

**Oil and Natural Gas Sector: New Source Performance Standards and National Emission  
Standards for Hazardous Air Pollutants Reviews  
40 CFR Parts 60 and 63**

**Response to Public Comments on  
Proposed Rule August 23, 2011 (76 FR 52738)**

U.S. Environmental Protection Agency  
Office of Air Quality Planning and Standards  
Sector Policies and Programs Division  
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## FOREWORD

This document provides the EPA's responses to public comments on the EPA's Proposed *Oil and Natural Gas Sector: New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews*. The EPA published a Notice of Proposed Rulemaking in the *Federal Register* on August 23, 2011, at 76 FR 52738. The EPA received comments on this proposed rule via mail, e-mail, facsimile, and at three public hearings held in Pittsburgh, Pennsylvania, Dallas, Texas and Denver, Colorado in September 2011. Copies of all comments submitted and transcripts for the public hearings are available at the EPA Docket Center Public Reading Room. Comments, letters, and transcripts of the public hearings are also available electronically through <http://www.regulations.gov> by searching Docket IDs EPA-HQ-OAR-2010-0505.

This document contains responses to comments on the proposed NSPS (40 CFR part 60, subpart OOOO) and changes proposed to the NESHAPs (40 CFR part 63, subparts HH and HHH). Due to the size and scope of this rulemaking, the EPA summarized a limited amount of major comments in the preamble of the final rule. This document contains a summary of all substantive comments provided by commenters extracted from the original letters and public hearing transcripts.

For each comment, the Document Control Number (DCN) is provided along with the comment summary. For purposes of this document, the text within the comment summaries was provided by the commenter(s) and represents their opinion(s), regardless of whether the summary specifically indicates that the statement is from a commenter(s) (e.g., "The commenter states" or "The commenters assert"). The comment summaries do not represent the EPA's opinion unless the response to the comment specifically agrees with all or a portion of the comment. In some cases the same comment was submitted by two or more commenters through submittal of a form letter prepared by an organization, by the commenter incorporating by reference the comments in another comment letter, or by the commenter providing identical or similar language independently. Rather than repeat these comment excerpts for each commenter, the comment excerpt is provided only once.

Several of the EPA's responses to comments are provided immediately following each comment summary. However, in instances where several commenters raised similar or related issues, the EPA has grouped these comments together and provided a single response after the last comment summary in the group. In some cases, the EPA provided responses to specific comments or groups of similar comments in the preamble to the final rulemaking. Rather than repeating those responses in this document, the EPA has referenced the preamble or the appropriate technical support document for a description of the analysis included in the final rule. Additionally, the EPA does not individually identify each and every commenter who made a certain point in all instances, particularly in cases where multiple commenters express essentially identical arguments. Although portions of the preamble to the final rule are paraphrased in this document, to the extent any ambiguity is introduced by this paraphrasing, the preamble itself remains the definitive statement of the rationale for the final rule.



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## Table of Contents

1.0 Summary .....	1
1.1 Background .....	1
1.2 Summary of Significant Changes Since Proposal .....	2
1.2.1 NSPS (Subpart OOOO) .....	3
1.2.2 NESHAP (Subpart HH and Subpart HHH) .....	8
1.3 Summary of Impacts of Promulgated Action .....	18
1.3.1 What are the air impacts?.....	18
1.3.2 What are the energy impacts?.....	20
1.3.3 What are the cost impacts? .....	20
1.3.4 What are the economic impacts? .....	22
1.3.5 What are the benefits of this final rule? .....	22
2.0 Response to Comments Regarding Subpart OOOO .....	27
2.1 Emission Sources Regulated Under the Proposed Rule .....	27
2.1.1 Gas Well Completions .....	27
2.1.2 Pneumatic Controllers.....	35
2.1.3 Compressors.....	40
2.1.4 SO <sub>2</sub> Emissions from Natural Gas Processing Plants.....	44
2.1.5 Other Potential Emission Sources to be Regulated – Produced Water Ponds.....	47
2.2 Well Completions and Recompletions.....	51
2.2.1 Estimated Number of Wells.....	51
2.2.2 Description of Well Completion Process and REC Process.....	52
2.2.3 Subcategory 1 Wells (non-exploratory and non-delineation).....	55
2.2.4 Subcategory 2 Wells (exploratory and delineation).....	69
2.2.5 Thresholds for Parameters to Define which Well Completions are Subject to REC Requirements .....	71
2.2.6 Other Comments .....	75
2.3 Pneumatic Controllers.....	80
2.3.1 Compliance Options and Compliance Schedule.....	80
2.3.2 Proposed Emission Limit for Processing Plants .....	81
2.3.3. Proposed Emission Limit for Production, Transmission and Storage .....	81

2.3.4	Low Bleed Devices .....	82
2.3.5	Other Comments .....	83
2.4	Compressors.....	85
2.4.1	Applicability .....	87
2.4.2	Number of Compressor Affected Facilities .....	90
2.4.3	Centrifugal Compressor Wet Seals.....	92
2.4.4	Reciprocating Compressors – Rod Packing Replacement.....	95
2.5	Storage Vessels .....	104
2.5.1	Number of Storage Vessels.....	104
2.5.2	Equipment Costs .....	104
2.5.3	Affected Facilities.....	110
2.5.4	Control Techniques.....	127
2.5.5	Other Comments .....	137
2.6	Equipment Leaks .....	143
2.6.1	Leak Definition .....	144
2.6.2	Leaker Emission Factors and Emission Estimation Methodology .....	148
2.6.3	Control Techniques.....	151
2.6.4	Other Comments .....	159
2.7	Innovative Compliance Approaches .....	169
2.7.1	Registration of Wells and Advance Notice of Completions.....	169
2.7.2	Third Party Verification .....	170
2.7.3	Provisions for Encouraging Innovative Technology .....	171
2.7.4	Applicability of Title V Permitting Requirements to Non-major Sources .....	173
2.7.5	Other Comments .....	180
2.8	Startup, Shutdown and Malfunction Provisions .....	181
2.8.1	Affirmative Defense Provisions for Malfunctions.....	195
2.8.2	Other Comments .....	209
2.9	Notification, Recordkeeping and Reporting Requirements for the Proposed NSPS .....	216
2.10	Other Comments .....	221
2.10.1	Use of Data from the Natural Gas STAR Program.....	221
2.10.2	VOC Content of Natural Gas .....	224

2.10.3	Assessing Co-benefits from Greenhouse Gas Emission Reductions .....	225
2.10.4	Harmonization with Other Rules .....	226
2.10.5	Relationship to 40 CFR 98, Subpart W .....	229
2.10.6	Proposed Standards Would Apply to Affected Facilities that Commence Construction, Reconstruction, or Modification After August 23, 2011 .....	231
3.0	Comments Regarding Subpart HH and Subpart HHH .....	233
3.1	Representativeness and Comprehensiveness of NEI Data Used in Analyses.....	233
3.2	Previously Unregulated Sources .....	234
3.2.1	Legal Authority.....	236
3.2.2	Glycol Dehydrators – 40 CFR subpart HH.....	241
3.2.3	Glycol Dehydrators – 40 CFR subpart HHH.....	245
3.2.4	Other Comments on Glycol Dehydration Units.....	256
3.2.6	Storage Vessels: Previously Unregulated and Regulated Sources .....	259
3.2.7	Definition of Associated Equipment.....	263
3.2.8	Other Comments .....	265
3.3	Risk Assessment .....	267
3.3.1	General Comments on the Methods Used to Assess Risk .....	267
3.3.2	Uncertainties in the Risk Assessment .....	280
3.3.3	Actions Taken Based on Risk Results .....	282
3.3.4	Other Comments .....	286
3.4	Technology Review .....	288
3.4.1	General Comments on the Technology Review Methodology.....	288
3.4.2	Actions Taken Based on the Technology Review .....	295
3.5	Other Proposed Actions .....	302
3.5.1	Alternative to Use Manufacturer’s Testing Results for Certain Enclosed Combustion Control Devices .....	302
3.5.2	Addition of Definition for Flare.....	310
3.5.3	Monitoring, Recordkeeping and Reporting .....	310
3.5.4	Startup, Shutdown and Malfunction .....	332
3.5.5	Applicability and Compliance .....	361
3.5.6	Other Comments .....	367



3.6 Miscellaneous Comments on NESHAP Amendments .....	369
4.0 Cost, Environmental, Energy and Economic Impacts .....	372
4.1 Economic Impacts.....	372
4.2 Estimated Benefits .....	386
4.2.1 Estimated Health Benefits.....	386
4.2.2 Estimated Climate Co-benefits .....	392
4.3 Other Comments .....	403
5.0 Miscellaneous Comments .....	409
5.1 Request for Extension of the Compliance Date.....	416
5.2 Rules are an Attempt to Regulate Methane and Other Greenhouse Gases.....	417
5.3 Regulation of NO <sub>x</sub> and other Pollutants.....	420

### **List of Appendices**

Appendix A. List of Commenters Cited in this RTC Document Submitting Comments To EPA Air and Radiation Docket Number EPA-HQ-OAR-2010-0505 Regarding the Oil and Natural Gas NSPS and NESHAP Reviews Proposed August 23, 2011 .....	A-1
Appendix B. Complete List of Commenters that Submitted Comments to EPA Air and Radiation Docket Number EPA-HQ-OAR-2010-0505 Regarding the Oil and Natural Gas NSPS and NESHAP Reviews Proposed August 23, 2011 .....	B-1

## Acronyms and Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
ADAF	Age-Dependent Adjustment Factors
AEGL	Acute Exposure Guideline Levels
AERMOD	The air dispersion model used by the HEM-3 model
API	American Petroleum Institute
AQRVs	Air Quality Related Values
BACT	Best Available Control Technology
BID	Background Information Document
BPD	Barrels Per Day
BSER	Best System of Emission Reduction
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
CAA	Clean Air Act
CalEPA	California Environmental Protection Agency
CBI	Confidential Business Information
CEM	Continuous Emissions Monitoring
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
CIIT	Chemical Industry Institute of Toxicology
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent
DOE	Department of Energy
ECHO	Enforcement and Compliance History Online
e-GGRT	Electronic Greenhouse Gas Reporting Tool
EJ	Environmental Justice
EPA	Environmental Protection Agency
ERPG	Emergency Response Planning Guidelines
ERT	Electronic Reporting Tool
GCG	Gas Condensate Glycol
GHG	Greenhouse Gas
GOR	Gas to Oil Ratio
GWP	Global Warming Potential
HAP	Hazardous Air Pollutants
HEM-3	Human Exposure Model, version 3
HI	Hazard Index
HP	Horsepower
HQ	Hazard Quotient
H <sub>2</sub> S	Hydrogen Sulfide
ICR	Information Collection Request

IPCC	Intergovernmental Panel on Climate Change
IRIS	Integrated Risk Information System
Km	Kilometer
kW	Kilowatts
LAER	Lowest Achievable Emission Rate
Lb	Pounds
LDAR	Leak Detection and Repair
MACT	Maximum Achievable Control Technology
MACT Code	NEI code used to identify processes included in a source category
Mcf	Thousand Cubic Feet
MOU	Memorandum of Understanding
Mg/yr	Megagrams per year
MIR	Maximum Individual Risk
MIRR	Monitoring, Inspection, Recordkeeping and Reporting
MMtCO <sub>2e</sub>	Million Metric Tons of Carbon Dioxide Equivalents
NAAQS	National Ambient Air Quality Standards
NAC/AEGL	National Advisory Committee for Acute Exposure Guideline Levels for Hazardous Substances
NAICS	North American Industry Classification System
NAS	National Academy of Sciences
NATA	National Air Toxics Assessment
NEI	National Emissions Inventory
NEMS	National Energy Modeling System
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NGL	Natural Gas Liquids
NIOSH	National Institutes for Occupational Safety and Health
NO <sub>x</sub>	Oxides of Nitrogen
NRC	National Research Council
NSPS	New Source Performance Standards
NSR	New Source Review
NTTAA	National Technology Transfer and Advancement Act
OAQPS	Office of Air Quality Planning and Standards
OGI	Optical Gas Imaging
OMB	Office of Management and Budget
PB–HAP	Hazardous air pollutants known to be persistent and bio-accumulative in the environment
PFE	Potential for Flash Emissions
PM	Particulate Matter
PM <sub>2.5</sub>	Particulate Matter (2.5 microns and less)

POM	Polycyclic Organic Matter
PPM	Parts Per Million
PPMV	Parts Per Million by Volume
PSD	Prevention of Significant Deterioration
PSIA	Pounds Per Square Inch Absolute
PSIG	Pounds Per Square Inch Gauge
PTE	Potential to Emit
QA	Quality Assurance
RACT	Reasonably Available Control Technology
RBLC	RACT/BACT/LAER Clearinghouse
REC	Reduced Emissions Completion
REL	CalEPA Reference Exposure Level
RFA	Regulatory Flexibility Act
RfC	Reference Concentration
RfD	Reference Dose
RIA	Regulatory Impact Analysis
RICE	Reciprocating Internal Combustion Engines
RTC	Response to Comments
RTR	Residual Risk and Technology Review
SAB	Science Advisory Board
SBREFA	Small Business Regulatory Enforcement Fairness Act
SCC	Source Classification Codes
SCFH	Standard Cubic Feet Per Hour
SCFM	Standard Cubic Feet Per Minute
SCM	Standard Cubic Meters
SCMD	Standard Cubic Meters Per Day
SCOT	Shell Claus Offgas Treatment
SIP	State Implementation Plan
SISNOSE	Significant Economic Impact on a Substantial Number of Small Entities
S/L/T	State, Local and Tribal Agencies
SO <sub>2</sub>	Sulfur Dioxide
SSM	Startup, Shutdown and Malfunction
STEL	Short-term Exposure Limit
TLV	Threshold Limit Value
TOSHI	Target Organ-Specific Hazard Index
TPY	Tons per Year
TRIM	Total Risk Integrated Modeling System
TRIM.FaTE	A spatially explicit, compartmental mass balance model describing the movement and transformation of pollutants over time, through a user-defined, bounded system that includes both biotic and abiotic compartments

TSD	Technical Support Document
TWA	Time Weighted Average
UF	Uncertainty Factor
UMRA	Unfunded Mandates Reform Act
URE	Unit Risk Estimate
VCS	Voluntary Consensus Standards
VOC	Volatile Organic Compounds
VRU	Vapor Recovery Unit

## 1.0 Summary

### 1.1 Background

On January 14, 2009, pursuant to section 304(a)(2) of the Clean Air Act (CAA), WildEarth Guardians and the San Juan Citizens Alliance filed a complaint in the United States District Court for the District of Columbia and alleged that the U.S. Environmental Protection Agency (EPA) failed to meet its obligations under CAA section 111(b)(1)(B) for the Crude Oil and Natural Gas Production source category and CAA sections 112(d)(6) and 112(f)(2) for the Oil and Natural Gas Production and Natural Gas Transmission and Storage major source categories. On February 5, 2010, the Court entered a consent decree that, as subsequently modified, required the EPA to sign by July 28, 2011, proposed standards and/or determinations not to issue standards pursuant to CAA sections 111(b)(1)(B), 112(d)(6) and 112(f)(2) and to take final action by April 17, 2012.

On August 23, 2011, the EPA announced (76 FR 52738) how the Agency proposed to address the reviews of the NSPS for volatile organic compounds (VOC) and sulfur dioxide (SO<sub>2</sub>) emissions from natural gas processing plants. The EPA proposed to add to the source category list any oil and gas operation not covered by the current listing. This action also included proposed amendments to the existing NSPS for VOC and SO<sub>2</sub> emissions from natural gas processing plants and proposed VOC standards for operations not covered by the existing NSPS. In addition, this action proposed how the EPA would address the residual risk and technology review (RTR) conducted for the oil and natural gas production and natural gas transmission and storage national emission standards for hazardous air pollutants (NESHAP). The EPA further proposed standards for emission sources within these two source categories that were not then addressed, as well as amendments to improve aspects of these NESHAP related to applicability and implementation. Finally, the EPA addressed provisions in these NSPS and NESHAP related to emissions during periods of startup, shutdown and malfunction (SSM).

Specifically, the EPA proposed revising the NSPS for VOCs from leaking components at onshore natural gas processing plants (40 CFR part 60, subpart KKK) and NSPS for SO<sub>2</sub> emissions from natural gas processing plants (40 CFR part 60, subpart LLL). The EPA also proposed establishing standards (40 CFR part 60, subpart OOOO) for certain oil and gas operations not covered by the existing standards. In addition to the operations covered by subparts KKK and LLL, the EPA proposed a new subpart OOOO to regulate VOC emissions from gas wells, centrifugal compressors, reciprocating compressors, pneumatic controllers, and storage vessels. The EPA also addressed the residual RTR conducted under section 112 of the CAA for the Oil and Natural Gas Production Facilities source category (40 CFR part 63, subpart HH) and the Natural Gas Transmission and Storage Facilities source category (40 CFR part 63, subpart HHH). The EPA proposed revisions to the existing emission limit for glycol dehydration unit process vents and leak detection and repair requirements. In addition, pursuant to section

112(d)(2) and (3), the EPA proposed emission limits reflecting maximum achievable control technology (MACT) for certain currently uncontrolled emission sources in these source categories. This action included proposed modification, and addition of testing and monitoring, and related notification, recordkeeping and reporting requirements, as well as other minor technical revisions to the NESHAP. This action also proposed revisions to the regulatory provisions related to emissions during periods of SSM.

A 90-day period, ending October 24, 2011, was initially provided for the public to submit comments regarding the proposed subpart OOOO (40 CFR part 60), and proposed revisions to subparts HH and HHH (40 CFR part 63). The comment period was later extended to November 30, 2011. Approximately 4,400 comment letters were entered into EPA's Air and Radiation docket assigned for this rulemaking (docket number EPA-HQ-OAR-2010-0505). The EPA reviewed all of the comment letters entered into the docket and grouped the commenters into two general categories. The first category consists of commenters stating only general support or opposition to the proposed rulemaking. Commenters supporting the rulemaking frequently included statements requesting that the EPA establish the most stringent air emissions standards possible and include all existing sources. Commenters opposing the rulemaking frequently stated that the proposed rules are overly stringent and burdensome and would negatively impact domestic oil and natural gas production. The second category of public commenters are those providing comments regarding specific issues and topics related to the rule development and proposed rule language for the new subpart OOOO, and revisions to NSPS subparts KKK and LLL, and NESHAP subparts HH and HHH.

This document presents a summary of the public comments entered into docket EPA-HQ-OAR-2010-0505 regarding specific issues and topics related to the development of the proposed subpart OOOO and amendments to subparts KKK and LLL NSPS (40 CFR part 60) and amendments to subparts HH and HHH NESHAP (40 CFR part 63) (i.e., comments submitted by commenters in the second category) and EPA's responses to those comments. The EPA assigned these comments to specific categories (see Table of Contents) based on an assessment of the principal subject of the comment; however, some comments inevitably overlap multiple subject areas. Appendix A lists commenters for which the EPA has provided a specific response, either in this document or in the final rule preamble. Appendix B identifies all of the commenters that submitted comments to the docket. Some of the comment sets were signed or submitted on behalf of multiple commenters.

## **1.2 Summary of Significant Changes Since Proposal**

This section describes significant changes made to the proposal that the EPA is now finalizing in this rule. These changes result from the EPA's review of the additional data and information

provided to us and our consideration of the many substantive and thoughtful comments submitted on the proposal.

For clarity, we have divided this section into two parts. Section 1.2.1 describes the significant changes that have been made to the NSPS (40 CFR part 60, subpart OOOO) since proposal. Section 1.2.2 describes the significant changes made to the NESHAP (40 CFR part 63, subparts HH and HHH).

### **1.2.1 NSPS (Subpart OOOO)**

This section will discuss in greater detail the key changes the EPA has made since proposal. These changes result from the EPA's review of the additional data and information provided to us and our consideration of the many substantive and thoughtful comments submitted on the proposal.

We believe the changes make the final rule more flexible and cost effective, address concerns with equipment availability, streamline recordkeeping and reporting requirements and improve clarity, while fully preserving or improving the public health and environmental protection required by the CAA.

#### *1.2.1.1 Gas Well Affected Facilities*

We have revised the requirements for gas well affected facilities since proposal in response to comment. The final rule applies to three subcategories of fractured and refractured gas wells for which well completion operations are conducted: (1) wildcat (exploratory) and delineation gas wells; (2) non-wildcat and non-delineation gas wells for which the reservoir pressure is insufficient for a reduced emissions completion (REC) to be performed, as determined by a simple calculation involving reservoir pressure, well depth and flow line pressure at the sales meter (we refer to these wells as "low pressure gas wells"); and (3) all other fractured and refractured gas wells. In the proposed 40 CFR part 60, subpart OOOO, upon promulgation of this rule, each well completion or recompletion at a non-exploratory or non-delineation well would have had to employ REC in combination with a completion combustion device to control gas not suitable for entering the flow line. Because of uncertainties in the supply of equipment and labor over the near-term, we are now requiring this work practice standard for completion operations begun at subcategory (3) gas wells (non-exploratory and non-delineation wells) on or after January 1, 2015. Until this date, flowback emissions must be controlled using a completion combustion device unless it is technically infeasible or unsafe to do so. Owners and operators are encouraged to use REC when available during this period. Completion operations at subcategory (1) gas wells (wildcat and delineation wells) and subcategory (2) gas wells (non-wildcat and non-delineation low pressure gas wells) begun on or after 60 days after the date of promulgation of the rule are required to control flowback emissions by using REC with combustion or by routing



emissions to a completion combustion device alone unless it is technically infeasible or unsafe to do so.

The final rule includes a specific modification provision for well completions in lieu of the General Provisions in 40 CFR 60.14. For a more detailed explanation, please see section IX.A of the final rule preamble. In addition, we have revised the definition of “flowback period” to more clearly define when the flowback period begins and ends.

In the proposed rule, all completions at existing wells (*i.e.*, those originally constructed on or before August 23, 2011) that are subsequently fractured or refractured were considered to be modifications. In the final rule, completions of wells that are refractured on or after the rule’s effective date are not considered modified and, as a result, are not affected facilities under the NSPS if the completion operation is conducted with the use, immediately upon flowback, of emission control techniques required on or after January 1, 2015, for new wells and satisfies other requirements.

In the proposed rule, we prescribed specific equipment to accomplish an REC. In the final rule, we have removed the required equipment specifications for REC and added operational standards that will result in minimizing emissions and maximizing product recovery. In light of the comments received, we conclude that it is inappropriate and unnecessary to prohibit the use of other equipment that can be used to accomplish an REC, and that the operational standards can be achieved using a variety of equipment that can change from well to well.

Initial compliance requirements for gas well affected facilities have also been revised and streamlined. Owners and operators are now required to notify the Administrator of the actual date of each well completion operation by email no later than 2 days prior to the well completion operation, rather than the proposed requirement of notifying the Administrator of the date of the well completion operation within 30 days of the commencement of each well completion operation. The email must include information that had been part of the 30-day advance notification, as described in the proposed rule, including contact information for the owner and operator, well identification, geographic coordinates of the well and planned date of the beginning of flowback. However, if the owner or operator is subject to State regulations that require advance notification of well completions and has met those advance notification requirements, then the owner or operator is considered to have met the advance notification requirements for gas well completions under the NSPS.

In the final rule, the recordkeeping and reporting requirements for well completions also provide for a streamlining option that owners and operators may choose in lieu of the standard annual reporting requirements. The standard annual report must include copies of all well completion records for each gas well affected facility for which a completion operation was performed during the reporting period. The alternative, streamlined annual report for gas well affected

facilities requires submission of a list, with identifying information of all affected gas wells completed, electronic or hard copy photographs documenting REC in progress for each well for which REC was required and the self-certification required in the standard annual report. The operator retains a digital image of each REC in progress. The image must include a digital date stamp and geographic coordinates stamp to help link the photograph with the specific well completion operation.

#### *1.2.1.2 Centrifugal and Reciprocating Compressor Affected Facilities*

In the final rule, we have made changes that impact both reciprocating and centrifugal compressor affected facilities in response to comments requesting clarification. Because we are not finalizing standards covering them, centrifugal and reciprocating compressors located in the transmission, storage and distribution segment are not affected facilities.

In the proposed rule, all centrifugal compressors would be required to use dry seals. The final rule requires that centrifugal compressors with wet seals reduce emissions by 95.0 percent. The standard can be achieved by capturing and routing emissions from the wet seal fluid degassing system to a control device that reduces VOC emissions by 95.0 percent. Testing, monitoring, recordkeeping, reporting and notification requirements associated with the control devices have also been added. In the final rule, centrifugal compressors with dry seals are not affected facilities. More detailed discussion of this change is presented in section IX.D of the final rule preamble.

As proposed, owners or operators of reciprocating compressor affected facilities were required to change rod packing after 26,000 hours of operation. This is equivalent to approximately 36 months of continuous operation. Based on comments we received, we are changing the final rule to provide operators the option of changing the rod packing every 36 months instead of tracking compressor hours of operation and changing rod packing after 26,000 hours of operation.

#### *1.2.1.3 Pneumatic Controller Affected Facilities*

For pneumatic controller affected facilities located in the oil and natural gas production segments, we have revised the definition of pneumatic controller affected facility from a single pneumatic controller to a single continuous bleed natural gas-driven pneumatic controller with a continuous bleed rate greater than 6 scfh for which construction, modification or reconstruction commenced after August 23, 2011. At natural gas processing plants, individual continuous bleed natural gas-operated pneumatic controllers for which construction, modification or reconstruction commenced after August 23, 2011, are affected facilities under this rule. As explained further in section IX.C of the final rule preamble, this change provides clarity by more specifically defining the pneumatic controllers we intended to regulate in the final rule. In

addition, only pneumatic controllers located prior to the point at which the gas enters the transmission and storage segment are subject to the NSPS. Because we are not finalizing standards covering them, controllers located in the transmission and storage segment are not affected facilities. The emission rates we proposed for pneumatic controllers have not changed in the final rule.

All new pneumatic controller affected facilities are required, in the final rule, to be tagged with the month and year of installation and identification that allows traceability to the records for that controller.

In the proposed rule, each pneumatic controller affected facility would have to comply upon promulgation. The final rule allows a 1-year phase-in period beginning on the date of promulgation before the bleed rate limit is effective for an affected facility. We believe this phase-in period is necessary for at least two reasons. First, owners and operators would demonstrate compliance based on information in the manufacturers' specification. We have concluded that such information is not always included in current manufacturers' specifications and a period of time is required for manufacturers to test their products and modify specifications to include the information. Second, we are not aware of any add-on control device that is or can be used to reduce VOC emissions from gas-driven pneumatic devices.

Finally, language in the proposed rule could have been interpreted to mean that all pneumatic controllers installed in any year after the proposal date must be reported each year, rather than those installed only during the reporting period. In order to clarify and streamline the recordkeeping and reporting requirements associated with pneumatic controllers, we are requiring only information concerning those affected facilities constructed, modified or reconstructed during the reporting period to be included in the annual report.

#### *1.2.1.4 Storage Vessel Affected Facilities*

We have modified the definition of "storage vessel" to exclude surge control vessels, knockout vessels and pressure vessels designed to operate without emissions to the atmosphere. In addition, we have clarified that we consider a storage vessel that is skid-mounted or permanently attached to something that is mobile (such as trucks, railcars, barges or ships) to be subject to 40 CFR part 60, subpart OOOO if it is intended to be located at a site for at least 180 consecutive days.

In the proposed rule, we established a throughput threshold for storage vessels below which they were not subject to the NSPS. In order to remove confusion with respect to the emission factors used to develop the throughput threshold and to address comments indicating significant difficulty measuring throughput, we have revised the final rule such that storage vessels that emit 6 tpy of VOC or more are subject to the NSPS, based on our analysis in the proposed rule

showing that the proposed NSPS is cost effective for storage vessels with that level of VOC emissions. In the final rule, for storage vessels constructed, modified or reconstructed at well sites with no wells already in production at the time of construction, the final rule provides a 30-day period for the owner or operator to determine whether the magnitude of VOC emissions from the storage vessel will be at least 6 tpy. If the storage vessel requires control, the final rule provides an additional 30 days for the control device to be installed and operational. For storage vessels constructed, modified or reconstructed at well sites with one or more wells already in production at the time of construction, modification or reconstruction, VOC emissions can be determined prior to startup. Accordingly, these estimation and installation periods are not necessary and, therefore, not provided.

Several requirements for storage vessels in the proposed rule pointed to 40 CFR part 63, subpart HH (the Oil and Natural Gas Production NESHAP). However, subpart HH regulates HAP while this NSPS regulates VOC. Therefore, in order to eliminate confusion caused by cross-referencing another regulation and to tailor the requirements for VOC regulation, we have incorporated the storage vessel requirements from subpart HH into 40 CFR part 60, subpart OOOO and modified those requirements, as appropriate for this rule.

In the proposed rule, each storage vessel required to reduce emissions would have to comply upon promulgation. In the final rule, owners or operators are allowed a 1-year phase-in period beginning on the date of promulgation before the 95.0-percent control requirement is effective. We believe this phase-in period is necessary because of initial problems securing control devices that are manufacturer-tested and have appropriate documentation for determining control efficiency. In addition, we believe that owners or operators will require a period of time to establish the need for controls and install them where called for. The 1-year phase-in period will also allow owners or operators the necessary time to establish the need for a control device and procure and install the equipment.

#### *1.2.1.5 Equipment Leaks Affected Facilities and Sweetening Unit Affected Facilities at Onshore Natural Gas Processing Plants*

We have revised the identification of affected facilities for equipment leaks at natural gas processing plants. We proposed that compressors and equipment (as defined in the rule) located at onshore natural gas processing plants were affected facilities. As discussed above, compressors (reciprocating and centrifugal) have requirements under 40 CFR part 60, subpart OOOO that extend beyond the natural gas processing plant. To remove the duplicative requirements for compressors at natural gas processing plants, we have revised the identification of affected facility to exclude compressors from the standards that apply to equipment leaks at onshore natural gas processing plants.

### *1.2.1.6 Changes to Notification, Recordkeeping and Reporting Requirements*

In response to comment expressing concern with the burdens associated with demonstrating and monitoring compliance, we have reanalyzed the notification, recordkeeping and reporting requirements throughout the proposed rule and eliminated duplicative and unnecessary requirements for all emission points. For well completions, compressors, pneumatic controllers and storage vessels, we have removed the General Provisions notification requirements in 40 CFR 60.7(a)(1), (3) and (4). These requirements relate to notification of construction and initial performance testing and are more suited to construction of more traditional facilities (e.g., gas processing plants, refineries and chemical plants) rather than the numerous individual pieces of apparatus (e.g., individual pneumatic controllers, compressor and storage vessels) that are “affected facilities” under the final rule. Specific notification and initial compliance demonstration requirements in the final rule make the General Provisions notification requirements unnecessary for gas well affected facilities.

As mentioned previously, we have also streamlined the notification, recordkeeping and reporting requirements for gas well affected facilities. In place of a written notification of each well completion operation 30 days prior to the completion, owners or operators must submit a notification no later than 2 days prior to the date of the completion. This notification may be submitted by email. To avoid duplicative and potentially conflicting advance notification requirements, the final rule provides that owners or operators who are subject to state regulations that require advance notification of well completions and have met those notification requirements, then the owner or operator is considered to have met the advance notification requirements of the NSPS. Additionally, in lieu of the standard annual reporting requirements, the final rule allows submission of an annual report for gas well affected facilities that consists only of a list, with identifying information of all affected gas wells completed, electronic or hard copy photographs documenting REC in progress for each well for which REC was required and the self-certification required in the standard annual report.

In the affirmative defense provisions of the rule, a citation was corrected, minor wording changes were made and reporting requirements were refined. The provisions we retained in the final rule are those we believe are necessary to assure regulatory agencies and the public that the owner or operator is in compliance with the final rule.

### **1.2.2 NESHAP (Subpart HH and Subpart HHH)**

This section discusses the key changes the EPA is making to the NESHAP from the proposal. These changes result from the EPA’s review of the additional data and information provided to us and our consideration of the substantive comments submitted on the proposal.

We have retained the same approach and methodology to establishing the standards as described at proposal. We have, however, made some changes in response to comments, which are described further below. One change resulted in revisions to the MACT emission limits for small glycol dehydration units. In addition, based on the comments received, we are not finalizing the MACT standard for the subcategory of storage vessels without the PFE, which was a subcategory that was left unregulated in the 1999 subpart HH rule. Specifically, based on our review of the comments, we believe that we need additional data and information to set an emission standard for storage vessels without the PFE, and we intend to collect the additional data and propose MACT emission standards under section 112(d)(2) and (3) of the CAA for such storage vessels. Finally, we are retaining the 0.9 Mg/yr compliance option for large dehydration units.

*1.2.2.1 What are the significant changes since proposal for the Oil and Natural Gas Production Facilities (subpart HH) source category?*

Under the authority of sections 112(d)(2) and (d)(3) of the CAA, we proposed amendments to subpart HH by adding requirements for previously unregulated units; specifically we proposed standards for small glycol dehydration units and storage vessels without the PFE.

In the final amendments for subpart HH, we have revised the proposed MACT standards for small glycol dehydration units in response to comments that we did not take into account variability in the development of the MACT floor. In our proposal, the MACT standards for existing affected sources was a unit-specific BTEX limit of  $1.10 \times 10^{-4}$  g BTEX/scm-ppmv and for new affected sources was a BTEX limit of  $4.66 \times 10^{-6}$  g BTEX/scm-ppmv. In this final rule, we accounted for variability by using an upper prediction limit to develop a revised BTEX emission limit for existing small glycol dehydration units of  $3.28 \times 10^{-4}$  grams BTEX/standard cubic meters (scm)-parts per million by volume (ppmv) and for new small glycol dehydration units the revised BTEX limit is  $4.66 \times 10^{-6}$  grams BTEX/scm-ppmv.

Finally, we are not finalizing MACT standards for storage vessels without the PFE in this rule. We received numerous comments expressing concerns with how we established the proposed standards for this subcategory. In response to such comments, we have re-evaluated the proposed MACT standards and conclude that we need (and intend to gather) addition data on these sources in order to analyze and establish MACT emission standards for this subcategory of storage vessels under section 112(d)(2) & (3) of the CAA.

Changes made to amendments proposed under the authority of CAA section 112(f)(2)

We proposed to eliminate the 0.9 Mg/yr benzene compliance option for large glycol dehydration units because, in the proposed rule, we estimated that the emissions allowed as the result of this compliance option resulted in estimated cancer risks up to 400-in-1-million. We received

multiple comments concerning our proposed risk estimate. After reviewing these comments, we discovered that we had significantly overestimated the allowable emissions associated with this compliance option. First, for several sources, including the source that we predicted had the 400-in-1 million MIR, we used an incorrect factor (or multiplier) to scale up actual emissions associated with sources that could utilize the compliance option level of 0.9 Mg/yr to allowables. We used an incorrect factor due to an inadvertent transcription error in our calculations. Second, we learned that the risk assessment supporting the proposed rule erroneously included several area sources, which are not subject to subpart HH and thus should not have been included in the 112(f) risk assessment. After revising the risk assessment to remove area sources, and considering the MACT standard promulgated today for small glycol dehydrators pursuant to section 112(d)(2) and (d)(3), the MIR for the Oil and Natural Gas Production source category based on actual and allowable emissions is 10-in-1 million, compared to the 400-in-1 million<sup>1</sup> based on allowable emissions and 40-in-1 million based on actual emissions that were estimated in the proposed rule.

As the result of our revised risk analysis, we have determined that approximately 120,000 people are estimated to have cancer risks at or above 1-in-1 million, compared to 160,000 people estimated in the proposed rule. Total estimated cancer incidence from the source category is 0.02 excess cancer cases per year, or one case in every 50 years. This estimate is unchanged from the proposed rule because the incidence from a small number of sources typically does not affect total incidence reported to one significant figure. The estimate from the proposed rule of maximum chronic non-cancer TOSHI value (0.1) is unchanged, driven by naphthalene emissions from fugitive sources. The maximum acute non-cancer hazard quotient value (9, based on the benzene REL) is also unchanged from the proposed rule. Although driven by the same pollutant that drives the MIR, benzene, the maximum acute hazard quotient value did not change from the proposed rule because the source driving the acute value was not identified as an area source and, thus, remained in the revised analysis. It is common for the maximum acute hazard quotient and cancer MIR not to coincide because the acute value is strongly dependent on short-term meteorology and the distance to the facility property boundary, whereas the MIR is dependent on long-term meteorology and the distance to census block receptors. There are 13 cases in the source category (out of approximately 1000 facilities) where the REL is exceeded by more than a factor of two.

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<sup>1</sup> At proposal, we used an incorrect factor (or multiplier) in calculating allowable emissions for the source that, at proposal, had an estimated MIR of 400-in-1 million. Since proposal, we have learned that this source is an area source and thus is not subject to the subpart HH MACT standards. As such, we removed this source from our section 112(f) risk analysis. In any event, we have determined that even if this area source were to have actual emissions at the 0.9 Mg/yr level, its risk would be 3-in-1 million.

Based on the conservative nature of the acute exposure scenario used in the screening assessment for this source category, the EPA has judged that, considering all associated uncertainties, the potential for effects from acute exposures is low. Screening estimates of acute exposures were evaluated for each HAP at the point of highest off-site exposure for each facility (i.e., not just the census block centroids) assuming that a person is present at this location at a time when both the peak emission rate and worst-case dispersion conditions occur. Although the REL (which indicates the level below which adverse effects are not anticipated) is exceeded in this case, we believe the potential for acute effects is low for several reasons. The acute modeling scenario is worst-case because of the confluence of peak emission rates and worst-case dispersion conditions. Also, the generally sparse populations near the facilities with the highest estimated 1-hour exposures make it less likely that a person would be near the plant to be exposed.

We also conducted a facility-wide risk assessment. The maximum facility-wide risk estimate of 100-in-1 million is unchanged from the proposed rule. Also unchanged from proposal is the fact that the facility-wide risk is driven by emissions from reciprocating internal combustion engines (“RICE”) and these engines are not part of the Oil and Natural Gas Production source category. In fact, oil and natural gas production operations contribute only about one percent or less to the total facility-wide risks. In the last few years, the Agency has revised the MACT standards for certain RICE. 75 FR 9648 and 51570. Although it is difficult to discern from the available data which types of RICE are driving the facility-wide risk, it is important to note that the 2005 NEI data on which we modeled risk did not take into account the recent MACT revisions to the RICE rule. Finally, our assessment that the potential for significant human health risks due to multipathway exposures or adverse environmental effects is low has not changed since proposal (*See* 76 FR 52774).

Consistent with the approach established in the Benzene NESHAP, the EPA weighed all health risk measures and information, including the maximum individual cancer risk, the cancer incidence, the number of people exposed to a risk greater than 1-in-1-million, the distribution of risks in the exposed population, and the uncertainty of our risk calculations in determining whether the risk posed by emissions from Oil and Natural Gas Production is acceptable. In this case, because the MIR is well below 100-in-1-million, and because a number of other factors indicate relatively low risk concern, including low cancer incidence, low potential for adverse environmental effects or human health multi-pathway, and unlikely chronic and acute noncancer health impacts, we conclude that the level of risk associated with the Oil and Natural Gas Production source category MACT standards (including the small glycol dehydrator MACT standard issued today) is acceptable.<sup>2</sup>

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<sup>2</sup> We reach the same conclusion even if we do not consider the new MACT for small glycol dehydrators in our acceptability determination. Indeed, focusing solely on the standards in the



In making our proposed ample margin of safety determination under CAA section 112(f)(2), we subsequently evaluated the risk reductions and costs associated with various emissions control options to determine whether we should impose additional standards to reduce risks further. As stated above, we made certain revisions to the risk assessment in response to comments and the resulting MIR for subpart HH is 10-in-1 million. We have not identified any emission control options that would reduce emissions and risk associated with subpart HH sources for glycol dehydration units and storage vessels. Our proposed amendment to remove the 0.9 Mg/yr compliance option does not affect the risk driver, which is fugitive emissions. As a result, we are retaining the 0.9 Mg/yr compliance option in the final rule. We have determined that the risks associated with the level of emissions allowed by the MACT standards are driven by fugitive emissions (i.e., leaks).

Since a LDAR program is the typical method for reducing emissions from fugitive sources, we considered requiring a LDAR program to reduce risk for this source category. The NEI dataset for this source category contains approximately 2,500 emission points that we characterized as fugitive. These emission points are located at 639 facilities. The fugitive emissions associated with those 639 facilities are 747 tons of HAP.

In evaluating the effectiveness of a LDAR program at these facilities we looked at two different LDAR programs – one is a program equivalent to NSPS subpart VV, and the second is a more stringent program equivalent to NSPS subpart VVa<sup>3</sup>. A LDAR program equivalent to subpart VV can achieve emission reductions of approximately 39 percent with capital and annual costs of \$237,700 and \$79,419 per facility, respectively. Therefore, such a program for the 639 facilities would be expected to reduce emissions by 249 tons of HAP with total capital and annual costs of \$152 million and \$50.7 million, respectively. The cost effectiveness would be approximately \$204,000 per ton of HAP.

A LDAR program equivalent to NSPS subpart VVa can achieve emission reductions of approximately 43 percent overall with capital and annual costs of \$241,000 and \$82,900 per facility, respectively. Therefore, an LDAR program for the 639 facilities would be expected to

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existing MACT, the level of risk associated with such standards would remain 10-in-1 million, and thus our acceptability determination does not change. There is one facility that is a small glycol dehydrator that has an MIR of 10-in-1 million. After imposition of the MACT for small glycol dehydrators, however, this unit would have an MIR of 7-in-1 million. Also, *see* memo titled *Supplemental Facility Information Obtained from Various State/Local Agencies and Additional Analysis*. March 20, 2012. *See* Docket.

<sup>3</sup> *See* memorandum titled *Costs and Emission Reductions for NSPS subpart VV and VVa LDAR programs*, dated April 1, 2012.

reduce emissions by 275 tons of HAP, with total capital and annual costs of \$154 million and \$53 million, respectively. The cost effectiveness would be approximately \$193,000 per ton of HAP reduced. These additional control requirements would reduce the MIR for the source category from 10 in a million to approximately 7-in-1-million.

As explained in the proposal, in accordance with the approach established in the Benzene NESHAP, we weigh all health risk measures and information considered in the risk acceptability determination, along with the costs and economic impacts of emissions controls, technological feasibility, uncertainties, and other relevant factors, in making our ample margin of safety determination and deciding whether standards are necessary to reduce risks further. Considering all of this information, we conclude that the costs of the options analyzed are not reasonable considering the emissions reductions and risk reductions potentially achievable with the control measures evaluated. Thus, we conclude that the MACT standards in subpart HH (coupled with the new MACT standard for small glycol dehydrators) provide an ample margin of safety to protect public health and prevent adverse environmental effects. Accordingly, we are re-adopting those standards to satisfy the requirements of section 112(f).

#### Changes made to standards proposed under the authority of CAA section 112(d)(6)

As discussed in detail in the preamble for the proposed rule (76 FR 52784), we conducted a technology review for glycol dehydration units, storage vessels, and equipment leaks under the authority of 112(d)(6). We assessed developments in practices, processes, and control technologies sources for those regulated under the initial NESHAP and determined that it was cost effective to lower the leak definition for valves at natural gas processing plants. We did not identify developments in practices, processes, and control technologies for glycol dehydration units and storage vessels. As a result of this assessment, we proposed revisions to the equipment leak requirements in 40 CFR part 63, subpart HH to lower the leak definition for valves to an instrument reading of at least 500 ppm. No significant changes since proposal were made to the equipment leak standards proposed under the authority of section 112(d)(6) of the CAA<sup>4</sup>.

#### Other Changes to the proposed rule

We are revising the emission reduction demonstrated using the manufacturers performance test from 98.0 percent to 95.0 percent. Specifically, if an owner or operator chooses to install a combustion control device that is tested under, and passes, the prescribed manufacturers performance test the final rule states that the control device has demonstrated a destruction

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<sup>4</sup> Memorandum from Brown, Heather, EC/R Inc., to Moore, Bruce, U.S. EPA, titled *Technology Review for the Final Amendments to Standards for the Oil and Natural Gas Production and Natural Gas Transmission and Storage Source Categories*. April 17, 2012. See Docket.

efficiency of 95.0 percent. This change is a result of comments and data provided on the actual performance of these devices in the field.

In the proposed rule, we proposed that the standards apply at all times and removed provisions that provided an exemption from the emission standards during SSM. In response to comments that the monitoring and reporting provisions related to excursions occurring during SSM events that remain in the subpart suggest exemption and therefore should be removed, we are removing these provisions in the final rule.

*1.2.2.2 What are the significant changes since proposal for the Natural Gas Transmission and Storage facilities (subpart HHH) source category?*

Changes made to amendments proposed under the authority of CAA sections 112(d)(2) and (d)(3)

Under the authority of sections 112(d)(2) and (d)(3) of the CAA, we proposed amendments to subpart HHH by adding requirements for previously unregulated units; specifically we proposed standards for small glycol dehydration units.

In the final amendments for subpart HHH, we have revised the proposed BTEX limits for small glycol dehydration units in response to comments that we did not take into account variability in the development of the MACT floor. We had proposed a unit-specific BTEX emission limit of  $6.42 \times 10^{-5}$  grams BTEX/scm-ppmv for existing sources and a BTEX limit of  $1.10 \times 10^{-5}$  g BTEX/scm-ppmv for new sources. In the final rule, we accounted for variability by using an upper prediction limit to develop a revised emission limit of  $3.10 \times 10^{-4}$  g BTEX/scm-ppmv and for new affected sources is a BTEX limit of  $5.44 \times 10^{-5}$  grams BTEX/scm-ppmv. The process for developing these emissions limitations is documented in this Responses to Comments document and a technical memorandum which can be found in the docket.

Changes to amendments proposed under the authority of CAA section 112(f)(2)

We proposed to eliminate the 0.9 Mg/yr benzene compliance option for large glycol dehydration unit process vents because, in the proposed rule, we estimated that the emissions allowed as the result of this compliance option resulted in estimated cancer risks up to 90-in-1-million. In response to comments, we learned that the risk assessment supporting the proposed rule erroneously included some sources that have permanently shut down, and several area sources, which are not subject to Subpart HHH and thus should not have been included in the 112(f) risk assessment. After revising the risk assessment to remove these sources, and considering the MACT standards promulgated today pursuant to section 112(d)(2) and (d)(3), the MIR for the Natural Gas Transmission and Storage source category based on actual and allowable emissions

is 20-in-1 million, compared to the 90-in-1 million based on allowable emissions and 20-in-1 million based on actual emissions estimated in the proposed rule.

As the result of our revised risk analysis, we have determined that approximately 1,100 people are estimated to have cancer risks at or above 1-in-1 million, compared to 2,500 people estimated in the proposed rule. Total estimated cancer incidence from the source category is 0.001 excess cancer cases per year, or one case in every 1,000 years. This estimate is unchanged from the proposed rule because the incidence from a small number of sources typically does not affect total incidence reported to one significant figure. The estimate from the proposed rule of maximum chronic non-cancer TOSHI value (0.2) is unchanged, driven by benzene emissions from fugitive sources. The maximum acute non-cancer hazard quotient value (4, based on the benzene REL) changed from the proposed rule; the value in the proposed rule was 5, but was associated with an area source that was removed from the risk assessment. There are two cases in the source category (out of approximately 300 facilities) where the REL is exceeded by more than a factor of two.

Based on the conservative nature of the acute exposure scenario used in the screening assessment for this source category, the EPA has judged that, considering all associated uncertainties, the potential for effects from acute exposures is low. Screening estimates of acute exposures were evaluated for each HAP at the point of highest off-site exposure for each facility (i.e., not just the census block centroids) assuming that a person is present at this location at a time when both the peak emission rate and worst-case dispersion conditions occur. Although the REL (which indicates the level below which adverse effects are not anticipated) is exceeded in this case, we believe the potential for acute effects is low for several reasons. The acute modeling scenario is worst-case because of the confluence of peak emission rates and worst-case dispersion conditions. Also, the generally sparse populations near the facilities with the highest estimated 1-hour exposures make it less likely that a person would be near the plant to be exposed.

We also conducted a facility-wide risk assessment. The maximum facility-wide risk estimate of 200-in-1 million is unchanged from the proposed rule. Also unchanged from proposal is the fact that the facility-wide risk is driven by emissions from reciprocating internal combustion engines (“RICE”) and these engines are not part of the Natural Gas Transmission and Storage source category. In fact, natural gas transmission and storage operations contribute only about one percent or less to the total facility-wide risks. In the last few years, the Agency has revised the MACT standards for certain RICE. (*See* 75 FR 9648 and 51570). Although it is difficult to discern from the available data which types of RICE are driving the facility-wide risk, it is important to note that the 2005 NEI data on which we modeled risk did not take into account the recent MACT revisions to the RICE rule. Finally, our assessment that the potential for significant human health risks due to multipathway exposures or adverse environmental effects is low has not changed since proposal (*See* 76 FR 52774).

Consistent with the approach established in the Benzene NESHAP, the EPA weighed all health risk measures and information, including the maximum individual cancer risk, the cancer incidence, the number of people exposed to a risk greater than 1-in-1-million, the distribution of risks in the exposed population, and the uncertainty of our risk calculations in determining whether the risk posed by emissions from Natural Gas Transmission and Storage is acceptable. In this case, because the MIR is well below 100-in-1-million, and because a number of other factors indicate relatively low risk concern, including low cancer incidence, low potential for adverse environmental effects or human health multi-pathway effects, and unlikely chronic and acute noncancer health impacts, we conclude that the level of risk associated with the Natural Gas Transmission and Storage source category MACT standards (including those MACT standards issued today) is acceptable.<sup>5</sup>

In making our proposed ample margin of safety determination under section 112(f)(2), we subsequently evaluated the risk reductions and costs associated with various emissions control options to determine whether we should impose additional standards to reduce risks further. As stated above, we made certain revisions to the risk assessment in response to comments and the resulting MIR for subpart HHH is 20-in-1 million. We have not identified any emission control options that would reduce emissions and risk associated with subpart HHH sources for glycol dehydration units. Our proposed amendment to remove the 0.9 Mg/yr compliance option does not affect the risk driver, which is fugitive emissions. As a result, we are retaining the 0.9 Mg/yr compliance option in the final rule.

We have determined that the risks associated with the level of emissions allowed by the MACT standards are driven by fugitive emissions (i.e., leaks). Since a LDAR program is the typical method for reducing emissions from fugitive sources, we evaluated the costs and emissions reductions associated with requiring such a program to reduce risk for this source category. The NEI dataset for the natural gas transmission and storage source category contains approximately 314 emission points that we characterized as being fugitive in nature. These emission points are located at 212 facilities. The fugitive emissions associated with those 212 facilities are 187 tons of HAP.

In evaluating the effectiveness of a LDAR program at these facilities we looked at two different LDAR programs – one is a program equivalent to NSPS subpart VV, and the second is a more

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<sup>5</sup> We reach the same conclusion even if we do not consider the new MACT for small glycol dehydrators in our acceptability determination. Indeed, focusing solely on the standards in the existing MACT, the level of risk associated with such standards would remain 20-in-1 million, and thus our acceptability determination would not change. The glycol dehydrators analyzed all had risks well below 20-in-1 million.

stringent program equivalent to NSPS subpart VVa<sup>6</sup>. A LDAR program equivalent to subpart VV can achieve emission reductions of approximately 51 percent with capital and annual costs of \$361,800 and \$142,600 per facility, respectively. Therefore, such a program for 212 facilities would be expected to reduce emissions by 95.4 tons of HAP and have total capital and annual costs of \$76.7 million and \$30.2 million, respectively. The cost effectiveness would be approximately \$317,000 per ton of HAP.

A LDAR program equivalent to NSPS subpart VVa can achieve emission reductions of approximately 78 percent overall with capital and annual costs of \$369,500 and \$154,300 per facility, respectively. Therefore, a LDAR program for 212 facilities would be expected to reduce emissions by 146 tons of HAP with total capital and annual costs of \$78.3 million and \$32.7 million, respectively. The cost effectiveness would be approximately \$224,000 per ton of HAP. These additional control requirements would reduce the MIR from the source category to approximately 3-in-1-million for the subpart VVa level of control and 7-in-1-million for the subpart VV level of control.

As explained in the proposal, in accordance with the approach established in the Benzene NESHAP, we weigh all health risk measures and information considered in the risk acceptability determination, along with the costs and economic impacts of emissions controls, technological feasibility, uncertainties, and other relevant factors, in making our ample margin of safety determination and deciding whether standards are necessary to reduce risks further. Considering all of this information, we conclude that the costs of the options analyzed are not reasonable considering the emissions reductions and risk reductions potentially achievable with the control measures. Thus, we conclude that the MACT standards in subpart HHH (coupled with the new MACT standard for small glycol dehydrators) provide an ample margin of safety to protect public health and prevent adverse environmental effects. Accordingly, we are re-adopting those standards to satisfy the requirements of section 112(f)(2).

#### Changes made to amendments proposed under the authority of CAA section 112(d)(6)

As discussed in detail in the preamble for the proposed rule (76 FR 52784), we conducted a technology review for glycol dehydration units under the authority of 112(d)(6). We did not identify developments in practices, processes, and control technologies for glycol dehydration units. As a result of this assessment, we did not propose amendments to 40 CFR part 63, subpart HHH. We have not made any changes since proposal under the authority of section 112(d)(6)<sup>7</sup>.

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<sup>6</sup> See memorandum titled *Costs and Emission Reductions for NSPS subpart VV and VVa LDAR programs*, dated April 1, 2012.

<sup>7</sup> Memorandum from Brown, Heather, EC/R Inc., to Moore, Bruce, U.S. EPA, titled *Technology Review for the Final Amendments to Standards for the Oil and Natural Gas Production and Natural Gas Transmission and Storage Source Categories*. April 17, 2012. See Docket.

Further discussion on our technology review analysis can be found in section X.C of the final rule preamble, and in responses to comments in this document.

### Other changes to the proposed rule

We are revising the emission reduction demonstrated using the manufacturers performance test from 98.0 percent to 95.0 percent. Specifically, if an owner or operator chooses to install a combustion control device that is tested under, and passes, the prescribed manufacturers performance test the final rule states that the control device has demonstrated a destruction efficiency of 95.0 percent. This change is a result of comments and data provided on the actual performance of these devices in the field.

In the proposed rule, we proposed that the standards apply at all times and removed provisions that provided an exemption from the emission standards during SSM. In response to comments that the monitoring and reporting provisions related to excursions occurring during SSM events that remain in the subpart suggest exemption and therefore should be removed, we are removing these provisions in the final rule.

## **1.3 Summary of Impacts of Promulgated Action**

### **1.3.1 What are the air impacts?**

For the oil and natural gas sector NESHAP and NSPS, we estimated the emission reductions that will occur due to the implementation of the final emission limits. The EPA estimated emission reductions based on the control technologies selected by the engineering analysis. These emission reductions associated with the final amendments to 40 CFR part 63, subpart HH and 40 CFR part 63, subpart HHH are based on the estimated population in 2008. Under the finalized limits for glycol dehydration units, we have estimated that the HAP emissions reductions will be 670 tons for existing units subject to the final emissions limits.

For the NSPS, we estimated the emission reductions that will occur due to the implementation of the final emission limits. The EPA estimated emission reductions based on the control technologies selected by the engineering analysis. These emission reductions are based on the estimated population in 2015.

The primary baseline used for the impacts analysis of our NSPS for completions of hydraulically fractured natural gas wells takes into account RECs conducted pursuant to state regulations covering these operations and estimates of RECs performed voluntarily. To account for RECs performed in regulated states, the EPA subsumed emissions reductions and compliance costs in states where these completion-related emissions are already controlled into the baseline. Additionally, based on public comments and reports to the EPA's Natural Gas STAR program,

the EPA recognizes that some producers conduct well completions using REC techniques voluntarily for economic and/or environmental objectives as a normal part of business. To account for emissions reductions and costs arising from voluntary implementation of pollution controls the EPA used information on total emission reductions reported to the EPA by partners of the EPA Natural Gas STAR. This estimate of this voluntary REC activity in the absence of regulation is also included in the baseline.<sup>8</sup> More detailed discussion on the derivation of the baseline is presented in a technical memorandum in the docket, as well as in the RIA.

Additionally, in the RIA, we provide summary-level estimates of emissions reductions and engineering compliance costs for a case where no voluntary RECs are assumed to occur. This alternative case is presented in order to show impacts if conditions were such that RECs were no longer performed on a voluntary basis, but rather were compelled by the regulation, and serves in part to capture the inherent uncertainty in projecting voluntary activity into the future. As such, this alternative case establishes the full universe of emissions reductions that are guaranteed by this NSPS (those that are *required* to occur under the rule, including those that would likely occur voluntarily). While the primary baseline may better represent actual costs (and emissions reductions) beyond those already expected under business as usual, the alternative case better captures the full amount of emissions reductions where the NSPS acts as a backstop to ensure that emission reduction practices occur (practices covered by this rule).

Under the final NSPS, we have estimated that the emissions reductions to be about 190,000 tons VOC affected facilities subject to the NSPS. The NSPS is also expected to concurrently reduce 1.0 million tons methane and 11,000 tons HAP. We estimate that direct reductions in HAP, methane and VOC for the final rules combined total about 12,000 tons, 1.0 million tons and 190,000 tons, respectively. If voluntary action is not deducted from the NSPS baseline, the emissions reductions achieved by the final NSPS in HAP, methane and VOC are estimated at about 19,000 tons, 1.7 million tons and 290,000 tons, respectively.

The EPA received several comments regarding the emission factor selected to calculate whole gas emissions (and the associated VOC emissions) from hydraulically fractured well completions. Comments focused on the data behind the emission factor, what the emission factor is intended to represent, and the procedures used to develop the emission factor from the selected data sets. We reviewed all information received and have decided to retain the data set and the

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<sup>8</sup> Voluntary short-term actions (such as REC) are challenging to capture accurately in a prospective analysis, as such reductions are not guaranteed to continue. However, Natural Gas STAR represents a nearly 20 year voluntary initiative with participation from 124 natural gas companies operating in the U.S., including 28 producers, over a wide historical range of natural gas prices. This unique program and dataset, the significant impact of voluntary REC on the projected cost and emissions reductions (due to significant REC activity), and the fact that RECs can actually increase natural gas recovered from natural gas wells (offering a clear incentive to continue the practice), led the Agency to conclude that it was appropriate to estimate these particular voluntary actions in the baseline for this rule.



analysis conducted to develop the emission factor of 9,000 Mcf per completion. More detailed discussion is presented in a technical memorandum on this subject in the docket.

### **1.3.2 What are the energy impacts?**

Energy impacts in this section are those energy requirements associated with the operation of emission control devices. Potential impacts on the national energy economy from the rule are discussed in the economic impacts section. There would be little national energy demand increase from the operation of any of the environmental controls analyzed under the final NESHAP amendments and final NSPS.

The final NESHAP amendments and final NSPS encourage the use of emission controls that recover hydrocarbon products, such as methane and condensate that can be used on-site as fuel or reprocessed within the production process for sale. We estimated that the final standards will result in net annual costs savings of about \$11 million (in 2008 dollars) due to the recovery of salable natural gas and condensate. Thus, the final standards have a positive impact associated with the recovery of non-renewable energy resources.

### **1.3.3 What are the cost impacts?**

The estimated total capital cost to comply with the final amendments to 40 CFR part 63, subpart HH for major sources in the Oil and Natural Gas Production source category is approximately \$2.6 million. The total capital cost for the final amendments to 40 CFR part 63, subpart HHH for major sources in the Natural Gas Transmission and Storage source category is estimated to be approximately \$140,000. All costs are in 2008 dollars.

The total estimated net annual cost to industry to comply with the final amendments to 40 CFR part 63, subpart HH for major sources in the Oil and Natural Gas Production source category is approximately \$3.3 million. The total net annual cost for final amendments to 40 CFR part 63, subpart HHH for major sources in the Natural Gas Transmission and Storage source category is estimated to be approximately \$180,000. These estimated annual costs include: (1) The cost of capital, (2) operating and maintenance costs, (3) the cost of monitoring, inspection, recordkeeping and reporting (MIRR) and (4) any associated product recovery credits. All costs are in 2008 dollars.

The estimated total capital cost to comply with the final NSPS is approximately \$25 million in 2008 dollars. The total estimated net annual cost to industry to comply with the final NSPS is estimated to be approximately \$170 million in 2008 dollars. This annual cost estimate includes: (1) The cost of capital, (2) operating and maintenance costs and (3) the cost of MIRR. This

estimated annual cost does not take into account any producer revenues associated with the recovery of salable natural gas and hydrocarbon condensates.

When revenues from additional product recovery are considered, the final NSPS is estimated to result in a net annual engineering cost savings overall. When including the additional natural gas recovery in the engineering cost analysis, we assume that producers are paid \$4 per thousand cubic feet (Mcf) for the recovered gas at the wellhead. The engineering analysis cost analysis assumes the value of recovered condensate is \$70 per barrel. Based on the engineering analysis, about 43 million Mcf (43 billion cubic feet) of natural gas and 160,000 barrels of condensate are estimated to be recovered by control requirements in 2015. Using the price assumptions, the estimated revenues from natural gas and condensate recovery are approximately \$180 million in 2008 dollars.

Using the engineering cost estimates, estimated natural gas product recovery, and natural gas product price assumptions, the net annual engineering cost savings is estimated for the final NSPS to be about \$15 million. Totals may not sum due to independent rounding.

If voluntary action is not deducted from the baseline, capital costs for the NSPS are estimated at \$25 million, and annualized costs without revenues from product recovery for the NSPS are estimated at \$330 million. In this scenario, given the assumptions about product prices, estimated revenues from product recovery are \$350 million, yielding an estimated cost of savings of about \$22 million.

As the price assumption is very influential on estimated annualized engineering costs, we performed a simple sensitivity analysis of the influence of the assumed wellhead price paid to natural gas producers on the overall engineering annualized costs estimate of the final NSPS. At \$4.22/Mcf, the price forecast reported in the 2011 Annual Energy Outlook in 2008 dollars, the annualized cost savings for the final NSPS are estimated at about \$24 million. As indicated by this difference, the EPA has chosen a relatively conservative assumption (leading to an estimate of few savings and higher net costs) for the engineering costs analysis. The natural gas price at which the final NSPS breaks-even from an estimated engineering costs perspective is around \$3.66/Mcf. A \$1/Mcf change in the wellhead natural gas price leads to a \$43 million change in the annualized engineering costs of the final NSPS. Consequently, annualized engineering costs estimates would increase to about \$29 million under a \$3/Mcf price or decrease to about -\$58 million under a \$5/Mcf price. For further details on this sensitivity analysis, please refer the regulatory impact analysis (RIA) for this rulemaking located in the docket.

### **1.3.4 What are the economic impacts?**

The analysis of energy system impacts EPA performed using the United States Department of Energy's (DOE) National Energy Modeling System (NEMS) shows that domestic natural gas production is not likely to change in 2015 as a result of the final rules, the year used in the RIA to analyze impacts. Average natural gas prices are also not estimated to change in response to the final rules. Domestic crude oil production is not expected to change, while average crude oil prices are estimated to decrease slightly (about \$0.01/barrel or about 0.01 percent at the wellhead for onshore production in the lower 48 states). All prices are in 2008 dollars. The NEMS-based analysis estimates that in the year of analysis, 2015, net imports of natural gas and crude oil will not change.

### **1.3.5 What are the benefits of this final rule?**

The final Oil and Natural Gas NSPS and NESHAP amendments are expected to result in significant reductions in existing emissions and prevent new emissions from expansions of the industry. These final rules combined are anticipated to reduce 12,000 tons of HAP, 190,000 tons of VOC (a precursor to both PM<sub>2.5</sub> and ozone formation) and 1.0 million tons of methane (a GHG and a precursor to global ozone formation). These pollutants are associated with substantial health effects, welfare effects and climate effects.

With the data available, we are not able to provide credible health benefit estimates for the reduction in exposure to HAP, ozone and PM (2.5 microns and less) (PM<sub>2.5</sub>) for these rules, due to the differences in the locations of oil and natural gas emission points relative to existing information and the highly localized nature of air quality responses associated with HAP and VOC reductions. This is not to imply that there are no benefits of the rules; rather, it is a reflection of the difficulties in modeling the direct and indirect impacts of the reductions in emissions for this industrial sector with the data currently available.<sup>9</sup> In addition to health improvements, there will be improvements in visibility effects, ecosystem effects and climate effects, as well as additional product recovery.

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<sup>9</sup> Previous studies have estimated the monetized benefits-per-ton of reducing VOC emissions associated with the effect that those emissions have on ambient PM<sub>2.5</sub> levels and the health effects associated with PM<sub>2.5</sub> exposure (Fann, Fulcher, and Hubbell, 2009). While these ranges of benefit-per-ton estimates provide useful context for the break-even analysis, the geographic distribution of VOC emissions from the oil and gas sector are not consistent with emissions modeled in Fann, Fulcher, and Hubbell (2009). In addition, the benefit-per-ton estimates for VOC emission reductions in that study are derived from total VOC emissions across all sectors. Coupled with the larger uncertainties about the relationship between VOC emissions and PM<sub>2.5</sub> and the highly localized nature of air quality responses associated with HAP and VOC reductions, these factors lead us to conclude that the available VOC benefit-per-ton estimates are not appropriate to calculate monetized benefits of these rules, even as a bounding exercise.

Although we do not have sufficient information or modeling available to provide quantitative estimates for this rulemaking, we include a qualitative assessment of the health effects associated with exposure to HAP, ozone and PM<sub>2.5</sub> in the RIA for this rule. These qualitative effects are briefly summarized below, but for more detailed information, please refer to the RIA, which is available in the docket. One of the HAP of concern from the oil and natural gas sector is benzene, which is a known human carcinogen. VOC emissions are precursors to both PM<sub>2.5</sub> and ozone formation. As documented in previous analyses (U.S. EPA, 2006<sup>10</sup> and U.S. EPA, 2010<sup>11</sup>), exposure to PM<sub>2.5</sub> and ozone is associated with significant public health effects. PM<sub>2.5</sub> is associated with health effects, including premature mortality for adults and infants, cardiovascular morbidity such as heart attacks, and respiratory morbidity such as asthma attacks, acute and chronic bronchitis, hospital admissions and emergency room visits, work loss days, restricted activity days and respiratory symptoms, as well as visibility impairment.<sup>12</sup> Ozone is associated with health effects, including hospital and emergency department visits, school loss days and premature mortality, as well as injury to vegetation and climate effects.<sup>13</sup>

In addition to the improvements in air quality and resulting benefits to human health and non-climate welfare effects previously discussed, this rule is expected to result in significant climate co-benefits due to anticipated methane reductions. Methane is a potent GHG that, once emitted into the atmosphere, absorbs terrestrial infrared radiation, which contributes to increased global warming and continuing climate change. Methane reacts in the atmosphere to form ozone and ozone also impacts global temperatures. According to the Intergovernmental Panel on Climate Change (IPCC) 4<sup>th</sup> Assessment Report (2007), methane is the second leading long-lived climate forcer after CO<sub>2</sub> globally. Total methane emissions from the oil and gas industry represent about 40 percent of the total methane emissions from all sources and account for about 5 percent of all CO<sub>2</sub>e emissions in the United States, with natural gas systems being the single largest contributor

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<sup>10</sup> U.S. EPA. *RIA. National Ambient Air Quality Standards for Particulate Matter, Chapter 5*. Office of Air Quality Planning and Standards, Research Triangle Park, NC. October 2006. Available on the Internet at <<http://www.epa.gov/ttn/ecas/regdata/RIAs/Chapter%205--Benefits.pdf>>.

<sup>11</sup> U.S. EPA. *RIA. National Ambient Air Quality Standards for Ozone*. Office of Air Quality Planning and Standards, Research Triangle Park, NC. January 2010. Available on the Internet at <[http://www.epa.gov/ttn/ecas/regdata/RIAs/s1-supplemental\\_analysis\\_full.pdf](http://www.epa.gov/ttn/ecas/regdata/RIAs/s1-supplemental_analysis_full.pdf)>.

<sup>12</sup> U.S. EPA. *Integrated Science Assessment for Particulate Matter (Final Report)*. EPA-600-R-08-139F. National Center for Environmental Assessment—RTP Division. December 2009. Available at <<http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=216546>>.

<sup>13</sup> U.S. EPA. *Air Quality Criteria for Ozone and Related Photochemical Oxidants (Final)*. EPA/600/R-05/004aF-cF. Washington, DC: U.S. EPA. February 2006. Available on the Internet at <<http://cfpub.epa.gov/ncea/CFM/recordisplay.cfm?deid=149923>>.

to United States anthropogenic methane emissions.<sup>14</sup> Methane, in addition to other GHG emissions, contributes to warming of the atmosphere, which, over time, leads to increased air and ocean temperatures, changes in precipitation patterns, melting and thawing of global glaciers and ice, increasingly severe weather events, such as hurricanes of greater intensity and sea level rise, among other impacts.

This rulemaking requires emission control technologies and regulatory alternatives that will significantly decrease HAP and VOC emissions from the oil and natural gas sector in the United States. As a co-benefit, the emission control measures the industry will use to reduce HAP and VOC emissions will also decrease methane emissions. The NESHAP amendments and the NSPS combined are expected to reduce methane emissions annually by about 1.0 million short tons or about 19 million metric tons CO<sub>2</sub>e. After considering the secondary impacts of this rule as previously discussed, such as increased CO<sub>2</sub> emissions from well completion combustion and decreased CO<sub>2</sub>e emissions because of fuel-switching by consumers, the methane reductions become about 18 million metric tons CO<sub>2</sub>e. The methane reductions represent about 7 percent of the baseline methane emissions for this sector reported in the EPA's U.S. Greenhouse Gas Inventory Report for 2009 (251.55 million metric tons CO<sub>2</sub>e when petroleum refineries and petroleum transportation are excluded because these sources are not examined in this proposal). However, it is important to note that the emission reductions are based upon predicted activities in 2015; the EPA did not forecast sector-level emissions in 2015 for this rulemaking. These emission reductions equate to the climate benefits of taking approximately 4 million typical passenger cars off the road or eliminating electricity use from about 2 million typical homes each year.<sup>15</sup>

The EPA recognizes that the methane reductions from this rule will provide for significant economic climate benefits to society just described. However, the 2009-2010 Interagency Social Cost of Carbon Work Group did not produce directly modeled estimates of the social cost of methane. In the absence of direct model estimates from the interagency analysis, the EPA has used a "global warming potential (GWP) approach" to estimate the dollar value of this rule's methane co-benefits. Specifically, the EPA converted methane to CO<sub>2</sub> equivalents using the GWP of methane, then multiplied these CO<sub>2</sub> equivalent emission reductions by the social cost of carbon developed by the Interagency Social Cost of Carbon Work Group.

The social cost of carbon is an estimate of the net present value of the flow of monetized damages from a 1-metric ton increase in CO<sub>2</sub> emissions in a given year (or from the alternative

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<sup>14</sup> U.S. EPA (2011), *2011 U.S. Greenhouse Gas Inventory Report* Executive Summary available on the internet at <http://epa.gov/climatechange/emissions/downloads11/US-GHG-Inventory-2011-Executive-Summary.pdf>, accessed 02/13/12.

<sup>15</sup> U.S. EPA. *Greenhouse Gas Equivalency Calculator* available at: <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>, accessed 04/09/12.

perspective, the benefit to society of reducing CO<sub>2</sub> emissions by 1 ton). For more information about the social cost of carbon, see the *Support Document: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866*.<sup>16</sup> Applying this approach to the methane reductions estimated for the NESHAP Amendments and NSPS, the 2015 climate co-benefits vary by discount rate and range from about \$100 million to approximately \$1.3 billion; the mean social cost of carbon at the 3-percent discount rate results in an estimate of about \$440 million in 2015.<sup>17</sup>

These co-benefits equate to a range of approximately \$110 to \$1,400 per short ton of methane reduced, depending upon the discount rate assumed with a per ton estimate of \$480 at the 3-percent discount rate. These social cost of methane benefit estimates are not the same as would be derived from direct computations (using the integrated assessment models employed to develop the Interagency Social Cost of Carbon estimates) for a variety of reasons, including the shorter atmospheric lifetime of methane relative to CO<sub>2</sub> (about 12 years compared to CO<sub>2</sub> whose concentrations in the atmosphere decay on timescales of decades to millennia). The climate impacts also differ between the pollutants for reasons other than the radiative forcing profiles and atmospheric lifetimes of these gases.

Methane is a precursor to ozone and ozone is a short-lived climate forcer that contributes to global warming. The use of the IPCC Second Assessment Report GWP to approximate co-benefits may underestimate the direct radiative forcing benefits of reduced ozone levels and does not capture any secondary climate co-benefits involved with ozone-ecosystem interactions. In addition, a recent the EPA National Center of Environmental Economics working paper suggests that this quick “GWP approach” to benefits estimation will likely understate the climate benefits of methane reductions in most cases.<sup>18</sup> This conclusion is reached using the 100-year GWP for methane of 25 as put forth in the IPCC Fourth Assessment Report (AR 4), as opposed to the lower value of 21 used in this analysis. Using the higher GWP estimate of 25 would increase these reported methane climate co-benefit estimates by about 19 percent. Although the IPCC Assessment Report (AR4) suggested a GWP of 25 for methane, the EPA has used the GWP of 21 from the IPCC Second Assessment Report to estimate the methane climate co-benefits for this oil and gas rule. The EPA uses the 21 GWP in order to provide estimates more consistent with global GHG inventories, which currently use GWP from the IPCC Second Assessment Report,

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<sup>16</sup> Interagency Working Group on Social Cost of Carbon (IWGSC). 2010. *Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866*. Docket ID EPA-HQ-OAR-2009-0472-114577. <http://www.epa.gov/otaq/climate/regulations/scc-tsd.pdf>, accessed 02/12/12.

<sup>17</sup> The ratio of domestic to global benefits of emission reductions varies with key parameter assumptions. See Interagency Working Group on Social Cost of Carbon. 2010. *Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866*.

<sup>18</sup> Marten and Newbold (2011), *Estimating the Social Cost of Non-CO<sub>2</sub> GHG Emissions: Methane and Nitrous Oxide*, NCEE Working Paper Series #11-01. <http://yosemite.epa.gov/EE/epa/eed.nsf/WPNumber/2011-01?OpenDocument>.

and with the US GHG Reporting program. See the Regulatory Impact Analysis for further details.

Due to the uncertainties involved with the “GWP approach” estimates presented and methane climate co-benefits estimates available in the literature, the EPA chooses not to compare these co-benefit estimates to the costs of the rule for this proposal. Rather, the EPA presents the “GWP approach” climate co-benefit estimates as an interim method to produce these estimates until the Interagency Social Cost of Carbon Work Group develops values for non-CO<sub>2</sub> GHG.

For the final NESHAP amendments, a break-even analysis suggests that HAP emissions would need to be valued at \$5,200 per ton for the benefits to exceed the costs if the health, ecosystem and climate benefits from the reductions in VOC and methane emissions are assumed to be zero. Even though emission reductions of VOC and methane are co-benefits for the final NESHAP amendments, they are legitimate components of the total benefit-cost comparison. If we assume the health benefits from HAP emission reductions are zero, the VOC emissions would need to be valued at \$2,900 per ton or the methane emissions would need to be valued at \$8,300 per ton for the co-benefits to exceed the costs. All estimates are in 2008 dollars. For the final NSPS, the revenue from additional product recovery exceeds the costs, which renders a break-even analysis unnecessary when these revenues are included in the analysis. Based on the methodology from Fann, Fulcher, and Hubbell (2009),<sup>19</sup> ranges of benefit-per-ton estimates for emissions of VOC indicate that on average in the United States, VOC emissions are valued from \$1,200 to \$3,000 per ton as a PM<sub>2.5</sub> precursor, but emission reductions in specific areas are valued from \$280 to \$7,000 per ton in 2008 dollars. As a result, even if VOC emissions from oil and natural gas operations result in monetized benefits that are substantially below the national average, there is a reasonable chance that the benefits of the rule would exceed the costs, especially if we were able to monetize all of the additional benefits associated with ozone formation, visibility, HAP and methane.

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<sup>19</sup> Fann, N., C.M. Fulcher, B.J. Hubbell. *The influence of location, source, and emission type in estimates of the human health benefits of reducing a ton of air pollution*. Air Qual Atmos Health (2009) 2:169-176.

## 2.0 Response to Comments Regarding Subpart OOOO

### 2.1 Emission Sources Regulated Under the Proposed Rule

#### 2.1.1 Gas Well Completions

**Comment:** One commenter (4264) points out an unintentional consequence of defining temporary/construction type activities as affected facilities is that recent completions since the proposal date of August 23, 2011, appear to have retroactive compliance obligations. The EPA has said that this was not its intent; however, the final rule needs to establish that owners/operators have at least 60 days after the publication of the final rule to comply with the completion requirements.

**Response:** Under section 111(e) of the CAA, it is unlawful to operate a new source (including a modified source) in violation of any applicable NSPS after the effective date of the standard. Compliance is not required for well completion activities conducted prior to the effective date of this final rule.

See section IX.A and B of the final rule preamble for further discussion.

**Comment:** One commenter (4241) agrees with the EPA that a well completed after the proposal date of the NSPS would be subject to the standards. However, a well completed before the proposal date of the NSPS should not be subject to the standards, even if such a well is later refractured.

**Response:** See section IX.A of the final rule preamble.

**Comment:** One commenter (4208) recommends that the application of capital expenditure requirements for modifications be removed from the rule. This will ensure that all recompletions and refracturings will qualify as modifications. The commenter points out that a modification occurs when a company spends more than 10 percent of the cost of a new well to recomplete a fractured or refracture an existing gas well; then the modification is subject to NSPS. This proposed capital expenditure test will be difficult to implement and enforce because: companies will not hire an accountant and/or attorney to determine which recompletions or refracturings are subject to the rule; permitting agencies will not have access to company accounting information prior to the activity; and enforcement authorities will not issue formal information requests unless they have reason to believe that a violation has occurred. The ratio of recompletion or refracturing costs to initial capital expenditures is not an indicator of the potential environmental harm. The commenter suggests using a size threshold (number of barrels of oil or standard cubic feet of gas per year) as an applicability threshold instead of using the capital expenditure test.



**Response:** See section IX.A of the final rule preamble.

**Comment:** One commenter (4228) states that well completion flowbacks are temporary emission sources from portable equipment and should be exempt from subpart OOOO.

**Response:** The commenter is incorrect that the emissions are generated by any portable equipment used in well completions. As explained in the preamble to the proposed rule, the VOC emissions originate from below the ground and are vented to the atmosphere during flowback of a hydraulically fractured gas well. With respect to the comment on the temporary nature of the emissions, see section IX.A of the final rule preamble.

**Comment:** A couple of commenters (4228, 4266) point out that NSPS are used to regulate emissions from normal operation of affected facilities. According to the commenters, a well completion, recompletion, or workover and associated feedback are not part of normal operation; they are construction and maintenance activities that employ portable equipment and typically remain at the well site for a small number of days. The commenters state that they are temporary and should not be subject to NSPS. A commenter (4266) challenges the legality of this regulation by stating that a well completion is not part of the normal operation of a well, in that completion activities do not continuously occur as a well is producing or, for that matter, are not repeated more than once or twice over the life of a well (a life that typically spans years and often spans decades). Instead, the commenter asserts that a well completion is a construction related activity that must be accomplished for a well to begin producing and thereafter engage in normal operations. Additionally, the commenter (4266) states that the agency did not explain why it has reversed the longstanding practice under section 111 of the CAA of regulating only emissions from normal operation of affected facilities and excluding construction-related emissions from regulation. According to the commenter, regulating construction-related emissions is a significant substantive departure in the Agency's prior interpretation and implementation of section 111 of the CAA. The commenter asserts that the EPA's failure to explain how this turnaround is justified and to present the legal basis for regulating non-routine emissions is arbitrary and capricious.

**Response:** See section IX.A of the final rule preamble.

**Comment:** One commenter (4228) points out that there are conflicting definitions between the proposed rule and longstanding, conventional definitions for modification. The commenter asserts that the proposed §60.5430 definition contradicts what is defined in §60.2 and §60.14 of the General Provisions. Furthermore, the commenter notes that hydraulic fracturing and refracturing activities should be subjected to a test that evaluated whether a VOC emissions increase has occurred as outlined in the historical NSPS approach. The commenter recommends

that the General Provisions definition of modification be retained for well completion operation flowbacks.

**Response:** See section IX.A of the final rule preamble.

**Comment:** One commenter (4228) urges the EPA to publish in the final rule detailed guidance, examples, and criteria for each affected facility or equipment to identify what individual actions will trigger NSPS applicability to avoid conflicts with historical approaches used previously.

**Response:** The EPA has clarified in the final rule the actions that trigger the applicability of the NSPS for well completions. See section IX.B of the final rule preamble.

**Comment:** One commenter (4266) requests explanation why the EPA has reversed a decades-long practice under CAA section 111 of regulating only emissions from normal operation of affected facilities and expressly excluding construction-related emissions from regulation. According to the commenter, the proposal to regulate construction-related emissions is a significant substantive departure in the Agency's prior interpretation and implementation of CAA section 111. The commenter believes that a failure to explain why this departure is justified and the failure to present the legal basis for regulating non-routine emissions is arbitrary and capricious and plainly violates the EPA's obligation to clearly set forth "the major legal interpretations and policy considerations underlying the proposed rule." CAA section 307(d)(3)(C). Commenter 4266 adds that the EPA should remove the requirements for REC from the proposed regulation and suggests that, if the EPA chooses to proceed in regulating flowback immediately following hydraulic fracturing stimulation, the EPA should repropose the requirements and include sufficient justification for their departure from not regulating construction-related emissions and present the legal basis for regulating non-routine emissions under CAA section 111.

One commenter (4281) contends that the EPA's decision to regulate emissions from well completions and recompletions is unprecedented, and the EPA has not provided any legal basis for regulating construction-related activities (such as flowback immediately following hydraulic fracturing stimulations during completion of a new well). Therefore, the commenter recommends that the EPA remove the REC requirements from the proposed rule. According to the commenter, to the extent that a producing well must be "recompleted," this activity constitutes maintenance of the well because it is needed to assure the ongoing proper operation and suitable productivity of the well. Commenter 4266 argues that to date, the EPA has not sought to impose CAA section 111 emissions limitations or standards on construction or maintenance activities at affected facilities and that the EPA is not authorized to list or regulate flow back immediately following hydraulic fracturing stimulation at gas wellhead facilities onshore under CAA section 111.

**Response:** See section IX.B of the final rule preamble.

**Comment:** One commenter (4241) supports the EPA’s decision not to propose standards for oil and conventional natural gas wells and agrees with the EPA’s conclusion that control of VOCs at these types of wells is not cost effective.

**Response:** The EPA confirms that subpart OOOO does not include standards for oil and conventional natural gas wells that are not hydraulically fractured.

**Comment:** Several commenters (4159, 4177, 4220, 4273) request that the Agency clarify in the final rule that only completions or recompletions that occur within 10 days of a fracture or refracture are included as modifications. One commenter (4177) asserts that the EPA did not provide a definition for a well completion “with” hydraulic fracturing in the proposed rule nor did the agency explain the timeframe for determining if a well completion that occurs any time after a hydraulic fracture or refracture is considered a completion activity subject to the rule. The commenter also argues that if the EPA intended that any completion activities after an initial fracture or refracture would be modifications subject to subpart OOOO, then the agency has not provided proper notice of that to the public. Another commenter (4266) points out that §60.5375 does not limit the applicability to the flowback immediately following the hydraulic fracturing. One commenter (4184) adds that the proposal did not specify any limitation on the amount or timeframe for flaring of vented gas for exploratory and delineation wells where gathering lines are unavailable.

One commenter (4228) asks that the EPA clarify in the proposed rule when a well completion flowback ends and that requirements to control emissions (§60.5375(a)) end when the well completion is finished. The commenter notes that a well completion flowback ends when produced gas is no longer passing through well completion equipment or vented directly to atmosphere or a flare, and the produced gas quality is such that it can be directed from the wellhead to a sales pipeline.

One commenter (4266) states that there is no time limit placed on “following” hydraulic fracturing or refracturing such that, as written, once a well has been hydraulically fractured, any subsequent well work could be subject to the REC requirements.

The commenter (4266) notes that §60.5375 in the proposed rule states that “for each well completion operation with hydraulic fracturing” the operational procedures of REC applies. However, the commenter further notes, as with §60.5365, there is no time limit placed on “with hydraulic fracturing or refracturing” and could be interpreted that any subsequent well work

could be subject to REC. Also, the commenter asserts it does not limit the applicability to the flowback immediately following hydraulic fracturing.

One commenter (4135) states that fracturing operations are only a small part of the completion process, and flowback may occur at various times throughout the completion and expresses that it is unclear whether controls are required for all flowback operations that occur during the entire completion, or if the requirements are only applicable to the flowback operations after the fracturing process. The commenter requests clarification.

One commenter (4375) requests that the EPA close a significant loophole by requiring non-salable quality gas to go into the gas gathering lines within the same amount of time. This commenter further asserts that a limit on putting salable quality gas into pipelines should be required.

**Response:** Regarding the condition when the well completion flowback is deemed to have ended, the end of completion/flowback is based on having continuous flow to the flow line or a storage vessel for collection, or the well is shut in. This clarification also addresses the issue raised by commenters about the limitation on the amount or timeframe for flaring of vented gas for exploratory and delineation wells where flow lines are unavailable and on the limiting the amount of gas that may be combusted, since the flowback is deemed to end when the well is shut in.

**Comment:** One commenter (4231) requests that the definition of gas well be modified to be each respective state's in-house definition of gas well. The commenter states that by doing this, the EPA would eliminate any confusion associated with having to apply different criteria (NSPS versus state regulations) for how to define a well-type in assessing the applicability of the rule. Another commenter (4241) points out numerous inconsistencies in definitions between subpart W of the GHG reporting rule and the proposed rule. First, the commenter states the definition of wellhead in the NSPS does not include other equipment at the well site while the MRR definition does. Second, the commenter states that the proposed rule does not define well workover but asserts this term is used in the definition of well completion operation. The commenter asks the EPA to add the definition of well workover from subpart W of the GHG reporting rule to the NSPS rule. Third, the commenter asserts that the proposed rule does not include an explanation of what is meant by "commencement of construction" for a wellhead facility.

Two commenters (4246, 4266) express that the definition of crude oil found in the proposed rule conflicts with the definition used in the subpart W of the GHG reporting rule, the EIA, and the definition recognized by most States. The commenters assert the API gravity for a well is not known at the time a well is completed; therefore, the definition of crude oil should not contain an

API gravity. Both commenters recommend the EPA use the definition of crude oil from the EIA and have provided that definition.

**Response:** With respect to using each State’s gas well definitions, the EPA believes this would cause undue confusion and may lead to inconsistencies in the affected source from state to state. Subpart W under the Greenhouse Gas Mandatory Reporting Rule and this rule each have different objectives. Subpart W is a reporting rule where operators supply activity factors to inform the EPA about the oil and gas industry. Subpart OOOO prescribe work practices requirements that must be followed for well completions operations following hydraulic fracturing. Given the different objectives of each action, the two rules sometimes use different definitions and nomenclature and one cannot be used for the other. However, in response to comment, we have made revision and clarification in the final rule to address the commenters’ concern with confusion and clarity of the terms. Specifically, for the reasons stated in the preamble to the final rule, we have included in the final rule a special provision defining modification as it relates to well completion operations covered by this NSPS. The final rule also does not include the term “workover.”

**Comment:** One commenter (4241) states that the EPA’s definition of REC in the NSPS is inconsistent with the proposed requirements, which include the option to utilize a pit flare under specific conditions.

**Response:** The EPA clarifies that the rule text explains the requirement for control of VOC during flowback of affected facilities, which is an operational standard. The operational standard requires a combination of gas capture and combustion, with provisions to allow for vents as stated within the rule text. The EPA clarifies that the operational standard is therefore inclusive of the REC activity as well as other requirements, so the REC definition does not need to be revised based on this comment.

**Comment:** One commenter (4263) requests that §60.5375(a)(1) be revised to provide for routing hydrocarbon liquids recovered during flowback operations to tanks other than “storage vessels,” as defined in §60.5430. The commenter asserts there are two reasons for this: (1) liquids are not “vented” and (2) portable tanks are used to receive flowback liquids during hydraulic fracturing well completion operations. In addition, the commenter notes that these temporary portable tanks are not designed to meet the standards for “storage vessels” in §60.669. A commenter (4266) requests that the rule should not require routing liquids to a storage vessel since sometimes flowback contains sands and other injection fluids that can damage storage vessels and make the condensate not salable; therefore, some of the flowback may get sent to a pit versus a storage vessel. The commenter (4266) adds that the ability to flow back to a pit should be allowed. One commenter (4191) requests that the EPA include fracturing or refracturing of a well as a modification to the on-site storage vessel and the resulting emissions increases at the storage

vessel should be regulated under the “modified” storage vessel provisions. The commenter believes that any increase in emissions to the on-site storage vessel resulting from fracturing, refracturing, or stimulation is a modification to the storage vessel. The commenter argues that increases in well emissions after fracturing or refracturing activities are emitted from the storage vessel.

**Response:** In response to comments on storage vessels at the wellsite, please see section V.D of the final rule preamble for further information on the storage vessel affected facility. With regard to designating any storage vessel as modified when the wellhead facility is modified, the final rule states that modifications to the gas well affected facility do not affect the modification status of other equipment, process units, storage vessels, compressors, or pneumatic controllers located at the well site.

We disagree that the final rule should allow a portion of the flowback to be routed to an impoundment. Liquids that would be directed to the impoundment in addition to solid materials may contain significant amounts of VOCs which would likely be emitted from the impoundment. However, we have modified the final rule to give additional flexibility in how liquids are handled. In addition to routing liquids to a storage tank, the owner or operator may re-inject the liquids into the well or another well.

**Comment:** One commenter (2803) strongly supports the proposed rule as it attempts to address emissions from oil and gas operations but strongly urges the agency to regulate all gas wells, existing and future. The commenter states that many gas wells are installed as close as 200 feet from residential homes and all gas wells need to have capture and filtration devices installed to protect these residents.

**Response:** The EPA appreciates the commenter’s support for the rule and concern with existing sources; however, this rulemaking relates to EPA’s review and revision of two oil and gas new source performance standards, which apply to new and modified affected facilities. However, EPA notes that subpart OOOO covers certain uncontrolled completion operations of existing wells following refracturing. Please see section IX.A.1 of the preamble for a detailed explanation.

**Comment:** One commenter (3562) urges the agency to expand the regulated sources to include well completions where pressurized gases (such as nitrogen) are used for fracturing. The commenter is concerned that the definition in the proposed rule for hydraulic fracturing has omitted wells that are fractured using high pressure gases (which also result in a flowback period and may have similar emission profiles to wells fractured with pressurized liquids). The commenter also feels that the rule should address control or minimization of emissions during backflow period and alternatives to venting emissions to the atmosphere when safety hazards or

other conditions prohibit flaring. One commenter (4236) requests that the EPA establish exemptions for operations where certain conditions exist (e.g. when air, nitrogen or carbon dioxide are principally involved in the process to extract natural gas or when the collection infrastructure is not in place). Another commenter (4240) takes issue with the definition of “hydraulic fracturing” with respect to specifying the material introduced into the well and implores the EPA to modify this definition to read as follows: “the process of directing pressurized substances, which may contain foam, gases, water, hydrocarbons, proppant, and any added chemicals, into a well whose casing is perforated, allowing these substances to leave the well bore.”

**Response:** The final rule applies to well completions following fracturing with fracture fluids such as nitrogen or carbon dioxide or other vapors. The EPA disagrees that such operations would be exempt. The VOC control requirement is by means of gas capture through gas capture in combination with combustion, and the EPA expects that the combustion option will be necessary for segments of the flowback when the vapor phase fracture fluid results in an overall gas composition that is not suitable for capture into the gathering line. Regarding the suggested definition that expands the type of fracture fluids that are possible, the EPA clarifies that hydraulic fracture may entail a variety of fracture fluids that may be liquid phase, gas phase, or a combination of both, in addition to the proppant used during the hydraulic fracture.

**Comment:** One commenter (4217) requests specific language be added to the final rule to exempt the first 48 hours of the completion flowback from REC or control requirements. The commenter asserts that during this time, the flowback stream is often very low in VOC content and/or is extremely high in inert gases preventing combustion.

**Response:** The EPA clarifies that the flowback begins when hydraulic fracture material begins flowing out of the well. The EPA acknowledges that the initial flowback may be mostly fracture fluid for a period of time, but the EPA does not have sufficient information to determine that the commenter's requested 48 hour initial period is representative of the industry nationally and therefore cannot specify a time period. As a result, the rule enables the overall objective of minimizing VOC emissions and maximizing VOC control via recovery, though VOC control is also accomplished by the combustion provision within the operational standard.

**Comment:** One commenter (4266) suggests that RECs only apply to onshore facilities. The commenter concludes that it did not appear that the EPA assessed the feasibility and cost for doing RECs offshore based on the TSD and the preamble for the proposed rule. The commenter states that without a pipeline or space for the specified REC equipment, it is not feasible to do RECs offshore. Also, according to the commenter, many offshore rigs are foreign and will not be designed to achieve U.S. regulatory requirements. Therefore, the commenter requests that RECs only apply to onshore facilities and provides suggested rule text.

**Response:** The EPA clarifies that the rule provisions for VOC control following a hydraulic fracture applies to onshore facilities only and has clearly specified this in the final rule. We received comments both in support of, and in opposition to, regulation of offshore facilities. We are not required to look at every emission point and pollutant under CAA section 111. Therefore, we did not evaluate these sources and have insufficient information to address these sources in this final action.

**Comment:** A commenter (4241) suggests revised rule language for §60.5375(a)(1)-(3) of the proposed rule. First, with regard to §60.5375(a)(1), the commenter provides the following revisions: “You must minimize the emissions associated with venting of hydrocarbon fluids and gas over the duration of flowback by routing the recovered liquids initially into storage vessels and/or reinjecting the recovered liquids or routing the recovered gas into a gas gathering line or collection system.” The commenter argues that the revised language in subparagraph (a)(1) would allow for reinjection where feasible and safe, which would be consistent with current industry practice. One commenter (3528) also asks if instead of flaring, whether the gas could be used to operate a generator or other gas fired equipment on the site.

**Response:** The EPA agrees with the commenters and has adjusted the rule language to allow for re-injection or recovery for another useful purpose. Section 60.5375(a)(1) has been revised to allow for re-injection of gas or liquid, or the use of recovered gas on-site as a fuel source or for another useful purpose.

### **2.1.2 Pneumatic Controllers**

**Comment:** One commenter (4266) states that, unlike the large emission sources regulated in other NSPS subparts, operators, manufacturers, and suppliers keep inventories of extra pneumatic controllers in stock as they are relatively inexpensive, and since malfunctions require quick repair or replacement to maintain production. This commenter claims a compliance date of only 60 days after promulgation will make large inventories of high bleed controllers potentially unusable. Therefore, the commenter requests that the effective date of this rule for pneumatic controllers be delayed for one year past the promulgation date to allow companies to adapt to the new requirements and make inventory adjustments.

**Response:** The EPA clarifies that, under this NSPS, a pneumatic controller is considered to have commenced construction when an owner operator has entered into a contractual obligation to acquire that piece of controller. This is consistent with the definitions of “commence” in the General Provisions at 40 CFR 60.2. Accordingly, controllers ordered prior to the proposal date of the standard (August 23, 2011) are considered existing facilities and therefore may be installed without being subject to the NSPS. Furthermore, the NSPS allows the use of high-bleed



pneumatic controllers in certain specified circumstances. In light of the above, we do not anticipate a large inventory of potentially unused high bleed controllers.

**Comment:** One commenter (4233) disagrees with the use of 6 scfh as the cutoff to categorize a pneumatic controller as either high- or low-bleed, claiming there is no justification for this number.

Some commenters (4104, 4228, 4233, 4266) argue that there is no discussion of how this 6 scfh emissions limit was derived in the proposed rule or in the TSD. Without this information, a commenter states that the EPA has not “adequately demonstrated” that this bleed limit is “achievable” as required by section 111(a)(1) of the CAA. The commenters object to the 6 scfh threshold for continuous high-bleed controllers for assorted reasons, including assertions that the market models available cannot support this threshold; that the emissions limit is based on an arbitrary continuous natural gas bleed rate of 6 scfh; and that the limit is outdated and should be lowered to reflect technology currently being sold and current practices. The commenters request that the EPA conduct additional analysis based on current practices, equipment population, and manufacturer product lines to determine what bleed rates are appropriate to define a regulatory threshold.

One commenter (4266) states that a 6 scfh dividing line between high-bleed and low-bleed would mean that most operators would choose between continuous high-bleed and intermittent vent controllers that are no-bleed and explained why. This commenter concludes that this should be considered a desirable outcome.

Another commenter (4240) argues that the 6 scfh bleed rate to define low-bleed controllers is higher than what modern technology can achieve in many circumstances. This commenter wants to see maximum bleed rates among pneumatic devices which would correspond to different functions for those devices. The commenter states that the EPA must therefore define a maximum bleed rate for each functional class of pneumatic controller, setting each bleed rate to force technological improvements, consistent with the goals of the NSPS program. The commenter believes that this range of allowable bleed rates must extend no higher than 5 scfh, the highest bleed rate supported in the record. For each class of controller, this commenter believes the EPA must fully justify that its standard is no higher than the lowest emission rates that each class of controller can achieve. This commenter concludes that this would “force” technological improvements, consistent with the goals of the NSPS program. This commenter also argues that rigorous leak detection and monitoring standards for low-bleed pneumatic devices should be in the final rule to ensure that “the EPA captures the full benefits of its proposal.”

Another commenter (4192) suggests specific revisions to §60.5410(d) based on the fact that continuous, low-bleed controllers typically range from 6 to no more than 10 scfh. The

commenter's recommended revisions are as follows: a 60-day reply period for demonstration that a high-bleed pneumatic controller is predicated, use of manufacturer documentation to show a pneumatic controller is low-bleed (where low-bleed is now defined as < 10 scfh), replacement of an existing high-bleed pneumatic controller with one that meets rule standards (or has been demonstrated to the Administrator) within 6 months of replacement or reconstruction, and inclusion of this information in the initial annual report submitted for pneumatic controller affected facilities according to the rule requirements.

**Response:** The EPA is maintaining the bleed rate set in this rule to be 6 scfh based on the use of this well-accepted and established methodology and the ability of pneumatic controllers on the market to achieve it. The EPA specified a methane emissions category labeled "gas-operated high-bleed pneumatic devices" in the 1993 Report to Congress (Opportunities to Reduce Anthropogenic Methane Emission in the United States, Report to Congress, October 1993, EPA 430-R-93-012) wherein the EPA cited the industry study: PG&E (Pacific Gas and Electric), 1990, Unaccounted for Gas Project Summary Volume, PG&E Research and Development; San Ramon, CA; GRI 90/0067.1. This study established a high-bleed device as a device with a continuous bleed emissions rate in excess of 6 standard cubic feet per hour (scfh), while low-bleed devices bleed at a rate less than or equal to 6 scf. Since the development of that study, EPA in collaboration with industry has further evaluated and adopted this definition of low bleed device as a voluntary Best Management Practice and developed detailed technical materials to promote this practice across the industry. The commenters did not provide sufficient information to support their statements to change the limit. Therefore, based on all available information, the EPA has determined that this limit is appropriate and is moving forward with the emissions limit at proposed. The methodology for this emissions limit is further detailed in Section 5.2 of the proposed rule Technical Support Document.

The EPA also clarifies that it does not require "low-bleed" controllers, only an emissions limit for affected facilities. The affected facility is defined in the final rule for pneumatic controllers located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment other than at a natural gas processing plant as "a single continuous bleed natural gas-driven pneumatic controller operating at a natural gas bleed rate greater than 6 scfh which commenced construction on or after August 23, 2011..."

A commenter anticipates that the "low-bleed" requirements in the rule mean that operators will opt to install intermittent or no bleed controllers. The EPA clarifies that the rule specifies an emissions limit rather than use of a technology meeting specific "low-bleed" criteria. The EPA is not regulating separate power gas or actuation gas to position valves as part of this action, nor is the EPA regulating intermittent bleed emissions related to process control as part of this action. Given that pneumatic controllers operate on the same principle of sensing a process condition, transmitting a process condition, comparing that process condition to a set point, and actuating a

valve based on that comparison, the EPA disagrees that pneumatic controller affected facilities must be further stratified by the function that they perform.

The EPA disagrees with the comment arguing that the final rule should include rigorous leak detection and monitoring to assure compliance with the pneumatic controller standards in the production segment. The standard at issue is expressed in terms of a controller's bleed rate (6 scfh), based on our conclusion that using a controller with a bleed rate at that level or below is the BSER for reducing VOC emissions from pneumatic controllers in the production segment. Accordingly, compliance is achieved by installing controllers with a bleed rate at or below this standard. As long as controllers meeting the bleed rate are being installed, continued compliance is assured and there is no need for leak detection and monitoring after installation. As explained in section V.C. of the preamble, we expect that documentation from manufacturers will provide a controller's bleed rate or information for determining the bleed rate. In light of the above, the EPA does not believe that leak detection and monitoring is necessary for assuring compliance with the pneumatic controller standard in the production segment.

To address the commenter's recommendation to remove manufacturers' design guarantees, the EPA agrees with this comment and has removed the requirement to obtain design guarantees in the final rule. Please refer to the final rule §60.5420(c)(4) for the reporting requirements for pneumatic controller affected facility.

The EPA is not revising the rule to incorporate commenter suggestions of a wait period or a demonstration of compliance within 6 months of replacement or reconstruction. However, as explained further in sections V.C and IX.C of the final rule preamble, the EPA is allowing a one-year phase-in period after the final rule is published in the *Federal Register* before the pneumatic controller bleed rate limit is effective for affected facilities located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment, other than at a natural gas processing plant.

**Comment:** One commenter (4241) suggests an alternate compliance method that should be added to the final rule. The commenter claims there should be provisions for alternate emission controls for pneumatic controllers at processing or non-processing facilities (such as routing the vent streams to a flare, combustor, or vapor recovery unit to achieve 95 percent control efficiency). The commenter believes this would greatly reduce the cost of compliance at processing facilities that are not currently equipped with instrument air or other non-natural gas motive gas systems and would give greater flexibility to non-processing facilities.

**Response:** Regarding the commenter's suggestion of alternate compliance methods for pneumatic controllers at processing or non-processing facilities, the final rule requires a natural gas bleed rate limit, not a technology requirement for pneumatic controllers. The affected facility

is defined in the final rule for pneumatic controllers located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment other than at a natural gas processing plant as “a single continuous bleed natural gas-driven pneumatic controller operating at a natural gas bleed rate greater than 6 scfh which commenced construction on or after August 23, 2011...” The natural gas bleed rate of such affected facilities located between the wellhead and a natural gas processing plant must be less than or equal to 6 scfh, and must be zero for affected facilities at a natural gas processing plant. We believe there are pneumatic controllers available that meet these bleed rates and no other compliance options are necessary. However, the final rule does not provide the use of alternate controls to meet the bleed rate limits.

**Comment:** One commenter (4249) urges the EPA to simplify the reporting and recordkeeping requirements under subpart OOOO and recommends that the definitions and nomenclature used in the GHG MRR (subpart W) and the proposed subpart OOOO be identical to the maximum extent practical. The commenter claims this will help to avoid confusion in establishing compliance plans for the same device under separate rules. Another commenter (4213) notes that, per §60.5410(d)(3), requiring owner/operators to comply with emission standards on pneumatic controllers by relying on the manufacturer’s guarantee that the controllers emit less than or equal to 6 scfh is inconsistent with the EPA’s recent proposal of subpart W. The commenter notes that subpart W states the oil and gas industry may comply by using engineering estimates to determine whether pneumatic devices are low-bleed or high-bleed. The commenter believes the EPA should allow the industry to use engineering estimates for compliance with the 6 scfh requirement and to determine emission rates to be consistent with the proposed amendment to subpart W. This commenter argues that if the EPA chooses not to do this, it must then promulgate a provision requiring manufacturers to provide this certification or guarantee. The commenter states that the EPA has done this for other types of equipment in the past (see §60.4231(a)).

**Response:** Subpart W under the Greenhouse Gas Mandatory Reporting Rule and this proposed rule each have different purposes. Subpart W is a reporting rule where operators supply activity factors to inform the EPA about the oil and gas industry. The rule allows the operator to estimate the total number of pneumatic devices, the emission factor, and the operating hours. The methodology in subpart W is not appropriate to apply to this NSPS action since the affected facility under this regulation is clearly defined and must be accounted for individually rather than estimated at a broader area level. The emissions factor table in subpart W is not equivalent to manufacturer specifications that will be readily available for a new controller. Subpart OOOO is an emissions limit rule that requires each affected facility to meet a specific standard for reducing emissions. Given the different objectives of each action, the two rules have different definitions and nomenclature and one cannot be used for the other. However, we believe that the final rule, which greatly lessens the compliance burden associated with the pneumatic controllers NSPS compared to the proposed rule, addresses the commenter's concerns.

**Comment:** A commenter (4254) requests that the EPA provide additional information about how to demonstrate that the use of high-bleed pneumatic controllers is predicated as stated in §60.5390(a). Additionally, the commenter urges the EPA to provide well-defined, specific examples and technical documentation of exemptions when high-bleed controllers can be used. Another commenter (4189) urges the EPA to more carefully define the circumstances when it will grant an exemption and allow the public to comment and challenge such exemptions. The commenter claims the proposed rule would allow operators to avoid using low- or no-bleed pneumatic controllers when their use is not “predicated.” This commenter states that the EPA does not define this term and risks undermining its own rule with such a vaguely worded exemption.

**Response:** In the final rule, the EPA has provided specific exemptions to the natural gas bleed rate limits for pneumatic controllers for certain safety requirements and considerations. The EPA believes that it is important to allow operator judgment to determine what these critical applications are and to provide records that document the need for a device that exceeds 6 scfh. Section 60.5390(a) gives examples of variables that can be used to demonstrate the need for an exemption from the requirements in §60.5390(b) and §60.5390(c) for pneumatic controllers, including response time, safety, and actuation.

### 2.1.3 Compressors

**Comment:** Four commenters (4177, 4227, 4268, 4268) object to the language in the proposed rule that compressors are considered to have “commenced construction” on the date of installation at a facility” and urged the EPA to remove the last sentence in the definition of affected facility for reciprocating compressors found at §60.4365(c). According to the commenters, the EPA gave no explanation as to why this definition was changed from the traditional NSPS definition of “commence construction” which applies when contractual commitments are entered into for the purchase of the equipment. The commenters state that the proposed rule preamble, regulatory impact analysis, and any other supporting rulemaking materials did not include an explanation or justification for changing the application of “commenced construction.” The commenters opine that the EPA’s proposed application of “commenced construction” to an existing source is contrary to the intent of the CAA. The commenters request that the traditional definition be put back into the final rule. One of these commenters (4227) provides an extensive list of CAA statutory provisions and the EPA regulations that confirm, in their opinion, that “commenced construction” is limited to “new sources” and should not be applied to existing sources which have been moved and not “modified” or “reconstructed.”

The commenters (4177, 4227, 4268, 4268) also want the EPA to clarify that the relocation of an existing compressor does not trigger the NSPS modification definition. The commenters state that, in §60.14(e), the term “modification” does not include the “relocation or change in ownership of an existing facility.” Therefore, according to the commenters, the relocation of existing compressors among sites managed by the same company would not trigger a modification under this rule.

Five commenters (4192, 4218, 4220, 4246, 4263) object to the EPA’s current proposed text in §60.5365(b) and §60.5365(c).

Three commenters (4192, 4220, 4246) object to compressors being considered to have commenced construction on the date the compressor is installed at the facility. Two commenters (4192, 4246) argue that the EPA’s current proposed text would make compressors subject to NSPS even if merely relocated. The commenters state that this would depart from the EPA’s practice and section 111 of the CAA and recommended the current text be revised. One commenter (4220) states that the traditional NSPS “commence construction” definition applied when contractual commitments were entered into for the purchase of equipment. This commenter states that the wording in §60.5365(b) and §60.5365(c) deviates from this definition and would result in more compressors being brought into the program, even after financial commitments might have been made by companies. The same commenter (4220) requests that the EPA clarify that the relocation of an existing compressor does not trigger the NSPS modification definition under the proposed rule. The commenter notes that relocation of a compressor would typically also involve relocation of an attached driver to power the unit that might be subject to different “commence construction” rules under subpart JJJJ.

**Response:** As the commenters note, the EPA traditionally defines the term “commence construction”, as it applies to an equipment, to mean the time an owner or operator has entered into a contractual obligation to acquire the equipment. This is reflected in the definition of “commenced” in the General Provisions at 40 CFR 60.2 as well as in the relevant NSPS (see, e.g., NSPS subpart JJJJ, 40 CFR 60.4230(a)). We therefore agree with the commenters that our proposed definition of “commence construction” in §60.5365(b) and §60.5365(c) as the time of installation is a deviation from our traditional view. Upon reviewing the comments and re-evaluating the proposed definition, we conclude that there is no discernible difference between the compressors at issue and other equipment subject to NSPS that would make such deviation necessary or appropriate in this case. We have therefore removed these specific definitions of “commence construction” in §60.5365(b) and §60.5365(c) of the final rule.

The NSPS also does not apply to relocated compressors. As provided in the NSPS General Provisions at 40 CFR 60.14(e)(6), relocation of an existing facility is not a modification.

**Comment:** One commenter (4218) suggests that §60.5365(b) and §60.5365(c) be modified to state that they apply only to the extent that the compressor was manufactured after August 23, 2011. The commenter argues that this would avoid imposing significant costs to retrofit existing wet seal centrifugal compressors. One commenter (4263) suggests modifying §60.5365(b) to limit the affected source to new centrifugal compressors and exclude centrifugal compressor facilities that compress natural gas that is less than 10 percent VOC. The commenter argues this would avoid requiring retrofitting a compressor equipped with a wet seal system with a dry seal system, something the commenter states could be cost-prohibitive. The commenter suggests adding to the provision a requirement that it apply only to centrifugal compressors that are in VOC service.

**Response:** The suggested definition change is not consistent with the definition of the term “commenced construction,” which is described in the comment response to the previous comment. In any event, for the reasons explained in IX.D of the final rule preamble, the final rule does not require that all centrifugal compressors be equipped with a dry seal system, as we proposed. Rather, the final rule applies only to wet seal centrifugal compressors and requires a performance standard of 95 percent control of VOC emissions. Retrofitting with dry seal would not be necessary for modified centrifugal compressors to meet the NSPS in the final rule.

**Comment:** Another commenter (4192) recommends that modification and reconstruction not subject a compressor to NSPS subpart OOOO, arguing that compressors are almost never modified or reconstructed.

**Response:** CAA section 111 requires that new and modified sources comply with the NSPS. The EPA considers reconstructed sources to be new sources. The General Provisions for modification (40 CFR 60.14) and reconstruction (40 CFR 60.15) also clarify that facilities that re modified or reconstructed after the date of proposal of a standard are subject to the standard. There is no exception from this requirement on the basis that the facilities (in this case compressors) are almost never modified or reconstructed.

**Comment:** One commenter (4241) requests that the EPA confirm that:

- 1) the reciprocating compressor affected facility that is subject to the proposed requirements at proposed §60.5385 is the individual compressor itself;
- 2) NSPS requirements would apply only to new compressors or replacement of old compressors with new compressors after August 23, 2011;
- 3) compressors installed before August 23, 2011 are not affected by the proposed ruling when modifications are made to other components of the reciprocating spark ignition engines; and
- 4) replacement of reciprocating compressor rod packing after August 23, 2011, at a reciprocating compressor that was installed before August 23, 2011, does not constitute

either installation of a new compressor or a modification of an existing compressor that triggers the NSPS requirements.

**Response:** The EPA confirms that a reciprocating compressor affected facility subject to the NSPS in §60.5385 is the individual compressor and the NSPS apply to new compressors as well as replacement of old compressors with new compressors after August 23, 2011. In addition, under the General Provisions for modification (40 CFR 60.14) and reconstruction (40 CFR 60.15), the NSPS apply to compressors that are modified or reconstructed after August 23, 2011. We do not believe that replacement of reciprocating compressor rod packing would meet the criteria for “modification” under 40 CFR 60.14 or “reconstruction” under 40 CFR 60.15. However, as explained in a previous comment response above, under the final rule, “commenced construction” is not the date a compressor is installed but the date an owner or operator enters into a contractual obligation to acquire a compressor. We have therefore removed the proposed definition of “commence construction” in §60.5365(b) and §60.5365(c) (which was based on the installation date) in the final rule.

**Comment:** One commenter (4241) recommends that the Agency develop a subcategory for reciprocating compressors that operate in low pressure environments with a higher standard for hours of operation (such as 52,260 hours of operation).

**Response:** The EPA has determined the 26,000 hour fixed replacement period requirement for owners or operators to replace their reciprocating compressor rod packing is appropriate for all reciprocating compressors located between the wellhead and the point of custody transfer to a natural gas transmission and storage facility. The EPA is also providing flexibility by allowing operators in the final rule to change rod packing every 36 months in lieu of monitoring hours of operation. In addition, the commenter did not provide additional data for the EPA to evaluate compressors in low pressure environments.

**Comment:** A commenter (4275) requests that the EPA add reciprocating compressors in the production sector to be subject to subpart OOOO. The commenter asserts that reciprocating compressors in the production sector are significant sources of methane and excluding them from this rule will result in the loss of reduced emissions from existing reciprocating compressors.

**Response:** The EPA disagrees with the commenter that the EPA should add reciprocating compressors in the production sector to be subject to subpart OOOO. As outlined in the TSD to the proposed rule, section 6.4.2.3, the economic impact analysis for this rule determined that potential VOC reductions from wellhead reciprocating compressors' rod packing were not cost-effective. However, the EPA determined that emissions control for gathering and boosting compressors were cost-effective.



**Comment:** One commenter (4241) acknowledges that a requirement to conduct periodic leak testing or monitoring would be extremely costly.

**Response:** The EPA appreciates this comment and has decided to retain the 26,000 hour fixed replacement period requirement for operators to replace their reciprocating compressor rod packing. In addition, the EPA is providing flexibility by providing in the final rule that operators may change rod packing every 36 months in lieu of monitoring hours of operation.

**Comment:** One commenter (4175) recommends that the EPA provide specific clarification in the rule that rotary screw compressors are not covered and cited an EPA letter to support the request. The commenter provides amended language to the definition of “compressor” and “centrifugal compressor” to ensure that rotary screw compressors are not covered by the rule. Another commenter (3528) asks the EPA to confirm that a “screw compressor,” which has a male and female rotor, but no vanes or impellers, is not a centrifugal compressor within the meaning of the proposed rule. Two commenters (4268, 4177) recommend that the EPA provide specific clarification in the final rule that rotary screw compressors are excluded from subpart OOOO. One commenter (4241) requests that the EPA confirm that the rule does not cover screw compressors, consistent with 40 CFR 98, subpart W. This commenter also asks the EPA to confirm that proposed §60.5380 would be inapplicable to screw, sliding vane, or liquid ring compressors, because these types of compressors typically are used in lower pressure applications normally associated with wellhead service. The commenter also objects to the definitions of centrifugal compressor and reciprocating compressor in the proposed rule as they are technically not correct and may cause confusion. Two commenters (4241, 4268) provide language for revised definitions of “compressor” and “centrifugal compressor.”

**Response:** The EPA agrees with the commenter that the subpart OOOO definition for centrifugal compressors does not include screw compressors. Therefore, screw compressors are not covered under this rule. The EPA has clarified the definition of centrifugal compressor to exclude screw, sliding vane, and liquid ring compressors.

#### **2.1.4 SO<sub>2</sub> Emissions from Natural Gas Processing Plants**

**Comment:** One commenter (4039) requests that the EPA revert to the previous definition of a sweetening unit which clearly states that these are used to treat sour gas. The commenter notes that §60.5430 states “... a process device that removes hydrogen sulfide and/or carbon dioxide from the natural gas stream,” whereas the previous definition found in subpart LLL recognizes that a sweetening unit is used to process sour gas. The commenter believes this would indicate that a natural gas stream processed solely for carbon dioxide removal would be subject to regulation regardless of the hydrogen sulfide content.

One commenter (4275) recommends the EPA include additional SO<sub>2</sub> reductions from existing plants in the final standards. One commenter (4241) supports the EPA's conclusion that the regulation of SO<sub>2</sub> emissions from boilers/heaters burning sour gas in the field is not appropriate under this NSPS.

One commenter (4242) states that the SO<sub>2</sub> control efficiency equation must account for all sulfur compounds. The commenter states the EPA's proposed performance test and subsequent monitoring requirements require facilities to calculate the reduction efficiency by calculating the ratio of the combined weight of the sulfur recovered by the sulfur recovery unit and atmospheric SO<sub>2</sub> emissions to the H<sub>2</sub>S content of the gas before it is processed by the sulfur recovery unit. The commenter states that this is not an apples to apples comparison. The commenter states the sulfur recovered by the sulfur recovery unit and the sulfur discharged to the atmosphere as SO<sub>2</sub> may have originated from non-H<sub>2</sub>S compounds, but this amount is not included in the denominator in the proposed equation. Therefore, the commenter believes the proposed methods for determining compliance artificially inflate the SO<sub>2</sub> reduction efficiency achieved by the natural gas processing plant. The commenter states that, significantly, tests of natural gas samples show that the non-H<sub>2</sub>S species of sulfur compounds can account for more than 50 percent of the total sulfur volume in the natural gas. The commenter believes the EPA must require natural gas processing plants to measure the total sulfur content of the natural gas before it is processed by a sulfur recovery unit to accurately determine compliance with the required SO<sub>2</sub> emission reduction efficiency.

**Response:** We agree with the commenter concerning the definition of "sweetening unit." In the final rule, we have changed the definition back to what is in subpart LLL.

Regarding field boilers and heaters, these are not part of the Oil and Natural Gas source category and are generally too small to be regulated by the NSPS covering boilers (i.e., they have a heat input of less than 10 million BTUs/hr). They may be included in future rulemakings. Regarding control efficiency, subpart OOOO and subpart LLL specifically address the sulfur feed rate from the sweetening unit (i.e., the H<sub>2</sub>S in the acid gas), expressed as sulfur in determining compliance. In response to the comment concerning strengthening standards for existing units, we point out as discussed elsewhere in this document that subpart OOOO applies to new, modified and reconstructed facilities, not existing facilities.

We appreciate the comments concerning the SO<sub>2</sub> control efficiency equation. However, subpart LLL was carried over essentially unchanged into subpart OOOO. We did not propose any changes to the compliance calculations, nor did we ask for any comment on them. Therefore, we believe that there is no logical outgrowth from the proposal to base any changes to the compliance calculation equations or methodology and we are making no changes as a result of this comment.

**Comment:** Two commenters (4174, 4263) state that the EPA should revise the definition of "natural gas processing plant" in part 60 subpart KKK to clarify the meaning of the term, as acknowledged by the EPA in numerous applicability determination memos and avoid the need for future applicability determination requests. The commenters provide suggested text. One commenter (4266) states that while the regulatory text clearly indicates that the standard applies to sweetening units located at onshore natural gas processing plants, this distinction is not made in the applicability provisions of §60.5365(g). To improve clarity on the applicability for sweetening units, the commenter recommends the provision be revised to read:

*§60.5365 (g) Sweetening units located at onshore natural gas processing plants that process natural gas produced from either onshore or offshore wells.*

**Response:** We agree that the suggested revision to §60.5365(g) provides additional clarity and have made the change in the final rule. In addition, we have revised the introductory language of §60.5365 to clarify that this subpart applies to onshore affected facilities. We do not believe any changes to the definitions of subpart KKK are warranted at this time.

**Comment:** One commenter (4240) agrees with the EPA that, as facilities with high sulfur feed rates can achieve a 99.9 percent control efficiency, the existing 99.8 percent feed rate no longer reflects BSER/BDT. The commenter supports the EPA's decision to raise the maximum required control efficiency consistent with control rates achieved by the sources in the EPA's database. One commenter (4282) states that the EPA's rationale in proposing NSPS control at levels as high as 99.9 percent is flawed. The commenter states that use of the two facilities referenced in the proposed regulations addressing sweetening units may be a reasonable approach for a BACT determination, but is inappropriate for NSPS. The commenter believes NSPS need not and should not be as stringent as BACT. The commenter believes facilities were subject to control requirements much stricter than NSPS. The commenter states that operating data from their sour gas processing facilities indicates that the current NSPS subpart LLL control level of 99.8 percent is overly stringent when compared to other NSPS that regulate SO<sub>2</sub> emissions.

**Response:** As described in more detail in the TSD, after reviewing the available cost information, we believe a 99.9 percent efficiency is cost effective for facilities with a sulfur feed rate greater than 5 long tons per day and H<sub>2</sub>S content equal to or greater than 50 percent. Based on this review, the maximum initial and continuous efficiency for facilities with a sulfur feed rate greater than 5 long tons per day and a H<sub>2</sub>S content equal to or greater than 50 percent is raised to 99.9 percent. We disagree with the commenter that installation of a tail gas cleanup unit is the only option available to a facility, and evaluated such options, as discussed in the preamble to the original proposed subpart LLL. We also disagree that the control level specified in other rules is a factor to be considered for subpart OOOO. Our data indicates that BSER for this industry is

99.9 percent control, and that this level of control is cost effective. The conclusions drawn for other NSPS are dependent on the BSER cost effectiveness determinations for those industries and are based on different datasets and other industry-specific considerations that may not have any relevance to the oil and natural gas production industry.

### **2.1.5 Other Potential Emission Sources to be Regulated – Produced Water Ponds**

**Comment:** Eight commenters (3468, 4225, 4258, 4236, 4251, 4266, 4317, 4472) oppose emission controls on produced water ponds. One commenter (3468) states that mature waterflood operations are common and production from such operations usually has lower gas/oil ratios than new flush oil production. The commenter asserts that these tank batteries may have lower emissions with the same or more crude oil throughput volume than from tanks used for new crude oil storage. The commenter states waterflood operations should be eligible for exemption from the proposed amendment. One commenter (4472) states that produced water ponds and flowback ponds should not be included. The commenter states that, because the EPA does not define "produced water ponds," it is not clear whether the EPA is considering regulation of emissions from flow-back ponds, produced water evaporation ponds, or produced water collection ponds (prior to deep well injection). The commenter adds that the EPA states in the TSD that "minimal amounts of emissions are caused by the fluid (mostly water) held in the impoundments or vessels since very little gas is dissolved in the fluid when it enters the impoundment or vessels." The commenter, therefore, believes that no emissions controls should be required for such ponds. In addition, the commenter is unaware of any available technology to safely control emissions from such ponds.

Two commenters (4225, 4258) contend that emissions from produced water ponds are more appropriately regulated by the individual States, as necessary, based upon the level of emissions associated with those ponds. The commenters believe a broad approach by the EPA may not be appropriate due to the significant differences in formation characteristics, including content of the gas, across various basins in the U.S. Two commenters (4236, 4266) state that VOCs from produced water ponds are unlikely to be a "significant source" of emissions. The commenters state that the EPA admits to having only "limited information" and demonstrates the difficulties associated with estimating emissions from produced water ponds, acknowledging that the VOC emissions will vary according to gas field and season and that the size and throughput of ponds may vary considerably. One commenter (4266) states that there is no data indicating that produced water ponds are significant emission sources. One commenter (4236) states that the EPA also appears to have limited information on the cost of any emission reduction technologies.

Two commenters (4236, 4266) state that, prior to proposing limitations on emissions from produced water ponds, the EPA needs to collect more data and release any proposed limitations

or standards for public review and comment. One commenter (4251) states it is not practical or feasible to measure emissions from produced water ponds. The commenter adds that the modeling software, Water 9, mentioned by the EPA, is designed for sewage treatment plants and is not applicable to measuring emissions from oil and gas operations. Further, the commenter states that in its operations, where ponds are used for water from CBM wells, the water contains de minimis volumes of VOCs or BTEX. The commenter believes that requiring industry to report on VOC emissions from produced water ponds would be a significant burden with limited to zero VOC reduction benefit.

Several other commenters (3399, 3552, 4189, 4240, 4274, 4375) support implementation of emission controls for produced water ponds. One commenter (3399) is particularly concerned with the impact on the public of expanded drilling of natural gas in the Marcellus Shale, a significant source of significant air pollution. Two commenters (3552, 4189) state that the EPA should eliminate storage ponds and other open pit wastewater storage. One commenter (3552) states that these ponds are a source of air pollution and that many well site operators already store produced water in closed tanks to accommodate trucking to other sites for reuse or disposal. The commenter states that the EPA should prohibit open pit wastewater storage regardless of whether it receives sufficient additional information to quantify pond emissions. One commenter (4274) supports implementation of air quality controls relative to produced water ponds due to air quality impairments within their state. Two commenters (4189, 4274) state the EPA should consider a standard requiring all produced water to be stored in tanks.

At a minimum, one commenter (4189) states the EPA should require operators to cover all pits, as required by many California air districts. One commenter (4275) adds that best available techniques to quantify emissions should be required. The commenter states that Colorado has a permitting system in place to help reduce emissions from produced water ponds and has developed ways to calculate emissions. One commenter (4375) states while they do not have firm data on the emissions from evaporation pond facilities, anecdotal evidence suggests these are a significant source of VOCs and HAPs.

One commenter (4189) states that it is cost effective to require sources to install water treatment equipment which will reduce the emissions of VOC and HAP from the facility, which in combination can reduce VOC and HAP emissions by 90 percent or more. The commenter states that this is supported by the recently published study completed by Sonoma Technology, Inc., which discusses treatment and disposal options for produced water from conventional oil and gas wells.

Another commenter (4191) recommends that the EPA include emission or control requirements for produced and flowback water facilities in the final rule. The commenter reports that they have found that produced and flowback waters have the potential to emit large quantities of VOC

and HAP, with some water treatment, storage, or evaporation facilities having a potential to emit greater than 250 tons of VOC per year. The commenter provides emission and control technology information on five facilities in Colorado.

One commenter (4240) asserts that the EPA needs to develop controls for produced water ponds and sumps, holding these sources to a rigorous control efficiency standard. The commenter states that some reports establish that these ponds emit harmful pollution, including the EPA research showing emissions of VOCs, including the hazardous pollutants benzene, toluene, xylenes, and methanol, and New York State data concluding that these impoundments could be significant sources of methanol. The commenter states that California air districts have long controlled emissions from produced water ponds, for instance, by requiring such ponds to be covered, or that their emissions be captured or flared, or simply by requiring ponds to be replaced by tanks.

One commenter (3562) states that while the EPA requested information on VOC emissions from water/liquid retention (tanks, ponds, etc.), it fails to address this issue. The commenter believes VOC emissions from backflow liquids and detention should be accounted for and reported. The commenter believes standard EPA methods for determining the VOC content in the water should be required. The commenter contends it should be assumed that 100 percent of the VOC content in backflow liquids and retention ponds or tanks that are open to the atmosphere is emitted to the atmosphere.

One commenter (4184) agrees with the EPA that flowback ponds or impoundments can be a significant source of emissions for certain additive chemicals used in high volume fracturing operations. The commenter asserts that, based on information obtained from industry and consultants, it is necessary to use such emission models because there are no actual data collected or reported by industry on these specific chemicals.

One commenter (4356) offers extensive guidance regarding the review and quantification of emissions from produced water at oil and gas production sites as recently published in the background documents for the Air Quality Standard Permit for Oil and Gas Handling and Production Facilities, effective February 27, 2011.

One commenter (4240) states that well cellars, sumps, and even pools of oil can emit substantial VOCs, which are controlled by several different state regulators. The commenter asserts that the EPA must include standards for such sources based upon these available controls.

**Response:** At this time, the EPA has decided not to propose regulations for produced water ponds. As noted in the comments received on this issue, there is limited firm data available on produced water ponds and we continue to have many concerns, including VOC content, methods which may be used to calculate emissions, cost of emission reduction technologies, and the

parameters that could be used to define affected facilities. We thank the commenters for the additional information they have provided and will continue to monitor and evaluate this potential source category as appropriate.

#### *2.1.5.1 Methods for Calculating Emissions*

**Comment:** One commenter (4228) states it is premature to conclude that produced water storage ponds are a significant source of VOC emissions without representative data and conclusive results quantifying the evaporation of trace soluble VOC compounds. The commenter asserts that, prior to proposing emission standards, the EPA must collect and analyze a comprehensive data set to determine the significance of produced water ponds as a VOC source. The commenter also urges the EPA to select a more accurate VOC emission estimate than Colorado's overly conservative 100 percent emission methodology. The commenter states that partitioning of highly water-soluble compounds and bacterial degradation would be expected to cause this assumption to have a very high bias. The commenter also states that water in the storage ponds can be reused as frac water or be sent to re-injection wells, which would reduce associated VOC emissions. The commenter adds that produced water that is reinjected or recycled into the producing formation should be exempted from consideration.

The commenter (4228) notes that for subpart W of the GHG MRR, the EPA determined that produced water ponds are an insignificant source of gas emissions, and were not included in the reporting rule.

One commenter (4237) states that produced water ponds should use the conservative Colorado mass balance approach which assumes 100 percent of the VOC content of the pond is emitted into the atmosphere based upon water sampling analysis. The commenter recommends that smaller evaporation pits co-located with drilling operations also be evaluated given the greater likelihood of being located near residential neighborhoods.

One commenter (4241) believes that using a mass balance that assumes 100 percent of the VOC content is emitted to the atmosphere leads to consistent overestimation of actual emission rates from produced water ponds. The commenter states that, in August 2008, OAQPS, in conjunction with Arcadis, performed OP-FTIR measurements on two produced water ponds and one skim pond in the Piceance area in Colorado. According to the commenter, the study indicated that measured emissions were much lower than those that would have been calculated using a mass balance approach, assuming 100 percent volatilization, or using the AP-42 Chapter 4 method. The commenter does not believe that the WATER9 model is a suitable tool for estimating emissions from produced water ponds and urges the EPA to do additional comparisons of models and field tests to develop a more accurate estimating approach before attempting to regulate.

One commenter (4266) states that the assumptions in WATER9 are quite conservative and tend to overestimate emissions. The commenter believes that assuming 100 percent of VOCs in the water enter the atmosphere is a false assumption that ignores the fate and transport of various chemicals. The commenter asserts that many chemicals, like methanol, have a very high affinity for water and do not evaporate; and many can only be removed from water using biodegradation. The commenter asserts that the EPA's "Measurement of Emissions from Produced Water Ponds: Upstream Oil and Gas Study #1" found minimal emissions from the evaporation ponds.

One commenter (4135) states that the WATER9 model is extremely difficult to understand in terms of input parameters and the units for those parameters. The commenter asserts that most users ultimately use widely varying, assumed values for input into the model. The commenter adds that a very small change in the numerous, assumed input values results in large changes to the modeled emission rates.

**Response:** We appreciate the emissions information provided by the commenters; however, as stated in the previous comment response, we have decided to take no action concerning produced water ponds in the final rule.

## **2.2 Well Completions and Recompletions**

### **2.2.1 Estimated Number of Wells**

**Comment:** One commenter (4177) states that the EPA chose worst case emissions numbers (inflating the potential for controlled emissions) and applied those emissions to a limited number of facilities associated with new well sites (lowering the cost of control) without any consideration of potential applicability and costs at existing sites. The commenter provides the current producing well count data from Texas Railroad Commission. Another commenter (4356) presents data suggesting that the EPA underestimated the number of well completions throughout the country. In addition, one commenter (4191) explains the oil and gas regulatory entities in the state of Colorado and provides the number active (permitted) wells in the State; the commenter also informed that oil and gas well completion activities are regulated by a different department. One commenter (4240) provides information regarding recent years' rapid growth of shale development in the U.S. Another commenter (4275) presents information on the number of CBM wells and states that while the VOC emissions per well might be lower for CBM wells than other types of wells, the cumulative impact of developing CBM reserves is extremely high.

**Response:** The EPA has estimated the regulatory impacts on the basis of expected number of new affected facilities, rather than the total number of existing wells. The EPA made its estimates using EIA NEMS which projects new drilling based on a national economic demand model.



**Comment:** Two commenters (4159, 4251) state that RECs are routinely used by the industry and one (4159) indicates they are more prevalent than the 15 percent of completions and recompletions suggested in this rulemaking. The commenters urge the EPA to work with stakeholders to develop better estimates of the frequency of RECs and emissions from well completions and workovers. A commenter (4233) notes that the benefits of complying with the proposed rule were overestimated because the RIA assumed that only a small percentage of operators currently capture gas. The commenter submits well completions information showing that one company captures gas from 91 percent (versus the EPA's 15 percent) of wells annually. The same commenter submits well completions information showing that, for wells where gas is not captured, the company flares emissions from 57 percent (versus the EPA's 51 percent) of wells annually. The commenter also submits data representing a total of 7 companies which shows that gas is captured from 92 percent of wells annually and that gas is flared from 55 percent of the remaining wells.

**Response:** Based on public comments and reports to EPA's Natural Gas STAR program, EPA recognizes that some producers conduct well completions using REC techniques voluntarily for economic and/or environmental objectives as a normal part of business. To account for emissions reductions and costs arising from voluntary implementation of pollution controls EPA used information on total emission reductions reported to the EPA by partners of the EPA Natural Gas STAR. This estimate of this voluntary REC activity in the absence of regulation is also included in the baseline. More detailed discussion on the derivation of the baseline is presented in a technical memorandum in the docket, as well as in the RIA.

## **2.2.2 Description of Well Completion Process and REC Process**

**Comment:** One commenter (4135) wrote for the removal of the words "inserting and cementing-in well casing" from the preamble of the proposed rule on page 52757 under "NSPS for Well Completions." The commenter points out that setting the casing and cementing it in place is part of the drilling process. The commenter adds that if the EPA includes this activity, it will lead to an overestimate of completion emissions.

**Response:** The EPA agrees that a description of inserting and cementing-in the well casing is not related to the flowback activity for which VOC requirements have been promulgated. To address this comment, the EPA has removed this description so that the definitions now only focus on the completion operations that pertain to the emissions source being regulated by this action.

**Comment:** In §60.5375(a)(3), one commenter (4184) asks the EPA to specify what type of conditions may result in a fire or explosion hazard that would allow a well completion to occur without a combustion device.

One commenter (4222) expresses that subpart OOOO is currently regulated in Alaska under the State's Gas Disposition regulations, 20 AAC 25.235. The commenter states these regulations require that operators take action to " ... minimize the volume of gas released, burned, or permitted to escape into the air." The commenter asserts that Alaska's regulations authorize short term venting as a result of an emergency or operational upset for safety considerations. Additionally, the commenter states that discretionary authorization may be granted for venting in cases of emergency that threaten life or property, when necessary to prevent loss of ultimate recovery, or for testing a well before regular production. The commenter argues that these important exceptions are absent from the proposed subpart OOOO, which only appears to allow venting when fire hazards or explosions may result and requests that these additional exceptions applicable to Alaska should be included in the final rule.

One commenter (4162) concludes that the language specifying the combustion device raises a concern that the language does not clarify when the use of a combustion device may result in a fire hazard or explosion. Commenter 4356 adds that where pit flaring is proposed to be required, there is substantial concern about fire danger, particularly in urban areas or during drought conditions.

**Response:** The EPA believes the operator has the best capability to determine when flaring would be a fire or explosion hazard. However, the reasons for venting instead of flaring must still be documented.

**Comment:** One commenter (4222) believes that the EPA has made erroneous assumptions about captured emissions. In Alaska, the commenter asserts that logistical challenges encourage alternative uses of these vapors such as use on-site, underground storage, re-injection for enhanced oil recovery in other fields, use as a chemical processing component, use for generation of heat or power, or wholesale or retail sales. The commenter requests that the EPA revise the proposed rule so as not to preclude any of these uses.

One commenter (4240) urges the EPA to collect the information necessary to determine whether all wells, including wildcat wells, can use gas that would otherwise be flared as fuel for onsite operations, and the emissions consequences of such a diversion. The commenter believes that if onsite fuel use produces more limited secondary environmental impacts than flaring, it must be required, where possible, and may be an especially attractive option for wells that are not near a gathering line.

**Response:** The EPA clarifies that REC can include the capture of flowback gas containing the VOC and directing that gas to a useful purpose which may include fuel gas or compressor

suction. Gas directed through the flow line may be sent to sales, reinjected, used as fuel gas, or used for other gainful purposes.

The EPA has clarified §60.5375(a)(1) to include the possibility of routing recovered gas and utilizing it as a fuel source or other useful purpose.

**Comment:** One commenter (4225) requests that the EPA defer to existing State regulation of RECs based on Colorado's success with them. The commenter recommends the EPA specify limits on the amount of gas that may be flared within the 3 to 10 day period before shutting the well or connecting to a sales line and to review the proposed work practices identified in the recently completed revised draft Supplemental Generic Environmental Impact Statement (SGEIS) released by NYSDEC in September, 2011 for high-volume hydraulic fracturing activities in the Marcellus Shale and other low-permeability reservoirs.

**Response:** The EPA reviewed the Colorado Oil and Gas Conservation Commission's requirements for REC during development of the nationwide rule. Based on these considerations and the additional information gathered by the EPA, the current rule is expected to be successful in reducing VOC emissions from hydraulically fractured well completions as well as other sources. The EPA reviewed the SGEIS released by NYSDEC during development of the nationwide rule. Based on these considerations and the additional information gathered by the EPA, the current rule is expected to be successful in reducing VOC emissions from hydraulically fractured well completions as well as other sources. In addition, the EPA disagrees that a volume limit of the amount of gas that can be flared before shutting the well or routing the gas to a gathering line should be established.

**Comment:** One commenter (4230) requests clarification from the EPA on items contained in proposed §60.5375(a)(3). The commenter asks, if the moisture content is too high on the flowback gas for combustion, would a completion combustion device be required or would this require additional REC (water and condensate separators) to lower the moisture content of the flowback gas to enable the use of a completion combustion device?

**Response:** The EPA clarifies that the requirement is to route the flowback stream through a continuous ignition source such that VOCs are exposed to an ignition source and are, therefore, controlled via combustion. The pre-treatment of the flowback stream to control water content is not required but also not precluded from occurring based on the final rule text.

**Comment:** A commenter (4230) requests clarification on what "as soon as practicable" means in proposed §60.5375(a)(2). Another commenter (4375) is concerned with the failure to define the term "practicable" and recommends that the EPA place strict limits on the length of time that salable quality gas is not required to go into the gas gathering lines. The commenter asserts that

by requiring salable gas to go into pipelines only within a "practicable" amount of time, the EPA creates too vague a standard to apply effectively and consistently in this aspect of oil and gas operations. The commenter believes this standard may allow companies to make unwarranted claims of non-practicability. The commenter suggests a hard cap of 10 days before all salable gas must go into gas gathering lines.

**Response:** The final rule requires an operational standard for gas well completions requiring the operator to route all salable quality gas to the gas flow line as soon as practicable. In response to the commenters' suggestion to define the term "as soon as practicable," the EPA has determined it is not appropriate to set a fixed period of time by when the gas must be sent to a flow line as that situation will vary by well and needs to be determined based on each well's individual operating circumstances. Therefore, setting a universal fixed period of time would require support of technical and cost-effectiveness analyses showing that a selected period of time is feasible and non-arbitrary. Furthermore, the EPA has determined that it is in the operator's best interest to control VOC by collection and sale rather than combustion.

**Comment:** One commenter (4240) takes issue with the definition of "hydraulic fracturing" and implores the EPA to modify this definition. The commenter proposes a definition removing the words "high rate of extended back flow" which the commenter believes are relative and never defined in the rule text and therefore, avoiding discussions/confusion about the magnitude of backflow and the purpose of the operation.

**Response:** We agree with the commenter and are therefore making the commenter's suggested changes to the definition of "hydraulic fracturing" in final rule.

### **2.2.3 Subcategory 1 Wells (non-exploratory and non-delineation)**

**Comment:** A commenter (4266) proposes that objectives for the control of VOCs be provided rather than specific methods and that the EPA adopt a management system approach to well completions rather than trying to specify methods that may work in one well or one region but not for every well in every region.

**Response:** The commenter suggests that the rule require a best management practice plan (BMP) to determine when to implement reduced emission completions across a development area. Because completion emissions occur at the well rather than at the area level, the EPA does not believe that use of a BMP is appropriate.

### 2.2.3.1 REC in Combination with Combustion is BSER for Subcategory 1 Wells, with Provisions for Venting

**Comment:** One commenter (4266) adds that the EPA has the authority under section 111 to adopt a “future effective” BSER determination for well completions. The commenter cites the “Clean Air Mercury Rule” (“CAMR”). The commenter also provides two detailed case law examples: *Portland Cement Association v. EPA* (486 F.2d 375) (DC Cir. 1973) and *Lignite Energy Council v. EPA*, 198 F.3d 930 (DC Cir. 1999) stating that those cases make it clear that while a determination about a technology or performance standard’s achievability may not be based on ‘mere speculation or conjecture,’ a technology or standard that may not necessarily be considered “adequately demonstrated” at present nonetheless can be considered “adequately demonstrated” for a compliance date in the future. Commenter 4266 concludes that given that the EPA has definitively determined that it has authority to under section 111 to establish such future effective BSER determinations, and in light of the record evidence indicating that sufficient REC equipment will not be available upon the effective date of the final rule but can become available within two years after the effective date of the rule, the EPA has ample legal and factual justification to defer the REC requirement , the EPA has ample legal and factual justification to defer the REC requirement. Two commenters (4266, 4266) state that the proposed requirement to implement RECs immediately upon the effective date of the final rule does not constitute BSER since the equipment is not available, cited section 111(a)(1) to support the statement, and requested that the EPA demonstrate that BSER is cost effective, accounting for the costs of delay in obtaining REC equipment. Commenter 4266 recommends that the EPA rectify this problem by bifurcating its BSER determination for well completions such that: (1) BSER is no additional control for a period of two years after the effective date of the final rule; and (2) REC constitutes BSER for well completions beginning two years after the effective date of the final rule. The commenter declares that such an approach would require that the EPA adopt a “future effective” BSER determination for well completions.

**Response:** See section IX.B of the final rule preamble.

**Comment:** One commenter (4191) recommends that well “shut in” be provided as an alternative to the requirement to route saleable gas to a flow line in §60.5375(a)(2). The commenter (4191) provides the following text revision: “All saleable quality gas must be routed to the gas gathering line or the well must be shut in as soon as practicable.”

**Response:** The EPA disagrees with the commenter's suggested revision. The EPA notes that this action is regulating the VOC emissions that occur during flowback, after a hydraulic fracture or re-fracture. The rule requirements do not preclude a well from being shut in prior to the flowback so that the VOC control takes place at a time when the VOC control can take place.

**Comment:** One commenter (4184) states that language in §60.5375(a)(1) and (a)(2) is overly vague and recommends that the regulation should require facility owners to apply "green" completion in all instances when a gathering line is available.

**Response:** The EPA disagrees with the commenter's suggested revision. While the owner or operator may choose to shut in the well at any time, we do not believe that §60.5375(a)(2) needs to further prescribe actions required by the owner or operator beyond routing the saleable quality gas to the flow line as soon as practicable.

**Comment:** One commenter (4184) believes that the EPA's rationale for preferring flaring to venting is based on calculations that indicate that the destruction of emissions of VOCs outweighs any increase in secondary NO<sub>x</sub> emissions. The commenter indicates that the EPA underestimated the NO<sub>x</sub> emissions due to flaring and did not recognize the potential for sulfur dioxide (SO<sub>2</sub>) emissions in the presence of hydrogen sulfide.

**Response:** The EPA disagrees with the commenter's statement that the EPA did not properly consider the secondary impacts of flaring produced gas. The EPA affirms the regulatory impact analysis done for the final rule which concludes that the secondary impacts of combustion are outweighed by the benefits of VOC control.

**Comment:** One commenter (4320) states that gas well completion operations typically last 10-15 days and flares utilized in these operations are temporary devices. The commenter believes that conducting Method 22 observations for these temporary operations is inappropriate and overly burdensome. The commenter requests that the Method 22 requirement should be deleted from the final rule, adding that there are less burdensome and costly ways of determining the efficacy of flare controls used temporarily in well completion operations.

One commenter (4230) requests clarification on items contained in proposed §60.5375(a)(3) such as whether temporary flares used as "completion combustion devices" are required to meet the standards set forth in §60.18 or whether they are subject to any standards other than a continuous ignition source. This commenter also requests that the EPA subcategorize completion combustion devices. The commenter states that the preamble only discusses pit flares and does not discuss temporary elevated flares, which do not pose the same fire hazards as an open pit flare and would not need the proposed fire hazard or explosion exemption from operation.

Three commenters (4192, 4266, 4246) provide remarks on the definition of "completion combustion device." One commenter (4192) recommends a revision. The commenter states that while pit flares are typically used and may not have been intended to be defined as flares, some operators may choose to use traditional flare devices or be required to do so by State or local rules and asserts these would more clearly be subject to §60.18. Two commenters (4266, 4246) suggest the following text revision:

§60.5430 - Flare means a thermal oxidation system using an open (without enclosure) flame. Completion combustion devices are not considered flares.

One commenter (4246) quotes §60.5375(a)(3) and states that the EPA appears to have chosen the term “completion combustion device” so that the pit flares, which the preamble states at p. 52758 are not a “traditional flare control device” would not be subject to 40 CFR 60.18. The commenter states that the preamble indicates that this is the case “because of the multiphase slug flow and intermittent nature of the discharge of gas, water and sand over the pit.” As a result, the commenter states that it is impossible for pit flares to comply with the requirements of that section. The commenter states that the definition of flare would include pit flares due to their use of an open flame to oxidize the gas portion of the flowback. The commenter adds that while pit flares are often used, they may not have been intended to be defined as flares, and cannot meet the requirements of §60.18. The commenter asserts some operators may choose to use temporary portable “field flare” devices or may be required to do so by State or local regulations. The commenter states that temporary portable “field flares” may or may not be capable of meeting the requirements of §60.18. The commenter requests that they receive a similar exclusion from the requirements of §60.18 that afforded to pit flares.

Two commenters (4266, 4246) state that the rule currently requires a completion combustion device with a “reliable continuous ignition device.” In many cases electronic igniters are used instead of a continuous ignition device. Commenter 4266 requests that the rule be modified to explicitly allow the use of electronic igniters. Commenter 4246 requests that the proposed rule be modified to allow the use of electronic igniters in place of continuous ignition devices.

One commenter (4274) inquires whether it is necessary to flare all wells on a site when there is no gathering line network and requests to the EPA the development of fact sheets explaining the purpose of flaring and the associated health risks, if any. The commenter expresses concern about flaring for extended periods as a method of operation and indicates the need to establish a standard reasonable flaring method and proper flare timeframes.

**Response:** With respect to the commenter’s concern about conducting Method 22 observations on combustion devices, completion combustion devices are not considered flares, therefore we are not requiring the use of Method 22. We have made the commenters’ suggested revision to the definition for “flare” in §60.5430 to clarify this. As discussed elsewhere in this document and stated in the proposal preamble (76 FR 52758, August 23, 2011), completion combustion devices are not traditional flares (as defined in §60.5430) and are therefore not subject to §60.18.

The EPA also clarifies that the rule is not allowing electronic ignition devices as surrogates for a continuous ignition source. The continuous ignition source is designed to combust the flammable portion of the flowback gas, even if the flowback gas has a low BTU content. An electronic

ignition device designed for ignition of a combustible stream would not be successful at combusting VOC portions of low BTU flowback gas.

In response to the commenters' concern about the use of flaring because of the associated health risks, our proposal identified NO<sub>x</sub> emissions as secondary to VOC emissions where the benefit of reductions of VOC outweighed the secondary increases of NO<sub>x</sub>.

*2.2.3.2. Phasing in Requirement for REC Over a Period of Time, or Other Ways to Address Potential Short-term Equipment Shortage*

**Comment:** One commenter (4266) believes that neither section 111(e) nor section 111(a)(2) prevent the EPA from allowing Proposal Period Wells additional time after the effective date of NSPS subpart OOOO to comply with reporting, recordkeeping and notification requirements. The commenter cites the definition of the term "standard of performance" from section 111(a) and affirmed that only the standard for emissions of air pollutants is referenced in section 111(e). Reporting, recordkeeping and notification requirements are not, therefore, standards of performance so that section 111(e) need not be read to require compliance with these requirements on the effective date of NSPS subpart OOOO. The commenter adds that this appears to be a distinction already recognized by the EPA as a general matter, since the EPA already allows time after the effective date of rules to submit reports and notifications for other new sources.

**Response:** Under section 111(e) of the CAA, it is unlawful to operate a new source (including modified source) in violation of any applicable NSPS after the effective date of the standard. This final rule becomes effective 60 days after its publication. Therefore, compliance with the NSPS requirements in this rule (including both the performance standards and the associated recordkeeping, monitoring, and reporting requirements) is not required for well completion activities conducted prior to the effective date of this final rule.

**Comment:** Two commenters (4233, 4234) state that green completions are not always feasible and gave reasons including that regulations stipulating well pads too small to accommodate equipment and the potential layout of the production area.

One commenter (1124) supports the NSPS rule and requests the standards be enforced and to take into consideration pad site impacts versus single well impacts. Another commenter (4233) asserts that AEPP completions are not always possible for a couple of reasons including the size of the well pad is too small to accommodate temporary equipment.

**Response:** With respect to the infeasibility of the rule requirements based on well sites being too small to accommodate equipment and the potential layout of the production area, the EPA disagrees. Because the development and hydraulic fracture of a well involves the use of sand and



water trucks, pumper trucks, tanks, and other support equipment that are present at the well site at various times during the well development, the EPA expects that the site can accommodate equipment necessary to accomplish the gas capture in combination with combustion, either by virtue of the well pad's size to accommodate the well development equipment or by virtue of scheduling the departure of equipment from previous steps in the development to allow for the necessary footprint.

**Comment:** One commenter (4209) requests that, where the implementation of REC is not cost effective, completions and recompletions of wells be exempt of compliance with the proposed requirements. Another commenter (4162) states that the proposed rule fails to adequately address fugitive emissions in exploratory and delineation wells and relies solely on economic benefit to industry as the basis for ensuring capture of fugitive emissions in other situations and presented a DVD that the commenter states proves otherwise.

**Response:** The EPA disagrees with the suggestion to exempt compliance based on wells not being cost effective and with the statement that the rule controls emissions on the sole basis of what is economically beneficial to industry. The EPA developed its emissions estimate based on best available data and figures reported by industry. Please see Section 4.4.2.3 of the TSD. The EPA analysis reflects operations across the U.S. related to flowback after a hydraulic fracture and is intended to be representative of the variety of flowback situations that will be encountered. The EPA therefore believes that the requirements, overall, are cost-effective for VOC emissions control and is not establishing provisions exempting specific wells on the basis of cost-effectiveness.

#### *2.2.3.3 Accuracy of Cost Estimate for REC Performed by a Contractor, Given the Estimated Number of Wells in 2015*

**Comment:** One commenter (4236) questions the EPA's estimates of cost-effectiveness of RECs. The commenter states that the limited data set upon which the estimates were based does not reflect the recent activity in the Marcellus Shale region. The commenter notes that even within that region, emission rates are likely to vary greatly from well to well. The commenter (4236) states that inaccurate or unsupported cost estimates have an impact on the EPA's analysis of compliance with the Regulatory Flexibility Act (RFA) (4236) and that some RECs might not be cost-effective. Some commenters assert that the EPA underestimated the cost of implementing the RECs, and thus the cost-effectiveness of the RECs proposed by the EPA is significantly different than described by the EPA. One commenter (4246) believes that the average cost per ton of VOCs reduction without sales could be 20 times greater than that estimated by the EPA. Another commenter (3529) states that the EPA underestimated the cost of complying with the proposed rule because the cost of other equipment necessary to comply with the rule was not considered. Two commenters (4266, 4246) provide the estimated equipment and labor cost per

well to do REC and state that the EPA grossly underestimates the cost. The costs provided by the two commenters are based on a survey in which 9 companies provided data for 29 producing areas. The results of the survey are summarized as follows: a) Cost of RECs in Conventional: \$2,150 - \$5,900 per day; b) Cost of RECs in CBM: \$4,286 - \$30,000 per day; c) Cost of RECs in Shale: \$1,530 - \$10,500 per day; d) Cost of RECs in Tight Gas: \$6,000 - \$15,000 per day. A weighted average of the results was developed and reported to be approximately \$5,000 per day.

**Response:** The EPA developed its cost estimate and emissions estimate based on best available data and cost estimates reported by industry. Regarding EPA's emissions estimates, please see the proposed rule TSD and the response to comment on EPA's emissions estimates for hydraulically fractured gas wells. Given that RECs were reported to cost between \$700 and \$6,500 per day in 2006, the EPA scaled these values to 2008 dollars. The resulting range was \$806 to \$7,486 per day. The arithmetic mean of the low and high end of the range is calculated to be \$4,146 per day. This value was then multiplied by the typical length of RECs as reported by industry, which was 7 days, to obtain the average total cost of RECs. Please see Section 4.4.2.3 of the TSD for more information. However, because the average cost per day the commenter calculated is similar to the value the EPA calculated and the actual data obtained from the survey are not provided, the EPA is not re-evaluating the costs at this time. The EPA's analysis was conducted with the available data that reflects operations across the U.S. related to flowback after a hydraulic fracture. The commenters did not provide the actual results of the survey, but rather simply provided a summary of the data.

**Comment:** One commenter (4255) states that the REC requirements fail to take into account that hydraulic fracturing is an operating technology that has been in existence for decades and has been used for many diverse types of wells. As such, according to the commenter, the proposed NSPS fails to differentiate between the large scale hydraulic fracturing operations utilized in completing horizontal wells in the various shale plays and the small scale completions and reworking that involve hydraulic fracturing in low production vertical wells. The failure to differentiate and exempt small scale completions that utilize hydraulic fracturing will be cost-prohibitive in many instances, says the commenter, because production in traditional vertical wells is naturally much lower. The commenter adds that it may be economically feasible to perform a "REC" type completion on unconventional horizontal wells that produce at high rates, but this type of completion is not realistic on conventional vertical wells.

**Response:** With respect to the commenters' concerns that the evaluation is not representative of vertical wells, the EPA disagrees. The EPA's cost estimates were developed using an emission factor that estimates gas release from well completions. The data sets used to develop the emission factor included primarily vertical wells in CBM, tight sands, and shale formations, though the data set includes a representation of horizontal wells. This data set represents the EPA's best available information to characterize emissions during a flowback following a hydraulic fracture. The EPA's cost estimates are therefore representative of vertical wells. For

more information please see the memo titled *Emission Factor for Hydraulically Fractured Gas Well Completions* located in the docket.

**Comment:** Six commenters (4216, 4233, 4241, 4246, 4251, 4266) state that the EPA overestimated emissions from gas well completions. Three commenters (4216, 4241, 4266) assert that the EPA's assessment of well completion emissions was based on a small number of instances and is not representative of the many producing areas in the United States. Three commenters (4216, 4233, 4241) argue that the EPA's estimates are based on an erroneous assumption that gas reported as captured through green completions would otherwise be vented to the atmosphere. One commenter (4233) asks that the EPA acknowledge data provided by the industry with lower estimates of emissions from gas well completions. Two commenters (4216, 4233) also object to the assumption that producers in States that do not mandate flaring or recovery vent to the atmosphere during flowback, suggesting that the EPA underestimates flaring and recovery. Commenter 4241 states that there are a number of uncertainties with respect to the accuracy of emissions calculations for well completions and recompletions, as such, the commenter suggests that it is premature for the Agency to establish NSPS for such activities at this time.

**Response:** The EPA evaluated all information received and has decided to retain the data set and the methodology used to develop the original emission factor of 9,175 thousand cubic feet (Mcf) per completion, but has made one change to the factor--rounding it to 9,000 Mcf per completion. The EPA notes that there has been a great deal of confusion about the emission factor, and acknowledges the need for clarification of the approach to develop the factor and the appropriate use of the factor. As such, the EPA has provided improved documentation and description of the emission factor data sources and analysis. See the memo titled *Emission Factor for Hydraulically Fractured Gas Well Completions* located in the docket.

Commenters state that the emissions estimates were based on four data points. This is an inaccurate characterization of the basis for the EPA's estimate. The emission factor for gas well completions with hydraulic fracturing was developed using four data sources, together representing data from over 1,000 well completions with hydraulic fracturing. These data were provided to the EPA or its technical contractors by industry for presentation at Natural Gas STAR technology transfer workshops from 2004-2007. For each data source, the EPA calculated the average gas release per gas well completion. The data from these wells collectively indicate that the true average gas release rate for a hydraulically fractured well completion is substantially higher (greater than two orders of magnitude) than the 1996 GRI/EPA emission factor that is applicable to conventional well completions. These data also indicate that there is a high degree of variability in gas release rates across hydraulically fractured well completions due to geology, technology and operating conditions. The four calculated averages were each then rounded to the nearest single significant digit to reflect the precision of these averages. The resulting emission factors from each of the four data sources were arithmetically averaged to determine the final emission factor for gas well completions with hydraulic fracturing.

The EPA used the best publically available data to develop this factor, which estimated emissions captured through reduced emission completions from over a thousand wells. The EPA determined this data was appropriate for developing this emission factor, in order to estimate potential emissions from an uncontrolled hydraulically fractured gas well completion and recompletion.

Commenters state that the EPA overestimated emissions from well completions and that the factor is not representative of the many producing areas in the U.S. The data sets used to develop the emission factor included wells representative of U.S. formation types where hydraulic fracturing is typical, including low pressure wells (e.g., coal bed methane wells). It is also important to note that the data set used to develop the factor primarily included vertical wells, while horizontal wells generally produce more gas.

This factor represents natural gas released from the completion of a hydraulically fractured natural gas well (i.e., potential gas emissions from the completion process in the absence of controls to capture or flare the released gas). It is very important to note that in calculating total national emissions from completions with hydraulic fracturing for the Inventory of U.S. Greenhouse Gas Emissions and Sinks, the EPA adjusts calculated methane release for methane that is actually not emitted (i.e., that is instead flared or controlled with certain technologies and practices) due to both voluntary action and State regulations. For more information, please see the memo titled *Emission Factor for Hydraulically Fractured Gas Well Completions* located in the docket. The NSPS analysis takes a similar approach in the development of its baseline emissions estimates, taking into account reductions from voluntary action and state regulations. Please see the RIA for more information on baseline emissions estimates.

Commenters provide or point to seven different data sets related to well completion emissions after a hydraulic fracture. The data varies in the level of detail provided. In most cases, the commenters shared total emissions and corresponding number of wells. One data set uses an engineering calculation and provides key input parameters (such as pressure, flowback duration, choke diameter, etc.). Both completions with and without REC were represented as well as tight sands, shale, and coal bed methane (CBM) formations. The average emissions per well completion ranged from 600 to 12,637 Mcf gas for the seven data sets. As discussed in more detail in the memo, the EPA evaluated all of the data (both data used to develop the original factor and data from the commenters) in several ways to determine whether an improved emission factor could be developed. As a result of this assessment, the EPA concludes that, although it does have uncertainty, the original EPA emission factor provides a valid central estimate of emissions from this source in the U.S. Therefore, the EPA has decided to retain the data set and the methodology used to develop the original emission factor for well completions. See the memo titled *Emission Factor for Hydraulically Fractured Gas Well Completions* located in the docket.

A comment submitted by Devon Energy<sup>20</sup> contains a study conducted by URS for ANGA. In the study, 7 companies submitted information relating to hydraulically fractured well completions at nearly 1,200 wells. Of the 7 companies, 4 submitted emissions estimates for 98 well non-green completions (i.e., completions without RECs). Emissions estimates were not included for wells with RECs, which comprised 92 percent of the URS data set. For each of the 98 wells without REC completions, URS provided information on pressure, flowback duration, and choke size and used Equation W-11B from subpart W of the EPA's Greenhouse Gas Reporting Rule to calculate the emissions from completions. Using this equation, and a number of simplifying assumptions, URS calculated an average emissions rate of 765 Mcf per completion.

In reviewing the data and URS' use of the subpart W equation, it became apparent that the resulting flowrate from Equation W-11B was misinterpreted to result in a flow rate at standard conditions when it was in fact a flowrate at actual conditions. Converting from actual volume (actual conditions) to standard volume (standard conditions), which is the input intended to estimate emissions from gas well venting during completions and workovers following hydraulic fracturing in Equation W-10A, the EPA re-calculated an average value greater than 50,000 Mcf per completion. This value is far higher than the value presented by URS (765 Mcf per completion) and values given in other data sets. The EPA's evaluation shows that the URS study is significantly underestimating emissions by using the equation at actual conditions, however, due to highly conservative assumptions made by URS (e.g., 100 percent gas in flowback instead of a mixture of gas and fluids, and maximum choke size and casing pressure), the recalculated emissions average of over 50,000 Mcf per completion may also be an inaccurate depiction of emissions. Given this uncertainty, the EPA performed the analyses highlighted in the memo titled *Emission Factor for Hydraulically Fractured Gas Well Completions* located in the docket both with (using the URS-calculated values per completion) and without the URS emissions estimates, for completeness and transparency.

Several commenters also questioned the EPA's decision to not round the 9,175 Mcf per completion factor, which was developed from rounded factors calculated from 4 data sets (together containing over a thousand wells). The EPA agreed with the commenters that the final factor should be rounded as well, and has rounded the factor to 9,000 Mcf per completion. For more information please see the memo titled *Emission Factor for Hydraulically Fractured Gas Well Completions* located in the docket.

#### 2.2.3.4 Inability to Set a Numerical Performance Standard

**Comment:** One commenter (4241) states that in the event that the EPA declines to revisit its emissions calculations as requested by the commenter and chooses to go forward with regulating such activities regardless of the underlying inaccuracies, the commenter supports the Agency's

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<sup>20</sup> <http://www.epa.gov/quality/informationguidelines/documents/12003-attB.pdf>

proposal to implement operational-based standards for well completions in lieu of performance-based standards. The commenter states that the flow measurement technologies to accurately measure emissions that occur during pit flaring or venting this stage are not widely available and are very expensive. As a result, the commenter claims that if the EPA were to develop a performance-based standard (e.g., a numerical emission limit) for well completions, there would be no cost-effective monitoring protocol that would allow a well operator to demonstrate compliance with a numeric limitation. The commenter asserts this falls squarely within the scope of circumstances that Congress contemplated when it included sections 111(h)(1) and (2) of the CAA allowing the Agency to substitute operational standards for performance standards where it is not feasible to enforce a performance standard due to technological limitations of measurement methodology.

Two commenters (4231, 4241) respond to the EPA's requested input on whether alternative approaches to requiring REC for all operators with access to pipelines may exist that would allow operators to meet a performance-based standard if they can demonstrate that an REC is not cost effective. One commenter (4231) does not support a performance-based standard for REC stating that such a standard would require monitoring that is not readily available or implemented. Another commenter (4241) agrees that there will be cases where a REC could be demonstrated to not be a cost effective way to reduce VOCs, and did not believe a performance-based approach to regulating well completions is feasible for the reasons stated above.

Two commenters (4251, 4254) respond to the EPA's request for comment on whether alternative approaches to requiring gas capture for all operators with access to pipelines may exist that would allow operators to meet a performance-based standard if they can demonstrate that gas capture is not cost-effective. One commenter (4251) agrees there may be cases a REC could be demonstrated to not be a cost-effective way to reduce VOCs and did not believe a performance-based approach to regulating well completions is feasible. Another commenter (4254) states that such a standard would require monitoring that is not readily available or easily implemented. The commenter adds that there may be periods of time when it is unlawful or impossible to flare, making compliance with a performance-based standard infeasible.

**Response:** In response to EPA's solicitation of inputs on the feasibility of complying with a performance standard for well completions, the EPA received comments confirming the EPA's belief that measuring and monitoring emissions to demonstrate compliance with a performance standard is not feasible at this time. The EPA is therefore proceeding with the operational standard that requires VOC control using reduced emission completions and combustion in combination, as specified in the rule text.

With respect to the comments that REC may not be cost effective in all cases, as we stated in the proposal preamble, we recognize that there is heterogeneity across well operations and costs.

However, our analysis reflects operations across the U.S. related to flowback after hydraulic fracturing and is intended to be representative of the variety of flowback situations that will be encountered. The EPA therefore believes that the requirements overall are cost-effective and is not establishing provisions exempting specific wells on the basis of cost-effectiveness.

#### *2.2.3.5 Alternative Approaches if REC is not Cost Effective*

**Comment:** One commenter (3618) requests the EPA to consider incorporating the following practices into the NSPS: a) Vapor Recovery Units- Equipment installed on condensate storage tanks that capture rather than vent vapors and b) Plunger Lifts- System using gas pressure in buildup in a well to lift a column of accumulated fluid out of the well to allow expected gas production. Two commenters (4189, 4275) state that liquids unloading and other well cleanup activities are the single worst source of methane emissions according to the EPA's most recent greenhouse gas inventory. One commenter (4275) recommends covering liquids unloading by the reduced emission completion requirement under the final new rules. Another commenter (4316) expresses that it is already working with industry and DOE on providing a step-change cost reduction for a ultra-reliable electric downhole deliquification pump used in gas well deliquification.

One commenter (4162) cites sections of the proposed rule and comments that it does not consider how methane and other fugitive emissions can bypass the capturing systems. The commenter states that obtaining a quantity of marketable gas that can be sold is a powerful incentive for capturing fugitives, but the regulation should consider the potential for significant amounts of fugitive emissions to escape capture from these systems. The commenter asserts that the language does not set percentages or other numeric standards for recapturing amounts or regulate the natural gas emissions outside of recapturing, assuming that such processes are successful. The commenter attached a video to support their assertion that the industry is not sufficiently limiting the amount of leaks from drilling and processing operations and the full extent of those leaks both current and expected have not been adequately considered in this rule.

**Response:** The EPA clarifies that tank emissions are already covered under this rulemaking. In addition, the EPA clarifies that the final rule covers equipment leaks from onshore natural gas processing plants. Regarding well venting for liquids unloading, the EPA agrees with the commenter that liquids unloading may be a significant source of VOC emissions for existing conventional gas wells. The EPA conducted a preliminary screening of emissions sources in the development of this rule with the goal of maximizing emission reductions for new sources. Available information is not sufficient to evaluate whether emissions from liquids unloading is an issue for hydraulically fractured wells, which represent the majority of projected future production and new sources. Given this uncertainty, the EPA is not regulating liquids unloading at this time.

### *2.2.3.6 Exemption from Pit Flaring because of Proximity to Residences or Other Factors Make Pit Flaring Infeasible*

**Comment:** One commenter (3475) suggests that pit flaring would be unrealistic in urban areas and not practicable during periods of drought. The commenter suggests that the rule include the ability to opt out of state oil and gas regulations when pit flaring is not feasible. One commenter (4240) urges the EPA to tighten its venting exemption because the proposed wording would be vague. The commenter suggests the EPA revise §60.5375(a)(3) to require combustion except in conditions “that pose a material risk of fire hazard or explosion.” One commenter (4241) expresses support for the EPA’s proposed exemption to pit flaring under conditions that may result in a fire hazard or explosion. Further, the commenter recommends that the EPA broaden the conditions for exceptions to the pit flaring requirement. Specifically, the commenter suggests that the EPA base the need for exemptions on engineering judgments that support venting.

Another commenter (3528) requests clarification on the pit flaring exemption. In particular, the commenter asks if the requirement would apply for all volumes or qualities of gas. Seven commenters (4266, 4269, 4266, 4251, 4246, 4217, 4228) identify scenarios where the quality or quantity of the gas would affect flaring. The commenters suggest that the pressure and content (e.g., presence of nitrogen) make combustion infeasible. The commenters recommend that the EPA broaden in the regulatory text the conditions for exceptions to the flaring requirement. Specifically, one commenter (4251) suggests that the EPA base the need for exemptions on engineering judgment. Another commenter (4217) recommends that the EPA state in the regulatory text that venting is acceptable when the gas (1) does not meet sales quality, (2) will not sustain combustion, or (3) exhibits other technical properties that require venting to prevent well damage, well cleanup issues, or facility/production shutdown.

One commenter (4228) suggests that the EPA remove the requirement that non-flammable flowback gases be sent to a combustor. The commenter explains that this requirement would result in increased pollutant emissions and higher operating costs compared to venting the non-flammable flowback gas. In addition, the commenter requests that the EPA revise the rule text to require that completion combustion devices be equipped with a reliable continuous ignition source for the entire time flowback gases are directed to the combustion equipment, rather than over the duration of flowback.

One commenter (4266) requests that the EPA provide additional clarity in the rule to address the many operational and safety constraints to routing all salable gas to a gathering line. Another commenter (3562) urges the EPA to incorporate design requirements, work practice standards, and good combustion practices for pit flares in the regulations. One commenter (4240) urges the EPA to strengthen its flaring requirement to minimize emissions risks. The commenter recommends that the EPA require operators to document the reason that capture does not occur



and venting or flaring occurs. The commenter also argues that the venting exemption is vague and the EPA should revise the rule language to require combustion except in conditions “that pose a material risk of fire hazard or explosion.” With regard to flaring, the commenter suggests that the EPA require use of enclosed combustion devices where possible to reduce these pollutants. Another commenter (4269) indicates that the flaring requirements would impose a greater burden on smaller producers who are drilling conventional wells and maintaining marginal production.

Five commenters (4258, 3560, 4217, 4269, 4246) cite regional conditions as a concern that the EPA should consider in the rule. For example, these commenters explain that requiring pit flaring or other flaring could be dangerous in drought-stricken areas. One commenter (4217) asks how the EPA would resolve conflicts between the rule requirements and burn bans from other Federal and State agencies. One commenter (4222) requests an exemption to allow venting in the Alaskan North Slope due to Alaska’s unique environment, or further study of the issue to understand the impacts of flaring on Alaska’s environment.

**Response:** The EPA agrees with the commenters and has clarified the combustion exemption. Section 60.5375(a)(3) has been revised to state, “You must capture and direct flowback emissions that cannot be directed to the flow line to a completion combustion device, except in conditions that may result in a fire hazard or explosion, or where high heat emissions from a completion combustion device may negatively impact tundra, permafrost or waterways. Completion combustion devices must be equipped with a reliable continuous ignition source over the duration of flowback.”

The EPA has also revised the VOC control requirement in §60.5375(a)(1) to state: “For the duration of flowback, route the recovered liquids into one or more storage vessels or re-inject the recovered liquids into the well or another well, and route the recovered gas into a gas flow line or collection system, re-inject the recovered gas into the well or another well, use the recovered gas as an on-site fuel source, or use the recovered gas for another useful purpose that a purchased fuel or raw material would serve, with no direct release to the atmosphere.” In response to the commenter’s particular concern, the exemption applies to all volumes and qualities of gas.

The EPA has considered the issue of venting flowback gas rather than capture or combustion. The purpose of this ruling is to minimize VOC emissions from hydraulically fractured gas well completion flowback. It is the operators’ responsibility to ensure the completion combustion devices are equipped with a reliable continuous ignition source over the duration of flowback and complete combustion of VOCs is occurring, except in conditions that may result in a fire hazard or explosion, in which case the control requirements allow for venting and documentation of the reasons and conditions that made the venting necessary.

The EPA does not agree with the commenter that this requirement would result in increased pollutant emissions and higher operating costs compared to venting the non-flammable flowback gas. The rule clearly indicates that completion combustion devices must be equipped with a reliable continuous ignition source over the duration of flowback and ensure complete combustion is occurring throughout the flowback. The EPA understands this may require additional fuel combustion to ensure complete combustion of the VOC but this requirement will achieve the EPA's objective to minimize VOCs from all hydraulically fractured completions, excluding the times of a flowback when operator-documented reasons for venting are necessary.

## **2.2.4 Subcategory 2 Wells (exploratory and delineation)**

### *2.2.4.1 REC is Not a Feasible Option*

**Comment:** One commenter (4240) states that the proposed standard itself is dangerously unclear. The commenter states that the EPA's proposed standard requires operators to "minimize" emissions by storing and then routing to pipelines as much recovered liquid and gas as possible, with the backstop of flaring or venting the remaining emissions, and to "minimize" releases to the environment. But, the commenter continues, it does not define what "minimize" means, or how the EPA will know when an operator is not "minimizing" in accordance with the standard. The commenter states that the EPA provides that resource recovery is to be "safely maximize[d]," it does not define that term either. The commenter further states that the EPA does not set any limit on how much gas may be flared, rather than captured, stating only that gas which "cannot be directed" to a gathering line is to be sent to flares. Similarly, according to the commenter, salable gas is to be routed to a gathering line as "soon as practicable," a term that leaves considerable room for dispute, according to the commenter. The commenter believes that the EPA must tighten these definitional holes. The commenter recommends that the EPA resolve these problems by stating clearly that, except in the very narrow defined circumstances where safety considerations so warrant, all emissions from the wellhead must be either captured or flared, not vented, and that flaring is a disfavored secondary option, to be used only when it is not possible to capture the wellhead emissions for safety reasons. In doing so, the commenter asserts the EPA must avoid the use of the "maximize" and "minimize" terms which will otherwise cause substantial difficulties, according to the commenter, and it must do so by revising proposed §60.5375(a) to read as follows, in pertinent part, "... (1) You must capture all gases and liquids emanating from each well subject to these regulations at all times following perforation of the well casing until flowback has ceased. (2) You must route all recovered liquids into storage vessels and route all recovered gas into a gas gathering line or collection system, except as specified in paragraph (a)(3). (3) Where direction of recovered gases or liquids into storage vessels or gas gathering lines is not possible due to material safety hazards, you must direct these materials to a completion combustion device, except in conditions that pose a

material risk of fire hazard or explosion. Completion combustion devices must be equipped with a reliable continuous ignition source over the duration of flowback.”

**Response:** The EPA disagrees that a definition for "minimize" and "maximize" are necessary since the well completions requirements are an operational standard and not an emissions limit. However, in order to provide clarity to these operational standards, we have removed the terms “minimize” and “maximize” from §60.5375(a)(1) and (a)(2), respectively, and restated these requirements in the form of a general duty clause in §60.5375(a)(4).

**Comment:** One commenter (4216) states that the EPA’s definition of a natural gas well completion creates a significant inequity. The commenter states that the EPA applies its NSPS requirements to any natural gas well completion that uses hydraulic fracturing, and that this definition would capture natural gas well completions that include only a vertical component and wells with both vertical and horizontal components. However, the commenter asserts, it is clear that in developing its basis for its REC technology, the EPA bases its determinations on well completions with horizontal legs, yet, the EPA would require the same controls for vertical wells where the emissions would be far less. The commenter argues that requiring REC on all natural gas well completions makes no sense since while there can be similarities in fracturing treatments within a particular formation or depositional basin, there can be big differences between basins across the country. The commenter further states that virtually all of the non-conventional, horizontal completions use large-volume multi-stage hydraulic fracturing treatments, while most of the conventional, vertical well fracture treatments are relatively low volume, single stage events. Applying a one-size-fits-all standard to both types of wells is counterproductive, according to the commenter. Another commenter (4246) believes that the average cost per ton of VOCs reduction without sales could be 20 times greater than that estimated by the EPA. One commenter (3529) states that the EPA underestimated the cost of complying with the proposed rule because the cost of other equipment necessary to comply with the rule was not considered. of the RECs proposed by the EPA is significantly different than described by the EPA. Two commenters (4266, 4246) have provided estimated equipment and labor cost per well to do REC and state that the EPA grossly underestimates the cost. One commenter (4266) bases its conclusion of the EPA having a low cost estimate on its contention that REC equipment costs are incurred over a period of about 30 days per well completion and not just during the flowback days. Therefore, this commenter believes that it is more appropriate to represent the REC equipment costs as occurred over a 30 day period for each completion rather than the shorter number of days associated with the flowback.

**Response:** The EPA developed its cost estimate based on best available data and cost figures reported by industry. *See* Section 4.4.2.3 of the Technical Support Document. Though one commenter disagrees with the length of the REC rental period underlying the EPA’s analysis, the commenter did not include additional data or information to support this claim. The rule impacts

analysis is intended to reflect the cost that the REC equipment for the purposes of complying with the rule, and the EPA has determined that assuming that the rental costs are only incurred for flowback period is appropriate for estimating REC costs. For vertical wells specifically, we believe that there are significant The VOC emissions from them which is why the affected facility definition includes all hydraulically fractured gas wells. Additionally, in the final rule the EPA is supplying a method to determine if a well is considered to be low pressure, in which case that well completion flowback is not required to perform gas capture for VOC control, and this reduces the cost burden for the so-defined low pressure wells.

### **2.2.5 Thresholds for Parameters to Define which Well Completions are Subject to REC Requirements**

**Comment:** One commenter (3459) requests that the EPA extend green completions requirements to include new and existing oil wells that co-produce gas instead of only applying to gas wells.

Another commenter (4240) expresses that the EPA needs to include hydraulically fractured oil wells that produce associated gas in its standards. These wells are excluded under the proposed standard, which applies only to gas wells. The commenter states that the EPA acknowledges that hydraulic fracturing at oil wells creates a period of flowback with increased natural gas and VOC emissions and requests that the EPA must require that the maximum amount of gas produced from hydraulically fractured oil wells during both flowback and normal production, be captured rather than vented or flared. The commenter provides information on how recent developments raise questions about the EPA's estimates of low emissions from these wells. According to the commenter, the New York Times reports gas discharges of over 150 million cubic feet per day being flared in the Bakken Shale play in North Dakota that field regarding very large amounts of gas are being flared daily in the hydraulically fractured. The commenter states that this huge volume of flaring is undoubtedly producing significant air pollution, and is avoidable with RECs and connection to gas gathering lines. The commenter cites the report from North Dakota government that the commenter claimed very strongly argues that REC, and continuing gas capture from producing oil wells, would be economically and environmentally beneficial. The commenter recommends that although producers may have to focus on expanding gathering line construction to prevent this waste, other options, including reinjection, must be explored and requests the EPA to drive the process with a strong performance standard for such wells. The commenter adds that as a start, the EPA must require the productive capture and routing to a pipeline of vented associated gas at oil wells whenever natural gas gathering pipelines are within a reasonable distance that the commenter considers to be three miles to an affected oil well. The commenter states that if reinjection, productive use onsite, or capture for sale of gas cannot be required, then the EPA must ensure that emissions from flares are minimized.

One commenter (4266) states that based on the EPA's discussion in Section 4 of the TSD, it appears the EPA's intent is to require REC only for natural gas wells. However, the commenter believes that the rule needs to include "natural gas" versus "gas" throughout as API has proposed for clarity. The commenter supports that the EPA applied REC only to natural gas wellhead facilities and excluded oil wellhead facilities and other types of gas wells which have little or no VOC emissions. The commenter states that, as shown on page 4-13 on Table 4.4 "Nationwide Baseline Emissions from Uncontrolled Oil and Gas Well Completions and Recompletions" of the TSD, there are only 134 TPY of VOCs emissions from oil well completions and recompletions for the entire U.S., which is not worth regulating.

Several commenters (4192, 4246, 4266) have commented on the definition of gas well, providing recommended revisions. One commenter (4192) recommends the following revision: "Gas well means a well, the principal production of which at the mouth of the well is [add: hydrocarbon gas, not CO<sub>2</sub>]. . . . Well means an oil or gas well, a hole drilled for the purpose of producing oil or gas, or a well into which fluids are injected." One commenter (4246) proposes the following revision: "Gas well means a well, [DELETE the principal production of which at the mouth of the well is gas.] completed for production of natural gas from one or more gas zones or reservoirs. Such wells contain no completions for the production of crude oil. The commenter also proposes the following revision: Gas well means a well [STRIKETHROUGH: , the principal production of which at the mouth of the well is gas.] [ADD TEXT: completed for production of natural gas from one or more gas zones or reservoirs. Such wells contain no completions for the production of crude oil.]"

One commenter (4191) points out that Oil and Natural Gas Air Pollution Standards (ONGAPS) apply to oil and gas activities, but it is not clear whether the green completion requirement of the ONGAPS applies to wells producing condensate or crude oil. The commenter believes that the EPA should focus on emissions, as opposed to the constituent generating such emissions, and clarify that well producing condensate or crude oil are included within the ONGAPS. The commenter asserts that green completions may be a cost effective means of controlling emissions from "hybrid" oil and gas wells, while also reducing losses of a valuable domestic resource and recommends that the EPA clarify the inclusion of such wells within the NSPS. However, the commenter did not define the term "hybrid" in the comments submitted. One commenter (4275) recommends that emissions from existing and new oil wells that co-produce gas be included in the scope of the REC requirement because they can be significant sources of pollution and lost product that can be cost-effectively captured by RECs. Another commenter (4266) points out that §60.5375 never mentions "gas wellhead" which could be interpreted that all hydraulically fractured wells, gas AND oil, would be subject to these requirements.

**Response:** Section IX.B of the final rule preamble discusses the issues of the definition of "gas well" and coverage of oil wells by the NSPS. Because we are uncertain of the meaning of

“hybrid” in the context of the public comments, we are unable to provide more clarity on treatment of these wells under the NSPS.

**Comment:** One commenter (1443) requests that the EPA set and enforce strict regulations of the chemicals used in the fracking process and requests to require closed pits and strong under-pit linings for used water and chemical mixtures. Another commenter (3551) states that chemicals used in the hydraulic fracturing process may also contribute to sources of air quality impacts and until the EPA can provide information on the frequency, quantity, and concentrations of the chemicals used in the fracking process, a complete effective regulatory process air quality emissions remains unattainable. The commenter (3551) recommends that the EPA consider to analyzing the impacts of the chemical constituents used in fracking as a source of potential air quality contaminants.

**Response:** The EPA's Office of Research and Development is currently engaged in a major study of hydraulic fracturing, including the constituents of fracturing fluids. The results of this study are not yet available, so there is no information on air emissions from those fluids at this time that can be incorporated into this rulemaking.

**Comment:** One commenter (4164) states that subpart OOOO should not imply that “natural gas” is a regulated pollutant.

**Response:** The EPA clarifies that natural gas is not being regulated as a pollutant under the NSPS and that this action regulates VOC. The EPA based its VOC emissions on a methane emission factor combined with an average VOC emissions profile to quantify the impacts.

**Comment:** One commenter (4041) provides text from the recently amended oil and gas drilling and production ordinance for the City of Southlake, Texas. Citing the ordinance, the commenter suggests that the rule require a best management practice plan for reduced emission completions across a development area.

**Response:** The EPA has reviewed the requirements of the oil and gas drilling and production ordinance for the City of Southlake, Texas, and the EPA disagrees that a best management practice plan should be implemented. The EPA has considered this comment when finalizing the rule in a manner that does not prescribe the equipment required to control VOC. The final rule states an operational standard to reduce VOCs and does not specify control equipment, because the VOC control situation may vary from well to well and across U.S. regions. The EPA has addressed the commenter’s statement about a management system approach because the rule includes flexibility for achieving the operational standard.

In addition, the EPA believes the current recordkeeping and reporting requirements satisfactorily accomplish the same goals as the continuous monitoring plans included in the oil and gas drilling and production ordinance for the City of Southlake, Texas. Moreover, the EPA is not exempting wells based on the sole point that a flow line is not available as discussed elsewhere in this response to comments. Lastly, the EPA is regulating emissions from hydraulically fractured well completions and not the associated equipment required to perform RECs.

**Comment:** One commenter (4135) suggests that the EPA modify the definition of a “wellsite” to specify that a wellsite may consist of one or more wells. The commenter states these types of multiple well wellsites may be referred to as PAD facilities, multiple well facilities, double well facilities, etc.

**Response:** The EPA clarifies that the final rule states that the affected facility is defined as, “Each gas well affected facility, which is a single natural gas well.” We further clarify that the overall well site is not the affected facility. The EPA has defined a well site as, “one or more areas that are directly disturbed during the drilling and subsequent operation of, or affected by, production facilities directly associated with any oil well, gas well, or injection well and its associated well pad.”

**Comment:** One commenter (4266) requests that the applicability of the proposed regulation to “flowback immediately following hydraulic fracturing stimulation at onshore gas wellhead facilities” should be clearly defined in §60.5365(a). The commenter believes that the following portion of the text is unnecessary and should be eliminated: “For the purposes of this subpart, a well completion operation following hydraulic fracturing or refracturing that occurs at a gas wellhead facility that commenced construction, modification, or reconstruction on or before August 23, 2011 is considered a modification of the gas wellhead facility, but does not affect other equipment, process units, storage vessels, or pneumatic devices located at the well site....” The commenter agrees that the text should clarify that other equipment, such as process units, storage vessels, pneumatic controllers, and compressors located at the well site are not affected by hydraulic fracture flowback operations.

**Response:** The EPA has clarified the definition of a modification so that this regulation only pertains to the intended emissions sources.

**Comment:** One commenter (4192) recommends that the EPA add a new defined term, “produced water,” as follows: “Produced water is water from underground formations that is brought to the surface during oil or gas production. The produced water has gone through some means to remove it from other stream brought up from the formation.” The commenter adds that the definition is from the publication “Produced Water Volumes and Management Practices in the United States,” Argonne National Laboratory –ANL/EVS/R-09/1.

**Response:** The EPA disagrees that a definition for "produced water" must be added because the EPA believes the definition is immaterial to the affected facility and the VOC emissions being controlled.

**Comment:** One commenter (3474) asserts that environmental protection and economic growth need not be a zero sum game, supports the increased use of green completions, states that RECs are a proven, economical way to reduce methane emissions, and encourages industry-wide, voluntary adoption of this practice. Another commenter (4042) commends the EPA for this proposal, especially the requirement for Reduced Emission Completions for newly fractured wells or re-fracturing of existing wells. Another commenter (4266) states that API and its member companies fully support the EPA's goals of minimizing VOC emissions from flowback immediately following hydraulic fracturing stimulation and have been among the earliest companies to adopt such measures; the commenter notes that REC make sense in many but not all scenarios.

**Response:** The EPA appreciates these comments. The EPA conducted detailed analyses and conducted extensive research of best available data and information to develop requirements that cost-effectively reduce harmful air pollution from the oil and natural gas industry while allowing continued, responsible growth in U.S. oil and natural gas production. In regard to comments on REC applicability, the EPA has finalized operational standards for completion of hydraulically fractured gas wells that will effectively reduce emissions where it is technically feasible and safe to do so.

## 2.2.6 Other Comments

**Comment:** One commenter (4208) requests that the EPA clarify the appropriate baseline for determining modifications. The EPA does not indicate the baseline a source should use in determining whether the recompletion or refracturing increases the amount of VOCs or natural gas emitted in the atmosphere. For example, the commenter notes that a well can be refractured approximately every three years but the operator may use a five-year baseline for determining existing emissions. In that case, the commenter asserts that a new refracturing might not cause any emission increases over the emissions baseline, since the baseline reflects the first refracturing. Thus the source would claim that the refractured well did not meet the definition of "modification." The commenter indicates that the EPA should specify in the regulatory preamble that sources, in determining whether there were any increase in emissions, use as their baseline the emissions from the existing gas well occurring immediately before the recompletion or refracturing.



Two commenters (4220, 4240) express concern that the proposed rule departs from a long-standing definition of modification without explanation and presumably under the new proposed definition, a change that results in any measurable increase not just of VOC, a regulated NSR pollutant, but natural gas, a non-regulated substance, would ostensibly be considered a “modification” for NSPS purposes. Both commenters ask why there is disparate treatment for the oil and natural gas production source category and state that the EPA has effectively denied stakeholders adequate notice of the intended scope of this change to the presumptive definition of “modification” in 40 CFR §60.14.

**Response:** See section IX.A of the final rule preamble.

**Comment:** One commenter (4209) cites the EPA’s proposed definition of modification and does not believe the EPA has adequately justified how it can regulate recompletions as modifications. Another commenter (4209) asks how the EPA’s own definition allows the regulation of recompletions or re-fracturing operations of an existing formation within a gas wellhead facility when the initial production volumes may have been higher than subsequent re-completions or re-fracturing operations because the formation has been depleted by production activities. Commenter 4220 states that the proposed definition of “modification” is a significant departure from the EPA’s existing definition of “modification” in 40 CFR § 60.14, which defines “modification” in terms of an increase in “emission rate,” a concept that, with few exceptions, has provided industry with a clear and measurable standard to determine whether NSPS review is triggered and provided how the concept was explained by the EPA in a prior rulemaking. In addition, commenter 4220 states that even more significant is that the EPA redefines NSPS modification by adding a new term – “amount of emissions” – where previously the emissions test was based on the maximum achievable hourly rate of emissions for determining whether a modification would occur. According to the commenter, there is no explanation in the proposal as to whether this change is intentional, the basis for such a change if it is intentional, and how the “amount” of emissions would be measured. Commenter 4220 explains that the EPA cannot upset 30 years of precedent on the definition of modification without at least providing explicit notice and explaining its basis for doing so. The commenter asserts that the public simply cannot reasonably participate in the rulemaking process with this inadequate notice. Moreover, the commenter believes that such a departure is substantively inappropriate. The commenter continues by saying that measuring the “actual amount” – if that is what is intended – of the pollutants is impractical and unreasonable because the EPA has explained that a work practice standard is justified here on the grounds that measuring emissions during these periods is not feasible. 76 FR 52758.

Three commenters (4220, 4273, 4251) provide detailed explanation of the basis for the following statements: 1) The proposed definition of “modification” unreasonably and arbitrarily assumes certain operations such as “recompletions” and “workovers” are modifications on the basis of

assumed and unsubstantiated emission changes, 2) Workovers should not be included in the definition of modification because they are not physical or operational changes and do not result in an emissions rate increase, 3) Recompletions and refracture activities should not be included in the definition of modification, and 4) Even if recompletions could be modifications, the EPA must clarify that the proposal includes only recompletions that occur at the same time as hydraulic fracturing. Commenter 4251 indicates it is debatable whether a recompletion would constitute a “change” since it has been termed by the EPA as simply maintenance.

**Response:** See section IX.A of the final rule preamble.

**Comment:** One commenter (4251) states that when a well is recompleted, it would be located at a site that already has viable gathering and sales lines. The commenter contends that the presence of this infrastructure means that gas from a recompleted well is recovered and routed to a sales line for maximum profit, meeting the EPA's definition of a REC, and the amount of VOCs emitted would be de minimis, if any at all and that regulation that requires onerous notification, record keeping, and reporting of this routine business practice creates an unnecessary cost burden on operators with no human health or environmental benefit.

**Response:** We appreciate the commenter's view that recompletions are often performed in areas where a flow line is available, and that RECs are performed on some portion of these recompletions. Based on public comments and reports to EPA's Natural Gas STAR program, EPA recognizes that some producers conduct well completions using REC techniques voluntarily for economic and/or environmental objectives as a normal part of business. To account for emissions reductions and costs arising from voluntary implementation of pollution controls EPA used information on total emission reductions reported to the EPA by partners of the EPA Natural Gas STAR. This estimate of this voluntary REC activity in the absence of regulation is also included in the baseline. More detailed discussion on the derivation of the baseline is presented in a technical memorandum in the docket, as well as in the RIA.

**Comment:** One commenter (4240) states that there is a definitional flaw in the EPA's proposed language for modification; first the commenter cites the CAA “modification” definition under section 111. The commenter indicates that the EPA points out in the proposed rule and TSD that during the fracturing or refracturing of an existing well, “physical change occurs to the existing well, which includes the wellbore, casing and tubing, resulting in an emissions increase during the completion operation.” The commenter continues, saying that for purposes of NSPS, an emissions increase occurs whenever emissions after a physical change are greater than emissions immediately prior to the change and cites *Wisconsin Electric Power Co. v. Reilly*. Further, the commenter says that not only do hydraulic fracturing activities meet the statutory definition of modification, but the EPA's proposed NSPS that recompletions of these wells are modifications for the purposes of this industry overrides any conflicting provisions in the general NSPS

definition of modification. According to the commenter, the EPA previously has relied on §60.14(f) to depart from its general regulatory definition of modification by delineating what constitutes a modification under a sector-specific subpart of the NSPS “to eliminate ambiguity.” Thus, to the extent that any of the exemptions contained in §60.14(c) would otherwise prevent recompletions and refracturing from being considered modifications, they would be overridden by the specific oil and gas provision. The commenter states that, while the proposed §60.5430 is sufficient to override any conflicting portions of §60.14, they encourage the EPA to clarify the regulatory language by explicitly invoking §60.14(f) and explaining that the capital expenditure test codified at 40 C.F.R. §60.14(e)(2), for example, does not apply. Second, according to the commenter, the EPA is wrong to define a modification in this context as “each recompletion of a fractured or refractured existing gas well” because “recompletion” is an undefined term and so will lead to confusion. The commenter states that the relevant modification – and source of increased emissions – in this context is, in fact, the hydraulic fracturing operation at the well. The commenter requests that the EPA say so. Commenter 4240 proposes a revised §60.5430:

Modification means any physical change in, or change in the method of operation of, an affected facility which increases the amount of VOC or natural gas emitted into the atmosphere by that facility or which results in the emission of VOC or natural gas into the atmosphere not previously emitted. For the purposes of this subpart, each hydraulic fracturing operation at an existing gas well is considered to be a modification regardless of any provision of 40 C.F.R. §60.14(e) stating regulatory exemptions to the term “modification.

One commenter (4266) states that “modification” should apply to flowback of a recompletion immediately following hydraulic fracturing that has a reasonable expectation to be greater than the original completion. According to the commenter, wells that are recompleted within the same reservoir/zone that was previously hydrofractured will necessarily have fewer emissions than previously experienced due to the depletion of reservoir pressure. However, the commenter asserts that a well that is recompleted in new reservoir may have more or less emission than in original completion operations. The commenter states that, by including recompletion in the definition of modifications, the EPA has exceeded the intent of the CAA. The commenter opines that the definition of modification should remain under §60.14. However, the commenter recommends that, if the EPA chooses to define modification in this subpart, the recompletions portion of the definition of modification should be removed. Commenter 4266 provides two suggested rule text revisions for §60.5430.

1. Preferred Option:

[~~STRIKETHROUGH~~: Modification means any physical change in, or change in the method of operation of, an affected facility which increases the amount of VOC or natural gas emitted into the atmosphere by that facility or which results in the emission of

VOC or natural gas into the atmosphere not previously emitted. For the purposes of this subpart, each recompletion of a fractured or refractured existing gas well is considered to be a modification.]

2. Alternative option:

Modification means any physical change in, or change in the method of operation of, an affected facility which increases the amount of VOC [STRIKETHROUGH: or natural gas] emitted into the atmosphere by that facility or which results in the emission of VOC [STRIKETHROUGH: or natural gas] into the atmosphere not previously emitted.

[STRIKETHROUGH: For the purposes of this subpart, each recompletion of a fractured or refractured existing gas well is considered to be a modification.]

**Response:** See section IX.A of the final rule preamble.

**Comment:** Eight commenters (1369, 1498, 1519, 1375, 1396, 1467, 1496, 1498) express concern about air and water pollution and health risks from fracturing operations. Five commenters (1369, 1498, 1519, 1375, 1467) express mistrust of information provided by oil companies implying that fracturing poses little to no risk or actual pollution. Some of these commenters (1498, 1519, 1375, 1396) also cite personal experience or media vehicles, such as movies and articles, to assert dangers and damage associated with fracturing. One commenter (1496) asserts that the extraction industries should pay the full cost of their business practices, including associated adverse impacts. Two commenters (1491, 1496) request that the EPA conduct further studies to determine the impacts from fracturing before allowing the practice to continue and emphasize the importance of transparency of that information.

**Response:** The EPA acknowledges these commenters' concerns regarding potential air and water pollution and health risks from hydraulic fracturing. The EPA views natural gas as having an important role in our country's clean energy future, and this rule will reduce harmful air pollution from the oil and natural gas industry while allowing continued, responsible growth in U.S. oil and natural gas production. At most fractured natural gas wells, the rule requires producers to capture a high volume of natural gas that contains VOCs and methane, along with air toxics such as benzene, ethylbenzene and n-hexane by using REC.

In its FY2010 Appropriations Committee Conference Report, Congress requested that the EPA study the relationship between hydraulic fracturing and drinking water, using the best available science, independent sources of information, and to conduct the study in consultation with others using a transparent, peer-reviewed process. The EPA announced in March 2010 that it would conduct a research study to investigate the potential impacts of hydraulic fracturing on drinking water resources. This study is intended both to provide data where there is inadequate information and to contribute to resolving scientific uncertainties. A first report of results is expected by the end of 2012. However, certain portions of the work will be long-term projects

that are not likely to be finished at that time. An additional report of study findings will be published in 2014 as the longer-term projects progress.

## 2.3 Pneumatic Controllers

### 2.3.1 Compliance Options and Compliance Schedule

**Comment:** One commenter (4219) believes that the continuous compliance demonstration requirements for low-bleed pneumatic controllers should be limited to a demonstration that the controller was properly installed and is being properly maintained. The commenter states that this requirement would not be overly burdensome to industry.

**Response:** The EPA provides guidance rather than exact conditions that define proper maintenance to demonstrate continuous compliance, and the final rule relies on the application of manufacturers' specifications to document bleed rate.

**Comment:** A commenter (4263) recommends revising §60.5410(d)(3) to provide for cases where facilities other than gas plants operate pneumatic controllers using air or other gas other than natural gas. The commenter's rationale for this is that pneumatic systems driven other than by natural gas (e.g., air or other inserts) are used at facilities other than natural gas processing plants (e.g., compressor stations).

**Response:** The commenter is recommending revisions to the proposed rule to provide for facilities other than gas plants to operate pneumatic controllers using air or gas other than natural gas. The EPA clarifies that the rule specifies a natural gas bleed rate limit rather than use of a technology meeting specific "low-bleed" criteria. Therefore, as long as the pneumatic controllers are below the rule's bleed rate for the specified affected facility (i.e., an affected facility located in either the production or processing segment), then the use of air or gas other than natural gas is permitted.

**Comment:** One commenter (4246) believes that, in lieu of requiring new controllers at gas processing plants to be on air assist the day of startup, owners or operators should have the option to convert all controllers in the gas processing plant to air assist (except for those exempted as per 40 CFR §60.5390(a)) no later than 3 years after the date of installation and startup of the first new controller, provided that all new controllers installed at the plant are low-bleed or exempted during the 3-year transition to compliance.

**Response:** The commenter did not provide supporting information explaining why non-gas driven controllers cannot be readily used at gas processing plants or why implementing instrument air would require three years. Based on the information available to the EPA, most

gas processing plants are equipped to use instrument air pneumatic controllers. We further note that the NSPS provides exemption from the zero bleed rate limit if there is a functional need for gas driven controllers. In light of the above, we do not believe that a three-year transition period is warranted.

### **2.3.2 Proposed Emission Limit for Processing Plants**

**Comment:** One commenter (4228) states that residue natural gas-driven pneumatic controllers should be permitted at gas processing plants. According to the commenter, the EPA's data show that the VOC content of processing plant residue gas is about an order of magnitude lower than plant feed gas (i.e., field gas); thus, a rule requirement that all gas plant pneumatic controllers be powered by residue gas rather than field gas would provide VOC emissions control without requiring each new plant to install and maintain costly air compression equipment. The commenter believes that, at a minimum, the rule should include an exception to allow gas plants to use natural gas-driven pneumatic controllers for emergency plant shut down and subsequent start up. The commenter notes that air driven devices require an air compressor and, if the plant loses power during an emergency, then compression could be lost; thus, a reliable alternative to gas-powered controllers, is needed for safe plant operation during an emergency.

**Response:** The EPA disagrees with the commenter and is not exempting pneumatic controllers that process residue gas in the final rule. Our analysis showed that BSER for pneumatic controllers at natural gas processing plants is zero emissions of natural gas, which would also mean zero emissions of VOC. Even if the commenter is correct that residue gas has a lower VOC content than field gas, the use of residue gas would still result in emissions of natural gas and VOC. This would not meet BSER; therefore, operating pneumatic controllers at processing plants with residue gas cannot be allowed.

Concerning the comment on emergency situations, our data show that processing plants are large facilities that typically have backup electrical systems in case of emergency. Thus, there should be no need for an exemption for emergency shutdown and startup. We do point out, however, that the final rule does provide a functional exemption from meeting the bleed rate limit for reasons such as safety, response time and actuation.

### **2.3.3. Proposed Emission Limit for Production, Transmission and Storage**

**Comment:** One commenter (4246) states that for pneumatic controllers not located at a natural gas processing plant, that are (1) designed for continuous, gas-assisted, high-bleed and (2) that require immediate replacement or reconstruction due to an emergency situation, the EPA should allow immediate replacement with a like-kind or reconstructed controller for a six-month period. After which, the commenter states the owner/operator would be required to replace the

pneumatic controller with one that complies with subpart OOOO, or submit a demonstration to the Administrator that a high-bleed controller is necessary.

**Response:** The EPA has considered the commenter's request to include a six-month period due to emergency replacement situations. Based on the EPA's understanding that pneumatic controllers meeting the bleed rate limit at processing plants are readily available and serve a variety of control functions, the EPA expects that the rule can be met in cases of emergency replacement. Furthermore, processing plants have a zero bleed rate limit with provisions for the use of pneumatic controllers that exceed the zero bleed rate limit when certain functional considerations are met. The EPA expects that new sources coming into existence due to emergency replacement will have a zero bleed rate limit or will meet a functional exemption as specified in the final rule.

**Comment:** One commenter (4234) states that the EPA should clarify that the proposed rule would not apply to pneumatic devices used in distribution or for a gas utility's LNG peak shaving operations. Alternatively, to focus subpart OOOO more appropriately on natural gas streams that are more likely to include VOCs and avoid regulation of pneumatic controllers dispersed along pipelines as well as in distribution systems, the commenter suggests this affected facility description could be revised to limit applicability to pneumatic controllers located from the wellhead through the gas processing plant (or custody transfer to natural gas transmission if a gas processing plant is not present).

**Response:** The final rule applies to continuous bleed natural gas driven pneumatic controllers in the production and processing segments. Pneumatic controllers in the transmission and storage and distribution segments are not affected facilities in the NSPS. See section IX.C of the final rule preamble.

#### **2.3.4 Low Bleed Devices**

**Comment:** One commenter (4275) states that the EPA should require additional pollution reductions from existing pneumatic devices.

**Response:** Section 111(b) of the CAA requires that the EPA establish NSPS for new sources in a listed source category. Section 111(a) defines new sources to include sources that undergo modification. Thus, the EPA does not have the authority under section 111(b) to extend the rule to existing sources, until the existing sources undergo a modification or reconstruction that triggers an NSPS standard.

### 2.3.5 Other Comments

**Comment:** One commenter (4228) claims that the EPA has overstated the reduction analysis for production segment pneumatic controllers as the analysis does not consider current industry practices that reduce emissions. The commenter also questions the EPA's use of the production segment gas composition and VOC content to estimate emissions in the processing segment. The commenter states that, based on industry practice, the transmission segment gas composition and VOC content would provide a more accurate VOC reduction estimate.

Two commenters (4104, 4270) argue that emissions reduction estimates are overstated and the analysis provided is based on invalid data. The commenters note that the data sources used to estimate VOC emissions reductions are flawed, and actual VOC reductions will be much lower. One commenter (4104) notes that the data used to estimate the VOC emissions reductions from using a low-bleed rather than high-bleed pneumatic controller is based on a limited data set of pneumatic controller population from a handful of sites and a few manufacturers, rather than considering the cross section of industry segments, operating companies, and controller manufacturers.

One commenter (4104) reasons that the EPA's VOC estimates for the transmission and storage segment are overestimated because the EPA included VOC emissions reductions that result from standard industry practices that already occur due to safety, economy, and best practice considerations. The commenter argues that the failure to consider incremental reductions from actions above and beyond current practices overestimates the VOC reductions.

Another commenter (4270) argues that the emission factors for compressors and pneumatic controllers, and the premise for the entire proposed rule, is based on invalid assumptions. The commenter states that the EPA made the following assumptions: that the proposed action will be supported by forthcoming data; that the emission factors used to calculate data in subparts OOOO and HHH is valid (when in fact, it is outdated); that the cost and benefits analysis is valid based on questionable emissions factors; and that the data is sufficient for the discussion and further analysis put forth in part VIII of the preamble to the proposed rule.

Two commenters (4104, 4158) argue that the VOC emissions from pneumatic devices and compressors, when further analyzed, would be trivial and not worth the regulatory burden proposed. One commenter (4101) notes some statistics and states that the EPA's estimated subpart OOOO reductions from pneumatic controllers in transmission and storage are 0.000046 percent of the total anthropogenic VOC inventory or 0.00001 percent of biogenic and anthropogenic VOC emissions.



One commenter (4104) argues that some of the data captured in the EPA's emissions analysis includes VOC reductions taking place due to current industry standards and, therefore, the VOC emissions reductions attributed to the proposed rule would be incremental VOC emissions reductions. The commenter claims incremental natural gas VOC emissions reductions that directly result from subpart OOOO would be small and the least cost-effective reduction opportunities. The commenter remarks that codifying these on-going, standard industry practices would unnecessarily increase the administrative costs of such practices. The commenter also states the EPA's cost-benefit analysis should be based on incremental, regulatory-driven emissions reductions and not include reductions achieved through current industry practice. One commenter (4158) states that, within the transmission and storage segment, the VOC content in natural gas translates to an insignificant bleed-rate from pneumatic controllers.

**Response:** Regarding the commenter's questioning of the use of the production segment gas composition for the processing segment, the EPA believes this composition more accurately describes the amount of VOCs in processing segment gas streams, not the transmission segment gas composition. Gas in the transmission segment is lower in VOC content because the gas has already gone through treatment processes which remove VOCs. Regarding commenters' concerns that the proposed rule's emissions reduction estimates are overstated and based on invalid data, the EPA has incorporated best available public data and documentation on industry practices for reducing the bleed emissions from pneumatic controllers. The approach, methodologies, and sources used by the EPA are summarized in Section 5.0 of the proposal TSD. Another commenter claims the EPA overestimates VOC estimates for the transmission and storage segment because emissions reductions that already result from standard industry practices are included. With regards to the regulation of pneumatic controllers in the transmission and storage segment, the EPA is revising the requirements to apply to affected facilities located between the wellhead and a natural gas processing plant, as well as affected facilities at natural gas processing plants. Pneumatic controllers in the transmission and storage segment are not affected facilities.

With regard to the comments on the minimal amount of VOCs in emissions from pneumatic devices, the EPA disagrees. A summary of the estimated VOC emissions is in Table 5-2 of the TSD, with an outline of the data sources used in Table 5-1. This summary depicts the significant VOC impacts achieved through this rulemaking and addresses the issue raised by the comments.

A commenter claims the EPA overestimates the reductions for pneumatic controllers in the production segment because it did not consider current industry practices for reducing emissions. The EPA did consider current industry practices and the emissions limit in the final rule is based on the EPA's understanding of widely available technology updates for pneumatic controllers. In part of the EPA's research for the impact analysis, it characterized the costs of higher and lower emitting pneumatic controllers per what is currently available in industry. The costs used in this

proposed rule are estimated using recent comprehensive vendor research in combination with population factors from the U.S. inventory. The EPA explains its methodology for calculating VOC emissions and reductions in Sections 5.3 and 5.4 of the proposal TSD. The EPA used established and published sources on methane emissions and used a VOC weight ratio, calculated from a literature review of available sources, to convert to VOC emissions. This investigation can be found as a memo in the rule docket.

In addition, as described in Section IX.C of the preamble, the EPA is defining the pneumatic controller affected facility as a continuous bleed natural gas driven pneumatic controller with a bleed rate greater than 6 scfh. In response to the comments on increased administrative costs and current industry practice, the revised definitions exclude from the NSPS coverage owners and operators who are already using (including replacement) pneumatic controllers that meet the applicable standards, thus, relieving them from the cost and other burdens related to compliance.

**Comment:** A commenter (4191) suggests a revision to specific text in the proposed rule. The commenter notes that the reference to §60.5490(a) in the initial compliance requirement is a typographical error as there is no §60.5490 in subpart OOOO.

**Response:** The EPA has corrected this typographical error.

## 2.4 Compressors

**Comment:** Two commenters (4175, 4268) believe that the Natural Gas STAR program is not suitable for mandatory widespread use in the oil and gas industry. The commenters state that the Natural Gas STAR program attempts to instigate a pro-active maintenance approach whereby the leakage on the seals is monitored and the seals replaced when the value of the gas lost exceeds the cost of the replacement seals. The commenters state that the program is not suitable for several reasons including: the value of the gas savings is overstated, the beneficiary of the gas savings may not be the same entity that bears the cost of seal replacement, the majority of facilities are remote and unmanned, and the program is duplicative for reciprocating compressors and would provide no significant benefit over a reasonable proactive replacement schedule. The commenters believe that if the EPA is intent on utilizing a program similar to the STAR program, it should be voluntary and exempt the operator from the 26,000 hour replacement interval. One commenter (4159) notes that it appears that some proposed NSPS requirements may be based on preconceived notions from the STAR program and not substantiated by a thorough cost-benefit analysis. The commenter states that codifying existing, prevalent practices in an NSPS is neither necessary nor cost effective, as the administrative aspects of complying with the rulemaking will add cost without any additional environmental benefit.

**Response:** The EPA used data from the Natural Gas STAR program as well as a variety of other sources to estimate emissions from reciprocating and centrifugal compressors, determine appropriate control techniques, and estimate the costs of those controls. We documented the data sources we used in the compressor analyses in the TSD for the proposed rule. Additionally, we documented our data sources in additional compressor analyses in the Supplemental TSD for the final standards. While the Natural Gas STAR program was one source of data, it was by no means the only source we relied upon. Since the commenters did not specifically point out which Natural Gas STAR data they believed were inaccurate and did not provide additional data for the EPA to evaluate, we made no changes in response to these comments.

**Comment:** One commenter (4263) suggests that the EPA exclude centrifugal compressor facilities that compress natural gas that is less than 10 percent, weight basis, VOC. The commenter asserts that compression of gas that does not contain VOC (propanes plus) should not be subject to standards for VOC. The commenter states that this is consistent with equipment leak rules which do not regulate components that are not in VOC service. The commenter also argues that due to low VOC content, the Agency should exclude centrifugal compressors in the T&S sector located after the point-of-custody transfer. Another commenter (4270) states that the EPA should suspend rulemaking and expand its fact-finding to include a statistically significant sampling of affected sources. Another commenter urged the EPA to revise §60.5365 to exclude centrifugal compressors not associated with the Crude Oil and Natural Gas Production, Transmission, and Distribution sector (4270).

**Response:** The EPA acknowledges that the VOC concentration in natural gas can vary across centrifugal compressors in different industry segments and within each industry segment. With respect to the suggestion that the EPA develop a specific threshold for VOC concentrations and exempt compressors below such threshold, the EPA determined that the information provided by commenters is not sufficient to warrant a change in the EPA's VOC emissions estimates or to develop a VOC threshold that can be applied universally.

The EPA has however revised the final rule requirements for compressors to apply to the production segment and the natural gas processing segment. The EPA has revised the centrifugal compressor affected facility in the final rule to be wet seal centrifugal compressors located between the wellhead and the point at which the gas enters the transmission and storage segment. Thus, centrifugal compressors with dry seals are not affected facilities. Compressors located at the wellhead and located in the transmission and storage and distribution segments are not affected facilities. We acknowledge the commenters concerns about low VOC emissions and potentially high burden in this segment. The EPA has concluded that additional evaluation of these compliance and burden issues is appropriate prior to taking final action on pneumatic controllers in the transmission and storage segment. See section IX.D of the final rule preamble for further details.

**Comment:** One commenter (3552) requests that the EPA include measures to control emissions from compressor station blowdowns. The commenter argues that several cost-effective control measures exist, such as installing automatic engine control systems, keeping engines pressurized during shutdowns, routing the blowdown vent to the fuel gas system, and installing static seals to prevent rod packing leaks.

**Response:** Under CAA section 111, the EPA has authority to define the source categories, determine the pollutants for which standards should be developed, identify the facilities within each source category to be covered, and set the performance standards for those affected facilities. The EPA is therefore not required to address every single emission source of a listed source category. In any event, with respect to compressor station blowdowns in the development of the proposed rule, the EPA conducted a preliminary screening of oil and gas emissions sources. The EPA's analysis showed that total compressor blowdown emissions are significantly lower on a national level than the other new sources the EPA is regulating under this action. The commenter did not provide information that contradicts EPA's preliminary screening.

**Comment:** One commenter (4184) states that in §60.5420(b)(4)(ii) the rule incorrectly cites the rod packing replacement interval as being 24,000 hours when it should be 26,000 hours, as specified in §60.5385(a).

**Response:** The EPA appreciates the commenter's observation. The EPA intended for the rod packing replacement interval to be 26,000 hours and has corrected the text in §60.5420(b)(4)(ii).

**Comment:** Two commenters (4246, 4192) suggest replacing "if it is located at an onshore natural gas processing plant" with "if it is part of a process unit at an onshore natural gas processing plant" to exclude equipment unrelated to natural gas processing but co-located within the plant boundary from subjecting the natural gas processing plant to subpart OOOO, particularly for pneumatic controllers.

**Response:** The EPA does not agree with the commenters. The EPA does not intend to include equipment unrelated to natural gas processing but co-located within a gas processing plant boundary under the rule. The EPA is not aware that this is a significant issue. In addition, the commenter did not provide sufficient detail to further evaluate the language in the rule.

#### **2.4.1 Applicability**

**Comment:** Four commenters (4192, 4252, 4266, 4268) are proponents of a 43,800-hour standard. In support of this interval, two commenters (4246, 4252) note the EPA's assertion in the NPRM preamble that rod-packing rings might last as long as five years without replacement, and argue that a five-year timeframe better represented the commenter's experience as an

appropriate lifetime for rod packing. The commenters observe that the typical cycle for such operations is five years, and that a 43,800-hour/5-year replacement cycle would best maintain standard industry practices and cost-effectiveness. Two commenters (4209, 4219) not opposed to having an hours-based standard simply suggest more than 26,000 hours as the appropriate interval. One commenter (4233) argues simply for a 5-year maintenance interval, offering no suggestion on an hours-based interval. Two commenters (4251, 4226) who oppose an hours-based requirement nevertheless offer different intervals for rod packing replacement should the Agency decide to keep such a standard. One of these commenters (4226) says the interval should be 40,000 hours at a minimum, based on the company's experience.

One commenter (4227) says the Agency should permit owners and operators to demonstrate compliance by replacing the rod packing within a designated period (e.g., three to five years). This commenter asserts that such flexibility would not lessen the rule's effectiveness, most likely would result in more frequent packing replacement than the hourly operational requirement, and would reduce the regulatory burden of hourly monitoring. The commenter offers language reflecting this suggestion, noting also that changing to a yearly replacement requirement would be similar to management practices for NESHAP area sources under subpart ZZZZ.

Five commenters (4104, 4228, 4229, 4264, 4265) not opposed to having an hours-based standard variously suggest 35,000 or 43,800-hour intervals. Proponents of the 35,000 hour standard state that the 35,000 hour interval is consistent with a four-year maintenance schedule that better represented operator experience and practice, is within the range of replacement intervals the EPA identified in the preamble, and is within the Natural Gas STAR Lessons Learned document the EPA cited.

**Response:** The EPA is maintaining the the rod packing replacement period in the final rule. The TSD for the proposed subpart acknowledges in its cost impacts analysis for reciprocating compressors that gathering and boosting compressors and processing compressors operate for only a fraction of the year, and therefore may replace their rod packing at intervals longer than 3 years if the operating hours for the compressor are monitored. For additional flexibility, we are providing in the final rule that operators may change rod packing every 36 months in lieu of monitoring hours of operation. Also, commenters did not provide additional operational data for the EPA to further evaluate the operational standard for reciprocating compressors rod packing.

In addition, the EPA understands from industry comments from the November 2010 proposal of subpart W of the GHG reporting rule that compressors are shutdown at least every three calendar years for maintenance and therefore, the reciprocating compressor rod packing replacement can be implemented during a regular maintenance schedule. The operational standards for reciprocating compressors in the final rule require replacement of the rod packing based on usage. The rod packing must be changed every 26,000 hours of operation. Alternatively, owners

or operators can elect to change the rod packing every 36 months in lieu of monitoring compressor operating hours. However, this final rule does not apply to compressors located in the transmission and storage segment.

**Comment:** One commenter (4266) recommends that the definition of centrifugal compressor exclude centrifugal compressors associated with vapor recovery because shutdowns to replace seals would increase emissions as compared to waiting for the next scheduled process shutdown. The commenter suggests modified text to §60.5430 to exclude such compressors.

**Response:** The final rule contains standards for wet seal centrifugal compressors located between the wellhead and the point at which the gas enters the transmission and storage segment. A dry seal centrifugal compressor is not an affected facility in the final rule. The control option in the final rule is to reduce VOC emissions by 95 percent, which may be achieved by routing captured seal-oil gas to a control device, such as the compressor suction, fuel gas system, or flare. The EPA determined this control system is cost-effective for new, modified, and reconstructed facilities.

**Comment:** In support of permitting design flexibility, one commenter (4192) asks the EPA to revise proposed §§60.5410(b) and 60.5415(b) to provide the option of achieving compliance with a dry seal “or an equivalent wet seal system.” The commenter says that although it supports the dry seal standard for centrifugal compressors, there are circumstances where it is impractical or infeasible to install a dry system. One commenter (4241) recommends that the EPA retain the option of using wet seals to control emissions, although dry seals are likely to be used in most cases. Two commenters (4192, 4246) request that §60.5380 be modified to allow for wet seal systems upon startup, when equivalent to dry seal systems. The commenters argue that wet seal systems might be the only viable options for some situations because of housing design or operational requirements. One commenter (4246) also requests that §60.5410(b) be modified to include the option of an equivalent wet seal system. One commenter (4158) requests that existing wet seal compressors not be deemed affected by the proposed rule. A second commenter (4233) asserts simply that the Agency should permit operators to control emissions from wet seals. However, this commenter recommends that the Agency permit the use of wet seals combined with a capture device, asserting that modifying or replacing a wet seal with a dry seal could be cost-prohibitive or technically impossible. One commenter (4246) conditionally supports the dry seal standard for centrifugal compressors, if the EPA would permit owners and operators to achieve compliance with a dry seal “or an equivalent wet seal system.” Another commenter (4263) suggests the EPA permit routing back to a process as a compliance option. Additionally, one commenter (4249) requests that wet seals be allowed on new centrifugal compressors if VOC emissions are equivalent to dry seal emissions. Another commenter (4254) agrees with the use of wet seals with a closed vent system and control device as an acceptable alternative to dry seals for centrifugal compressors. Yet another commenter (4263) recommends allowing the use

of wet seal systems provided that emissions are routed to a control device or back to a process. In addition, capturing emissions from wet seal systems and routing such emissions to a process or to a control device may result in a greater reduction in overall emissions. One commenter (4164) says the rule should permit wet seal systems on new centrifugal compressors if an operator can demonstrate that the emissions would be similar to a compressor with a dry seal. This commenter says having such an option would give the operator design flexibility should one seal system design be preferable to the other in a given context. Objecting to the EPA's proposal to require a particular type of technology, a commenter (4220) says there are wet seals now on the market that can achieve performance as good as, or better than, dry seals, and that the Agency did not provide for the use of equally performing equipment. The commenter argues that the EPA had not demonstrated whether dry seals were superior to wet seals, and says that for turbine drive compressors, some manufacturers already provide wet seal gas recovery systems that result in no emissions. Another commenter (4193) recommends exempting centrifugal compressors from the requirement where the owner or operator is unable to retrofit the compressor with dry seals.

**Response:** See Section IX.D of the final rule preamble for further discussion.

**Comment:** One commenter (4222) notes that the applicability definition for compressors in §60.5365 refers to “compressors located between the wellhead and the city gate.” The commenter states that most Alaskan facilities do not supply their product to a city gate and that the product is typically used on-site or re-injected. The commenter then concluded that compressors located in such Alaskan facilities would not be subject to the applicability definitions of §60.5365.

**Response:** In regards to compressors in Alaskan facilities that move gas primarily for on-site purposes or for re-injection, the EPA directs the commenters to the facility definitions in §60.5365. For compressors, an affected facility in the final rule is defined as a single compressor located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment, except at a well site. Therefore, a compressor located at a facility in Alaska, as described by the commenter, would not be subject to the NSPS subpart OOOO if it is located at a well site or after the point of custody transfer to the natural gas transmission and storage segment.

#### **2.4.2 Number of Compressor Affected Facilities**

**Comment:** Three commenters address the EPA's definition of “affected facility.” One commenter (4240) agrees with the Agency interpretation that each compressor is an affected facility, because each compressor was an “apparatus,” and because installing a new replacement compressor was “construction” given the definition of the term in 40 CFR 60.2 of “fabrication, erection, or installation of an affected facility.” Another commenter (3475) describes the EPA as imposing an undue burden on operators and regulators by applying a narrow definition of

“affected facility.” This commenter asserts that the Agency definition of the term would mean regulation of individual pieces of equipment, rather than of complete well sites or plants. A third commenter (4251) asks the EPA to confirm that as proposed, §60.5380 would apply only to the compressor itself and to the installation of new compressors (including replacement of existing compressors) after August 23, 2011, and not to modification of other turbine components. Finally, this commenter (4251) asks for confirmation that replacing reciprocating compressor rod packing after August 23, 2011 on a compressor installed before that date would not constitute installing a new compressor or modifying an existing compressor, because such a replacement would not result in increased VOC or natural gas emissions.

**Response:** The EPA confirms that each compressor is an affected facility. As one comment notes, this definition is consistent with the General Provisions in 40 CFR 60.2, which defines “facility” to include an apparatus. The EPA has previously issued NSPS that apply to individual equipment on a plant instead of the whole plant. We disagree with the comment that the affected facility definition would impose an undue burden on owners and operators. Our analysis shows that the standards are cost effective. The commenter also provides no support for its claim of undue burden. Concerning the comment on whether replacing rod packing would constitute a modification, we reiterate that §60.14 defines modification. We believe it unlikely that rod packing replacement would be a modification.

**Comment:** Noting that the cost of retrofitting wet seals to dry can be as high as \$1 million, one commenter (4192) further asserts that such a retrofit is cost-prohibitive. Another commenter (4270) agrees that the actual cost of replacing wet seals is significantly higher than the Agency’s estimate of approximately \$270,000 for equipment and \$540,000 for installation, with a reduction in emissions under the proposal costing \$23,000/ton of VOCs rather than the EPA estimate of \$3,485/ton. One commenter (4266) says that because the analysis in the TSD addresses only centrifugal compressors in the processing and transmission and storage segments, the EPA had no cost-benefit data to support regulating compressors in the gathering and boosting sector, and should exclude this sector from the rule. Five commenters (4158, 4218, 4263, 4246, 4265) agree that in some circumstances, it would be too costly or technologically infeasible to replace wet seals with dry ones. Four commenters (4218, 4219, 4233, 4246) say a conversion from wet to dry seals could cost anywhere from \$600,000.00 to \$1 million. One commenter (4263) states that retrofitting compressors equipped with wet seal systems with dry seal systems is cost-prohibitive. The commenter states that in the case of a unit that undergoes modification, changing to dry seal could be cost prohibitive or technically impossible. Two commenters (4146, 4265) request that existing centrifugal compressors be excluded from the proposed rule. The commenters state that existing units with wet seals could face major redesign or rebuild costs if they become subject to the rule as a result of a rebuild or modification. One commenter (4254) adds that for some existing units that are modified, changing to a dry seal may be cost prohibitive or technically impossible.



**Response:** See section IX.D of the final rule preamble.

**Comment:** Citing information and calculations from an EPA study, a commenter (4270) says the Agency should recognize a broad disparity between seal oil degassing rates, and recalculate emissions based on the mean number rather than an average that excludes the zero emissions. The commenter further asserts that other reasons for more fact-finding are the variability in the Agency study of the volume of methane emissions from wet-seal degassing in any given compressor, and the reliance on an assessment examining natural gas losses at only 0.6 percent of the estimated 726 gas processing plants in the United States.

**Response:** With regards to the commenter's request about revising the emissions factor using zero-values, the EPA does not agree with the commenter. When determining the methane emission factor for venting from centrifugal compressor wet seal degassing, as part of its methodology the EPA removed the zero emissions values as not valid based on the intended function of the seal oil system. The EPA expects seal oil to absorb the gas in the compressor gas under high pressure and then to release that absorbed gas when the seal oil is returned to atmospheric pressure in the sump. The EPA also acknowledges the possibility that bulk gas in the compressor case can be entrained in the seal oil piping where it reaches the atmosphere at the seal oil sump. Zero emissions implies that the seal oil pressure setting is sufficiently high to allow seal oil to be forced into the gas where it can damage the compressor and accumulate in the pipelines downstream. Therefore, the EPA excluded the zero emission data points when determining the mean emissions from centrifugal compressor wet seals. Regarding the commenter's statement that this action affects only 0.6 percent of gas processing plants, the EPA clarifies that its promulgation of centrifugal compressor seal oil degassing NSPS is based on consideration of the emissions source itself which is the degassing vent(s), and the EPA considers this emissions source to be significant with available and cost-effective control options.

### **2.4.3 Centrifugal Compressor Wet Seals**

**Comment:** One commenter (4270) asserts that the following are disadvantages to retrofitting: the necessity for compressor head machining; changes in compressor rotor dynamics; increased susceptibility to failures due to reverse rotation, or due to dirt or liquids in the gas; and high assembly complexity.

**Response:** The EPA has concluded that dry seals are not the BSER for all new and modified centrifugal compressors. Instead, the EPA separately evaluated the control options for wet seal compressors. The EPA has identified one control option through its review of available information, including comments and other information obtained since proposal. The option is to

reduce VOC emissions by 95 percent, which can be achieved by routing captured seal-oil gas to a control device, such as the compressor suction, fuel gas system or flare. See section IX.D of the final rule preamble.

**Comment:** One commenter (3528) asks the EPA to confirm that a centrifugal compressor is not “on a well site” if the compressor served multiple well sites from an associated pad in proximity to a well site, and consequently, would not be an “affected facility” subject to the rule.

**Response:** The final rule contains standards for wet seal centrifugal compressors located between the wellhead and the point at which the gas enters the transmission and storage segment. The final rule does not include standards for compressors at the wellhead. The EPA has clarified the final rule to also exclude compressors located adjacent to the well site that service one or more wellheads from an associated site.

#### *2.4.3.1 Control Options – Replace with Dry Seal*

**Comment:** Regarding the EPA’s proposal to set an equipment standard requiring dry seals for centrifugal compressors, one commenter (4170) supports the standard as proposed. This commenter agrees with the Agency that dry seal systems are BSER for reducing VOC emissions from such compressors, and notes further that dry seals reportedly reduce operational costs, maintenance costs, and methane emissions as well. Another commenter (4275) recommends that the EPA require owners and operators to replace wet seals on existing compressors with dry seals, because dry seals represented the best-demonstrated technology, are an important component in protecting human health and the environment, and are consistent with the law.

**Response:** See section IX.D of the final rule preamble.

**Comment:** Although supporting the dry seal requirement, another commenter (4240) argues that the EPA must investigate whether to require dry seal centrifugal compressors as BSER, and prohibit new installations of reciprocating compressors.

**Response:** Centrifugal and reciprocating compressors are unique types of equipment that satisfy the variety of compression needs in oil and gas operations. The EPA does not intend, in this rule, to prohibit new installations of reciprocating compressors because rod packing emissions from reciprocating compressors can be controlled. Therefore, the EPA is requiring separate control standards for reciprocating and centrifugal compressors. See sections V.B and IX.D of the final rule preamble.

**Comment:** One commenter (4240) asserts the Agency must require the use of tandem or double-dry seal systems as BSER, because tandem seals substantially improved emissions control.

Another commenter (4159) argues that the Agency had not demonstrated the superiority of dry seals and should not mandate using a particular type of technology.

**Response:** In the final rule, the EPA is requiring standards for wet seal centrifugal compressors located between the wellhead and the point at which the gas enters the transmission and storage segment. A dry seal centrifugal compressor is not an affected facility in the final rule. See section IX.D of the final rule preamble.

**Comment:** One commenter (4159) says the EPA should set a performance standard rather than mandate using dry seals. Another commenter (4251) supports the proposed use of a technology-based operational standard for centrifugal compressors as opposed to an emissions-based standard.

**Response:** See section IX.D of the final rule preamble.

**Comment:** One commenter (4245) asserts that the EPA should implement the switch from wet to dry seals by setting requirements for compressor manufacturers. The commenter recommends replacing the proposed rule with a “stipulation to state agencies” to examine gas compressor integrity as “part of the normal process of engine testing, maintenance and recordkeeping.”

**Response:** In response to the comment on dry seals, the final rule contains standards for wet seal centrifugal compressors located between the wellhead and the point at which the gas enters the transmission and storage segment. A dry seal centrifugal compressor is not an affected facility in the final rule. The EPA also clarifies that the emissions source being regulated by this action is related to compressors and not engines, and the emissions source being regulated by this action does not involve combustion.

**Comment:** A commenter (4245) further recommends phasing out wet seal pumps for wet seal centrifugal compressors over a five year period as they need to be replaced.

**Response:** The EPA does not agree with the commenter. This rule intends to control emissions from new, modified, and reconstructed wet seal compressors located between the wellhead and point at which gas enters the transmission and storage segment by reducing VOC emissions from the seal fluid degassing system by 95 percent. See section V.B of the final rule preamble.

**Comment:** One commenter (4219) states that methane, not VOCs, is the substance emitted from wet seals used for processed gas, and that it is unreasonable to compel owners and operators to spend half a million dollars to reduce already de minimis VOC emissions. This commenter asserts the rule should not apply to facilities midstream or downstream, which are the ones

handling processed gas. One commenter (4246) states that in some situations, a wet seal system may be the only viable control option, and that dry seal conversions are impractical for some compressors due to housing design or operational requirements.

**Response:** The EPA does not agree with the commenter that operators would need to spend half a million dollars to comply with the requirements for centrifugal compressors in this rulemaking. The final rule requires 95 percent reduction of the emissions from each wet seal centrifugal compressor affected facility, which can be achieved by capturing and routing the emissions to a control device that achieves an emission reduction of 95 percent. The EPA determined the BSER for new, wet seal centrifugal compressors is cost-effective for compressors located between the wellhead and point at which gas enters the transmission and storage segment.

**Comment:** A commenter (4164) says that codifying a requirement to use dry seals on centrifugal compressors is unnecessary, because the practice is already the industry standard.

**Response:** As explained in the preamble, the final rule contains standards for wet seal centrifugal compressors located between the wellhead and the point at which the gas enters the transmission and storage segment. A dry seal centrifugal compressor is not an affected facility in the final rule. See section IX.D of the final rule preamble.

**Comment:** One commenter (4273) is concerned with the requirement that centrifugal compressors use "dry seals" rather than setting a performance standard. The commenter states that there are wet seals that can achieve the same performance or better performance than dry seals. The commenter states the EPA has not demonstrated that dry seals are by definition superior to wet seals and provides no option in the proposed rule for the use of equally performing equipment. The commenter states that the EPA should not mandate a particular type of technology and that CAA section 111 indicates that a performance standard should be imposed.

**Response:** See section IX.D of the final rule preamble.

#### **2.4.4 Reciprocating Compressors – Rod Packing Replacement**

**Comment:** Five commenters (4104, 4158, 4193, 4268, 4185) suggest that the EPA set a maintenance standard instead of, or as an alternative to, the 26,000 hour operational standard. One commenter (4158) argues that a "condition-based maintenance program" is the best way to manage costs and reduce emissions. One commenter (4193) observes that current practice is to monitor reciprocating compressors for leaks and replace equipment at appropriate intervals. One commenter (4185) suggests text that would require owners or operators to maintain and operate reciprocating compressors "consistent with good air pollution control practice for minimizing

emissions,” to use quarterly ultrasound measurements or metering for leak detection, and to replace the rod packing within 180 days of detecting a leak greater than 2.0 standard cubic feet per minute.

Another commenter (4158) reports that, in routinely monitoring for leaks and using a “financial objective based on a targeted payback period,” its company determined the most cost-effective time for packing replacement. One commenter (4266) suggests rule text for §§60.5385(a), 60.5415(c)(2) and 60.5420(b)(4) permitting owners or operators to specify the frequency interval for rod packing replacement in terms of a set number of hours, years, or in a preventive maintenance plan designed both to maximize the reliability of the reciprocating compressor and minimize VOC emissions. This commenter’s suggested changes would require that the owner or operator conduct and monitor operations according to the chosen option for packing replacement.

One commenter (4251) says the interval should be 50,000 hours of operation, with a requirement for conducting periodic monitoring and preventive maintenance to detect and correct leaks throughout the life of the packing. However, this commenter says the preferred approach would be a periodic monitoring program and “as needed” rod packing replacement.

Six commenters (4104, 4185, 4214, 4228, 4229, 4265) argue for a “condition-based” or preventive maintenance program as an option to the hours-based standard. These commenters say such programs would reflect safety, maintenance, and replacement practices in the industry; and should include requirements to assess performance by measuring the rod packing leak rate. Three commenters (4229, 4251, 4265) request that the EPA change the rule text to require a rod maintenance program, rather than a replacement program.

Two commenters (4104, 4228) state that owners and operators should document condition-based maintenance/replacement procedures and leak rate results, and retain these records under subpart OOOO. The commenters (4104, 4228) assert that the measurement should be in accordance with standard practices defined in subpart W; and that the standard should require maintenance/replacement, respectively, within nine months or three months of discovering a leak rate exceeding 150 scfh or at the next unit shutdown, whichever is sooner. Another commenter (4185) asserts that a leak rate of 2.0 scfm or more should be the emissions threshold for rod-packing replacement.

One commenter (4039) states that the EPA should permit replacing rod packing based on periodic monitoring, which would give owners and operators additional flexibility – particularly on units already subject to monitoring requirements under the Greenhouse Gas Mandatory Reporting rule. The commenter believes the final rule should refer to rod packing maintenance rather than rod packing replacement. The commenter suggests operators could use proven

maintenance practices to address rod packing leakage without replacing all of the components. Second, the commenter recommends increasing the time before maintenance work is required from 26,000 hours of operation to 43,500 hours of operation, based on the typical maintenance outage schedule. The commenter suggests requiring owner/operators to implement a program of condition-based maintenance or predictive maintenance to avoid possible leaks. Third, the commenter suggests requiring testing the leak rate of the packing every subsequent 8,760 hours of operation after the initial 43,500 hours of operation to determine if maintenance work is required. The commenter recommends a leak rate of 150 standard cubic feet per hour (scfh) in determining whether rod packing maintenance (including component replacement) would need to occur.

With regard to the same subject of rod packing, two commenters (4249, 4254) agree that the final rule should refer to rod packing maintenance rather than rod packing replacement for the same reasons as above and because replacement could cause wasteful discard of fully or nearly full functioning equipment. However, these commenters recommend allowing up to 35,000 hours of operation before requiring maintenance or replacement of rod packing. One commenter (4249) supports condition-based maintenance that would assess rod packing leak rate performance against industry standards and maintain or replace the rod packing within nine months if the leak rate exceeds a threshold such as 150 scfh and continued use of the packing beyond 35,000 hours if it has been properly maintained and has an acceptable leak rate.

**Response:** The EPA has determined that a 26,000 hours-of-operation or every 36 months fixed replacement period for reciprocating compressor rod packing will control rod packing emissions. The EPA reviewed comments that suggested establishing a monitoring and repair program and reviewed options for establishing a potential emission limit for replacing reciprocating compressor rod packing. However, the EPA determined that an emission limit for rod packing is not appropriate, given that emissions tend to increase continuously over time and the limited available data depicting that change. Some commenters have requested that the EPA adopt a specific emissions limit of 150 scf/hour, but did not provide new data or information to allow the EPA to evaluate the derivation of that proposed limit. Based on these factors, the EPA is retaining the 26,000 hour fixed replacement period requirement for operators to replace their reciprocating compressor rod packing. In addition, we are providing flexibility by providing in the final rule that operators may change rod packing every 36 months in lieu of monitoring hours of operation.

**Comment:** One commenter (4266) said the Agency should exempt reciprocating compressors in the transmission and storage segment located after the point of custody transfer, because there is low VOC content in natural gas from that segment. Another commenter (4104) argued that even without regard to fundamental flaws stated in the five factors or methods, there still would be only trivial and inconsequential VOC reductions relative to the national VOC inventory. The

commenter observed that achieving VOC reductions of one percent of the national anthropogenic VOC inventory would require over 21,000 regulations at 6.9 TPY, and that the EPA's estimated annual VOC reductions for compressors was similarly inconsequential. Nor, said the commenter, had the EPA adequately considered administrative burdens associated with reporting, recordkeeping, and permitting. The commenter asserts that the trivial, incremental emissions reductions that would result from the rule failed to justify the associated compliance costs, and that the final rule should exclude transmission and storage sources. Another commenter (4228) expressly requests that the EPA reanalyze VOC emissions reductions and reassess whether the rule would be cost-effective.

**Response:** The EPA agrees with the commenters that costs are an important consideration in a rulemaking. In fact, the EPA believes that such consideration is particularly important here given that coverage of the transmission segment would result in a significant number of sources, and owner and operators being subject to the rule that are not subject to the current standards. We have concluded that additional evaluation is appropriate prior to taking final action on reciprocating compressors in the transmission and storage segment.

For the reasons stated above, the requirements for reciprocating compressors in the final rule apply to affected facilities located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment. Our current data indicate that the VOC content of the natural gas used in the transmission and storage segment is low, whereas the natural gas used in the segments we are regulating has a higher VOC content. See section IX.D of the final rule preamble.

**Comment:** One commenter (4170) says it supports the Agency's analytical approach of looking at industry experience with the Natural Gas STAR program and other sources to substantiate a finding of 26,000 hours (equivalent to 3 years of operation) as a cost-effective, reasonable, and adequate rod packing replacement standard.

**Response:** We appreciate the commenter's support of the methodologies used to develop subpart OOOO.

**Comment:** Two commenters (4170, 4274) support the proposed operational standard of replacing rod packing based on 26,000 hours of usage for reciprocating compressors. They call the proposed standard "imperative" and assert that it would create industry savings.

**Response:** The EPA appreciates this comment.

**Comment:** One commenter (4274) says the Agency should adopt a procedure for verifying operating hours and determining whether owners and operators made timely replacements.

**Response:** The commenter has not provided an explanation as to why they do not believe that the proposed recordkeeping and reporting requirements for verifying operating hours are insufficient. The EPA believes that the current requirements of recordkeeping and an annual report of the cumulative number of hours of operation or the number of months since the previous reciprocating compressor rod packing replacement provides verification of timely rod packing replacements. The recordkeeping requirement will provide documentation that the engine is operating in compliance with the rod packing requirements, and the reporting requirement will provide the EPA a way to track rod packing replacements.

**Comment:** One commenter (4274) states that although the EPA’s proposal codified standard industry practices reflecting appropriate and effective measures for reducing emissions, the Agency rulemaking action is necessary to bring all of the industry to the same standard as responsible companies.

**Response:** The EPA appreciates this comment.

**Comment:** One commenter (4104) states that requiring reciprocating compressor rod packing replacement could lead to wasteful discard of functioning components and equipment, or to stifling innovation in rod packing maintenance. This commenter says setting a blanket standard number of hours for rod-packing replacement could allow units to continue operating after significant leaks occurred or require premature replacement of working systems. The commenter adds that if all of these equipment components were in good working condition, there would not be leaks substantial enough to justify replacement at the “overly prescriptive interval” of 26,000 hours. The commenter says the 26,000-hour standard could result in prematurely removing properly functioning equipment, adding unnecessary operational costs; could eliminate incentives for developing superior rod-packing technologies; and could increase emissions due to more frequent maintenance-related start-up and shutdown.

Four commenters (4185, 4214, 4233, 4251) say the 26,000-hour standard could lead to unnecessary down time and equipment replacement.

Two commenters (4241, 4251) support the EPA’s use of an operational standard to address fugitive emissions from piston rod packing wear; however, state that a requirement to change out rod packing at 26,000 hours of operation could prematurely remove properly functioning equipment, result in an expensive and infeasible maintenance program, and undermine the incentive to develop superior rod packing technologies.

One commenter (4219) endorses an alternative method based on operation time as opposed to a leak-based threshold, and supports the EPA’s proposal to allow for coordinating packing



replacement with planned maintenance shutdowns before operating hours reached the designated level.

Two commenters (4104, 4228) state that the EPA's analysis assumes that there would be no rod packing replacement and maintenance in the absence of the proposed rule, but the commenters believe the rule would yield a small fraction of total industry reductions given existing practices.

**Response:** With regard to premature replacement and stifling innovation, the EPA acknowledges that rod packing replacement and maintenance occurs in the absence of the final rule. The TSD for the proposed subpart OOOO explains that rod packing emissions increase as the packing components wear, and the EPA understands that rod packing must be replaced periodically to ensure the mechanical integrity of the compressor. The EPA has promulgated the rod packing replacement requirements based on VOC control which may require replacement of the rod packing before the point at which the rod packing has mechanically deteriorated. The EPA believes that the benefits of VOC control warrant the rod packing replacement requirement.

The replacement period for reciprocating compressor rod packing was determined based on industry information from the Natural Gas STAR Program. As discussed above, the EPA is retaining the rod packing replacement period in the final rule. The background TSD for the proposed subpart OOOO rule acknowledges in its cost impacts analysis for reciprocating compressors that gathering and boosting compressors and processing compressors operate for only a fraction of the year, and therefore will replace their rod packing at intervals longer than 3 years if the operating hours for the compressor are monitored. For additional flexibility, we are providing in the final rule that operators may change rod packing every 36 months in lieu of monitoring hours of operation. Also, commenters did not provide additional operational data for the EPA to further evaluate the operational standard for reciprocating compressors rod packing.

With regards to unnecessary operational costs and downtime, industry comments from the November 2010 proposal of subpart W of the GHG reporting rule state that compressors are shutdown at least every three calendar years for maintenance and therefore, the reciprocating compressor rod packing replacement period is based on a typical maintenance shutdown cycle.

**Comment:** One commenter (4185) says its suggestions are consistent with practices at its facility, and notes further that the EPA should make the standard for rod packing replacement consistent with the associated maintenance standard for engines subject to subpart JJJJ. This commenter also notes that the EPA should make the standard for rod packing replacement consistent with the associated maintenance standard for engines subject to subpart JJJJ. To that end, the commenter suggests the Agency model the rule on §60.4243(b)(2)(ii), and require owners or operators to maintain and operate reciprocating compressors “consistent with good air pollution control practice for minimizing emissions.”

**Response:** Regarding consistency with associated maintenance standard for engines subject to subpart JJJJ, the EPA has determined that immediately replacing the rod packing after 26,000 hours of operation or after 36 months will control rod packing emissions. The EPA reviewed comments that suggested establishing a maintenance and repair program and reviewed options for establishing a potential emission limit for replacing reciprocating compressor rod packing. However, the EPA determined that an emission limit for rod packing is not appropriate, given that emissions tend to increase continuously over time and the limited available data depicting that change.

**Comment:** In contrast to other remarks endorsing the Natural Gas STAR program, a commenter (4268) says that for reciprocating compressors, the program is duplicative and would not provide significant benefit over a reasonable, proactive replacement schedule. The commenter states that if the EPA uses the Natural Gas STAR program, the program must be voluntary, with participants exempted from the 26,000-hour replacement interval.

**Response:** The EPA used available information on viable emission reduction technologies and practices from the Natural Gas STAR program and other sources and conducted analyses with this best available information to inform the development of this rulemaking. The operational standards for reciprocating compressors in the final rule require replacement of the rod packing based on usage. The rod packing must be changed every 26,000 hours of operation. Alternatively, owners or operators can elect to change the rod packing every 36 months in lieu of monitoring compressor operating hours. The EPA also clarifies that the Natural Gas STAR Program is a voluntary partnership to reduce methane emissions cost-effectively and is a separate activity from this rulemaking. This NSPS action is not being used in lieu of Natural Gas STAR, or vice versa.

**Comment:** One commenter (4270) opines that the EPA is mistaken in assuming that replacing compressor rod packing necessarily would reduce or eliminate leaks. The commenter asserts that reducing leaks depends upon related issues such as rod alignment, compressor-rod coating deterioration, and condition of crossheads; all these, the commenter asserts, can damage new compressor rod packing soon after installation. Another commenter (4193) notes that by reconditioning or rebuilding the system, it might be possible to restore performance without replacing the packing.

**Response:** We appreciate the commenter's concerns for the rod packing replacement period. The EPA is aware rod packing emissions are a result of the fit of the rod and the packing and that there is variance in the rate of packing wear from one compressor to another. However, there is not enough publically available data to appropriately characterize this variance. Therefore, we determined an operational standard for rod packing replacement..

#### *2.4.4.1 Replacement Frequency – Hours of Operation versus Time in the Field*

**Comment:** One commenter (4240) says that if the EPA continued to permit the use of reciprocating compressors, the Agency must strengthen the rod-packing standard by evaluating a more aggressive replacement schedule (i.e., less than the proposed 26,000 hour operating threshold as the trigger for packing replacement). Acknowledging that such a schedule might result in further cost savings to operators through avoided methane losses, the commenter argues that the Agency still is obliged to go beyond requiring only those emissions reductions that would be profitable to the operator.

**Response:** The EPA acknowledges the commenter's suggestion to reduce the proposed 26,000 hour reciprocating rod packing replacement period; however, the EPA does not agree that shortening the replacement period will necessarily increase cost saving for operators. The EPA has determined that the additional cost of shortening the replacement period does not justify the additional emissions reductions. The EPA has decided to retain the 26,000 hour-of-operation fixed replacement period, and in addition, the EPA is providing further flexibility by allowing operators to change the rod packing every 36 months in lieu of monitoring hours of operation.

**Comment:** One commenter (4266) references an assertion in the preamble that the rule should permit owners and operators to complete rod-packing replacement during a normally scheduled maintenance shutdown. One commenter (4191) states that because most operators routinely track the number of hours a compressor operates, the EPA should require tracking according to actual operating hours.

**Response:** The EPA appreciates the comment; however, we are retaining the 26,000 hours fixed replacement period requirement. The EPA believes that the 26,000 fixed replacement period allows owners and operators to complete rod-packing replacement during a normally scheduled maintenance shutdown at the owner and operators' discretion. In addition, the EPA is providing flexibility by providing in the final rule that operators may change rod packing every 36 months in lieu of monitoring hours of operation.

**Comment:** One commenter (4245) requests that the requirement to replace reciprocating compressor rod packing at a fixed time interval be changed so that the emissions source is regulated through testing, maintenance, and recordkeeping. The commenter requests that the requirement be based on the existing State agency normal processes of engine testing, maintenance and record keeping.

**Response:** The EPA disagrees with the commenter that rod packing emissions requirements should be associated with State engine testing, maintenance, and recordkeeping. The emissions

source being regulated by this action is related to compressors and not engines. Therefore, we did not evaluate State testing requirements and the commenter did not provide us with any information on State testing requirements for us to evaluate.

**Comment:** One commenter (4251) requests that the EPA modify the monitoring requirement so that an operation could assume the maximum number of operating hours per year, rather than track the unit's actual operating hours. One commenter (4192) states that, except during periods of down time, the EPA should allow owners and operators to assume that a compressor is operating continuously. One commenter (4241) requests that the EPA modify §60.5385(a) to allow an operator the option of assuming the maximum number of operating hours in a year in lieu of installing an hour meter and tracking the unit's actual hours of operation. Two commenters (4175, 4268) recommend an option of replacing rod packing based on a calendar frequency of 36 months of actual operation. The commenters state that this approach would give owners and operators sufficient operational flexibility and serve the purpose of replacing packing before it is worn and leaking. One commenter (4246) suggests changing §60.5415(c) by permitting owners and operators to monitor a compressor's days operated or downtime, in addition to hours of operation. One commenter (4263) suggests that, rather than setting an impractical continuous monitoring rule, the Agency should follow standards similar to those based on implementation by operating hours that require periodic recording rather than monitoring.

**Response:** In regards to the recommendation to require replacement on a calendar frequency of 36 months of actual operation, the EPA has decided the final rule require replacement of the rod packing based on usage. When the hours of operation of a reciprocating compressor reach 26,000 hours, the owner or operator is required to change the rod packing immediately.

In order to provide additional flexibility, the final rule allows owners and operators to change the rod packing every 36 calendar months in lieu of monitoring the reciprocating compressor's actual operating hours. Please see section V.B and IX.D of the final rule preamble for more details.

**Comment:** One commenter (4246) suggests that §60.5420(c)(3)(i) and (c)(3)(ii) be modified to add that hours of operation recorded be those since initial startup "at the current location" or the date of publication of the final rule in the *Federal Register*, or the previous replacement of the reciprocating compressor rod packing "since the reciprocating compressor became subject to the rule at the current location." The commenter asserts that the added wording would clarify that subpart OOOO does not apply to compressors that have merely been relocated.

**Response:** The EPA agrees that the NSPS does not apply to relocated compressors and further clarification would be helpful. However, the EPA is not certain that the commenter's suggested revision clarifies the status of relocated compressors. Rather, in the final rule, the EPA revised

§60.5365(b) and (c) to state that the term “commenced construction” does not include relocation.

## 2.5 Storage Vessels

### 2.5.1 Number of Storage Vessels

**Comment:** Eight commenters (4177, 4192, 4231, 4241, 4245, 4246, 4251, 4266) state that the EPA greatly underestimated the number of storage vessels that would be subject to the NSPS. The commenters believe that the EPA should reexamine available data and develop a more realistic impacts analysis.

**Response:** Although some commenters provided anecdotal data to support their claims, these data were localized and based on the proposed throughput applicability metric, which has been replaced in the final rule with an emissions threshold. Thus, the data provided were not adequate to allow for a comprehensive reexamination of the population of storage vessels that would be affected by the final rule.

### 2.5.2 Equipment Costs

**Comment:** One commenter (4240) states that assuming, as the EPA does, that half of facilities use combustion devices and half use VRUs, the proposed rule would achieve significant VOC reductions at just \$143/ton (accounting for additional revenues from recovered condensate). The commenter asserts that this is an eminently reasonable control cost, and is reflected in the wide use of vessel emissions control measures throughout the industry.

**Response:** We agree with the commenter that the storage vessel rules are reasonable and cost effective. Please see the RIA for further details of our cost effectiveness calculations for storage vessels.

**Comment:** Four commenters (3447, 3468, 4255, 4472) are concerned that storage vessel control costs will be prohibitively expensive for oil and natural gas wells with low production. The commenters are primarily concerned that because many wells are only marginally profitable, particularly in the Midwest and Texas, the additional cost of installing controls on a storage vessel and conducting performance tests would render the wells to be uneconomical for the many small businesses that operate such wells.

**Response:** The final rule applies only to individual storage vessels with annual VOC emissions of 6 tpy or greater. Our analysis of the associated costs shows that the required controls are cost effective, with average costs of around \$3,400 per ton of VOC reduced. In addition, our analysis of the impacts of the final rule on small businesses shows that they will not be significantly

affected (see Section 4 of this document). It should also be noted that because the rule is an NSPS, it applies only to new, modified and reconstructed storage vessels, and not to the existing storage vessels serving the many existing, low-producing wells in the Midwest, Texas and elsewhere.

**Comment:** Two commenters (4216, 4256) believe that the throughput thresholds would result in unacceptable costs for modified operations, particularly marginal wells. One of the commenters (4216) points out that the storage tank battery system must be designed to manage production when a production site is initiated, and then remains in place as existing wells decline and are plugged, as new wells are drilled and begin production, and as existing wells are reworked to increase production. The commenter notes that when a well is reworked, its production may increase for 6 or 8 months before declining back to its prior flow rate. Thus, the commenter believes, the consequences of normal well field development could result in a storage tank being under the threshold for 1 year, over the threshold the next year and below again the year after. The commenter asserts that under the proposed NSPS, a tank could be over the threshold and require installation of a vapor recovery unit (VRU) or flaring system that would no longer be required by the time it was in place.

The commenter (4216) asserts that control requirements for existing tanks create both economic and safety issues. The commenter believes that a marginal well producing operation would be hard pressed to economically absorb the costs of a VRU or flare system. The commenter also states that as many as 30 percent of existing tanks subject to emissions control could require replacement, primarily because of the potential that the existing tanks would allow oxygen into the vapor recovery process and create an explosive mixture. The commenter concludes that the EPA needs to develop an approach that does not create an unreasonable burden on existing production, particularly marginal well operations, resulting from short-term increases in production.

**Response:** We disagree with the commenters that the final rule will require excessive costs for modified operations or marginal wells. As discussed previously, the NSPS applies only to new, modified and reconstructed storage vessels. The reworking of a well or the introduction of production from a new well does not render the associated existing storage vessels subject to the rule. Thus, the ebb and flow of production associated with normal well field development does impact existing storage vessels.

In addition, for well sites with no other wells in production, the final rule provides a 30-day period after installation, modification or reconstruction of a storage vessel for throughput to stabilize and for the operator to estimate VOC emissions to determine whether a control device will be required. Where control is required at such sites, the final rule provides an additional 30 days for the control device to be installed and become operational. These estimation and

installation periods are not provided in the final rule at well sites with one or more wells already in production.

Finally, as noted previously, our analysis shows that the controls required under the final rule are cost effective for storage vessels with annual VOC emissions of 6 tpy or greater. This analysis holds true for modified and marginal operations as well as for new operations.

**Comment:** One commenter (4178) believes that virtually no tank constructed after August 23, 2011 in Oklahoma will be exempted at the proposed throughput levels, which will require more facilities to be permitted, potentially inspected, and required to submit annual reports, thereby increasing the burden for regulatory agencies in areas of heavy natural gas and oil production. The commenter contends that agencies will be required to take manpower and focus away from larger emitting facilities.

**Response:** We do not agree with the commenter that the requirements of the final rule for storage vessels are overly burdensome. As noted above, under the final rule, applicability for storage vessels is based on annual VOC emissions, rather than on throughput. This may reduce the number of new storage vessels in Oklahoma that are subject to the NSPS, depending on a number of parameters related to the storage vessels and the fluids being stored.

In addition, the EPA reexamined the proposed notification, recordkeeping and reporting requirements, and reduced these requirements where warranted. As a result, operators of storage vessels will not be required to submit, and permitting authorities will not be required to review, the notifications of construction, startup and modification in §60.7(a)(1), (3) and (4) of the NSPS General Provisions as proposed. Although annual reports will still be required for storage vessels, these reports will only be required to identify those affected vessels that were installed, modified or reconstructed during the reporting period. Thus, we believe that we have reduced these requirements to the essentials necessary to assure compliance.

As proposed, the final rule exempts area source affected facilities from title V permitting, and we do not expect most storage vessels to be subject to major NSR permitting under the CAA. Where state minor source permitting regulations require permitting of storage vessels based solely on their status as affected facilities subject to an NSPS, we note that this is not a requirement under the CAA.

**Comment:** One commenter (4178) asserts that it is industry practice to not maintain records of the throughput of each individual tank; rather, total load out records are kept, which only show the total volume, rather than the volume at each individual tank. The commenter believes that putting the mechanisms in place to be able to track the totals at each individual tank in addition to the reporting requirements could prove to be a great burden on industry.

**Response:** We do not believe that the concerns expressed by the commenter apply under the final rule. The final rule does not determine applicability based on throughput, nor does it require monitoring of throughput. Instead, operators are required to determine at the outset whether a new, modified or reconstructed storage vessel will have uncontrolled VOC emissions equal to or greater than 6 tpy and, if so, must install controls. The operator is not required to track VOC emissions thereafter.

**Comment:** One commenter (4266) states that infrequently used tanks such as blowdown tanks, emergency tanks, and dehydrator drip tanks were not considered in the EPA's cost effectiveness analysis. The commenter states that for blowdown tanks, the piping system for the combustion device will provide too much back pressure during a blow down event and the safety devices will vent the tanks as they should. The commenter believes the EPA needs to recognize that implementation of this requirement is far more complicated than connecting up existing tanks to combustors. The commenter states the entire tank system would need to be evaluated and possibly replaced with a "code stamped" pressure vessel/tank and appropriately sized and designed safety valves, hatches, and gas piping. Accordingly, the commenter asserts that the EPA needs to fully recognize the associated costs which are substantially more.

**Response:** We do not agree that our analysis inappropriately omitted the retrofitting costs raised by the commenter. As an NSPS, the final rule applies only to new storage vessels; existing vessels would not need to be retrofitted to be controlled unless they were modified or reconstructed. In addition, we note that the cost effectiveness analysis was based on VOC emissions and controls, not type of storage vessel or fluid. This analysis found that controls are cost effective for those storage vessels that emit 6 tpy or more of VOCs, and the final rule applies only to storage vessels with emissions at or above this level. We also note that the definition of storage vessel in the final rule states that surge control vessels and knockout vessels are not storage vessels.

**Comment:** One commenter (4269) indicates that the cost of purchase or prolonged rental of VRUs is grossly underestimated over the life of a well, particularly "stripper" production which may never recover the cost of the prescribed equipment. According to the commenter, the cost of the unit would be \$50,000-\$100,000 plus \$10,000 of piping and installation, and rental of these units can be \$2,000 per month plus piping and installation. The commenter believes that small producers would be required to hire new staff or pay new and additional consulting fees to comply with the EPA proposal, and would be unlikely to recover the investment in purchasing VRUs.

**Response:** The EPA disagrees that the cost of a VRU is unreasonable. We reanalyzed these costs based on comments received and determined that the total capital investment to purchase and



install a VRU is about \$98,000 and the total annual cost (including the annualized cost of capital and annual O&M) is about \$20,000 without accounting for the value of reclaimed materials (which averages over \$1,100 per year). At the minimum level of applicability (6 tpy of uncontrolled VOC emissions), this results in cost effectiveness of around \$3,400 per ton of VOC emissions reduced, which we believe to be cost effective.

In addition, we analyzed the impact of the final rule on small businesses and determined that the rule would not result in significant impacts for a significant number of small businesses. For more on the small business impacts, see the RIA for the final rule, section XI of the preamble to the final rule and section 4 of this document.

**Comment:** One commenter (4158) states that if the EPA intends to extend the control requirements of this rule to storage tanks in the transmission and storage segment, then the EPA should conduct additional cost analysis. The commenter asserts that the cost of control would be well in excess of the average annual cost of \$14,528 included in the EPA's RIA at proposal, and that based on costs solicited from a manufacturer, budgetary expenditure would be approximately \$986,427 for total installed costs including materials and installation for a VRU for one condensate tank with greater than 1 bbl/day throughput. According to the commenter, the present value of annualized costs over a 5-year period ranges from \$632,000 – \$1.57 million including operating expenditure.

**Response:** The EPA disagrees with the commenter that additional cost analysis is necessary for storage vessels in the transmission and storage segment, and with the commenter's estimate of control costs for storage vessels in this segment.

The control requirements of the final rule are based on annual VOC emissions, without regard to the location of the storage vessel within the various segments of the natural gas industry. Thus, it is possible for storage vessel in the transmission and storage segment to be affected by the final rule, although we do not expect a large number of storage vessels in this segment to have VOC emissions greater than the 6 tpy threshold. In any case, our analysis of the costs and cost effectiveness of controlling storage vessel emissions was based on VOC emissions and controls, and the location of the storage vessel is not germane to the analysis. Thus, controls at the 6 tpy level are cost effective no matter where the storage vessel is located. The commenter did not provide any details or rationale for why costs would be greater in the transmission and storage segment, so we were unable to evaluate this assertion.

We revisited our cost analysis for storage vessel controls based on comments received on the proposal. Our revised analysis indicates that total annual costs for storage vessel controls average \$19,864 for 95 percent control without accounting for product recovery, assuming that half of the tanks are controlled with VRUs and half with combustion devices. The commenter did not

provide specific information to support the cited capital and annualized costs for a VRU, so we were unable to evaluate these costs.

**Comment:** One commenter (4266) contends that the EPA's cost for controls of \$18,983 per year is inconsistent with the EPA Air Pollution Control Cost Manual, which addresses enclosed combustors in Section 3.2. The commenter presents a cost analysis purportedly based on the method prescribed in the EPA Cost Manual which results in an annual cost of controls of \$55,207. (The commenter indicates that this cost is conservative in that it includes no costs for data management required by the proposed rule, and it does not adjust for inflation since calendar year 2000.) The commenter presents a cost effectiveness analysis based on this cost that concludes that the threshold needs to be 12 tpy to be cost effective at the EPA's threshold of \$5,000/ton. Numerous other commenters (4177, 4192, 4217, 4220, 4233, 4264, 4281) support this analysis and threshold.

**Response:** As noted above, we reanalyzed control cost for storage vessels based on the comments that we received on the proposal. Our revised analysis show that the average annual control cost for storage vessels (half VRUs and half combustion devices) is \$19,864 without consideration of the value of reclaimed product and \$19,281 considering those savings. These costs represent revisions primarily to account for the operating labor associated with flares. While we are not disputing the Control Cost Manual analysis performed by the commenter, we used a different source of cost information (see the docket for more details). This information was developed specifically for this industry; therefore, we believe it may be more accurate than the more generalized Control Cost Manual analysis.

**Comment:** One commenter (4240) asserts that the EPA's proposal to exempt "small throughput" storage vessels is unlawful. The commenter indicates that the EPA's own calculations show that the annualized cost of installing a VRU is \$18,983 and \$8,909 for a flare – translating into control efficiencies of about \$3,000 per ton of VOC emissions reduced for a VRU (depending on the tonnage of emissions captured) – which are not exorbitant costs. The commenter states that in exchange for these costs, the EPA would significantly reduce VOCs at these facilities. The commenter concludes that these are substantial emissions reductions at fairly low costs and the EPA must, therefore, either abandon or strictly limit the exemption.

**Response:** The EPA disagrees that our threshold for control of storage vessels is inappropriately high. For the final rule, we have set the applicability threshold at 6 tpy of uncontrolled VOC emissions based on our revised control cost and cost effectiveness analysis. The EPA has the latitude to decide which emission points to regulate in setting thresholds.

As noted above, the revised cost analysis indicates that the average annual control cost, not including the value of reclaimed product, is nearly \$20,000. At the applicability threshold of 6

tpy, this translates to a cost effectiveness of about \$3,400 per ton of VOC reduced. We believe that this is a reasonable cost effectiveness value, and our analysis of the final rule's insignificant impacts on small businesses bears this judgment out.

### **2.5.3 Affected Facilities**

#### *2.5.3.1 Definition of storage vessel*

**Comment:** Five commenters (3560, 4258, 4219, 4263, 4266) assert that units such as process vessels, pressure vessels, knockout vessels, separators, open top pit tanks and tanks that receive pigging fluids should not be included in the definition of storage vessel.

**Response:** The EPA agrees with the commenters that process vessels, pressure vessels and knockout vessels should all be excluded from the definition of storage vessel. Process and knockout vessels are typically used within a process to collect material from one unit before being transferred to another, and thus are not used for storage. Pressure vessels are expected to be operated without venting to the atmosphere and are regulated by 40 CFR part 63, subpart HH. However, the EPA disagrees with the commenters that tanks storing pigging fluid discharge are not a storage vessel, as these tanks are storing liquids that have the potential to emit VOC. Therefore, if the vessel meets the 6 tpy VOC threshold, it would be subject the storage vessel requirements.

**Comment:** Four commenters (4241, 4251, 4252, 4320) request that the EPA exclude temporary and mobile storage vessels, such as "frac tanks," from regulation. The commenters variously suggest on-site time limits of 90 days, 180 days, and 12 months to qualify as a temporary or mobile storage vessel.

**Response:** We agree that these temporary tanks are not truly stationary, but believe that 180 days is an appropriate length of time to determine whether the storage vessel is temporary or stationary. Temporary and "mobile" vessels that are intended to be located at a site for 180 days or more will be considered subject to the storage vessel requirements of subpart OOOO. We have also added provisions to subpart OOOO that require records to be kept on the number of days that a temporary or "mobile" storage vessel has been located at a site.

**Comment:** Eight commenters (4104, 4158, 4219, 4220, 4249, 4252, 4265, 4266) assert that the EPA should clarify that the VOC reduction requirement in proposed subpart OOOO would only apply to tanks at production sites. The commenters indicate that a variety of materials convey that this is the EPA's intent.

The commenters state that the proposed rules, however, do not reflect this apparent intent and that additional clarification is warranted. One of the commenters (4104) recommends revising the definition of “storage vessel” in §60.5430 and/or revising the affected source in §60.5365(e) to clearly define the sectors that include subpart OOOO affected tanks.

One of the commenters (4219) contends that applying the VOC control requirement to midstream and downstream tanks would be unreasonable because the product in such tanks tends to have little VOC content, and the cost per ton of VOC reduction for tanks with low VOC content is unreasonably high. The commenter adds that establishing a threshold emission limit of 12 tpy VOC for storage tanks would accomplish this result because storage tanks downstream of gas processing plants typically have lower VOC emissions than tanks at production sites.

Another commenter (4220) similarly states that applicability should be limited to tanks located in the production field, upstream of the “point of custody transfer” between oil production operations and liquid distribution pipeline operations.

In contrast, one commenter (4275) believes that storage vessels used in the Natural Gas Storage and Transmission source category should also be regulated because these are also significant pollution sources.

**Response:** The EPA disagrees with the commenters who contend that storage vessels in the transmission and storage segment of the natural gas industry should not be regulated. The final rule applies to storage vessels based on their uncontrolled VOC emissions, regardless of their location. As discussed above, our analysis shows that VOC controls are cost effective at the final rule’s applicability threshold of 6 tpy without regard to the type of storage vessel, its location or the fluid that is stored.

However, we understand the concern expressed by the commenters based on the proposed rule’s throughput applicability metric. We believe that the shift to VOC emissions as the applicability metric in the final rule will result in few storage vessels in the transmission and storage sector requiring control, as well as other storage vessels handling low VOC materials for which the commenters expressed concern.

**Comment:** Two commenters (4104, 4158) state that if the EPA intends to regulate tanks in the transmission and storage segment, it has not supported the regulatory basis for the decision, and the EPA needs to complete additional analysis. One of the commenters (4104) indicates that, for example, the preamble cost-benefit discussion on tanks is based solely on production sources, and the EPA has not provided analysis on VOC emissions, prevalence of affected sources, costs of controls, or relative cost-benefit for tanks in the transmission and storage segment.

**Response:** As discussed above, the EPA disagrees with the commenters that additional cost analysis is necessary for storage vessels in the transmission and storage segment. Applicability under the final rule is based on annual VOC emissions, without regard to the location of the tank within the various segments of the natural gas industry. Thus, it is possible for storage vessel in the transmission and storage segment to be affected by the final rule, although we do not expect a large number of tanks in this segment to have VOC emissions greater than the applicability threshold. In any case, our analysis of the costs and cost effectiveness of controlling storage vessel emissions was based on VOC emissions and controls, and the location of the storage vessel is not germane to the analysis. The commenter did not provide any details or rationale for why costs would be greater in the transmission and storage segment, so we were unable to evaluate this assertion.

**Comment:** One commenter (4039) states that the EPA should evaluate an alternative threshold of tank volume to determine rule applicability for storage tanks that are not located at processing facilities. The commenter contends that the proposed approach (requiring 95 percent control of VOC emissions on tanks with throughput or 1 bbl/day of condensate or 20 bbl/day of crude oil, along with initial performance tests continuous monitoring) be valid for tanks that are in a processing facility, but this requirement is very cumbersome to implement for most smaller storage tanks in the field that do not have flow indicators or meters that allow the operator to know the throughput at any given point in time. The commenter points out that most small storage tanks in the field are allowed to accumulate liquid products and then emptied when reaching a certain capacity, and that these field storage tanks are designed so that they can be emptied at a reasonable interval, usually monthly or quarterly. The commenter requests that the EPA evaluate an alternative threshold of tank volume to determine rule applicability for tanks that are not located at processing facilities and would suggest a volume threshold of 5,000 gallons. The commenter believes that this approach has the advantages that it is easy to determine and does not change, making it clear whether a tank is regulated or not, and also eliminates the need for extensive recordkeeping for small, remotely located tanks.

**Response:** Under the final rule, controls are required for tanks based on uncontrolled VOC emissions rather than throughput. We believe that this change addresses the commenter's concerns related to storage vessels that are not located at processing facilities.

**Comment:** Five commenters (4192, 4193, 4218, 4231, 4246) commented on whether the EPA should or should not aggregate storage vessels in defining the affected facility.

Two commenters (4193, 4231), referring to proposed §60.5365(e) which states, "A storage vessel affected facility, which is defined as a single storage vessel," assert that a storage vessel affected facility should not be defined as a single storage vessel. The commenters believe that the

affected facility should not be every tank, but instead an entire tank farm or battery, including all tanks that store only condensate or crude oil.

Two commenters (4192, 4246) note that the proposed rule defines a “storage vessel” as “...a stationary vessel or series of stationary vessels that are either manifolded together ...” The commenters understood from the EPA Conference Call on September 9, 2011, that if one storage vessel at a compressor station or natural gas processing plant is replaced, subpart OOOO would only be applicable to the one new storage vessel and not the series of storage vessels that might be manifolded together. The commenters request that the EPA confirm this interpretation in the final rule.

One commenter (4218) states that the definition of “storage vessel” should not include multiple vessels that are either manifolded together or located at a single site in order to avoid imposing significant control costs on vessels with very low emission rates. Other commenters who provided suggested definitions for “storage vessel” also support deleting this language; these suggested revisions appear elsewhere in this section.

**Response:** The EPA agrees that the regulations should apply to each individual storage vessel, which is clearly stated in §60.5365 of both the proposed and final rule. The proposed definition of “storage vessel” confused this issue, and we have revised the definition to reflect this intent. Regarding the situation where one storage vessel at a site is replaced, we agree that only the replacement vessel would become subject to the rule; other existing vessels with which it is manifolded would not become subject, although the owner or operator would have to vent the entire manifold to a control device if the existing vessels share a common vent with the replacement vessel.

**Comment:** One commenter (4230) asks for guidance on implementing the proposed 1 bbl/day exemption and whether sources can install additional condensate storage vessels to lower the annual average barrel throughput.

**Response:** As noted above, the final rule applies to each individual storage vessel based on its annual VOC emissions. Therefore, any questions concerning throughput are no longer relevant.

The EPA notes that subpart OOOO is an NSPS and that under the NSPS program, only new, modified and reconstructed sources are subject to the rule. Thus, we agree with the commenters that new and reconstructed (as defined under part 60) storage vessels are subject to the final rule. Existing storage vessels are not subject to the rule unless they are modified as defined in the final rule at §60.5430 and according to the provisions of §60.14 in the subpart A General Provisions for the NSPS program.

**Comment:** Four commenters (4191, 4192, 4246, 4251) request clarification on when storage vessels are considered modified for purposes of subpart OOOO.

Three commenters (4192, 4246, 4251) point out that existing storage vessels operating below the applicability threshold of the rule could, with the addition of a new well, exceed the threshold. According to two of the commenters (4192, 4246), the EPA verbally stated during the September 9, 2011 NSPS Webinar that an increase in the throughput without a capital expense would not trigger NSPS for these tanks. These commenters request that the EPA confirm in the final rule that an increase in the production rate would not subject an existing tank to subpart OOOO. In addition, the commenters request clarification on whether this answer would also be the case for a tank that commenced construction after August 23, 2011.

One commenter (4191) requests that the EPA consider fracturing or refracturing a well to be a modification to the on-site storage vessel, and that the resulting emissions increases at the storage vessel be regulated under the “modified” storage vessel provisions. The commenter points out that fracturing and refracturing of existing wells will result in an increase in production and associated increase in emissions from the well operation, and that after fracturing or refracturing is complete, all emissions from the well operation are typically conveyed first through the separator and then through the storage vessel on-site used to store produced hydrocarbon liquids. The commenter concludes that ultimately, increases in well emissions after fracturing and re-fracturing activities are emitted from the storage vessel, warranting regulation under the modified storage vessel provisions.

One commenter (4251) asks if replacing a storage vessel with a new vessel of the same size would trigger this rule, or would the new vessel have to be larger and, thus, per the EPA's general definition of modification “increase the amount of VOC or natural gas emitted into the atmosphere by that facility or which results in the emission of VOC or natural gas not previously emitted” to trigger the rule.

**Response:** The EPA agrees that an increase in production rate would not, by itself, subject an existing storage vessel to subpart OOOO. As an NSPS, subpart OOOO applies only to new, modified and reconstructed facilities. Under the part 60 General Provisions at §60.14(e)(2), a modification does not include “[a]n increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility.”

However, this modification provision does not apply to a storage vessel on which construction commenced after August 23, 2011 because such vessels are considered new facilities under subpart OOOO. If a new storage vessel is not initially subject to control due to low VOC emissions but a subsequent increase in production rate increases its emissions above the

applicability threshold of 6 tpy, the vessel would become subject to the requirements of subpart OOOO upon the increase in emissions.

We do not agree that fracturing or refracturing a well should cause the associated existing storage vessels to be considered modified vessels subject to the requirements of subpart OOOO. We disagree with the commenter's characterization that increased emissions from the fractured or refractured well are routed to and emitted from the associated storage vessels. We have added §60.5365(h) to the final rule to specify which well completion operations following fracturing or refracturing are modifications, and also state that the completion operations do not affect the modification status of other equipment (including storage vessels).

Regarding the question of replacing a storage vessel, the replacement vessel would be considered a new storage vessel, rather than a modified vessel, regardless of its size or emissions relative to the existing tank it replaces, and would be subject to subpart OOOO. If the storage vessel's VOC emissions are projected to be equal to or greater than 6 tpy, then the storage vessel would be subject to the emission reduction requirements of the rule. As defined at §60.5430 of the final rule, "modification" means "any physical change in, or change in the method of operation of, an affected facility..." Under subpart OOOO, an individual storage vessel is defined as the affected facility, and replacement of an entire affected facility does not fall under the intended scope of a "physical change in ... an affected facility." Rather, a "physical change" to an affected facility is intended to connote an alteration of some part or parts of the affected facility that leaves other parts of the existing affected facility unaltered. Note that the threshold for "reconstruction" under NSPS at §60.15 is the "replacement of components of an existing facility to such an extent that ... [t]he fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility..." If an affected facility is reconstructed, it is subject to the NSPS regardless of whether emissions increase, provided that it is technologically and economically feasible to meet the applicable standards. Thus, the effective upper bound for expenditures for a physical change that could be considered a modification is 50 percent of the cost of a new affected facility, and replacement of an affected facility clearly requires the expenditure of the entire cost of a new affected facility.

We are aware that §60.14(e)(1) of the part 60 General Provisions states that a modification does not include "[m]aintenance, repair, and replacement which the Administrator determines to be routine for a source category..." We do not believe that "replacement" as used in this provision is intended to refer to the replacement of an entire affected facility; rather, we believe that it refers to replacement of components of a larger affected facility. Again, replacement of an entire affected facility would, at a minimum, constitute reconstruction. In any case, we do not believe that replacement of a storage vessel is ever a "routine" event in this industry.



**Comment:** Three commenters (3459, 4240, 4275) believe that the regulations should be applied to existing storage vessels. One of the commenters (4240) asserts that existing storage vessels must be subject to the same degree of emissions control as is required for all other tanks. The commenter believes that such a standard would be cost-effective, especially if phased in over a reasonable time period. The commenter concludes that whatever control efficiency requirement the EPA ultimately applies to new tanks must be extended to existing vessels which are not already covered by the NESHAP, and must be applied on a reasonably strict retrofit schedule.

**Response:** The EPA has promulgated subpart OOOO as an NSPS, and is statutorily only able to apply these standards to new, modified and reconstructed sources. Therefore, we cannot apply these standards to existing storage vessels unless they are modified or reconstructed.

**Comment:** One commenter (4241) seeks clarification that refurbished tanks (e.g., tanks that are recoated) would not be considered a modified source.

**Response:** As discussed above, subpart OOOO is an NSPS and, as such, applies only to new, modified and reconstructed facilities. Thus, a refurbished existing storage vessel would become subject to the rule only if it were modified or reconstructed.

Section 60.14 of the NSPS General Provisions specifies that a modification is “any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies.” Section 60.14 further states that modifications do not include “maintenance, repair, and replacement which the Administrator determines to be routine for a source category.” It is unlikely that refurbishing a storage vessel would, in itself, increase the emissions from the vessel or cause VOC or natural gas to be newly emitted. In addition, it is likely that refurbishment, as generally understood, would be considered maintenance or repair. Thus, it is unlikely that refurbishing a storage vessel would be considered a modification within the meaning of part 60.

Under §60.17, “reconstruction” means the replacement of components of an existing facility to such an extent that: (1) the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and (2) it is technologically and economically feasible to meet the applicable standards set forth in this part. It is unlikely that refurbishment, as generally understood, would involve costs exceeding 50 percent of the cost of a new storage vessel and, thus, unlikely that refurbishing a storage vessel would be considered reconstruction.

**Comment:** One commenter (4230) requests clarification on why the cost per ton analysis was done on 6 tpy, but storage vessels under 10 tpy potential are exempted. Another commenter (4161) states that the discrepancy between the throughput thresholds (which are based on

emissions of 6 tpy) and the 10 tpy exemption in the definition of “storage vessel” leaves storage vessels between 6 and 10 tpy undefined. A third commenter (4240) presumes that the EPA did not intend to exempt tanks with emissions less than 10 tpy, and states that EPA must delete the “10 tpy” language from its definition section, as it conflicts with the lower emissions threshold it sets in the substantive storage vessel standard itself.

Another commenter (4159) supports the inclusion of the 10 tpy threshold in the proposed definition, believing that it provides a minimum level of throughput and emissions to ensure that any controls can meet a cost-effectiveness test and not result in unnecessary flaring and emissions from such flaring.

**Response:** In the proposed rule, the EPA did not intend to exempt storage vessels with potential VOC emissions of less than 10 tpy; this exemption was included in the proposed definition of “storage vessel” inadvertently. In the final rule, no emissions level is included in the definition. The applicability of the storage vessel emission reduction requirements of the final rule is determined based on the threshold of 6 tpy of uncontrolled VOC emissions, a level at which controls were determined to be cost effective.

**Comment:** One commenter (4230) requests specific guidance on exactly how the potential VOC emissions are to be calculated for this 10 tpy threshold for national consistency.

**Response:** The commenter’s questions are generally no longer relevant as a result of the provisions of the final rule. The final rule clearly applies to each individual storage vessel; storage vessel emissions are not aggregated to determine applicability. Under the final rule, process vessels, such as surge control vessels, bottoms receivers and knockout vessels, are not considered storage vessels. Finally, the final rule determines applicability based on VOC emissions, not throughput.

**Comment:** One commenter (4266) states that the EPA proposed throughput thresholds pegged to 6 tpy of VOC emissions in the storage tank provisions of §60.5395(a), as well as a 10 tpy emissions threshold in the definition of a storage vessel at §60.5430. According to the commenter, these thresholds do not determine whether or not a given structure is a storage vessel, but rather they are criteria for determining whether a given storage vessel is subject to the control requirements of the rule. As such, the commenter believes that the more appropriate location for them in the rule is at §60.5395, rather than in the definitions, and requests that the EPA move the emissions threshold from the storage vessel definition at §60.5430 to the storage vessel standard at §60.5395, and specify a threshold of 12 tpy.

**Response:** In the final rule, the definition of “storage vessel” does not include a VOC emissions threshold; as noted previously, this threshold was included in the proposed definition

inadvertently. The final rule includes an applicability threshold of 6 tpy, which is located in §60.5395.

**Comment:** Two commenters (4192, 4246) support the proposed §60.5395(b), which reads: “This standard does not apply to storage vessels already subject to and controlled in accordance with the requirements for storage vessels in 40 CFR § 63.766(b)(1) or (2) of this chapter.”

**Response:** We agree with the commenter that storage vessels that are already subject to and controlled in accordance with the requirements for storage vessels in 40 CFR 63.766(b)(1) or (2) should not be subject to the requirements of subpart OOOO. Accordingly, we have maintained this exemption in the final rule, although it has been rephrased to refer to 40 CFR part 63, subpart HH.

**Comment:** One commenter (4263) states that the EPA should add overlap provisions for other Federal standards, for example subpart Kb, to the proposed §60.5395(b).

**Response:** The EPA agrees with the commenter. Accordingly, §60.5395(d) of the final rule provides exemptions for storage vessels “already subject to and controlled in accordance with the requirements for storage vessels in 40 CFR part 60, subpart Kb, or 40 CFR part 63, subparts G, CC, HH, WW, or HHH.”

**Comment:** One commenter (4218) believes it is best to regulate storage tanks based on VOC emissions limits and not throughputs and therefore suggests that the storage vessel standards in §60.5395 include an exemption with an emissions threshold of 10 tpy of VOC (removing that threshold from the definition of “storage vessel”).

**Response:** As discussed elsewhere in this document, the applicability threshold for storage vessels in the final rule is 6 tpy of VOC emissions, rather than in terms of throughput as proposed. This threshold is located in §60.5395 of the final rule as requested by the commenter.

**Comment:** One commenter (4241) notes that proposed §60.5395 reads: “Storage vessels that meet either one or both of the throughput conditions specified in paragraphs (a)(1) or (a)(2) of this section are not subject to the standards of this section.” The commenter believes that the EPA intends that both conditions must be met to be excluded from the rule and suggests that “either one or” be stricken from the language of the rule.

**Response:** The proposed language cited by the commenter has been eliminated from the final rule. Applicability of the final rule to storage vessels is determined based on VOC emissions, and the same applicability level of 6 tpy applies to both oil and condensate storage vessels.

**Comment:** Two commenters (4220, 4263) believe it is best to regulate storage tanks based on VOC emissions limits and not throughputs and contend that the EPA should move the emission thresholds from the definition of “storage vessel” in §60.5430 to the affected facility definition section §60.5365(e). One of the commenters (4263) also believes the EPA should add provisions for PTE determinations for storage tanks at upstream facilities with declining production. The commenter believes that the definition of "storage vessel" proposed by the EPA is inconsistent with the definition set out in relevant part 60 and part 63 standards, and that thresholds pertaining to the affected facility definition should be provided in §60.5365. The commenter notes that the EPA has acknowledged that an owner or operator may consider inherent limitations on production in PTE determinations for oil and gas production facilities, and adds that defining "maximum hydrocarbon liquid throughput" to be used for purposes of PTE determinations for storage vessels would remove uncertainty.

**Response:** As discussed previously, the storage vessel applicability provisions of the final rule are based on VOC emissions rather than throughput, and the applicability threshold is included in §60.5395 where the control requirements are set out. We do not agree that the applicability threshold should be included in the definition of the storage vessel affected facility. Rather, all new, modified or reconstructed storage vessels are considered affected facilities, and the owner or operator is required to determine and report whether each new, modified or reconstructed storage vessel is subject to the control requirements of the rule. That is, the applicability threshold determines which storage vessel affected facilities are subject to the requirement to control emissions, not which storage vessels are affected facilities.

Regarding the comment that the proposed definition of “storage vessel” was inconsistent with the definitions in other related part 60 and 63 standards, we agree that certain revisions to the definition were necessary. Accordingly, we have revised the final definition to more clearly define “storage vessel” in a manner that is more consistent with the definitions in other related standards.

**Comment:** One commenter (4245) states that the proposed storage vessel emissions standards that would apply to all wells producing 1 bbl/day or more of condensate or 20 bbls/day or more of crude oil would have the effect of greatly expanding the number of oil and gas batteries needing emission control, which is not justified since State-level standards and regulation adequately define emission thresholds and control requirements for such facilities. The commenter asserts that this arbitrary threshold has not been demonstrated to be scientifically justified and will greatly increase operational costs throughout the industry. The commenter adds that existing State permit restrictions prescribe yearly emission limits, thus additional Federal oversight is unwarranted. The commenter recommends that the EPA continue to defer to State agencies with respect to oil-field emission quantification and regulation.

**Response:** As previously discussed, whether the control requirements of the final rule apply to a storage vessel is based on VOC emissions rather than throughput, and the threshold for applicability has been set at a level which our analysis shows to be cost effective. On this basis, we believe that the final rule requires control for the appropriate population of storage vessels.

Regarding the comment that the EPA defer to State regulation of the oil and gas industry, we note that section 111 of the CAA requires the EPA to promulgate and periodically update an NSPS for each listed source category to require the application of BSER for that source category. During development of this updated NSPS for the oil and gas industry, we evaluated the baseline emissions from storage vessels in this source category, including State control requirements, and determined that the final rule will reduce VOC emissions in a cost effective manner. In cases where storage vessels are subject to both State requirements and the requirements of subpart OOOO, part 60 allows for any required notifications and reports to be consolidated provided the consolidated items meet all the requirements of the NSPS.

**Comment:** One commenter (4263) asserts that the term "condensate" is well understood in the industry consistent with the definition of the term already promulgated in part 63 and part 98; therefore, rather than inventing a new definition of a common term, the exemption thresholds in proposed §60.5395 should simply be based on the API gravity of the hydrocarbon liquid (crude oil or condensate). That is, the commenter suggests that the EPA replace the term "condensate" with "hydrocarbon liquid with an API gravity equal to or greater than 40 degrees" in paragraph (a)(1), and replace the term "crude oil" with "hydrocarbon liquid with an API gravity less than 40 degrees" in paragraph (a)(2). In addition, the commenter advises that the EPA should revise the definition of "condensate" to reflect similar definitions in parts 60, 63 and 98. Another commenter (4193) advocates the removal of the definitions of "condensate" and "crude oil."

**Response:** Under the terms of the final rule, these comments are no longer relevant. The final rule bases the applicability of the control requirements for all storage vessels on VOC emissions without regard to whether they are used to store crude oil or condensate.

**Comment:** Three commenters (4177, 4220, 4266) believe that there should be exemptions for blowdown and emergency tanks, due to their infrequent use. One commenter (4266) states that the EPA's capacity and vapor pressure thresholds are based on emissions that would be expected if these tanks were in continuous operation, but tanks such as blowdown tanks, emergency tanks, and dehydrator drip tanks are used only infrequently. The commenter contends that the EPA should specify a threshold for storage vessels in infrequent use, and specify a work practice for such tanks. According to the commenter, there is precedent for this in the Gasoline Distribution area source rule. The commenter adds that the EPA must allow for open-top blow down tanks because a well cannot be blown down to a closed top tank.

One commenter (4258) suggests that coal bed methane (CBM) and other facilities with low VOC gas content (e.g., less than 10 percent) be specifically exempted from the tank requirements.

One commenter (4177) states that there should be an exemption for weathered or stabilized crude oil storage tanks based on the lack of potential flash emissions from such tanks. The commenter adds that tanks storing stabilized crude may also be subject to the control requirements of NSPS subpart Kb and utilize a floating roof and seals as a control methodology, so this control option should be added if the exemption from subpart OOOO controls is not included.

**Response:** As previously discussed, the final rule bases the applicability of storage vessel control requirements on annual VOC emissions. If storage vessels of any of the types mentioned by the commenters are below the threshold of 6 tpy of VOC emissions, they are exempt from the control requirements of the final rule. If their emissions are equal to or greater than 6 tpy, they are subject to the control requirements. Our analysis shows that controls are cost effective at this level of emissions, without regard to the type of tank or the fluid being stored. Accordingly, we believe that other exemptions of the types suggested by the commenters are generally unnecessary. In addition, we note that the final rule contains an exemption for storage vessels that are subject to and controlled in accordance with subpart Kb. Concerning open-top blowdown tanks, these storage vessels would be subject to the control requirements if VOC emissions are 6 tpy or greater. The final rule does not specify that the tanks have to be closed, only that VOC emissions must be reduced by 95 percent.

#### *2.5.3.2 Throughput Cutoffs*

**Comment:** Numerous commenters (4135, 4159, 4161, 4176, 4177, 4191, 4193, 4216, 4217, 4218, 4219, 4220, 4225, 4228, 4231, 4233, 4240, 4241, 4244, 4246, 4251, 4252, 4256, 4263, 4266, 4269, 4281, 4356) assert that the applicability for storage vessels should be based on VOC emissions, rather than liquid throughput as proposed. These commenters often state that the emission factors used by the EPA in developing the throughput thresholds were drawn from a very limited data set that did not take into account the variability in volatility of stored liquids and other parameters that affect emissions. Commenters indicate that the emission factor that the EPA used to develop the throughput thresholds are too high, resulting in thresholds that are so low that many storage vessels with low emissions would be required to install controls that are not cost effective.

Five of the commenters (4161, 4177, 4219, 4228, 4266) reexamined the study and data used by the EPA to develop the emission factor, and conclude that it was inappropriate for the EPA to use such data. Four commenters (4191, 4216, 4225, 4241) compare the EPA's emission factor to the lower emission factors used by Colorado, which vary by geographic area, to show that storage vessels with low emissions would be regulated by the proposed rules. Three commenters

(4218, 4219, 4258) use case-specific information to show that storage vessel emissions are lower than estimated by the EPA.

**Response:** The EPA agrees with the commenters that applicability should be based on VOC emissions instead of liquid throughput and that the use of a VOC emissions threshold is more flexible approach, ensuring that controls will be required only on those storage vessels where they can be applied cost-effectively. We originally proposed the applicability threshold for storage vessel control requirements in terms of throughput because we believed that this would simplify applicability determinations for sources, particularly small sources. However, because emission factors vary widely, we now recognize that it is inappropriate to develop liquid throughput thresholds based on average emission factors. Accordingly, the final rule includes a VOC emissions threshold of 6 tpy for applicability of storage vessel controls.

**Comment:** Several commenters prefer that the storage vessel applicability metric be based on VOC emissions (3618, 4159, 4177, 4192, 4193, 4217, 4218, 4219, 4220, 4225, 4228, 4231, 4240, 4241, 4251, 4252, 4256, 4264, 4266, 4273, 4176, 4281, 4191) and recommend specific thresholds ranging from 20 tpy to 1.5 tpy for crude oil tanks. The commenters' rationales for these thresholds are based on such reasons as: matching state thresholds, maintaining cost-effectiveness (12 tpy based on an independent analysis supported by several commenters), applying different levels in different areas depending on factors in each region, avoiding unnecessary flaring and associated emissions, and using low thresholds to maximize emission reductions.

**Response:** Based on the EPA's analysis, we have selected an emissions threshold of 6 tpy VOC. We selected this threshold by evaluating cost effectiveness for storage vessels with emissions of 3, 6, 12, and 30 tpy and determined that control for vessels with emissions of 6 tpy is cost effective. Based on an estimated annual average cost of \$19,281 (including savings from recovered product), controlling storage vessels with emissions of 6 tpy will result in a cost effectiveness of about \$3,400 per ton of VOC reduced. Further details of these calculations are in the docket.

**Comment:** One commenter (4356) states that if the EPA continues to rely on a throughput for applicability, the proposed level of 1 bbl/day for condensate storage vessels is not justified because it would be more stringent than the NSPS for refineries and chemical plants. The commenter also notes that the TCEQ has adopted requirements for a nonattainment area in Texas and proposed requirements for another that require 95 percent control of all storage vessels at a site when there is a throughput of 1,500 bbl/yr of condensate.

**Response:** As discussed previously, the final rule bases the applicability of storage vessel control requirements on annual VOC emissions, not liquid throughput.

**Comment:** Four commenters (4177, 4220, 4266, 4281) favor VOC emissions as the applicability metric and add that the proposed rules need capacity and vapor pressure thresholds, in the same manner as all other EPA rules with storage vessel provisions. The commenters believe that the capacity and vapor pressure thresholds specified in NSPS subpart Kb should be considered for tanks that do not have the potential for flash emissions.

Another commenter (4231) recommends that the standards apply only to storage tanks with a capacity greater than 500 bbl.

One commenter (4240) states that if the EPA is going to include an exemption for some storage vessels in the rule, it should further condition its exemption by limiting it to only small throughput tanks with low vapor pressure (in addition to lowering the threshold and applying it to tank batteries). Such an exemption would ensure that only tanks which do not contain significantly volatile substances are exempt. The commenter notes that such vapor pressure limitations are used in certain California air quality districts.

**Response:** The EPA disagrees that subpart OOOO needs capacity and vapor pressure thresholds. As discussed above, the applicability of storage vessel control requirements in the final rule is based on annual VOC emissions, and the threshold level of 6 tpy has been determined to be cost effective without regard to the type of vessel or fluid stored. In addition, the final rule provides exemptions for storage vessels already subject to and controlled in accordance with the requirements for storage vessels in 40 CFR part 60, subpart Kb, or 40 CFR part 63, subparts G, CC, HH, WW, or HHH.

**Comment:** Eight commenters (4177, 4217, 4219, 4220, 4228, 4233, 4266, 4281) favor VOC emissions as the applicability metric and add that the emissions threshold should be a standard, rather than a trigger for once-in, always-in controls. The commenters note that initial production curves from wells typically are high and then significant decline occurs over time. Two commenters (4219, 4228) indicate that if the threshold was not met in a given future year, then the tank would not be subject to the rules during that year. Five commenters (4177, 4217, 4220, 4266, 4281) state that removal of controls should be allowed when emissions decline.

One commenter (4220) states that the proposed rule would essentially eliminate the use of the WDEQ presumptive BACT minor source permitting program, whereas the EPA should instead be using the program as the model for its own rulemaking. The commenter believes that the WDEQ's program allows for the wide variability in the dynamics of oil and gas production and provides a cost effective, common sense permitting program to lower emissions to equivalent standards desired by the EPA.



One commenter (4177) adds that some fields have a 1-year decline rate of 80 percent or more, and control options must match actual conditions to be both effective and of reasonable cost. The commenter indicates that the EPA analysis for tank control technologies does not address this difficult design challenge. According to the commenter, under proposed control requirements, multiple sets of controls may be required to control the falling levels of emissions from a typical tank or tank battery, and the cost of installing multiple controls over the life of a tank was not included in the EPA documentation for this rule. By providing a low level emission rate where controls are no longer required, the commenter believes that the rule can maintain consistent and defensible cost effectiveness for tank control requirements. Similarly, another commenter (4217) states that without this sunset provision, the EPA's cost-benefit analysis is significantly flawed as the production declines and the tank emissions approach a lower economic limit for production because the annual O&M cost will eventually approach or exceed the limits of viable production and profitability.

Another commenter (4228) indicates that removing the control device from storage tanks with emissions below the threshold could reduce pollutant emissions. The commenter points out that reduced VOC PTE is associated with lowered production rates and/or less volatile fluids, and as these parameters continue to decrease, there will eventually be insufficient gas emissions to maintain a stable flame in a flare or other combustor designed for higher production and gas emission levels. The commenter believes that this would result in poor combustion and an increase in pollution, including HAPs and other products of incomplete combustion. Alternatively, according to the commenter, supplemental fuel could be used but this would increase NOx emissions and operating costs.

**Response:** We do not agree that the applicability threshold for the storage vessel emission control requirements should be a standard rather than a one-time trigger. We understand that the production rate of the well may decrease over time, which may affect the level of emissions from the tank. However, future refracturing operations have the potential to restore the production rate of the well to near original levels, or at least to levels that may increase emissions to the 6 tpy threshold. Thus, we believe that once a storage vessel is shown to be capable of emitting at least 6 tpy, the tank should remain controlled.

Additionally, we believe that the potential burden to both the facility and the regulatory agency of continually changing the status of the source is unreasonable and poses significant compliance issues.

**Comment:** One commenter (4256) indicates that under the API gravity threshold of 40 degrees of the proposed regulation, the majority, if not all, new production facilities (tank battery) in the Bakken would be considered condensate producing wells, requiring 95 percent controls for every new production facility producing more than 1 bbl/day. The commenter believes that the EPA's

proposal of a production rate threshold was intended to simplify the implementation of the rule for industry overall, but it unnecessarily and inadvertently has greatly increased the amount of facilities, including all new Bakken oil production facilities, that would require expensive controls. The commenter does not believe that the EPA intended to force operators to install costly controls at facilities from unconventional plays such as the Bakken if the production from the associated wells is as little as 1 bbl/day.

**Response:** This comment is no longer relevant because the final rule bases the applicability of storage vessel control requirements on annual VOC emissions rather than liquid throughput. The EPA's analysis shows that the final applicability threshold of 6 tpy is cost effective regardless of the type of vessel or fluid stored.

**Comment:** Five commenters (4135, 4228, 4241, 4258, 4266) who advocate using a VOC emissions applicability metric also recommend methods for determining VOC emissions. One commenter (4135) recommends that the EPA specify the methods to be used to determine emissions because there are many methods, and some are far less accurate than others. Another commenter (4241) suggests that basin-wide emission factors developed by some State or local agencies could be used to determine applicability or, alternatively, the data and simulations being developed under the Mandatory Reporting Rule for GHG could be used as compliance data for the NSPS which would simplify the data management for operators.

One commenter (4266) states that appropriate methods of estimating flashing emissions include process simulation software and E&P TANK, while another commenter (4228) states that there are numerous tools for determining VOC PTE for a liquids hydrocarbons storage vessel, including the Vasquez-Beggs Equation (VBE) calculation methodology and other correlation equations, equation of state (EOS) calculation programs such as E&P TANK, gas oil ratio (GOR) and throughput determinations, and process simulators such as HYSIM, HYSYS, WINSIM, and PROSIM. The commenter recommends that the final rule allow operators to determine VOC PTE based on available data and tools provided the approach is documented.

One commenter (4258) states that "potential" is not defined in this subpart and the traditional definition of "potential" does not realistically apply to storage tanks and, therefore, this should be changed to "actual" emissions as calculated by E&P TANK 2.0 or another method accepted by the Administrator (e.g., HYSIS) based on the first 30 days of production and appropriate decline factor (default decline factor of 0.6 if other supporting information is not provided).

**Response:** We disagree that the EPA should specify which methodologies must be used to calculate VOC emissions. Different methodologies may be more appropriate than others for certain situations, and it would be very difficult to determine each possible situation and determine the appropriate methodology for that situation. Additionally, such a prescriptive

requirement would not allow as yet undeveloped methodologies to be used, or would require amending the rule whenever a new methodology was released. For these reasons, the final rule specifies that any generally accepted methodology may be used to estimate emissions.

**Comment:** Several commenters (3560/4258, 4192, 4219, 4228, 4241, 4246, 4266) object to the requirement in the proposed rule to use flow meters to determine the annual throughput of storage vessels. According to three of the commenters (4192, 4219, 4246), it is not practical to use a flow meter because flow measurement for individual tanks is costly and inaccurate, as the liquid is near-atmospheric conditions and flashing can occur across the flow measurement orifice. Two commenters (4192, 4246) add that they are concerned that the Administrator will not be able to issue approval to use alternative methods for determining throughput in a timely manner, as provided for in the proposed rule. These commenters recommend revised language that would allow the use of tank strapping and load tickets or condensate sales, which the commenters state are the usual methods of measuring throughput in the industry, with the option for metering at the discretion of the owner/operator.

Another commenter (4241) similarly suggests that the EPA allow more common monitoring methods, such as revenue and accounting system, because the sales volume condensate and crude oil is carefully measured and recorded. One commenter (4228) suggests revised language that would allow the use of “standard oil and gas field methods including, but not limited to, strapping and tanker truck measurements.”

One commenter (4266) contends that the flow of condensate from a production separator to a storage vessel is intermittent and short duration, while every flow meter has a “latency period” that provides unreliable data for some period of time (ranging from a few seconds to several minutes depending on the technology) after flow begins. According to the commenter, it is common for either a turbine meter or a magnetic meter in dump service to report values that are 5-10 times higher than sales volumes that are eventually reported to accounting systems. The commenter asserts that there is no technology that will allow a 1 bbl/day condensate stream or a 20 bbl/day oil stream to accurately record flow volume into a storage tank. Accordingly, the commenter recommends that the preferred method of quantifying liquid hydrocarbons throughput in the regulation be changed to “based on Lease Automatic Custody Transfer (LACT) meter, haul records (run tickets), sales tickets, or other sales documentation to show the amount transferred to a truck or liquids pipeline.” Another commenter (4192) similarly states that the EPA should provide for the use of (LACT) meter, crude oil / condensate truck load out tickets or tank strappings or metering to determine whether a storage tank is exempt from the subpart OOOO standards.

Two commenters (3560,4258) recommend that the EPA accept manual tank gauging as an acceptable measurement for annualized daily average production rate. The commenters state that

the requirement for flow meters is inconsistent with regulation on Federal land as the Bureau of Land Management requires operators to manually gauge crude oil/condensate. The commenters add that flow meters will not be any more accurate than monthly tank gauging since water is periodically pulled from these tanks due to carryover from the separator; field operators manually make the adjustments for water pulled from the tank to the tank level so similar adjustments would also be required for flow meter readings. Furthermore, the commenters express concern that flow meters would be subject to freezing during colder months from the water carryover.

**Response:** The final rule does not require the use of liquid throughput flow meters because the applicability of the storage vessel control requirements is determined based on annual VOC emissions, rather than liquid throughput as proposed. As discussed above and in section IX.E of the preamble to the final rule, we made this change in part because we are convinced that VOC emissions from stored fluids in the ONG industry are too variable to be regulated based on an average emission factor. Other factors in our decision to change the applicability metric include the issues raised by these commenters.

The EPA agrees that the flow characteristics of the liquid flow to the tanks may be highly inconsistent and instead resemble a series of multiphase plugs separated by gas pockets. Additionally, as the liquid pressure decreases, it may tend to flash across a flow measurement orifice. These factors may cause inaccurate flow readings. In addition, a VOC emissions threshold eliminates issues raised by some commenters with the use of flow meters to monitor throughput. These included further technical issues with the ability to accurately measure throughput and where throughput should be measured, cost issues, and issues related to data acquisition at remote locations without electrical service.

**Comment:** One commenter (4161) notes that the proposed §60.5420(b)(6)(ii) requires the source to document that crude oil throughput is less than 21 bbl/day. The commenter believes that this is a typographical error because the proposed applicability threshold in §60.5395(a) is 20 bbl/day. This commenter and another (4192) make a similar comment about the proposed language in §60.5420(c)(5)(ii).

**Response:** This comment is no longer relevant because the final rule bases the applicability of the control requirements for storage vessels on annual VOC emissions rather than liquid throughput. Thus, the language in question is not included in the final rule.

#### **2.5.4 Control Techniques**

**Comment:** One commenter (4275) asserts that Wyoming requires 98 percent control of VOC and HAP from storage vessels with the potential for flash emissions. The commenter

recommends that the EPA adopt an equivalent level of control in the NSPS, which the commenter believes would carry out the law and secure additional health and environmental benefits.

Another commenter (4240), while agreeing that some combination of combustion devices and VRUs on storage tanks constitutes BSER for this class of facilities, asserts that the EPA must raise its control efficiency requirements and limit or eliminate the use of combustion devices. Citing available information, the commenter states that a control efficiency of 98 percent is achievable, noting that it is required in Wyoming, and that, therefore, the proposal falls below BSER. The commenter notes that VRUs recover material that can be used or sold, while flares create secondary emissions including NO<sub>x</sub>, SO<sub>2</sub>, PM and other emissions, and opines that the EPA must avoid these secondary impacts wherever feasible. The commenter asserts that under the statutory standard for new source emissions under CAA section 111(b), the EPA must ensure that VRU-level control efficiencies are achieved in all applications so long as that does not impose exorbitant costs on industry, and must do so by requiring all affected sources to achieve control efficiencies of 98 percent, with no secondary emissions of NO<sub>x</sub>, except where the operator can demonstrate to the EPA that it cannot install a VRU. In that case, the commenter indicates that the EPA could allow a 95 percent control efficiency (which can be met either by VRU or flare), with that exemption subject to review or challenge.

On the other hand, two commenters (4216, 4267) contend that it has not been adequately demonstrated that VRUs and flares can achieve 95 percent control. One of the commenters (4267) asserts that the emissions from oil and gas exploration and production are so small they cannot be measured so must be calculated. Based on this position, the commenter asserts that it is highly speculative that a 95-percent reduction is possible. The commenter states that all references to a 95-percent reduction in emissions must be stricken. The other commenter (4216) contends that the limited data base used by the EPA to assess storage vessel emissions (coming from a relatively narrow study in Texas) cannot generate the robust information needed to adequately demonstrate 95-percent control.

**Response:** The EPA disagrees with the commenters who contend that 98 percent control is technically achievable on a continuous basis. The data we have reviewed support a BSER level of 95 percent control and indicate that 98 percent control cannot be achieved continuously for all tanks. Therefore, 98 percent control cannot be considered BSER.

Likewise, we disagree with the commenters who allege that there is inadequate data to demonstrate that VRUs and flares can achieve 95 percent reduction. The data clearly support a BSER level of 95 percent control.

**Comment:** One commenter (4161) recommends that the EPA allow for an alternative control technology that meets or exceeds the required control level, subject to the Administrator's approval. The commenter does not wish to discourage the development of new technologies for reducing emissions from storage vessels.

Another commenter (4263) suggests that the EPA revise proposed §§60.5395 and 60.5415(e) to provide for the alternative of routing emissions to a fuel gas system or process. The commenter notes that the proposed rule already includes a definition of "routed to a process or route to a process" and that other standards such as the Refinery MACT subpart CC and UUU categorically exclude emission points that are routed to a fuel gas system.

Four commenters (4241, 4251, 4266, 4281) request that the EPA consider providing a floating roof control option in the final rules as an alternative to routing vapor to a control device. One of the commenters (4251) notes that her company uses internal floating roof tanks, which are designed to minimize emissions and control VOC emissions by 95 percent, but they are not compatible with a VRU. The commenter adds that another factor that the EPA did not include in its discussion of the feasibility of VRUs is corrosion, which can occur if air is drawn into the tanks by the VRU and can result in leaks and expensive repairs. Another of the commenters (4266) states that floating roof tanks are not viable for tanks with flash emissions or very small tanks, but may be suitable for larger production field tanks storing stabilized crude oil. This commenter suggests that the EPA specify that a storage vessel storing a VOL with maximum true vapor pressure of less than 11.1 psia may be equipped with a floating roof, and that the floating roof requirements be specified in the same manner as in Table 1 of NESHAP subpart BBBBBB. Another commenter (4281) likewise recommends that the floating roof option be made available for storing hydrocarbon liquids with maximum true vapor pressure of less than 11.1 psia.

**Response:** Section 60.5395 of the final rule has been revised to specify that storage vessels with VOC emissions of 6 tpy or greater must control emissions by 95 percent, rather than prescribing a closed vent system and control device as in the proposed rule. Therefore, you may choose any control technology that achieves at least 95 percent control, including floating roofs. We note, however, that the owner or operator must still demonstrate initial and continuous compliance as directed in the final rule.

**Comment:** Four commenters (4209, 4219, 4246, 4266) believe that there will be a shortage of control equipment available to meet the proposed storage vessel requirements. Two of the commenters (4219, 4246) suggest the final rule allow 1 year after the effective date for compliance with the storage vessel provisions.

One commenter (4209) believes that this expected shortage will affect the 115,000 plus oil wells and many of the 65,000 gas wells (that produce liquids) located in Oklahoma. To reduce the burdens and cost impacts, the commenter requests that the EPA consider less costly methods such as work practices and standards that operators (especially smaller operators/businesses) could implement.

One commenter (4266) notes that the requirements in subpart OOOO for storage tank control devices cite the performance test requirements specified in §63.772(e) of subpart HH, which include a provision for the performance test to be conducted by the manufacturer as specified in §63.772(h). According to the commenter, it will require considerable lead time before such “manufacturer certified” control devices are readily available. The commenter requests that the effective date of the storage tank requirements under subpart OOOO be delayed for 3 years to allow time for the specified control devices to become available.

**Response:** The EPA disagrees that there will be a significant shortage of control equipment to meet the storage vessel requirements. We note that because it is an NSPS, subpart OOOO applies only to new, modified and reconstructed storage vessels, and not to the existing wells in Oklahoma or other States. Existing wells will be affected only to the extent that they are modified or reconstructed after August 23, 2011.

The final rule allows the operators of affected storage vessels at a well site with no other wells in production up to 30 days to determine the VOC emission rate and, if the storage vessels are subject to control, an additional 30 days to install the control system and bring it into operation. This approach was based on the approach currently used in Wyoming, and we believe that the Wyoming experience demonstrates that this provides adequate time for control systems to be acquired and installed.

We add that, while no longer citing the requirements of §63.772(e) of subpart HH, the final rule allows sources to demonstrate compliance through the use of a control device that has been certified by the manufacturer after performance testing. We agree that there may be some lag time before such devices are available, but we believe that there will be ample availability of controls that will meet the final rule. Until manufacturer-certified units are available, sources will simply have to demonstrate compliance through one of the other methods provided in the final rule.

#### *2.5.4.1 Vapor Recovery Units*

**Comment:** One commenter (4191) suggests that the EPA include a requirement for monitoring the downtime for VRUs. In addition, the commenter requests that the EPA clarify whether it considers a VRU subject to the testing requirements for non-condenser control devices (citing 76 FR 52785).

**Response:** VRU downtime would fall under startup, shutdown or malfunction. The final rule specifies that compliance must be achieved at all times, and that there is no exemption from the rule requirements during these periods. We do not see the need to include monitoring specific to VRUs other than what is already present in the final rule. Concerning the comment on VRU testing requirements, any control device that is not a condenser is subject to performance testing every five years.

**Comment:** One commenter (4192) states that a VRU that is part of a process should not be considered a control device, and therefore not subject to testing and monitoring.

**Response:** The EPA disagrees with the commenter. We consider a VRU to be a control device subject to all the relevant requirements of the final rule for control devices.

#### 2.5.4.1.1 Emission reduction

**Comment:** Two commenters (4192, 4246) indicate that VRUs that recover product and return it to the process collect 100 percent of emissions when they are running and none of the vapors when they are not. The commenters note that proposed subpart OOOO would require a VRU to operate at 95 percent efficiency at all times, without any provision for downtime associated with maintenance. Thus, according to the commenters, each VRU maintenance event would require the operator to generate excessive emissions reports, document an NSPS deviation and prepare an affirmative defense. The commenters propose that industry should be required to comply with an annual overall efficiency of 95 percent, which the commenter believes would ensure a high level of VRU performance while permitting brief outages for maintenance and process upsets.

One commenter (4320) makes many of the same points about VRU operation and efficiency but concludes that the operator of a VRU would be required to install and operate a combustion control device as back-up for times when the VRU is down due to maintenance or malfunction, which would be very expensive. The commenter suggests that the EPA should encourage the use of VRUs over combustion control devices by providing credit to the operators of VRUs that their over-compliance warrants.

Another commenter (4218) also makes many of the same points, and expresses concern that the compliance provisions of subpart HH that are cited in subpart OOOO do not accommodate the type of VRUs that the commenter's company uses which capture and compress storage tank vapors and route them back to the inlet of the gas processing plant. The commenter suggests revisions to the sections in subpart HH that are cited in subpart OOOO to address such VRUs.

One commenter (4230) has observed a different kind of VRU in operation (sometimes referred to as an "ejector" VRU) that recycles the storage vessel emissions back into the gas gathering line



with a closed-vent system, which achieves 100 percent control when in operation. However, the commenter notes that the prescribed percent reduction performance test requirement in subpart HH is problematic because it is based on upstream and downstream measurements. The commenter suggests that the EPA provide compliance demonstration procedures for such VRUs using the closed-vent system standards set forth in subpart HH §63.771(c), the no detectable emission test procedures set forth in §63.772 (c) and the monitoring and inspection requirements of §63.773 (c), which would alleviate the need for a percent emission reduction performance test. The commenter added that the VRU would need to be operated continuously.

**Response:** We do not believe that the owner or operator of a VRU must also install a back-up flare. While it is true that VRUs can be expected to experience some downtime for maintenance and malfunctions, VRUs when operating properly generally approach 100 percent efficiency. Since the rule requires a minimum of 95 percent efficiency, we believe this difference adequately compensates for any reduced efficiency that may occur during non-routine operations.

We reiterate that the final rule no longer cites to the requirements of subpart HH. Instead, we decided to remove from subpart OOOO the citations to the requirements for performance tests, monitoring, recordkeeping, etc. in subpart HH and instead incorporate the appropriate subpart HH language into subpart OOOO.

#### 2.5.4.1.2 Cost impacts and cost effectiveness

**Comment:** Six commenters (3560, 4258, 4219, 4228, 4266, 4320) assert that the EPA underestimated the control and monitoring costs for storage vessels. One commenter (4266) contends that the control cost of \$18,983 presented in the TSD is inconsistent with the EPA Air Pollution Control Cost Manual. The commenter presents a cost analysis said to be based on the EPA Control Cost Manual methods which results in an annual cost of controls of \$55,207. The commenter indicates that this cost is conservative in that it includes no costs for data management required by the proposed rule, and it does not adjust for inflation since calendar year 2000.

Two commenters (3560,4258) present data compiled from flare manufactures that have provided flares for oil and gas storage tank use. According to the commenters, the cost of the flare with installation comes to \$23,000 of initial costs plus \$5,000 annual operating costs. The commenters state that for the scenarios included, these costs equate to \$5,000-\$14,750 per ton of VOC for capital costs and \$1,087-\$3,125 per ton of VOC for annualized operating costs.

Two commenters (4219, 4320) commented on the EPA's cost estimate for VRUs. One commenter (4320) indicates that the EPA should include the cost of a back-up flare in VRU costs because it will be necessary during periods of VRU downtime for maintenance or malfunction, which is not uncommon in the gas production sector. Another commenter (4219) states that it is

incorrect to assume that the cost of a VRU is in all cases offset to some degree through recovery of product. The commenter notes that some companies that would be subject to these rules transport natural gas for others and are paid the same amount regardless of whether natural gas escapes to the atmosphere or is captured by a VRU and returned to the process system.

One commenter (4266) contends although the EPA consistently included the primary equipment required for the control option being considered, it often overlooked the cost of auxiliary equipment. According to the commenter, the EPA considered the cost of the control device (flare, combustor or VRU), but did not appear to include the closed vent system required to collect the vapors, assure condensed liquids do not “vapor lock” this very low pressure system, and separate any condensed liquids before it reaches the control device.

The commenter (4266) also states that the EPA’s cost analysis appeared to include some costs for monitoring where required (i.e. storage vessels and LDAR), but did not appear to consider the remote, dispersed and unmanned nature of the facilities. Two commenters (4228, 4266) likewise indicate that the required data logging may not be feasible at remote, unmanned locations due to lack of electrical power for a continuous data systems and accessibility for manual data collection. Therefore, the commenters recommend that the final rule include provisions for remote locations that allow manual data collection on a schedule that matches an owner’s normal site visit schedule.

One commenter (4228) indicates that the proposed performance testing requirements for storage vessel combustion control devices are unnecessarily costly. The commenter’s company operates about 2,400 of these control devices in Colorado alone, and the commenter asserts that the added burden and cost associated with performance testing is not warranted or justified. In addition, the commenter believes that the large number of sources will overwhelm the industry testing capacity.

**Response:** We appreciate the detailed cost data provided by the commenters. After reviewing these data, including verifying the source and reasonableness of the data, we concluded that a revised cost analysis was warranted.

Our original cost analysis was based solely on VRUs as a more conservative estimate since available data indicated VRUs have a higher annual cost than flares. However, we determined previously that both VRUs and flares can meet the BSE level of control and based national impacts on equal use of VRUs and flares. Thus, in our revised cost estimate, we averaged the cost of a VRU and a flare rather than using just the VRU costs. We used the commenter’s flare cost and our previous VRU cost (which was not disputed by the commenters). The resulting annual cost was less than \$20,000. We then evaluated the cost effectiveness and determined that at a VOC emissions rate of 6 tpy, an acceptable cost effectiveness value of about \$3,400/ton is

achieved (see discussion above for additional information concerning our decision to change from a throughput threshold to an emission rate threshold). Thus, in the final rule we have revised the threshold for storage vessels to 6 tpy, and storage vessels at or above this threshold will be required to control emissions.

The revised cost analysis includes all capital cost components of the control measures, including auxiliary equipment. However, we do not believe that the owner or operator of a VRU must also install a back-up flare, and we have not included those costs in VRU costs. While it is true that VRUs can be expected to experience some downtime for maintenance and malfunctions, VRUs when operating properly generally approach 100 percent efficiency. Since the rule requires a minimum of 95 percent efficiency, we believe this difference adequately compensates for any reduced efficiency that may occur during non-routine operations.

The change in the final rule from a throughput threshold to an emission rate threshold has eliminated the need for liquid flow meters, along with the associated technical and cost issues related to data acquisition at remote locations without electrical service. The inclusion of an option to control emissions with an internal or external floating roof tank also can reduce testing, monitoring, recordkeeping and reporting costs for some tanks at remote facilities.

Regarding the costs associated with emissions tests for combustion control devices, we reiterate that the final rule no longer cites to the requirements of subpart HH. Instead, we decided to remove from subpart OOOO the citations to the requirements for performance tests, monitoring, recordkeeping, etc. in subpart HH and instead incorporate the appropriate subpart HH language into subpart OOOO.

#### 2.5.4.2 *Flare*

**Comment:** One commenter (3468) states that the rule should allow gas vented from crude oil storage vessels to be vented to a flare pit if there is not a market nearby, as was proposed for emissions from fractured gas wells.

**Response:** The EPA disagrees with the commenter. We believe that in such situations a flare achieving 95 percent control is a cost effective control option.

**Comment:** One commenter (4161) notes that the proposed definition of “flare” in §60.5430 specifically excludes enclosed flares. The commenter believes that enclosed flares are preferential in some cases and should be allowed.

**Response:** The definition of flare specifically excludes enclosed devices to distinguish flares from enclosed combustion devices such as oxidizers. However, this does not preclude the use of

an enclosed flare as a control device to meet the emission limits of subpart OOOO. Any enclosed flare would have to meet all applicable monitoring, recordkeeping and reporting requirements.

**Comment:** Two commenters (4266, 4281) contend that the requirement for a flare to be operated with a flame present at all times is not appropriate in light of current technology.

**Response:** We are aware of the growing use of electronic spark ignition systems for flares. However, given the intermittent and inconsistent nature of emissions from tanks in this industry combined with the highly variable VOC concentration in the emissions, we do not believe a spark-ignited flare will achieve the same level of emission reduction as a flare with a continuous flame present. Therefore, we are not allowing electronic spark ignition systems in the final rule.

**Comment:** Two commenters (4192, 4246) note that the EPA conceded that a VRU cannot be used when electrical service sufficient to power the VRU is not available (76 FR 52763), and that the proposed regulatory text would require flares to comply with §60.18. However, according to the commenters, in order for a flare to meet §60.18 it may need a blower or steam during upsets. The commenters state that neither electricity for the blower nor clean water for the steam are usually present at a compressor station or a production facility. The commenters point out that an onsite diesel generator could be installed to provide electricity, but that would increase emissions of NO<sub>x</sub>, CO, and VOCs, and onsite generators have a hard time showing compliance with the 1-hour NO<sub>2</sub> standard during the permitting process. As a result, the commenters believe that the reference to §60.18 would rule out flares as a compliance option at many storage vessels not located at natural gas processing plants. The commenters urge the EPA to exempt flares from subpart OOOO compliance requirements by maintaining the SSM exemption.

In addition, the commenters (4192, 4246) express concern that an enclosed flare also is not an option for the following reasons:

- States may not permit them. One of the commenter's association's member companies was not able to permit an enclosed flare in Texas.
- Manufacturers may not test them. This is particularly true if the test requirement requires testing with propylene vs. propane.
- Nearby property owners may not allow enclosed flares in Texas in the summer drought season, because of the fear of grass fires.

According to the commenters (4192, 4246), this would leave some operations with no acceptable compliance option and, for these reasons, the EPA should not require that flares comply with section 60.18 during upsets.

Another commenter (4219) similarly notes that for a flare to meet §60.18 standards, it may need to have a source of electricity (for a blower) or clean water (for steam), neither of which tend to be present at compressor stations. The commenter adds that tip velocity requirements are difficult or impossible to meet with respect to small tanks in remote locations. The commenter concludes that if §60.18 standards remained in the rule for flares, then flares would not be a compliance option for many storage vessels that are located at sites other than natural gas processing plants. The commenter adds that in some cases there are set-back requirements that complicate the siting of the flare or prevent installation of a flare altogether. In addition, the commenter points out that acquisition of land or right-of way may be needed if the site is not big enough for a flare and there are many other safety and logistical considerations that must be taken into account with regard to flare installation and operation, especially in dry or drought-stricken areas.

One commenter (4209) indicates that, in many instances, State and local laws/rules will not allow flaring; for example, burn bans prevent the use of flaring. The commenter believes that the EPA should include exceptions to flaring requirements to address state and local issues. In addition, the commenter notes that flaring is not always feasible due to the BTU content and adds that the EPA should allow for such exceptions.

**Response:** In Table 3 of the final rule, we now specify that §60.18 does not apply to flares; therefore, the comments concerning the requirements of §60.18 are no longer relevant. We agree with the commenters that there may be certain circumstances where flares cannot be used. However, other control technologies may be used for VOC emissions from storage vessels. In those cases, the owner or operator must choose an alternate emission control technology.

**Comment:** One commenter (4192) recommends that the EPA revise the requirement that flares comply with §60.18 to add “except that compliance with §60.18(f)(1) and (f)(4) shall not be required for flares that are intended to handle emergency releases.” The commenter states that such flares are designed to burn large quantities of gas during maintenance and emergencies, but during normal operations the amount of flow to the flare is often little more than what is required to maintain the pilot. The commenter contends that the §60.18(f)(1) requirement for Method 22 during normal operations and the §60.18(f)(4) requirement for Method 2, 2A, 2C, or 2D, or a flow meter are a waste of time, money and effort for emergency flares because they always pass during normal operations

**Response:** This comment is no longer relevant, as the final rule no longer requires that flares comply with §60.18.

#### 2.5.4.2.1 Secondary Impacts

**Comment:** One commenter (4161) notes that many of the controls for VOC emissions are based on combustion, with the resultant formation of NO<sub>x</sub> which, if an area has an ozone issue and the ozone level is NO<sub>x</sub>-limited, will increase the ozone problem. The commenter asserts that the control strategy in the NSPS must allow an exemption to these controls if such an issue is demonstrated by the agency with jurisdiction.

**Response:** The final rule specifies 95 percent control of VOC emissions. Owners and operators may choose controls other than combustion devices in those situations where the use of combustions devices may be an issue.

**Comment:** One commenter (4356) is concerned about applicability to small tanks or locations where it is infeasible to install VRUs because a flare would be the most likely control device. The commenter contends that the use of flares in highly populated areas, which can also be nonattainment areas, is a health and safety concern, wastes energy, and could contribute to ozone precursor formation.

**Response:** As already stated, the owner or operator may choose any control technology that achieves 95 percent control. As for small tanks, the final rule specifies that controls are required only for tanks with VOC emissions of 6 tpy or greater. Many of the small tanks addressed by the commenter may not meet this threshold.

#### **2.5.5. Other Comments**

**Comment:** Several commenters (4192, 4217, 4219, 4231, 4240, 4241, 4246, 4266, 4320) request that the EPA provide all storage vessel NSPS requirements in subpart OOOO rather than referencing NESHAP subpart HH. The commenters indicate that this would improve readability and clarity and note that the cross-citation is confusing because the cited sections – and the sections that they, in turn, cite – are rooted in section 112 concepts and include references to HAP control requirements. One commenter (4320) states that the application of NESHAP provisions in this manner is not justified because they add a compliance burden not justified using the same analysis employed in the development of NESHAP standards. One commenter (4241) believes that the continuous parameter monitoring and control device testing requirements associated with NESHAP HH, and incorporated by reference in the NSPS, are infeasible and excessively costly for remote production locations. One commenter (4241) points out alleged problems with specific sections of subpart HH, which they believe are unjustifiably burdensome for the VOC emissions regulated under subpart OOOO. One commenter (4219) asserts that a VRU is properly characterized as a process unit, not a control device, and that the final rule should delete any provision that would impose part 63 requirements on VRUs.

**Response:** Based on our consideration of these comments, the EPA decided to remove from subpart OOOO the citations to the requirements for performance tests, monitoring, recordkeeping, etc. in subpart HH and instead incorporate the appropriate subpart HH language into subpart OOOO.

As noted previously, we continue to believe that a VRU is a control device and should not be characterized as a process unit. Nevertheless, the final rule does not apply subpart HH requirements to VRUs.

**Comment:** One commenter (4266) notes that the proposed subpart OOOO would impose a 95 percent control requirement on affected storage vessels by incorporating by reference the 40 CFR part 63, subpart HH NESHAP storage vessel control requirements. The commenter states that even if the same control standard of 95 percent reduction is selected and economically justified, the more stringent monitoring and performance testing requirements required by the CAA in section 112 for HAPs are not required in section 111 for criteria pollutants.

**Response:** The commenter incorrectly assumes that section 111 requires less stringent monitoring, inspection, recordkeeping and reporting (MIRR) requirements than section 112. In promulgating a standard either under section 111 or 112 of the CAA, the EPA includes MIRR requirements that are adequate to ensure compliance with the standard. In this case, due to the same control, the EPA reasonably adopted in the NSPS the NESHAP subpart HH MIRR requirements that the EPA already determined to be adequate to assure compliance for such control. Even if the EPA had decided to start anew, there is no reason to believe that the MIRR requirements that would adequately assure compliance with the NSPS would be less stringent than the MIRR requirements in subpart HH.

**Comment:** Two commenters (4192, 4246) support proposed §60.5395(b), which provides that storage vessels subject to subpart HH are exempt from subpart OOOO.

The commenters also recommend that the EPA extend this approach to establish storage vessel standards for minor HAP sources in NSPS subpart OOOO, and provide in NSPS subpart OOOO that storage vessels subject to those standards are exempt from subpart HH. The commenters also indicate that once storage vessel standards are established in NSPS subpart OOOO, tanks that are subject to the control standards in NSPS subpart OOOO should be exempt from the control standards in MACT subparts HH and HHH.

**Response:** We thank the commenters for their support of the exemption from subpart OOOO for storage vessels subject to subpart HH.

We do not understand precisely what the commenters are suggesting with regard to establishing standards in subpart OOOO for minor HAP sources, but note that CAA section 111 does not provide authority for the EPA to regulate HAP emissions.

Finally, while we have established in the final subpart OOOO that storage vessels that are subject to and controlled in accordance with subpart HH are not subject to the requirements of subpart OOOO, we do not believe that it is appropriate to provide the complementary exemption from subpart HH to storage vessels subject to subpart OOOO. In cases where storage vessels are subject to subpart HH, we believe that they should be required to meet all the requirements of that subpart. We do not believe that it is appropriate to set up a system that allows sources to choose whether to comply with an NSPS (subpart OOOO) or a NESHAP (subpart HH).

**Comment:** Three commenters (4192, 4246, 4263) recommend that proposed §60.5410(e)(2) be revised to specify that the initial performance test be conducted by the later of 180 days after initial startup or the date of publication of the final rule in the Federal Register. Two of the commenters (4192, 4246) state that this revision is needed to provide owner/operators a reasonable and predictable period of time to install the necessary controls. These commenters believe that a 180-day compliance window following initial startup is reasonable for the following reasons:

- The publication date of the final rule is unknown.
- The requirements of the final rule are unknown.
- Delivery time frames for a VRU are, at a minimum, 12 weeks.
- Winter installations are difficult due to ground freezing.
- Industry has valid concerns that suppliers may not be able to meet demand for VRU systems upon promulgation of the final rule. Shortages of these systems will lead to issues meeting compliance deadlines.
- In addition to time delays associated with ordering control devices, there is dirt work, pads, electrical, plumbing, piping, etc to be designed, ordered, delivered and constructed.
- There may also be work associated with electricity delivery to some sites.
- Following completion of construction and installation, testing still needs to be performed.

**Response:** The final rule language (now §60.5410(e)(5)) does provide that the initial performance test must be conducted by the date of publication of the final rule in the *Federal Register* or 180 after initial startup, whichever is later. However, this does not postpone the date that compliance must be achieved until this date. The final rule requires that owners or operators install and operate controls at the time of startup at well sites with one or more other wells already in production. At well sites with no other wells in production, the owner or operator has



30 days to determine what emissions from the associated storage vessels will be, and an additional 30 days to install required controls.

**Comment:** Several commenters (4177, 4217, 4220, 4241, 4252, 4258, 4264, 4266, 4281) state that operators need time to evaluate the emissions or throughputs before the controls must be installed. Six of these commenters (4177, 4220, 4252, 4264, 4266, 4281) recommend that the EPA allow the first 30 days of production to be the applicability basis and require compliance within 60 days thereafter. Three of these commenters (4177, 4220, 4266) note that the Wyoming DEQ bases control on the first 30 days of production multiplied by a decline factor, then control must be installed 60 days later, and suggest that the Wyoming approach could be a model with adjustment made to the “decline factor” such that it is more representative of an individual basin or field’s average decline rate. One of the commenters (4252) adds that if the EPA fails to specify a reasonable compliance period, then storage vessels would potentially need to be equipped with controls at every new production site – just in case the production characteristics might trigger the control requirements – which would result in installing controls at many sites for which controls would eventually be shown to have been neither required nor cost effective.

Another of the commenters (4241) states that the average production rate of a new well generally is not known until 60 days after first production or, in the case of a pad-wide tank battery, 60 days after the final well is completed. On this basis, the commenter recommends a 90-day evaluation period (similar to state-wide Colorado Regulation 7 Section XVII.C.2 requirements) to determine which vessels will likely trigger the applicability thresholds. One of the commenters (4258) recommends that the EPA allow for an initial 90-180 day period during which the operator can more correctly evaluate each new storage vessel and well. Another commenter (4217) requests that the EPA allow 180 days after first production to comply with the standard, noting that 180 days would be allowed for a modified affected facility per §60.14(g).

**Response:** The EPA agrees that some lag time may be needed after initial start-up for the owner or operator to determine the long-term production level of a well and to procure the appropriate control equipment. For this reason, the EPA has decided to adopt the approach taken in the Wyoming rules for new sources. In the final rule, for storage vessels installed at well sites with no wells already in production at the time of installation, or in situations where a storage vessel currently emitting less than 6 tpy experiences an increase in throughput due to an additional well coming on line or other factor, the final rule provides a 30-day period for the owner or operator to determine whether the magnitude of VOC emissions from the storage vessel will be at least 6 tpy. If the storage vessel requires control, the final rule provides an additional 30 days for the control device to be installed and operational. We believe that the Wyoming experience illustrates that this will be sufficient time to size and obtain suitable controls.

However, for replacement storage vessels or additional storage vessels at well sites with one or more wells already in production, we believe the operator already should have information on liquid composition and throughput. This information would allow estimation of VOC emissions to determine applicability of control requirements and for acquisition and installation of a control device concurrent with the replacement or additional storage vessel being installed. Thus, for well sites with one or more wells already in production at the time of installation, or in situations where an existing storage vessel is replaced, these estimation and installation periods are not provided.

**Comment:** One commenter (4266) recommends that the EPA include in the final rule a provision to allow time for an affected storage vessel that is initially below the exemption level to implement controls after exceeding the exemption level. The commenter indicates that the time should be sufficient for designing, ordering and installing the necessary equipment, and adds that although this type of scenario would not be a modification, the EPA could use a similar approach used in §60.14(g) and allow 180 days to come into compliance with all the applicable standards.

**Response:** As noted above, in situations where a storage vessel currently emitting less than 6 tpy experiences an increase in throughput due to an additional well coming on line or other factor, the final rule provides a 30-day period for the owner or operator to determine whether the magnitude of VOC emissions from the storage vessel will be at least 6 tpy. If the storage vessel requires control, the final rule provides an additional 30 days for the control device to be installed and operational. We believe that the Wyoming experience illustrates that this will be sufficient time to size and obtain suitable controls.

**Comment:** One commenter (4266) states that the compliance requirements for vapor combustors for controlling storage vessels are a part of the equipment design that is controlled by the equipment manufacturer, not the owner/operator, and that the EPA needs to allow sufficient time for the manufacturer to review the equipment design and label it as complying with the requirements of this rule. The commenter notes that the proposed performance test requirements for storage vessel control devices cite §63.772(e) of NESHAP subpart HH, which include a provision for the performance test to be conducted by the manufacturer as specified in §63.772(h). The commenter indicates that it will require considerable lead time before such “manufacturer certified” control devices are readily available. Accordingly, the commenter requests that the effective date of the storage tank requirements under subpart OOOO be delayed for 3 years to allow time for the specified control devices to become available.

**Response:** We agree that it will likely take some time beyond the promulgation date of the NSPS for combustor manufacturers to have control devices constructed, tested, documented and available for operators to install in efforts to comply with the storage vessel requirements of the

NSPS. Under the final rule, operators are not required to conduct individual performance tests on combustors installed in the field if the combustor manufacturer tests and documents for the owner or operator that the model achieves a control efficiency of 95.0 percent. The time required for testing and documentation is often longer than for a single model when manufacturers provide multiple models for varying applications based on capacity. We disagree with the commenter that a 3-year period would be required, and instead believe this testing and documentation program would require an “adjustment period” of one year for manufacturers to be ready to supply the operators with the correct equipment they need. At the end of this adjustment period, we believe owners and operators should have no problem securing control devices that are manufacturer-tested and have appropriate documentation for determining control efficiency. Accordingly, the final rule provides for a one-year phase-in period beginning on the date of publication of the final rule in the *Federal Register* before the 95.0 percent control requirement is effective.

**Comment:** One commenter (4231) requests that the definitions of condensate and crude oil provided by the EPA in the proposed subpart be removed.

**Response:** We disagree with the commenter. While these terms have been removed from the storage vessel definitions, the terms are used elsewhere in the rule and as such the terms should be defined.

**Comment:** Four commenters (4135, 4230, 4241, 4266) express concern with the proposed definition of “condensate.” The commenters suggest alternative definitions.

**Response:** We disagree that the definition of condensate needs to be revised, and have made no changes to the definition in the final rule.

**Comment:** One commenter (4230) believes that the definition for “API Gravity” should be made more specific because the literature appears to include variations as to how to calculate this value.

**Response:** We disagree with the commenter. We believe the definition is general enough to encompass any variations in the system recommended by API.

**Comment:** One commenter (4266) recommends that a definition for “First Date of Production” be added to the final rule and provides suggested language.

**Response:** The EPA does not agree that the concept of the “date of first production” is needed, and we have not added a definition for the term.

**Comment:** One commenter (4266), who prefers replacing the throughput applicability threshold with a VOC emissions threshold, also recommends that proposed §60.5395(a)(1) and (2) be clarified to state that the exemptions are based on calendar year annual averages, which would avoid surprises from fluctuating operations and minimize burdens by matching the time period used for emission estimating with other reporting where tank throughput data are needed.

**Response:** The final rule no longer uses throughput thresholds, so these comments are no longer relevant.

**Comment:** If the EPA retains the citations to subpart HH (which the commenters oppose), two commenters (4266, 4281) request that the EPA clearly allow that the performance test be conducted by the equipment manufacturer. One commenter (4266) provides alternative language for the initial performance test requirement of proposed §60.5410(e)(2) to clarify this.

**Response:** The EPA has not retained the citations to subpart HH, but we have included language in subpart OOOO providing procedures for control device manufacturers to test and certify their products.

**Comment:** One commenter (4219) suggests that, for the sake of clarity, the word "already" be struck from proposed §60.5395(b). The commenter believes that if a storage vessel is subject to and controlled in accordance with §63.766, then it should be exempt from proposed §60.5395(a) regardless of when the vessel came under such controls. According to the commenter, use of the word "already" only injects the possibility for confusion.

**Response:** We agree that this may create confusion and have made the suggested change in the final rule.

## 2.6 Equipment Leaks

**Comment:** Two commenters (3459, 4275) recommend that the new LDAR requirements apply to existing processing plants as well as to new plants. One commenter (4275) adds that improved leak detection methods are equally available to detect VOC leaks at existing plants and should be required, as demonstrated by Colorado's rules to reduce VOCs at existing gas plants in ozone nonattainment areas.

**Response:** Section 111(b) of the CAA requires that the EPA establish NSPS for new sources in a listed source category. Section 111(a) defines new sources to include sources that undergo modification. Thus, the EPA does not have the authority under section 111(b) to extend the rule to existing sources, until the existing sources undergo a modification or reconstruction that triggers an NSPS standard.

**Comment:** One commenter (4274) believes it is not cost effective to address equipment leaks at sites, gathering and boosting facilities, and transmission and storage facilities at this time. The commenter believes, however, that as technology continues to improve, there may be cost effective methods that can be introduced, which is important as the number of well sites increases, especially those near communities. The commenter recommends that the EPA monitor this situation, as shale plays develop and new cost effective technology becomes available.

**Response:** We evaluated various options for reducing VOC emissions from equipment leaks at sites, gathering and boosting facilities, and transmission and storage facilities, but found these options not to be cost effective. Therefore, we were unable to prescribe a monitoring program to reduce VOC emissions from these sources at this time.

### 2.6.1 Leak Definition

**Comment:** Two commenters (4192, 4246) state that the EPA should specify that equipment is considered not in VOC service if the VOC content is not expected to exceed 10 percent by weight during normal operation. The commenters believe this is necessary to accommodate brief periods during upset conditions when the lines may contain heavier components than normal, such as in residue gas lines. The commenters add that if the EPA removes the SSM exemption, the rule should clearly provide that residue lines remain exempt from the provisions of subpart OOOO as long as they normally contain less than 10 percent VOC by weight. The commenters also recommend that engineering judgment be allowed to estimate VOC content for any stream, whether the equipment is in VOC service or out of VOC service. The commenters state there is no reason to refer to “in wet gas service” because “in VOC service” should define all affected components. The commenters state that removing the term “in wet gas service” from §60.5365(f)(1) and §60.5400 would streamline and simplify this regulation.

One commenter (4266) states that the proposed leak provisions of §60.5430 would apply to all components regardless of the quantity of VOC present, in contrast to “in VOC service” which is based on the VOC content of the material handled. The commenter believes that, just as the EPA concluded in establishing the criteria for a component in VOC service that it is not cost effective to monitor components containing less than 10 percent VOC, this same logic should apply to components handling wet gas that contains less than 10 percent VOC. The commenter states that for wet gas components in the 1-10 percent VOC concentration range, the cost effectiveness is between 20 and 2 times the EPA’s estimates, depending on the VOC concentration of each particular stream. Thus, the commenter states, it is not cost effective (and not BSER) to apply the proposed equipment leak requirements to such components, and the definition of “in wet gas service” should be deleted and the “in VOC service” criterion should be applied to all components in the source category.

The commenter (4266) adds that, if the EPA intends to continue regulation of lower VOC content streams at natural gas processing plants, the definition of “in wet gas service” should be revised to include the field gas before extraction step that contains more than X percent VOC by weight (recommends X be equal to or greater than 5). The commenter believes this revised definition will still result in a mandate of controls that are not cost-effective, but the impact would be lessened because inert gas streams from enhanced recovery systems, coal-bed methane, and dry shale gas streams that contain little to no VOC would no longer require monitoring.

**Response:** It is the EPA’s intent that subpart OOOO regulates VOC emissions. We do not agree that an “in VOC service” exemption is warranted. We have made selected revisions to the rule to account for specific segments of the source category in which the VOC content of the natural gas handled by the processes in those segments is consistently and reliably nearly zero. Thus, pneumatic controllers and compressors in the transmission and storage and distribution segments will not be subject to the final rule.

We believe this more focused approach provides better certainty that emission sources with appreciable VOC emissions will be subject to the rule. A threshold based on “in VOC service,” on the other hand, introduces the possibility that an emission source with a high volume throughput (and the possibility of having appreciable emissions) but does not meet the definition of “in VOC service” could escape control.

As discussed elsewhere in this document, however, we note that we revised §60.5365(f) and §60.5400 to exclude compressors.

**Comment:** One commenter (4240) believes that the most basic elements of an LDAR program are the definition of a leak, frequency of monitoring, and timeline in which leaks are repaired. The commenter states that the Bay Area Air Quality Management District (BAAQMD) has demonstrated that stricter regulation is feasible. The commenter (4240) states that, in addition to having a lower leak threshold, the BAAQMD rule is stricter than the subparts VV and VVa rules because it requires monitoring for methane leaks. The commenter states that this oversight may potentially diminish the effectiveness of leak detection at a specified threshold. The commenter recommends the EPA specify that leak-detection equipment be sensitive to methane and adopt BAAQMD’s lower threshold or explain why these steps are infeasible for natural gas processing plants.

**Response:** With respect to methane emitted from the oil and gas sector, in the preamble to the proposed rule, the EPA states that it is continuing to assess methane emissions and evaluate appropriate actions for addressing these concerns. The EPA notes that control measures for methane are the same as those for VOC, which the EPA has previously regulated and is requiring

further reduction in subpart OOOO. The VOC requirements in this rule would also achieve substantial reduction in methane emissions as a co-benefit. However, the EPA does not have sufficient information at this time to assess whether the category continues to emit significant amount of methane even with the expanded VOC controls and what measures are appropriate for reducing the remaining methane emission. For these reasons, the EPA is continuing its assessment of methane emissions, including gathering and reviewing additional information, to evaluate appropriate actions.

Absent convincing data demonstrating that lower emissions can be achieved through the BAAQMD requirements, we are not revising our analysis at this time.

**Comment:** One commenter (4246) believes that §60.5421 should be revised to 10,000 ppm not 500 ppm, as the commenter believes leaks should be defined as 10,000 ppm or greater. The commenter recommends deleting §60.5401(b)(2), the PRD requirement for 5,000 ppm equipment leak threshold. One commenter (4266) is unclear whether the alternate leak definition for PRDs in §60.5401(b)(2) is a typographical error, as it states, “If an instrument reading of 5,000 ppm or greater is measured, a leak is detected.” The commenter contrasts this with §60.5421(b)(2)(iv), where the language suggests a leak definition of 500 ppm. The commenter (4246) also believes that §60.5421 should be revised to “10,000 ppm” not “500 ppm”, as the commenter believes leaks should be defined as 10,000 ppm or greater. The commenter adds that the proposed regulatory text is internally inconsistent at proposed 40 CFR §60.5421(b)(2)(iv) which requires recording values “above 500 ppm” for pressure relief devices, however, proposed 40 CFR §60.5401(b)(2) defines a leak as 5,000 ppm. One commenter (4191) recommends that the EPA explain the exception to the leak definition threshold of 500 ppm, which allows that threshold to be increased to 5,000 ppm. One commenter (4192) recommends that a leak should be defined as 10,000 ppm or greater for pressure relief devices. The commenter also notes that the proposed regulatory text is internally inconsistent as proposed §60.5421(b)(2)(iv) requires recording values “above 500 ppm” for pressure relief devices, however, proposed §60.5401(b)(2) states that a leak is defined as 5,000 ppm. The commenter requests clarification.

**Response:** As stated in the preamble to the proposed rule, the EPA reviewed several sources to determine BSER for each type of equipment. To develop control options, the EPA examined requirements found in various State and local rules, applicable Federal regulations such as the HON, the MON, the Generic MACT, and the CAR, data from NEIC inspections, and emissions data from industry representatives. The Agency considered industries subject to the above-referenced standards as a basis for examining the appropriateness of applying requirements at the NESHAP levels in the NSPS. Section 111(b)(1)(B) of the CAA allows the Agency to consider the emission limitations and percent reductions achieved in practice that are beyond the current regulations when revising NSPS. Once the EPA identified options and leak definitions for various equipment, each option was evaluated in conjunction with technical feasibility, costs,

and emissions reductions to determine BSER for each type of equipment. Based on this analysis, we determined that the leak definition should be defined as 500 ppm.

The commenter is correct that an “instrument reading of 5,000 ppm” is a typographical error. The correct leak definition for pressure relief devices is an instrument reading of 500 ppm or greater. Section 60.5421(b)(2)(iv) simply requires you to keep a record of any repair attempt after which the instrument reading is 500 ppm or greater. This change will make the requirement in 40 CFR §60.5421(b)(2)(iv) consistent with §60.5401(b)(2).

**Comment:** Four commenters (4159, 4220, 4273, 4266) state that lowering the leak definition from 10,000 ppm to 2,000 ppm for pumps is expected to be very costly. The commenters state that it would likely require different seal material for pumps and necessitate extending the compliance time to the next scheduled turnaround to allow time for planning the equipment upgrade that would be required. The commenters also state that increasing the stringency of the leak definition for valves and pumps might not lead to actual emission reductions. The commenters state that if those components cannot be repaired to be under the defined leaking threshold while on-line (as is expected for multiple components) those components will be placed on the repair list for the next scheduled process unit shutdown. The commenters indicate that the unintended consequence will be an increase of the number of components on the repair list, an extension of the duration of required maintenance time, and higher industry costs due to lost operations without clear environmental benefits. One commenter (4266) adds that the EPA did not include pumps in its model plants for natural gas processing facilities and thus is not justifying the extra burden or demonstrating any environmental benefit and must demonstrate the need for such a LDAR program for pumps and demonstrate this is BSER.

**Response:** The cost analysis has included costs for materials and labor to replace packing and seals from components. We believe that the replacement of packing or seals is considered to be part of the normal maintenance of a facility. The repair of components not only eliminates emissions from that equipment, it also helps maintain the physical integrity of the facility, thereby reducing the likelihood of leaks elsewhere on the line.

**Comment:** One commenter (4184) supports tightening the definition of leak from 10,000 ppm to 500 ppm for VOCs based on a reference calibration gas. However, the commenter states that the EPA concluded that while processing plants would incur only an incremental cost of an enhanced detection monitoring program, production sites associated with a wellhead, gathering stations, and storage would incur substantial cost of initiating a new leak detection program. The commenter believes that a prescribed monitoring program is necessary to define what constitutes a “significant” leak at these other source categories to enable states with delegated programs to implement the regulatory requirement to mitigate significant leaks that might be associated with these specific source operations.



**Response:** We evaluated a number of different options for reducing VOC emissions from equipment leaks for the production, gathering and boosting, and transmission and storage segments, but found these options not to be cost effective. Therefore, we were unable to prescribe a monitoring program to reduce VOC emissions from these sources.

**Comment:** Several commenters (4192, 4214, 4219, 4220, 4233, 4246, 4252, 4254, 4266) state that 10,000 ppm should be the leak definition for all equipment because the justification for achieving 10,000 ppm in the original 1984 subpart KKK preamble is still valid and the cost for compliance below 500 ppm is much higher than that at 10,000 ppm. One commenter (4219) adds that connectors should be monitored by only visual, audible and olfactory methods. The commenter states that the proposed standard will place a burden on industry. Two commenters (4185, 4219) add that while the synthetic organic chemical industry operates under a 500 ppm leak definition threshold, the emissions associated with that industry tend to be more toxic than the VOC emissions in the natural gas industry. One commenter (4193) believes the leak threshold for natural gas processing plants should be 5,000 ppm rather than 500 ppm. Another commenter (4252) believes that the proposed leak definition for valves would be burdensome without achieving the VOC reduction as claimed by the EPA.

**Response:** The EPA agrees that lowering the leak definition for a component will increase the cost of compliance; however the final rule does not include any leak definitions below 500 ppm. The EPA believes that the 500 ppm VOC leak definitions used by the synthetic organic chemical industry to reduce toxic emissions are also appropriate for the natural gas industry. Nearly all of the toxic emissions generated from equipment leaks by the synthetic chemical industry are also VOC and hence would be detectable using the Method 21 monitoring device. Discussions of the BSER determination are presented in the preamble to the proposed amendments (76 FR 52738) and in the TSD. The analysis of the LDAR programs show that subpart VVa LDAR is cost effective for natural gas processing plants and was determined to be BSER.

## **2.6.2 Leaker Emission Factors and Emission Estimation Methodology**

**Comment:** One commenter (4266) states that the baseline VOC emissions the EPA used in Table 8-12 of the TSD are in error because they represent emissions from an uncontrolled facility. Four commenters (4159, 4185, 4220, 4273) state that the proposed revisions are highly burdensome and are not cost-effective for reducing VOC emissions from valves and connectors and reducing the leak definition to 500 ppm will have no meaningful environmental benefit. Five commenters (4159, 4185, 4220, 4266, 4273) also state that on the cost side, reducing the leak definition in this manner will dramatically increase the costs of the rule and should not be adopted. Three commenters (4159, 4220, 4273) indicate that the percentage of valves that leak above 10,000 ppm is extremely low, ranging between 0.1 - 8.8 percent, but these leaking valves

contribute 82 - 99.7 percent of the total mass emissions from facility valves when using the Leak/No-Leak method from the EPA's 1995 protocol for estimating emission. Further, four commenters (4159, 4220, 4266, 4273) believe that the approach used by the EPA in the TSD for this proposed rule is flawed in that the model calculates emissions using an average emissions factor, which typically overestimates emissions by 20 - 40 percent when compared to the Leak/No-Leak method, and by even more if compared to the emissions correlation approach. The commenters state that, thus, the TSD derives an estimated VOC emission control effectiveness of 94 percent, which is not realistic even if the baseline was that for an uncontrolled facility. One commenter (4266) believes a more realistic value, based on applying the CE to the EPA's uncontrolled emissions estimate, would be in the range of 4.3 to 5.7 tons/yr, per facility, and this should be used as the baseline from which to calculate the incremental impact of the proposed regulations. Three commenters (4159, 4220, 4273) recommend that the EPA must conduct an "incremental cost" analysis and only take "credit" for repairs that would not occur at the 10,000 ppm level but would occur at the 500 ppm level and must also take credit only for the time period during which the leak would stay below 10,000 ppm.

One commenter (4266) believes the EPA overestimated valve control-effectiveness for its model plant and the natural gas processing plant model in its TSD to analyze the impact of these new leak definitions for the LDAR program is flawed. The commenter (4266) states that the calculations of baseline emissions for the model plant significantly overestimate these emissions since the method used relies on component counts and average emission factors by component type, which are, at best, representative of uncontrolled facilities. The commenter (4266) adds that since subpart KKK was promulgated in 1985, a significant proportion of the existing natural gas plants that would become subject to subpart OOOO through modification will already be complying with subpart KKK, and all new natural gas plants would have to comply with subpart KKK if subpart OOOO was not in place. Thus, the basis for evaluating subpart OOOO impacts, the commenter (4266) states, must be compliance with subpart KKK, not an uncontrolled emissions scenario as was used in the EPA's TSD analysis that supports the proposed rule.

**Response:** We believe that the commenter is referring to Table 8-11 of the TSD which lists the nationwide baseline emissions for new sources and not Table 8-12.

The EPA is governed by the CAA in setting national standards that adequately reflect the emissions level for new sources nationwide. The evaluation of the costs and emission reductions were based on the incremental cost of going from a subpart VV to a subpart VVa LDAR program. Based on our analysis, we found that an additional 13.5 tons per year of VOC emissions could be reduced by requiring a subpart VVa LDAR program at an additional cost of \$45,000, in comparison to the subpart VV LDAR program. We also evaluated the incremental costs using emission and cost data from the "Analysis of Emission Reduction Techniques for Equipment Leaks," which is located in the docket. Using the latest cost and emission

information, we found the cost effectiveness to be comparable to the cost effectiveness calculated in the TSD. Therefore, we believe the results show that the subpart VVa is cost effective and reflects the emission level that can be achieved for new sources.

As the commenter noted, we calculated emissions and emissions reductions using the average emission factor approach. The other emission estimation approaches (e.g., screening ranges approach formerly known as the leak/no-leak approach) were developed to allow facilities to estimate emissions using screening data from the facility. The commenter provided no data that shows that the emission factor method overestimates emissions from equipment leaks; therefore, we believe that the emission factor approach provides a reasonable estimate of emissions from equipment leaks.

The VOC control effectiveness was calculated using the “Approach for Estimating LDAR Control Effectiveness” in the Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017). This approach uses the leak definition, the initial leak frequency, and the final leak frequency. The control effectiveness of an LDAR program can be estimated based on the average leak rate before the LDAR program is implemented and the average leak rate after the LDAR program is in place. We believe this approach provides the best method for determining the control effectiveness of a LDAR program.

In calculating the cost effectiveness of the LDAR options, the costs and emissions were based on the incremental change between the subpart VV and subpart VVa LDAR programs. The subpart VVa costs and emission reductions only account for the additional costs for repair that occur from leaks between 500 and 10,000 ppm for valves. The subpart VVa costs also include the costs and emission reductions for applying a 500 ppm connector leak detection program.

**Comment:** One commenter (4266) states that their data for three natural gas processing units where the actual ppm concentration values monitored are recorded indicate that the proposed changes to the LDAR program for natural gas processing plants that will redefine leaking valves as those leaking above 500 ppm will not lead to any substantial VOC emissions reductions. The commenter believes that lowering the leak definition to 500 ppm might reduce VOC emissions by less than 0.6 tons/year but this is much lower than the 10.9 tons/yr postulated by the EPA for the TSD model plant. Therefore, the commenter concludes that the proposed revised LDAR program for valves will be burdensome without achieving the VOC control claimed and, considering its poor cost effectiveness, does not represent BSER for natural gas plant equipment leaks, as required by the CAA for NSPS.

**Response:** We revisited the equipment leak costs and emission reductions for natural gas processing plants using data collected to support the development of the uniform standards for equipment leaks rule (40 CFR part 65, subpart J) that the EPA proposed on February 24, 2012.

Using these data, we estimated the VOC reductions from going from a subpart VV to a subpart VVa LDAR program for a gas processing plant to be 4.56 tons per year at a cost effectiveness of \$2,693 per ton of VOC removed. We believe the subpart VVa requirements are cost effective and represent BSER for equipment leaks at natural gas processing plants.

### 2.6.3 Control Techniques

**Comment:** One commenter (4357) states that periodic, routine measurement of emissions using mobile CRDS or other remote sensing systems will quantify pollutant emissions and provide real-time feedback for corrective action. The commenter (4357) believes this will achieve the objective of the proposed regulation to measure, document, and ultimately reduce fugitive emissions from upstream oil and gas processes.

**Response:** Cavity Ring-Down Spectroscopy (CRDS) analyzers are used to measure methane plumes in the air, map them, and then alert users and repair teams upon leak detection in real-time. This system would have more difficulty measuring VOC emissions from processing plants, because this system would require spectra for each of the VOC pollutants that are being measured. In addition, the analyzers require laser systems and high reflectivity mirrors which would make this system orders of magnitude more expensive than other alternative spectroscopic techniques. Therefore, we do not believe this system is an appropriate option for measuring equipment leak VOC emissions from natural gas processing plants.

**Comment:** One commenter (4240) states that the EPA must require "repeat offenders" to be replaced. The commenter notes that the South Coast Air Quality Management District and Ventura County Air Pollution Control District each have rules under which components that have been subject to repair more than, e.g., 5 times within a year, be replaced with BACT/BARCT or be vented to an approved air pollution control device. One commenter (4375) urges the EPA to require equipment with an unsuccessfully repaired leak to be shut down until the leak is fully repaired. The commenter believes it unacceptable to allow a company to continue operating if a repair is "unsuccessful" because the company attempting to repair the leak is not incentivized to fix it rapidly.

**Response:** We do not have the data, nor did the commenter provide us any, to evaluate whether, and at which point, it becomes cost effective to replace a component that has been leaking as opposed to repairing it. We are therefore not requiring in this final rule that "repeat offenders" be replaced.

### 2.6.3.1 Subpart VVa LDAR Program

#### 2.6.3.1.1 Applicability

**Comment:** One commenter (4162) states that the EPA has proposed to adopt 40 CFR 60, subpart VVa, but did consider the option of making changes in standards for individual components. The commenter states that subpart VVa is beneficial as it provides a lower amount (ppm) for defining a leak, but these new emission sources have never been subject to Federal standards, and each of the components should be considered individually before a rule is established.

**Response:** We evaluated costs and emission reductions from both the individual component and LDAR programs during the development of the proposed standards. Based on these results, we determined that the subpart VVa LDAR program adequately reflected the emissions level for new sources nationwide. Many processing plants have already implemented a subpart VV LDAR program as part of the requirements for complying with NSPS requirements of subpart KKK.

**Comment:** One commenter (4240) states that while the EPA proposes to require all new gas processing plants to comply with the enhanced leak detection standards of subpart VVa, existing plants will continue to be bound by the more relaxed standards of subpart VV. The commenter states that the EPA estimates there are 577 existing plants operating in the U.S. today. The commenter states that applying the annual emission reductions from implementing a subpart VVa LDAR program to individual gas plants estimated in Table 8-13 of the TSD, extending the subpart VVa requirements to existing sources would result in an additional reduction of 7,790 tons of VOCs from the atmosphere. The commenter indicates that the EPA must apply this more effective and less expensive, standard to existing processing plants immediately. The commenter asserts that no technical or logistical efforts appear to require a long phase-in period, though some need to hire or train sufficient workers may delay phase-in somewhat. The commenter states that even assuming some phase-in period, operators and the public can benefit from enhanced leak control as soon as the EPA extends these standards to existing sources.

**Response:** Section 111(b) of the CAA requires that the EPA establish NSPS for new sources in a listed source category. Section 111(a) defines new sources to include sources that undergo modification. Thus, the EPA does not have the authority under section 111(b) to extend the rule to existing sources. Due to the section 111(a) modification and reconstruction provisions, however, existing sources may become subject to the rule when modified or reconstructed.

#### 2.6.3.1.2 Cost impacts and cost effectiveness

**Comment:** One commenter (4266) states the EPA did not account for the additional cost to repair valves and connectors at natural gas processing plant if a leak is defined as 500 ppm. The commenter believes that the additional annual costs for repairing valves and connectors to a more stringent leak definition of less than 500 ppm are significant. For a natural gas processing plant, similar to the model plant in the TSD, the commenter estimates the incremental repair costs to range from \$60,500 to \$121,000 with an average of \$90,750. The commenter believes that these costs must also be accounted for in the EPA's BSER analysis prior to promulgating the new LDAR requirements.

**Response:** We disagree with the commenter that the repair costs for the subpart VVa standard were not accounted for in the cost analysis. Labor costs, material costs, and repair time were all included in the costs analysis that showed that the subpart VVa LDAR program was cost effective for natural gas processing plants.

**Comment:** Four commenters (4159, 4220, 4266, 4273) state that the EPA appears to be understating the costs of dropping the threshold regarding connectors in that the EPA assumes a cost of \$1.50 per monitoring event. The commenters state that this does not reflect the true cost of monitoring connectors. The commenters add that connectors cost more to monitor per component than valves for a number of reasons: the time required to monitor a connector is longer because the entire circumference of the connector must be traversed; connectors often are in hard-to-reach locations; and some connectors require that a lift be rented to access them. In addition, the commenters state that connectors, by their nature, tend to be spread out and hard to find, particularly when monitoring events may be 4 years apart. The commenters state that it is likely that each time connectors are monitored it is being done for the first time by that operator.

The commenters (4159, 4220, 4266, 4273) believe that recordkeeping will also be more costly and burdensome for connectors than for valves because valve additions or deletions are typically predetermined and approved by operations management, but connectors are not typically shown on process & instrumentation drawings which can lead to discovery after the fact by monitoring personnel. The commenters believe that this regulatory requirement for connectors would expose facilities to potential violations with no corresponding environmental benefit. The commenters state that to maintain a high level of compliance with such a requirement adds administrative burden and costs that are not reflected in the EPA's cost estimates. The commenters recommend that the EPA should reconsider the proposed leak definition in view of the technical and logistical infeasibility of online valve repair to below 500 ppm within the 15-day repair period. The commenters state that many of the leakers would require delay of repair, and thus the expected reductions would not be realized. One commenter (4192) states the EPA should confirm that, for purposes of this subpart, it is not necessary to tag each connector. The

commenter believes that, as allowed in Applicability Determination Control Number: NR89, an alternative marking system of assigning each connector an identification number corresponding to the nearest piece of physically-tagged equipment, and recording that identification number in a log, should be acceptable.

One commenter (4266) states that they have collected limited data from three natural gas processing facilities that voluntarily monitor and record screening values for connectors. The commenter states that, as expected, connectors do not exhibit significant VOC emissions, and do not typically register concentrations over 10,000 ppm when monitored with VOC sniffers. The commenter also states that for the process units analyzed, the number of connectors range from 1,463 to 11,272, and the corresponding emissions range from 0.076 to 1.77 tpy of VOCs. The commenter adds that for those process units 27 – 57 percent of the connectors are found to be in the screening value range of 500 and 10,000 ppm. The commenter states that when these data are normalized for a facility with an equivalent number of connectors as in the model plant, potentially reducible emissions from connectors are 0.87 tons VOC/year. Therefore, according to the commenter, a value of 0.87 tpy of VOC emission reduction is a more realistic value than the EPA's 1.57 tpy estimate to judge the effectiveness of the proposed connector program. The commenter believes that this value and a more realistic CE than the 95.9 percent the EPA assumed should be used to calculate the cost effectiveness of the proposed connectors program.

One commenter (4192) states that, for connectors, the EPA should keep the subpart VV standard of detecting potential leaks by means of AVO or any other detection method. Two commenters (4192, 4246) believe that the connector monitoring cost should be \$2.50/connector as was assumed for the refining sector, as there is no reason to believe that connector monitoring costs should be lower for natural gas processing plants. The commenter also believes that the EPA should apply the original subpart KKK assumption that there are 4.25 connectors for each valve at an average natural gas processing plant, and recalculate the cost analysis of connector monitoring accordingly. The commenter states that applying correct assumptions regarding monitoring costs and the quantity of connectors would nearly double the cost per ton associated with connector monitoring. The commenter recommends that a new provision, 40 CFR §60.5401(j), be added that reads: "Connectors are exempt from 40 CFR §60.482-11a. Instead, all connectors are subject to 40 CFR §60.482-8a."

Two commenters (4192, 4246) believe the EPA should assume a connector monitoring cost of \$2.50/connector, as the EPA has previously assumed for the refining sector. The commenters also ask the EPA to increase the assumed number of connectors in gas plants to at least the original NSPS subpart KKK estimate of 4.25 connectors to 1 valve and recalculate the cost analysis of connector monitoring accordingly. The commenters expect this will nearly double the costs per ton associated with connector monitoring. The commenter (4266) believes the EPA

oversimplified cost assumptions and failed to consider such factors as high turnover of personnel, remoteness of some locations, and added administrative burden.

One commenter (4193) urges the EPA to eliminate connectors from the list of monitored equipment. The commenter believes the EPA should keep the subpart VV standard for connectors of “evidence of a potential leak is found by visual, audible, olfactory, or any other detection method.” One commenter (4218) recommends that subpart OOOO instead require that gas/vapor connectors be monitored through AVO, similar to liquid connectors. The commenter states that those connectors discovered through OVA inspections can be monitored by Method 21 to confirm a leak, or assumed to be leaking by the owner. The commenter asserts that, at that point, leaking connectors should be required to meet the work practice standards for repairs in proposed §60.5401(b)(3).

**Response:** The cost for monitoring connectors was based on cost data from the SOCFI and refinery facilities. Additional connector cost data was reviewed during the comment period that lists a cost of \$2.50 for monitoring connectors based on information provided by a monitoring repair contractor. Substituting this newer connector monitoring cost into the incremental cost calculation increases the VOC cost effectiveness from \$3,352 to \$3,434, which we believe is still cost effective.

We disagree with the commenter that administrative costs were not considered in the cost estimate. The cost estimates provides 300 hours annually for administrative and reporting labor for implementing the LDAR program. In addition, the cost estimate provides 340 hours for training and planning for the LDAR program. We believe these hours will provide sufficient time to implement the LDAR program and locate all the connectors at the facility. The requirements in §60.486a requires identification of all equipment, including connectors, that are being monitored. The EPA believes the identification of these components is needed to ensure compliance with the final regulations and allow inspectors to monitor ongoing compliance at the facility. We believe the inclusion of connectors in the LDAR program provides significant VOC reduction and is cost effective. With respect to the applicability determination, the final rule requires that all connectors be tagged, but a facility can work with their respective regulatory agency to determine what connector identification method is acceptable.

We reviewed the data provided by the commenter regarding the VOC emission reductions corresponding to voluntary connector monitoring. However, we are unable to verify the claims because the commenter did not submit the referenced data. The small sampling does show that significant VOC reductions can be achieved through a connector monitoring program. The EPA did recalculate the connector monitoring emission reductions using emissions data and methodology used to develop the Uniform Standards rule and found that the connector monitoring in the subpart VVa regulations would reduce VOC by 2.74 tons per year.



We disagree with the commenter regarding the infeasibility of valve repair to below 500 ppm within the 15-day repair period. Leaks from valves are typically repaired by replacing the packing or seals in the valve stem, and is considered to be part of the normal maintenance of a facility. The repair of leaking valves not only eliminates emissions from that equipment, it also helps maintain the physical integrity of the facility, thereby reducing the likelihood of leaks elsewhere on the line.

#### 2.6.3.1.3 Less frequent monitoring of valves and connectors

**Comment:** One commenter (4266) requests the EPA reconsider its proposed alteration of the equipment leaks program for natural gas processing plants. If the EPA demonstrates that tighter VOC emission control is justified, the commenter offers an alternative program. First, the commenter states, set up an LDAR program that requires on-going quarterly monitoring for valves (no skip periods allowed), retaining the current subpart KKK leak definition of 10,000 ppm and associated repair intervals. Next, the commenter adds, for initial compliance purposes, valve monitoring would be undertaken monthly during the first quarter of becoming subject to this program, then quarterly. The commenter states that new and repaired components would be monitored on the quarterly basis. Third, the commenter states, facilities would be required to establish internal programs to identify valves that leak above 10,000 ppm during three of the four quarters in a year. The commenter states that these valves would be placed on a ‘chronic leakers’ list and would be designated for refurbishment and/or replacement during the next process unit shutdown. Fourth, the commenter recommends no new LDAR program for connectors. The commenter recommends that connectors in gas/vapor service and in light liquid service be subject to the monitoring and leak definition provisions in §60.482-8a. Two commenters (4246, 4266) oppose the proposed 500 ppm threshold for pumps. One commenter (4246) states the EPA should exclude reciprocating pumps in light liquid service that cannot meet the leak standard without recasting of the distance piece or replacement of the pump. The commenter states it is extremely difficult to meet the 10,000 ppm emission standard with existing positive displacement pumps and they stand little or no chance of achieving the proposed 500 ppm threshold. One commenter (4266) states the EPA should retain the 10,000 ppm leak definition for pumps or consider a 5,000 ppm leak definition.

**Response:** We appreciate the commenter’s suggestion, but believe that the subpart VVa LDAR requirement is BSER for natural gas processing plants. The standards set in the new subpart are based on what the EPA has determined to be BSER for a national standard. This standard will not conflict with other CAA programs and not cause violations in following other parts.

### 2.6.3.2 LDAR with Optical Gas Imaging

**Comment:** The EPA received varied opinions regarding use of the optical gas imaging (OGI) detection systems.

One commenter (4170) states that the use of optical imaging in all areas of the proposed sector rule, not just gas processing facilities, would be beneficial in reducing emissions and simplifying the LDAR program, and supports the use of auditory, visual and olfactory inspections, at a minimum, to minimize the fugitive emissions from equipment leaks. Two commenters (4178, 4356) assert that EPA Method 21 and existing systems should remain the primary monitoring method for LDAR programs, though OGI and other technical advances are useful and could supplement existing programs. According to these commenters, infrared images cannot provide quantitative measures of the amounts of leaking gas, infrared optical imaging cameras only detect extremely large leaks, and well-designed and implemented LDAR programs provide demonstrated emissions reductions.

Three commenters (4246, 4266, 4320) state that implementing an OGI-only alternative work practice (AWP) is consistent with the monitoring requirements for the mandatory GHG reporting under 40 CFR part 98 subpart W and using such an approach to satisfy both LDAR and GHG monitoring would improve its effectiveness and reduce duplicative and redundant requirements for facilities. These commenters urge the EPA to return to an OGI AWP without requiring an annual EPA Method 21 survey, on the basis that analytical and field studies demonstrate AWP equivalency, or urge the EPA to evaluate the use of a one-time, side-by-side survey using OGI and EPA Method 21 as part of initial compliance. The EPA also received a request from one commenter (4266) to restore the 10-percent AWP Sensitivity Test Option, to clarify and modify the video recording requirements, to evaluate how the video data will be used and whether a complete video recording is really needed, and to work with stakeholders to develop an OGI Application Protocol for the AWP that is based on OGI techniques for LDAR programs.

Regarding cost effectiveness, one commenter (4237) suggests that the EPA use optical imaging as a pilot program to better estimate its cost effectiveness, and another commenter (4170) suggests that the EPA base the cost effectiveness of LDAR on all VOC pollutants, as well as GHG emissions such as methane.

One commenter (4240) states that the use of optical scanning devices, pressure relief valves, monitoring devices and other technical advances can complement existing programs. However, the commenter believes that the suite of existing options have not demonstrated the ability to provide the level of emission reductions as can be obtained from well-designed and implemented LDAR programs. The commenter recommends that these options be considered in addition to and not in lieu of existing programs. The commenter opines that the LDAR program must

incorporate elements beyond thresholds and schedules. The commenter states that an alternate compliance option and allowable level of designated “difficult to monitor” valves must be reviewed in light of the performance of best performing LDAR programs. The commenter suggests that the EPA limit the exemptions for devices that are difficult or unsafe to monitor or repair by providing that when such devices are replaced, they must be replaced with leakless designs, as this should be cost-effective. The commenter adds that because the NSPS only applies to newly installed components, advanced technology components must be required at the time of initial installation for those components that, if they leaked, would require a plant shutdown to repair. The commenter states the EPA must also explore whether optical scanning provides a way to monitor devices that would be difficult or unsafe to monitor using traditional monitoring techniques.

**Response:** As explained in the preamble to the proposed rule, the option of using optical gas imaging alone to detect leaks instead of the traditional LDAR program (e.g. Method 21 monitoring) was considered but was not determined to be BSER for any of the oil and gas segments. The cost effectiveness of the OGI only LDAR program could not be calculated because currently there is no methodology for estimating VOC emission reductions with OGI alone. Because the EPA must consider cost in determining BSER and setting appropriate NSPS standards, the EPA cannot first require OGI alone as a pilot program and then determine later its cost effectiveness, as one commenter suggests. Although the EPA may consider the cost effectiveness of reducing other pollutants from this option (assuming that can be determined), such analysis cannot replace a cost effectiveness determination based on VOC, which the EPA must evaluate in order to determine whether OGI only is a cost effective measure for reducing VOC emission from equipment leaks and therefore qualifies as a BSER.

We also received comments asking that we allow an OGI-only option as an alternative work practice (AWP), as in the GHG Reporting Rule, 40 CFR part 98, subpart W. Although we have determined that OGI-only is an appropriate AWP for the Reporting Rule, we did not propose such an option for subpart OOOO as an alternative to the Method 21-based LDAR requirements. We need additional time and information to evaluate whether such an alternative option is appropriate for this NSPS, in addition to the AWP of periodic monitoring for leaks using OGI accompanied by an annual Method 21 survey currently allowed under 40 CFR 60.18(g) and (h). We plan to continue this evaluation and are therefore not taking action on this suggestion at this point. With respect to the comment on the use of other sensory inspections, the EPA notes that subpart OOOO, which basically adopts the requirements of subpart VVa, already requires sensory monitoring where specific leak definitions and monitoring frequencies are not specified (e.g. §60.482-8a – standards for pumps, valves, and connectors in heavy liquid service and PRD in light liquid or heavy liquid service).

With respect to the comments on the 10 percent AWP sensitivity test and video recording, the comments relate to requirements in the current and/or previous NSPS General Provisions at §60.18(g) and (h). The EPA did not propose to revise these General Provisions, which apply to many other source categories. The EPA is therefore not addressing these comments in this final rule.

#### 2.6.4 Other Comments

**Comment:** Two commenters (4192, 4246) state that existing “process units” not formerly subject to a NSPS LDAR requirement should be allowed 180 days to make the transition if subject to the new subpart OOOO LDAR requirements, as is allowed in NSPS subpart KKK.

**Response:** For an existing source to become subject to the provisions of subpart OOOO, it would have to meet the reconstruction or modification requirements in the General Provisions. These requirements state that “reconstruction” means the replacement of components of an existing facility to such an extent that the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility. A gas processing plant that is being reconstructed would have the time needed to put in place an LDAR program during the reconstruction efforts to be in compliance with the LDAR requirements upon startup of the reconstruction source.

**Comment:** One commenter (4240) states that since the development of subpart VV and subpart KKK standards, much has been learned about what it takes to have an effective leak detection program. The commenter states that investigations by the EPA Regional and National Enforcement Investigations Center personnel detected massive fraud in the conduct of LDAR inspections and in the reporting of results. The commenter states the most significant violations were LDAR rules violations where refiners, and independent contractors hired by refiners, routinely underreported (by up to a factor of 10) the number of leaking valves. The commenter believes this demonstrates a need for detailed independent oversight of LDAR activities, as does the recent Pelican refinery criminal prosecution. The commenter states that in the absence of a sustained Federal focus on this issue and recognizing the likely lack of State resources in the near future, MACT should include some form of independent auditing of LDAR programs. The commenter states the EPA could require an independent audit of sources with a large number of components, perhaps once every 5 years. The commenter states that enforcement action-induced negotiations with refinery operators led to consent decrees that substantially improved the real world effectiveness of those programs and the development of Best Practice Guidelines. The commenter adds that various States and regional entities have adopted LDAR programs. The commenter further states that many of these consent decrees and State regulations are more stringent than the subpart VVa regulation the EPA proposes to adopt for processing plants, yet the EPA’s BSER review did not examine these activities and practices. The commenter believes

the EPA must either adopt elements of these more stringent programs as BSER or explain why these elements are infeasible.

**Response:** We disagree with the commenter and believe that the recordkeeping requirements in subpart VVa will provide assurance that the facility is in compliance with the LDAR requirements.

**Comment:** One commenter (4375) is concerned about the proposal to allow the Administrator to judge acceptance of an alternative means of emission limitations under §60.5402. The commenter states the criteria the Administrator uses in making such an allowance is not clear, suggesting a less than objective standard. The commenter states there is nothing in this section requiring the Administrator to make a decision based on emission limitation data. The commenter states this section should focus on a data-driven decision that requires no discretion and rests upon tested means and a formulaic set of criteria that affirmatively prove an alternative means of emission limitation will be in place, which will result in at least the same amount of emissions reductions.

**Response:** We disagree with the commenter. The General Provisions to 40 CFR part 60 provides the Administrator of the EPA the authority to approve an alternative means of emission limitation specified by the subparts.

**Comment:** One commenter (4263) states that the EPA should revise the definition of "natural gas processing plant" in 40 CFR part 60 subparts KKK and part 63 subpart HH to clarify the meaning of the term, as acknowledged by the EPA in numerous applicability determination memos. The commenter states that the EPA should amend §60.631 as follows: "Natural gas processing plant (gas plant) means any processing site engaged in the forced extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products, or both. Forced extraction processes include for example cryogenic Joule-Thomson, refrigerated absorption and cryogenic Joule-Thomson and expander. Facilities that remove liquids from field gas by means other than a forced process (e.g., gravity or natural condensation) are not natural gas processing plants. Facilities that are engaged in fuel gas conditioning or dew point suppression that do not generate natural gas liquid "product" are not natural gas processing plants."

Commenter (4263) adds that in developing subpart KKK, the EPA clarified its intended meaning of the term "natural gas processing plant" to include only those facilities engaged in the forced extraction of NGL from field gas and/or fractionation of mixed NGL into natural gas products, as these facilities are commonly understood within the industry. According to the commenter, the Background Information Document for both the proposed and final standards clarified the EPA's intent, but the definition in the rule remained somewhat ambiguous. Since the 1983 rulemaking,

the commenter states that State regulatory authorities and the gas processing industry sector have been compelled to seek EPA guidance on the interpretation of the definition. The commenter notes that the EPA has issued several determinations clarifying its intent and meaning of the term within NSPS and MACT. To avoid the need for future applicability determination requests, the commenter recommends that the EPA should add that clarification be added to the definition in each relevant standard, consistent with EPA guidance.

One commenter (4266) is concerned that under the current definition in the proposed §60.5430, many very small remote sites without stable power supply would be defined as a natural gas processing plant, and thus subject to the LDAR requirements of the proposed rule. The commenter believes it is both technically and economically infeasible for such sites to comply with any LDAR requirements, especially the very stringent subpart VVa requirements. The commenter requests that the EPA address this issue by modifying the definition of natural gas processing plant by inserting the word “forced” before “extraction of natural gas liquids...”; and adding a new definition of “forced extraction of natural gas liquids” that is essentially adopted from the GHG MRR.

One commenter (4292) recommends that the definition of natural gas processing plant be revised to exclude dew point depression or Joule-Thompson valves installed for the purpose of meeting pipeline specifications. The commenter states that these devices are typically installed at production sites or sometimes at a compressor station. The commenter further explains that the infrastructure and remote location of these small stations would not support the additional requirements imposed by subpart OOOO for pneumatic controllers and LDAR.

**Response:** In the proposed standards, a "natural gas processing plant" (gas plant) is defined as "any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products, or both." The definition was intended to exclude facilities that remove liquids from field gas by means other than a forced process (e.g., gravity or natural condensation). The EPA has had extensive discussions with industry and trade associations during the development of this rule related to the definitions of field natural gas and production wells. Based on this information, the EPA has revised the definition in the final rule to state that a Joule-Thompson valve, a dew point depression valve or an isolated or standalone Joule-Thompson skid is not considered a natural gas processing plant. We do not believe that the definition for a natural gas processing plant needs to be modified by inserting the word “forced.” A review of the GHG MRR definitions did not include this term, nor was the definition of a natural gas processing plant included. The proposed definition is intended to only include facilities that are engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products, or both, and believe the subpart VVa equipment leak requirements are appropriate.

**Comment:** One commenter (4266) states that proposed §63.769(b) exempts ancillary equipment and compressors subject to part 63 subpart H and part 60 subpart KKK from the proposed §63.769(c) equipment leak requirements. The commenter believes this exemption should also apply to equipment and compressors that are subject to the new subpart OOOO, since otherwise duplicative and sometimes conflicting requirements would apply.

**Response:** We agree with the commenter and have revised §60.5365(f) to clarify our original intent that compressors not be included in the equipment leak provisions because leaks from rod packing are addressed in the rod packing replacement requirements of §60.5385.

**Comment:** One commenter (4178) states the rule should require that the regulated industry annotate the difference between existing/new compressors and equipment in the Master Equipment Lists and other records to be clear about which components are subject to which standards (subpart KKK or subpart OOOO). The commenter states it is likely that existing onshore natural gas plants in areas of rapid growth in natural gas production will expand their facilities by adding new process units which will require capital expenditures and thus qualify as new construction of compressors and equipment (as defined in §60.5430). The commenter believes this would create a situation wherein part of the processing plant would be subject to subpart KKK standards (existing) while the rest of the plant would be subject to subpart OOOO standards (new), thus creating significant inefficiencies and potential inaccuracies in determining compliance. The commenter states this burden would fall on the shoulders of both the regulatory agency and the regulated entity.

**Response:** We believe the burden falls on the facility to properly identify which piece of equipment is associated with the proper subpart to show compliance. The final rule contains recordkeeping and reporting requirements that require the facility to identify equipment using a unique equipment identification number for both subpart KKK and OOOO and should be reflected in their semiannual reports.

**Comment:** One commenter (4191) states that, while the EPA has indicated that reciprocating compressors have fugitive emissions that cannot be captured, they have two examples of facilities that collect emissions from leaking rod packing, venting the emissions to the atmosphere from a common point. The commenter will provide further data on these facilities at the EPA's request.

**Response:** Rod packing leaks from reciprocating compressors are not included in the LDAR program in the final rule and is addressed in the subpart OOOO reciprocating compressor requirements. These requirements call for the periodic replacement of rod packing to reduce fugitive emissions from reciprocating engine rod packing.

**Comment:** One commenter (4192) states the current difficult-to-monitor (DTM) definition as cited in subpart VV §60.482-7(h)(1) allows the owner or operator to exempt quarterly monitoring of a valve if it can be demonstrated that the valve cannot be monitored without elevating monitoring personnel more than 2 meters above a support surface. The commenter believes the EPA needs to provide further clarification and revisions to the definition to include areas classified as confined space and hazardous working environments that require supplemental breathing air for entry and monitoring. Two commenters (4192, 4246) recommend that a new provision, 40 CFR §5401(m), be added stating that “For purposes of this subpart and 40 CFR §60.482-7a(h)(2)(ii), up to 5.0 percent of valves may be designated as difficult-to-monitor.”

According to the commenter (4192), the BID for subpart KKK states that the 3 percent difficult to monitor (DTM) standard is based a refinery maintenance study (Docket Item II-A-11). The commenters believe it is inappropriate to apply limits derived from a refinery maintenance study to valves associated with gas plants, because the number of valves common to a refinery is substantially different than the number of valves in a natural gas processing plant. The commenters state that a process unit that has 100 valves would only allowed to designate 3 valves as DTM, though 5-6 valves may meet the definition. The commenters state that refineries find the 3 percent DTM limit less constrictive due to the large quantity of valves present at any given facility. The commenters add that the configuration of natural gas processing plants lends itself to more DTM situations as refinery piping usually contains liquids, and valves are either close to the ground or in pipe racks with elevated walkways, whereas gas plant piping usually contains gas, and valves are often elevated.

**Response:** We disagree that revision is necessary regarding DTM conditions as we have finalized standards in §60.5416(e) and (f) that allow provisions that would cover the situations described by the commenter. We also disagree with the commenter that the percent of valves that can be designated as DTM is inappropriate for natural gas processing plants. The commenter did not provide any data to support their assertion that this provision is inappropriate.

**Comment:** One commenter (4191) recommends that the EPA clarify its intention for the monitoring requirements of a pressure release device at a non-fractionating plant, monitored only by non-plant personnel. The commenter states it appears the proposed rule allows operators to monitor a pressure relief device with a pressure release on the next on-site visit, (§60.5401(b)(4)(i)) which is likely to be no sooner than the next quarterly visit, while also requiring monitoring within 30 days (§60.5401(b)(4)(ii)) of the pressure release.

**Response:** Section 60.5401(b)(4)(ii) states that you cannot continue to operate your pressure release device more than 30 days after a pressure release has occurred without monitoring if the PRD is located at a non-fractionating plant that is monitored only by non-plant personnel. If a



pressure release has not occurred within these parameters, the requirements of §60.5401(b)(1) apply.

**Comment:** One commenter (4191) suggests that the EPA explain the reason that sampling connection systems are being exempted from the leak standards for such systems in §60.482-5a (§60.5401(c)).

**Response:** The EPA found that when collecting gas samples, the space (tubing or pipe) between the valves on the sample container and in the closed-loop system will contain process gas. This trapped gas does not have to be collected or captured because it is not a purged process fluid. It may be released to the atmosphere when the sample container is disconnected. The standards in §60.482-5a of subpart VVa explicitly exempt gases remaining between the sample container and closed-loop system valves from control requirements.

The EPA decided not to explicitly exempt gas sampling activities from the sampling connection system requirements because the Agency does not have evidence that such sampling never involves purging. Furthermore, §60.482-5a(c) already exempts sampling systems without purges from the sampling connection system requirements.

**Comment:** Concerning alternative work practices (§60.5400(b)), one commenter (4192) recommends that the EPA add a new exemption, codified as §60.5401(n), that reads: “The alternative work practices, as specified in §60.487(d) can be made when eligible without notification to the Administrator.” The commenter also recommends adding a new paragraph (i) to NSPS subpart KKK, 40 CFR §60.633, as follows: 40 CFR § 60.633(i) An owner or operator may use the following provision instead of § 60.487(d): “An owner or operator who elects to comply with the provisions of §§60.483–1 or 60.483–2 is not required to notify the Administrator of the alternative standard selected before implementing either of the provisions.” The commenter believes that the requirement to notify the Administrator of the alternative standard selected 90 days before implementing either of these provisions is very difficult for owners and operators to track and implement, and yields no benefit. The commenter believes that eliminating the advance notice requirement for use of these alternative standards would help streamline the LDAR program without increasing emissions from subpart KKK regulated facilities.

**Response:** We believe that alternative standards need to be approved by the Administrator and the General Provisions to 40 CFR part 60 provides the Administrator of the EPA the authority to approve an alternative means of emission limitation specified by the subparts.

**Comment:** Two commenters (4192, 4246) state that, if affected facilities under subpart OOOO are required to comply with 40 CFR §60.8, then the EPA should clarify what constitutes a

performance test and under what circumstances affected facilities would be required to complete a performance test. The commenters would also like clarification that the EPA does not interpret the initial LDAR monitoring as an initial performance test subject to 40 CFR §60.8.

**Response:** The final rule lists those affected facilities that must conduct performance tests as required under §60.8. Specific conditions under which these performance tests must be conducted and the test methods that must be used are listed for each affected facility type. Although LDAR monitoring is generally performed using Method 21, a performance test, we do not intend for LDAR monitoring to be subject to the performance test requirements of §60.8. You are still subject to the reporting and recordkeeping requirements of §§60.486a and 60.487a, respectively, as applicable.

**Comment:** One commenter (4192) recommends that a new provision, 40 CFR §60.5401(l), be added that reads: “An owner or operator is exempt from the requirement in §60.485a(b)(2) to calculate the average algebraic difference between the three meter readings and the most recent calibration value and divide this algebraic difference by the initial calibration value and multiply by 100 to express the calibration drift as a percentage. Additionally, the commenter requests that the requirement to record the instrument reading for each scale used as specified in §60.486a(e)(7) be changed to §60.486a(e)(8).” The commenter states it is their understanding that the EPA recognizes that the referenced language is not pertinent and will be removed in a forthcoming proposal for subparts VV/VVa/GGG/GGGa. Rather than wait until this proposal is developed, the commenter suggests that the EPA make it clear in subparts KKK and OOOO that this language is inapplicable. In addition, the regulatory citation in §60.485a(b)(2) should be “§60.486a(e)(8)” instead of “§60.486a(e)(7).”

**Response:** We acknowledge that the citation to §60.486a(e)(7) within §60.485a(b)(2) is an error. Therefore, we have included an exemption for §60.485a(b)(2) in the final rule to correct this citation to read, “§60.486a(e)(8).” In addition to correcting the citation, we have made technical edits to the rule language for calibration drift assessments for clarification purposes.

**Comment:** One commenter (4192) recommends that the EPA keep the subpart VV standard of “evidence of a potential leak is found by visual, audible, olfactory, or any other detection method.”

**Response:** The subpart VVa requirements allow the use of sensory monitoring for components followed by a Method 21 check. In some cases for no detectable emissions, sensory monitoring is allowed for pumps, valves in heavy liquid service, or pumps in light liquid service.

**Comment:** One commenter (4192) requests confirmation from the EPA that a valve on a quarterly monitoring schedule per subpart VV that is placed temporarily out-of-service (that is,

the valve is completely blown down and drained of process fluid, and therefore no longer “in VOC service”) may resume a quarterly monitoring schedule when it is returned to service, provided it was not leaking prior to being removed from service.

**Response:** The commenter is correct in the determination that a valve on a quarterly monitoring schedule per subpart VV that is placed temporarily out-of-service may resume a quarterly monitoring schedule when it is returned to service, provided it was not leaking prior to being removed from service.

**Comment:** One commenter (4208) believes the EPA should consider requiring the use of leak detection equipment that can detect methane leaks (such as a flame ionization detector calibrated to methane) to ensure that leaks – whether of HAPs like benzene, criteria pollutants such as sulfur dioxide, or hydrocarbons – would be quickly and accurately detected.

**Response:** Subpart OOOO is a VOC rule which includes HAPs like benzene and some hydrocarbons but does not include SO<sub>2</sub> or methane. The EPA is continuing to assess methane emissions and evaluate appropriate actions for addressing these concerns. The EPA notes that control measures for methane are the same as those for VOC, which the EPA has previously regulated and is requiring further reduction in this NSPS review. The VOC requirements in this rule would also achieve substantial reduction in methane emissions. However, the EPA does not have sufficient information at this time to assess whether the category continues to emit significant amount of methane even with the expanded VOC controls and what measures are appropriate for reducing the remaining methane emissions. For these reasons, the EPA is continuing its assessment of methane emissions, including gathering and reviewing additional information, to evaluate appropriate actions.

**Comment:** Three commenters (4192, 4208, 4246) state that the affected facility defined in proposed §60.5365(f)(4) should not include “field gas gathering system.” One of the commenters adds that by including the gathering system in the affected facility, the equipment potentially extends outside the gas processing plant through all the field gas gathering system along with all the compressor stations. The commenter believes this will make defining the boundary of each gas processing plant difficult and could impose significant costs by requiring leak detection monitoring at remote locations spread over very large areas.

**Response:** We have not made any changes since proposal to the requirements for affected facilities at onshore natural gas processing plants for the final rule. The gas processing plant may include other equipment that are affected sources under subpart OOOO, but the equipment leak requirements of the gas processing plant are not intended to be extended through all the field gas flow system along with all the compressor stations.

**Comment:** One commenter (4240) states that the EPA must ensure the integrity of the LDAR program by including safeguards in its rules, including requiring a professional engineer to sign off on all LDAR reports. The commenter recommends that the EPA also explore requiring periodic independent audits of LDAR programs, at least for larger processing plants.

**Response:** We disagree with the commenter and believe that the recordkeeping and reporting requirements associated with the subpart OOOO equipment leak provisions will ensure the integrity of the LDAR program.

**Comment:** One commenter (4240) states the definition of “gas processing plant process unit” should be expanded to include all common gas processing processes. The commenter believes there may be confusion over what constitutes a “process unit” given the affected facility language of §60.5365(f)(1)-(2) and the definition of “gas processing plant process unit” at §60.5430.

**Response:** We disagree with the commenter and believe that the applicability requirements and definitions are appropriate for gas processing plants. The EPA has had extensive discussions with industry and trade associations during the development of this rule related to the definition of gas processing plant unit and believe we have developed a definition that provides a clear definition of the gas processing plant unit.

**Comment:** One commenter (4240) believes the EPA may be overstating the cost of LDAR programs for non-processing-plant facilities, and must at least reconcile its current cost estimates with those in the EPA's 2009 Methane to Markets report. The commenter states that the Methane to Markets presentation identified drastically lower LDAR costs per device monitored. At a minimum, the commenter believes that the EPA must evaluate whether monitoring is BSER for specific components, and justify its decision not to apply it.

**Response:** The TSD for the proposed NSPS examined costs of LDAR programs for individual components as well both processing and non-processing facilities. Based on the results of this analysis, it was determined that the subpart VVa LDAR program was BSER for natural gas processing plants. During the comment period, we used data and methodology from the Uniform Standards rulemaking to reanalyze the LDAR programs for individual components and oil and gas facilities. The results from this analysis were comparable to the results found during the proposed rule analysis. Therefore, we did not revise the equipment leak requirements in subpart OOOO. Please see docket item EPA-HQ-OAR-2010-0505-0045 for more details.

**Comment:** One commenter (4266) requests that EPA clarify the applicable provisions for compressors located at an onshore natural gas processing plant. The commenter states that the inclusion of compressors in affected facility descriptions in §60.5365(b) and (c)

and also in §60.5365(f) causes confusion as to the applicable requirements under NSPS subpart OOOO. Comparing chapter 6 of the TSD (which included compressors in natural gas processing plants in the options under §60.5380 and §60.5385) with chapter 8 of the TSD (which on page 8-21 stated that compressors are not regulated in the LDAR option and are regulated separately), the commenter concludes that the EPA intended to regulate affected compressors under §60.5380 and §60.5385 and not under the LDAR requirements for natural gas processing plants. One commenter (4263) states that equipment (as defined in §60.5430) not located at the onshore natural gas processing plant site should be excluded from the rule entirely, not just from certain sections and paragraphs. The commenter believes that listing individual sections in the rule that apply to equipment located at a natural gas processing plant in VOC service or wet gas service implies that some sections or paragraphs of the rule could apply to such equipment.

**Response:** The commenter is correct in their assertion that the EPA “intended to regulate affected compressors under §60.5380 and §60.5385 and not under the LDAR requirements for natural gas processing plants.” To make this clear, in the final rule we have revised §60.5365(f) by describing an affected facility to be the group of all equipment, except compressors, within a process unit.

**Comment:** One commenter (4266) recommends that the EPA add an additional delay of repair provision for on-line repairs utilizing specialized methods. The commenter states such repairs may be technically feasible, but are not logistically or economically feasible to be performed repeatedly to below 500 ppm within very narrow time windows. The commenter believes these facilities should be allowed a maximum of 90 days to complete these specialized repair attempts. The commenter adds that allowing more time reduces the cost burden and minimizes travel-associated emissions by enabling the repair of multiple components during fewer contractor site visits. The commenter notes that, according to §60.482–9(a) of subpart VV, delay of repair is allowed if repair is technically infeasible without a process unit shutdown, and §60.482–9(c) of subpart VV allows delay of repair of valves if emissions associated with immediate repair would exceed continued emissions from the leak.

**Response:** The equipment leak requirements in §60.5401(b)(3)(i) allow the delay of repair when a leak is detected using the criteria in §60.482-9a, which are the same exemptions noted by the commenter.

**Comment:** One commenter (4266) states there is an apparent typographical error in §60.5401(d), which reverses the small non-fractionating plant exemption in subpart KKK. The commenter states that subpart KKK exempts any non-fractionating plant that does not have the design capacity to process 10 million scf/day or more of field gas.

**Response:** The commenter is correct and the requirement in §60.5401(d) should exempt any non-fractionating plant that does not have the design capacity to process 10 million scf/day or more of field gas.

**Comment:** One commenter (4266) notes that §60.5401(d) exempts certain components at small non-fractionating gas plants from the routine monitoring requirements of §§60.482-2a(a)(1), 60.482-7a(a), and 60.5401(b)(1), and §60.5401(e) exempts those located in the Alaskan North Slope. The commenter recommends also exempting these components from the reporting requirements.

**Response:** We believe that the same reporting requirements for facilities located in the Alaskan North Slope in subpart KKK are appropriate for facilities located in the Alaskan North Slope in subpart OOOO.

**Comment:** One commenter (4263) states the EPA should add a reference to the definition of "capital expenditure" in subpart VVa or add a definition to §60.5430(f)(3) for "Addition or replacement of equipment." The commenter believes that without the definition, the use of the term "capital expenditure" leads to the conclusion that any addition of a valve, for example, would be a modification. Another commenter (4266) states that LDAR process units often use the concept of "capital expenditure" to prevent the addition of a few minor components from triggering modification and believes that the EPA needs to clarify the meaning of "capital expenditure" for the purposes of subpart OOOO.

**Response:** The General Provision at 40 CFR 60.14(e) is intended to exclude routine and minor activities, such as routine maintenance and repair or an activity that requires insignificant expenditure. *See, e.g.,* 40 CFR 60.14(e)(1) and (2). Therefore, we do not believe that the regulatory definition of "capital expenditure" needs to be clarified for LDAR process units.

## **2.7 Innovative Compliance Approaches**

### **2.7.1 Registration of Wells and Advance Notice of Completions**

#### *2.7.1.1 Length of Advance Notifications Required*

**Comment:** One commenter (4274) is not certain that the 30-day advance notice of hydraulic fracturing is realistic. The commenter states that, in their experience living within the Marcellus Shale area, while notifications are provided, the activity does not always materialize. The commenter states that the Commonwealth is considering legislation on several notifications from the operators to the state regulatory agency and asks if the operator would have to contact both agencies. The commenter believes it would be more reasonable for the State to send this

information electronically to the EPA. According to the commenter, the State regulatory agency will utilize this information in many ways, including scheduling field staff for corresponding inspections. Presently, the commenter states that they do not have any requirement for hydraulic fracturing notification, it is done at the local level. The commenter supports the EPA's role as not all States have such a provision. The commenter believes there is a need for coordination with States to avoid duplication of efforts. The commenter recommends that the EPA consider this information and move forward with a modified provision of the proposal.

One commenter (4472) believes that the proposed 30-day notice requirement will result in substantial delay in completion of natural gas wells in Texas and unanticipated costs due to the high competition for specialized hydraulic fracturing services, equipment and personnel, as well as REC equipment and personnel. The commenter estimates that of the nearly 11,000 well permits issued in 2010 within Texas approximately 85 percent of those were hydraulically fractured. The commenter believes owners and operators must have the flexibility to contract for services as soon as equipment and personnel become available.

**Response:** To lessen the burden of the 30-day notification requirement for well completions, we are now requiring a single, bulk monthly notification, which will include future estimated dates of anticipated well completions during that month. This notification will be followed by an advance notice (via email if desired) to the state or delegated authority no sooner than 3 days and no later than 2 days prior to the actual commencement of each completion. The EPA is not limiting the monthly bulk report to a written format. The rule language is flexible so that electronic communication notification is allowed. We agree with the commenter that it is important for the EPA and States to coordinate their efforts as much as possible.

## **2.7.2 Third Party Verification**

### *2.7.2.1 Potential Use for NSPS*

**Comment:** One commenter (4240) states that, due to potential for conflict of interest, private verifiers must not displace government review and enforcement of NSPS requirements. The commenter opposes use of third-party verifiers absent a more definite proposal. The commenter states that if third party verifiers are used as a "clearinghouse," any such clearinghouse should be fully available online, provide the public with full access to the collected data, and not substitute for government verification. The commenter disagrees with the EPA's suggestion that with such a clearinghouse "notifications of well completions could be submitted with an advance period much less than 30 days that could make a 2-day follow-up notification unnecessary." The commenter states the EPA has not explained how the clearinghouse would obviate the need for such advanced notification. The commenter believes that though notification through a clearinghouse might be more efficient than other methods, the role of advanced notification is to

enable states and the EPA to inspect well completions as they occur, and significant advanced notice is likely to facilitate scheduling of such inspections. The commenter does not believe an online clearinghouse would solve this scheduling problem.

The commenter (4240) states that if the use of third party verifiers to inspect facilities in the field is limited to collection of unarguably objective data, such as the type of compressor installed, the commenter does not object. The commenter adds that they oppose using third party verifiers in any role until the EPA offers a more detailed proposal for public comment. The commenter states that “third party verification paid for by industry” presents a potential conflict of interest that can compromise the verification’s validity. The commenter suggests that if third party verifiers are used, any information they collect should be fully available to the public, comparable to information collected by the EPA.

One commenter (4240) states that the EPA’s third party verification plans have not provided a coherent explanation as to the role these verifiers would play. The commenter believes that without a clear picture as to their roles, it is impossible to comment on the appropriateness of their use and objects to adoption of a third party verification system at this time. Another commenter (4472) states that the same factors that make compliance assurance difficult and burdensome for State and the EPA permitting staff (such as geographically dispersed and remote locations) will make the use of third party verification costly to the regulated industry. The commenter also strongly disagrees with any EPA approved third party verifiers, believing this would likely result in added delays in drilling and production activities, with a resultant decrease in production.

**Response:** For the proposed rule, the EPA solicited comment on all aspects concerning the use of third party verification to assure compliance. Though the EPA believes that there are certain functions that third party verifiers could perform, we have decided not to move forward with the use of third party verification at this time until we can more fully explore the logistics of organizing and overseeing such a program for the oil and gas industry.

### **2.7.3 Provisions for Encouraging Innovative Technology**

**Comment:** Two commenters (4192, 4246) believe that the EPA should exempt owners and operators from MACT subpart HH by reducing HAP emissions below an enforceable limit. The commenters believe this would be an innovative compliance approach and a win/win for both the EPA and industry. One commenter (4274) states that due to the controversy surrounding hydraulic fracturing, it would be beneficial to have as much transparency as possible to provide the public with straightforward information as shale extraction becomes a larger portion of our nation’s energy policy. The commenter states that citizens need to have information they can trust, to feel safe and comfortable with the measures used to extract these resources and



recommends that the EPA move forward with provisions for innovative compliance. One commenter (4356) requests clarification on whether innovative technology and compliance determinations will be delegated to States. The commenter also requests that the EPA encourage the use of new technologies that focus on recovery instead of destruction techniques that may result in collateral emissions and exacerbate existing nonattainment conditions.

One commenter (4357) states the EPA should encourage innovative approaches to emissions monitoring and compliance with underlying regulations by creating incentives for sources to employ these new methods and technologies. The commenter suggests incentives such as including less reporting, simpler recordkeeping, and fewer on-site inspections. The commenter believes the final regulation must include “carrots” for the regulated entities to choose the newer, continuous, facility-wide monitoring needed to achieve continuous compliance and timely corrective actions when needed. Another commenter (4222) supports a regulatory framework that efficiently and economically reduces unwanted VOC emissions from oil and gas production. The commenter believes regulations should allow for innovative methods for emissions capture and flexible emissions disposal/use alternatives.

One commenter (3454) describes an alternate method of containing and combusting methane and VOC emissions with very high efficiency that is currently in use. The commenter explains it involves introducing the normally vented VOC emissions, (without recompression), into the air intake of a carbureted reciprocating internal combustion engine (RICE) using natural gas fuel to combust VOC emissions as engine fuel. The commenter states the combustion efficiency of these engines is in excess of 99.5 percent for the combustion process. In addition, the commenter states these engines are equipped with non-selective catalytic converters, or oxidation catalysts, that are very effective in removing any remaining VOCs in the engine exhaust.

One commenter (4375) supports a specific program to test new and innovative technologies in the oil and gas industry. The commenter states that innovation and experimentation comes with potential increases in pollution and environmental harm as technologies are explored and tested. The commenter states the program should establish criteria by which operators are allowed to test new technologies. The commenter states that the EPA should consider such factors as (1) company resources; (2) number/seriousness of environmental violations; (3) membership in Natural Gas STAR program; and (4) potential benefit of the new/innovative technology proposed. One commenter (4209) believes that to encourage innovative technology the EPA should not regulate the testing of new technologies or innovative exploration and production methods or techniques to minimize product loss and reduce environmental impacts as these isolated tests will have minimal impacts on human health and the environment and will not produce significant emissions warranting regulation.

One commenter (4228) supports provisions for encouraging innovative technology, including approaches that may be suitable for allowing temporary field testing of technology in development, and which may provide more efficient and cost-effective emission controls. The commenter states that an innovative technology demonstration project requires sufficient duration to adjust and evaluate technology parameters, and the project cannot be held to rule standards as it evaluates the operating envelope. The commenter recommends a minimum 6-month duration for a demonstration project. In addition, the commenter states that exemption from rule standards is needed if the project is not successful or if standards are exceeded during parameter evaluations, malfunctions, or other events. The commenter adds that a potential barrier to the practical implementation of a demonstration project is timely Administrator approval for the project and exemption from rule standards during the demonstration. The commenter recommends inclusion of a provision that the EPA must respond to a request to conduct an innovative technology project within 30 days, and if a response is not provided within 30 days then the project is automatically approved.

**Response:** We thank the commenters for their comments and suggestions regarding innovative compliance approaches. While we considered these comments and suggestions, they have not been adopted for the final rule for various reasons. Some of these suggestions, however, may be useful for sources to consider in complying with the rule. We will continue to monitor and evaluate the use of innovative compliance options and new technologies.

#### **2.7.4 Applicability of Title V Permitting Requirements to Non-major Sources**

**Comment:** One commenter (4192) states that the EPA incorrectly asserts that compliance with the new subpart OOOO should reduce the number of NSR permits industry will have to obtain. The commenter states that a permit is required before construction can commence in their state and that subpart OOOO would lead to a very large increase in such permits, as industry would require an air permit before performing a routine operation such as completing a well or installing a pneumatic controller. One commenter (4209) states the proposed rule will require most if not all operators to obtain a state-issued minor source air permit for all or a significant number of wells in Oklahoma. The commenter states that the cost and burdens on operators as well as state air regulatory agencies are unnecessary and excessive. The commenter requests the EPA state in the final rule that NSPS/NESHAP applicability alone should not trigger minor source permitting requirements.

One commenter (4214) states that in West Virginia if a minor source is subject to a substantive requirement of an emission control rule, such as a NSPS or NESHAP, then it must obtain a minor NSR permit even if it is otherwise exempt from permitting. The commenter states that, similarly, in some states, permitting agencies require a permit if a source is subject to a NSPS and/or NESHAP performance or work practice standard, even if such source is otherwise exempt

from permitting. One commenter (4230) disagrees with the EPA's estimated reduction in the number of minor NSR permits. The commenter states their agency does not permit wellhead operations associated with REC activities and anticipates this will be a significant burden to its minor NSR permitting program and its Enforcement and Compliance Section to conduct inspections of these oil and gas operations. The commenter states their SIP-approved minor NSR permitting program rule requires permits for any substantive requirement and the controls required for wellheads, condensate storage vessels, and crude oil storage vessels in the EPA's proposed rule would be considered substantive.

One commenter (4176) is concerned about the direct impacts on governing agencies that would be responsible for implementing and administering these proposed regulations. The commenter believes state-specific impacts of a broadly applicable, indiscriminate national program should be evaluated to ensure the final rule does not preempt state implementation and compliance management of the same source categories.

One commenter (4266) offers that many States have developed minor source NSR permitting programs that go far beyond the requirements of the Prevention of Significant Deterioration (PSD), New Source Review (NSR), or title V operating permitting programs. The commenter recognizes that the EPA has already stated that the proposed regulation will not trigger title V permitting requirements but recommends that the EPA expand this to include a recommendation in the preamble that NSPS/NESHAP applicability alone should not trigger minor source NSR permitting requirements. Two additional commenters (4209, 4228) reiterated this request. One commenter (4266) states that such a statement will not bind the States, but it will be helpful in addressing this issue with the States.

**Response:** We have made no changes to the proposed rule regarding our position on title V and other permitting applicability to major and minor sources. As stated in the preamble to the proposed rule, this rule does not change the federal requirements for determining whether oil and gas sources are major sources for purposes of nonattainment major NSR, PSD, CAA title V, or HAP major sources pursuant to CAA section 112. If an owner or operator is not currently required to get a major NSR or title V permit for oil and gas sources, including well completions, it would not be required to get a major NSR or title V permit as a result of these proposed standards. The requirements of the EPA-approved state and local major source permitting programs are not affected by this rulemaking. That is, state and local agencies with EPA-approved programs will still make case-by-case major source determinations for purposes of major NSR and title V, relying on the regulatory criteria, as explained in the McCarthy Memo<sup>21</sup>.

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<sup>21</sup> "Memorandum from Gina McCarthy, Assistant Administrator, to Regional Administrators, *Withdrawal of Source Determinations for Oil and Gas Industries* (September 22, 2009). Available at <http://www.epa.gov/region07/air/nsr/nsrmemos/oilgaswithdrawal.pdf>

Consistent with the McCarthy Memo, whether or not a permitting authority should aggregate two or more pollutant-emitting activities into a single major stationary source for purposes of NSR and title V remains a case-by-case decision in which permitting authorities retain the authority to consider the factors relevant to the specific circumstances of the permitted activities. In addition, the proposed standards would not change the requirements for determining whether oil and gas sources are subject to minor NSR.

Nor do the new standards affect existing EPA-approved state and local minor NSR rules, or the policies and practices implementing those rules. As noted, many state and local agencies have already adopted minor NSR permitting programs that provide for control of emissions from relatively small emission sources, including various pieces of equipment used in oil and gas fields. State and local agencies would be able to continue to use any EPA-approved General Permits, Permits by Rule, and other similar streamlining mechanisms to permit oil and gas sources such as wells.

Regarding EO 13563, the EPA submitted this action to the Office of Management and Budget (OMB) for review under Executive Orders 12866 and 13563 (76 FR 3821, January 21, 2011) and any changes made in response to OMB recommendations have been documented in the docket for this action.

Regarding state permitting burden, as noted above, the final rule exempts area source affected facilities from title V permitting.

**Comment:** Several commenters (4192, 4209, 4214, 4219, 4220, 4228, 4320, 4230, 4261, 4263) support the title V exemption. The commenters believe the proposed rule will create increased burden with state permitting activity. One commenter (3477) urges the EPA to maintain its position in the final rule concerning applicability of other federal requirements. One commenter (3528) notes that the EPA previously stated that the rule would exempt well completions and other processes subject to NSPS from title V applicability if they are not major sources. A number of commenters (4159, 4184, 4236, 4261, 4273) support the EPA's proposal not to impose title V permitting on non-major sources, as they believe this will be extremely costly and yield no environmental benefit. One commenter (4159) states that the EPA should exempt well completions from title V permitting requirements.

One commenter (4159) states that the EPA should exempt well completions from title V permitting requirements. One commenter (4222) states the definition in §60.5430 of "well site" in the proposed rule would result in a significant impact and add burden on the permitting agency, due to the need to identify all affected equipment and permit all newly-affected sources.

The commenter states that, under the proposed rule, every time a drill site is reworked, it would become an affected facility and title V permitted facilities would then have to add newly affected facilities to their title V permits every time.

Several commenters (4237, 4240, 4257) object to the proposed title V exemption. One commenter (4240) states that rather than treating the statutory exemption as a narrow limitation on a rule of general applicability adopted by Congress, the EPA seems to assume that the exemption is available as a matter of right, unless some added benefit can be demonstrated. The commenter states that the EPA has incorrectly interpreted the exemption as permitting it to balance the enforcement and environmental benefits of title V against the costs to the facility operator. The commenter states the EPA has understated the benefits of the title V program and overstated the burden on facility operators.

One commenter (4237) states that title V exemptions should be revoked for non-major sources that fail to adequately follow the NSPS monitoring procedure. The commenter believes that though title V reporting requirements are somewhat burdensome, they may prove useful if the monitoring, recordkeeping and reporting obligations under the NSPS are not adequately met.

One commenter (4257) states that the EPA improperly exempts new and modified oil and gas activities in the production sector from the requirement to obtain a title V permit. The commenter adds that the EPA needs to strengthen the proposed compliance mechanisms that apply in lieu of the compliance mechanisms required under title V.

**Response:** Section 502(a) of the CAA states, in relevant part, that:

\* \* \* [t]he Administrator may, in the Administrator's discretion and consistent with the applicable provisions of this chapter, promulgate regulations to exempt one or more source categories (in whole or in part) from the requirements of this subsection if the Administrator finds that compliance with such requirements is impracticable, infeasible, or unnecessarily burdensome on such categories, except that the Administrator may not exempt any major source from such regulations. *See* 42 U.S.C. section 7661a(a).

The statute plainly vests the Administrator with discretion to determine when it is appropriate to exempt non-major (*e.g.*, area) sources of air pollution from the requirements of title V. In December 2005, in a national rulemaking, the EPA interpreted the term "unnecessarily burdensome" in CAA section 502 and developed a four-factor balancing test for determining, on case-by-case basis, whether title V is unnecessarily burdensome for a given source category, such that an exemption from title V is appropriate. *See* 70 FR 75320, December 19, 2005 ("Exemption Rule"). In addition to interpreting the term "unnecessarily burdensome" and developing the four-factor balancing test in the Exemption Rule, the EPA applied the test to

certain area source categories.<sup>22</sup>

The four factors that the EPA identified in the Exemption Rule for determining whether title V is unnecessarily burdensome on a given source category include: (1) Whether title V would result in significant improvements to the compliance requirements, including monitoring, recordkeeping, and reporting, that are proposed for a source category (70 FR 75323); (2) whether title V permitting would impose significant burdens on the source category and whether the burdens would be aggravated by any difficulty the sources may have in obtaining assistance from permitting agencies (70 FR 75324); (3) whether the costs of title V permitting for the source category would be justified, taking into consideration any potential gains in compliance likely to occur for such sources (70 FR 75325); and (4) whether there are implementation and enforcement programs in place that are sufficient to assure compliance with the relevant standards without relying on title V permits (70 FR 75326).

In its comment opposing the EPA's proposed title V exemption for the oil and gas NSPS non-major sources, a commenter challenges the EPA's interpretation of the term "unnecessarily burdensome" in CAA section 502. Specifically, the commenter objects to the interpretation because they assert it permits the EPA "to balance the enforcement and environmental benefits of title V against the costs to the facility operator and completely ignores the role title V fees play in funding state enforcement programs."

To be clear, the EPA did not re-open its interpretation of the term "unnecessarily burdensome" in CAA section 502 in the August 23, 2011 proposed rule. Rather, we applied the four-factor balancing test articulated in the Exemption Rule to the NSPS non-major sources for which we proposed title V exemption. Had we sought to re-open our interpretation of the term "unnecessarily burdensome" in CAA section 502 and modify it from what was articulated in the Exemption Rule, we would have stated so in the August 23, 2010 proposed rule and solicited comments on a revised interpretation, which we did not do. Accordingly, we reject the commenter's attempt to re-examine our interpretation of the term "unnecessarily burdensome" under CAA section 502, as that issue falls outside the purview of this rulemaking.<sup>23</sup>

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<sup>22</sup> In the Exemption Rule, in addition to determining whether compliance with title V requirements would be unnecessarily burdensome for a given source category, we considered, consistent with the guidance provided by the legislative history of section 502(a), whether exempting the source category would adversely affect public health, welfare or the environment. *See* 72 FR 15254-15255, March 25, 2005. As discussed in the preamble to the proposed rule, after conducting the four-factor balancing test and determining that title V requirements would be unnecessarily burdensome on the oil and gas NSPS non-major sources, we examined whether the exemption from title V would adversely affect public health, welfare and the environment, and proposed that it would not.

<sup>23</sup> If the commenter objected to our interpretation of the term "unnecessarily burdensome" in the Exemption Rule, it should have commented on, and challenged, that rule. Any challenge to the Exemption Rule is now time barred by CAA section 307(b). Although we received comments on the title V Exemption Rule during that rulemaking process, no one sought judicial review of that rule.

Moreover, the addition of title V fees would not improve compliance requirements themselves. Even assuming, *arguendo*, the addition of title V fees would appropriately be considered under the EPA's four factors, the EPA does not believe any potential improvement in compliance from title V fees would change the EPA's assessment that, on balance, the factors weigh in favor of finding that title V is unnecessarily burdensome for these NSPS non-major sources.

Furthermore, the EPA disagrees with the comment that "EPA's application of the four factors in this instance would seem to allow it to exempt all sources." As mentioned above, the EPA considers on a case-by-case basis in individual rulemaking whether to provide a title V exemption for a given source category. In the August 23, 2011 proposed rule, the EPA considered the extent to which one or more of the four factors supports title V exemption for the NSPS non-major sources and then we assessed whether those factors, considered together, demonstrate that compliance with title V requirements would be unnecessarily burdensome for these sources, consistent with section 502(a) of the CAA. As described in detail in the preamble to the proposed oil and gas rule, we considered a number of source-specific factors in determining whether to provide the exemption. In particular, we explained that, because well completions occur over a short period (generally 3 to 10 days) and the requirements for pneumatics can be met by simply installing the equipment that meets the emission limit, the type of monitoring and reporting generally required under title V may not significantly improve compliance with the NSPS. 76 FR 52752-52753.

In addition, we noted that many of the NSPS non-major sources may be small entities that may lack technical resources, and we expressed concern with their ability to get assistance from permitting authorities who may not have time to help due to the increases in permitting applications based on our estimates of the number of affected facilities subject to this NSPS. A number of commenters who support our proposed title V exemption similarly express concern with the burdens on the small entities as well as burdens on permitting authorities. After evaluating specific information regarding oil and gas NSPS non-major sources, such as the information described above, and based on the factors established in the exemption rule, we proposed that title V would be unnecessary burdensome for these non-major sources.

The commenter appears to suggest that the EPA overstated the title V compliance cost by considering the estimated average title V permitting cost of \$65,700 per source for a 5-year period.<sup>24</sup> We first note that this was but one of several factors we considered in evaluating the

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<sup>24</sup> The record concerning the 2007 and subsequent ICR-related actions for part 70 and 71 is publicly available under EPA docket numbers EPA-HQ-OAR-2004-0015 for part 70 and EPA-HQ-OAR-2004-0016 for part 71 on <http://www.regulations.gov>. Also, the supporting information for OMB-approved ICRs is publicly available on OMB's public website: <http://www.reginfo.gov/public/do/PRAMain>.

burden of title V permitting on oil and gas NSPS non-major sources. We also considered the number of sources estimated to have to obtain title V permits as a result of this rule, the need of small sources needing assistance and the ability to obtain such assistance. Furthermore, although the estimate is not specific to these oil and gas sources, it reflects the costs associated with certain activities under part 70 or part 71 rules that would be required for any source subject to title V permitting, and the title V cost estimates have been reviewed and approved by OMB in a separate action after public comment. It is therefore appropriate for the EPA to consider this cost in evaluating the burden of title V permitting on oil and gas NSPS non –major sources. On the contrary, we believe that the commenter underestimated the title V cost burden based on the minimum permit fee estimate for 2012 that is provided on the EPA website. The EPA noted that this estimates reflects the “minimum” permit fee because it is a simple emission-based estimate that does not reflect other charges that a state permitting authority may include in a permit fee. For instance, the minimum fee estimate would be an inaccurate representation of State title V programs that require non-emissions-based fees or a combination of emissions-based and non-emissions-based fees (such as application fees, service-based fees, etc., or a combination thereof). Also, even if a permitting authority uses emission- based fees, such as the presumptive minimum fee, the permitting authority typically requires facilities to include in the fee calculation many air pollutants, including those not covered by the rule triggering the title V requirement (in this case the oil and gas rule). The air pollutants generally required to be include in the fee calculation under a presumptive fee include: (1) Nitrogen oxides or any volatile organic compounds; (2) Any pollutant for which a NAAQS has been promulgated; (3) Any pollutant that is subject to a section 111 standard; (4) Any Class I or II substance subject to a standard promulgated under or established by title VI of the Act; or (5) Any pollutant subject to a section 112 standard or other requirement under section 112, including sections 112(g), (j), and (r) of the Act. (See §70.9(b)(2) and the definitions of "Regulated pollutant" and "Regulated pollutant (for presumptive fee calculation)" in §70.9.) For the reasons stated above, we do not believe that the minimum permit fee is an appropriate indicator of the title V cost burden. With respect to the comment on general permits, the EPA notes that general and standard permits are subject to the same permit content requirements, including recordkeeping, reporting, and monitoring requirements, under §§ 70.6 and 71.6. Therefore we expect that sources would have similar compliance costs under either type of permit, and that permitting authorities would have adequate oversight to assure compliance with either type of permit with respect to these oil and gas nonmajor NSPS sources. In light of the above, we conclude that title V is unnecessarily burdensome for NSPS compliance for the oil and gas non-major sources, whether they have a general or standard permit. However, we note that under section 504(d) of the CAA, issuing general permits to sources subject to title V is an option for State and local agencies; an EPA decision not to exempt these sources does not provide a means of ensuring that they would then receive general permits.

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Lastly, we decline a commenter's suggestion to require revocation of the title V exemption for non-major sources that fail to adequately follow the NSPS monitoring procedures. We have no reason to suspect non-compliance, considering many of the requirements reflect cost-saving measures that are already being implemented by the industry. Should this become an issue in the future, we would then need to evaluate the extent of noncompliance and whether and how it can be addressed through title V. Therefore, it is speculative and premature to anticipate future noncompliance and to address it in this rule with a title V exemption revocation provision.

### **2.7.5 Other Comments**

**Comment:** One commenter (4221) states that the EPA must recognize that control of air pollution from the oil and gas sector, at least in the western U.S., is likely to involve the actions - some regulatory some not - of several other Federal agencies. The commenter states that the preamble to the final rule should make it clear that the EPA recognizes this multi-agency network that will be in place to limit air pollution emissions from the oil and gas sector, and which must operate cooperatively if maximum emission reductions are to be achieved. The commenter adds there are additional means that Federal land management agencies may employ to reduce emissions from the oil and gas sector. The first of these, according to the commenter, is a requirement for project proponents to install a liquids gathering system (collection point) for large oil and gas fields. The commenter states this should be discussed or at least recognized in the preamble to the final rule. A second means, according to the commenter, is to regulate the pace of development in a field.

**Response:** The EPA recognizes the importance of and promotes multi-agency cooperation in support of solutions to key environmental concerns.

**Comment:** One commenter (4257) states that the EPA's proposal lacks the requisite safeguards needed to assure compliance. The commenter states that a rigorous self-certification requirement placing compliance responsibility on those in the best position to assure compliance, combined with stiff penalties for knowing false material statements, is necessary. The commenter states that a robust self-certification mechanism is necessary to assure compliance with the proposed standards due to the remote location and sheer number of affected sources; regulatory agencies will not be able to physically inspect or audit records from the thousands of new and modified facilities subject to the proposed standard each year. According to the commenter, a self-certification requirement will not replace the need for annual reporting, but will reduce regulatory agencies' need to rely solely on physical inspections or audits, thus reducing agency time, expense and burden. The commenter states this certification should include a certification of truth, accuracy and completeness. The commenter points to the regulations implementing title V as an example of a rigorous self-certification requirement. For accountability, the commenter

adds, this should include a certification by senior company officials. The commenter adds that these self-certification reports must be available to the public, as is similarly required under the CAA.

**Response:** We undertook a thorough analysis of the monitoring, recordkeeping and reporting requirements in the proposed rule. Based on that analysis, we have included in the final rule those provisions we believe necessary to assure regulatory agencies and the public that compliance is being achieved. We agree that self-certification is an important mechanism for assuring the public that the information submitted by each facility is accurate. In addition, the title V program has successfully employed self-certification since its inception. Therefore, we are requiring self-certification, based on requirements in the title V program, in the final rule.

**Comment:** One commenter (4257) states that another way to provide the public with real-time, transparent information on facilities' compliance with critical air quality standards is to leverage social media. The commenter notes that the EPA already uses several different forms of social media and technology applications, and the commenter encourages the Agency to consider how these social media tools may be helpful in facilitating robust, public disclosure of oil and gas well completions and re-completions. The commenter suggests the use of social media websites, smart phone applications, and QR codes. The commenter states that these and other social media tools may be particularly useful for rapidly disseminating data that the EPA will receive on gas well completion and recompletion activity. The commenter encourages the Agency to explore how these tools may be useful in promoting public transparency and accountability.

**Response:** We thank the commenter for their suggestions and will consider these options. As noted by the commenter, the EPA already utilizes social media tools to increase the potential for better understanding regarding environmental conditions and potential solutions.

## **2.8 Startup, Shutdown and Malfunction Provisions**

**Comment:** One commenter (4104) asserts that the EPA's proposed approach does not comport with the CAA and risks depriving industry of their due process rights. Two commenters (4104, 4219) state that the CAA requires that the EPA establish emission limits that are "achievable" through the application of BSER. The commenters assert that the limitations based on BSER must be achievable by the technology that the EPA has designated as BSER. The commenters opine that the EPA may accomplish the goal of meeting BSER in one of two ways to address periods of SSM:

- First, it may set emission standards sufficiently high so that all facilities using BSER can achieve the standard at all times, including during SSM periods.

- Alternatively, the EPA may set emission standards at some more rigorous level, and then provide an exemption for the other 1-2 percent of the time when even well-managed BSER technology will not be able to comply.

The commenters (4104, 4219) believe that the EPA's failure to provide such an exemption violates the CAA language and industries' constitutional rights to due process, by subjecting the affected industries to penalties, and even incarceration, for (i) failing to comply with an unattainable standard; and (ii) engaging in conduct that the CAA expressly makes legal. One commenter (4104) provides the following case law to support their position. See *Portland Cement Assoc. v. Ruckelshaus*, 486 F.2d 375, 402 (D.C. Cir. 1973) ("the [Clean Air Act] expressly requires, for the standards [the Administrator] promulgates, that technology be achievable"); *Marathon Oil Co. v. EPA*, 564 Fed.2d 1253, 1272-73 (9th Cir. 1977) (remanding permits to the EPA because they required permittees to meet the standards 100 percent of the time but the permittees could only be expected to achieve the standards 97.5 percent to 99 percent of the time with the best practicable control technology currently available); *FMC Corp. v. Train*, 539 F.2d 973, 986 (4th Cir 1976) (remanding effluent limitations to the EPA because a properly operating treatment facility could be in violation of those limitations on a few occasions). The commenter asserts that a law that requires an individual to do the impossible leaves an individual no choice but to violate the law; because individuals must be given the opportunity to conform their conduct to the law, such a law violates due process. See *Grayned v. City of Rockford*, 408 U.S. 104, 108 (1972) (vague laws violate due process in part because they fail to provide individuals a choice of whether to obey); *Portland Cement Ass'n v. Ruckelshaus*, 468 F.2d 375, 398 n.91 (D.C. Cir. 1973) ("Companies must be on notice as to what will constitute a violation."); *United States v. Dalton*, 960 F.2d 121, 122-23 (10th Cir. 1992) (individual cannot be convicted for having unregistered machine gun when there is no available mechanism for registering machine guns). Furthermore, according to the commenter, subjecting affected sources to sanctions for doing that which the CAA expressly makes legal – continuing to operate their facilities using properly-managed BSER-level controls – would also violate due process. "To punish a person because he has done what the law plainly allows him to do is a due process violation of the most basic sort." *United States v. Goodwin*, 457 U.S. 368, 372 (1982) (internal quotations omitted).

One commenter (4219) requests that the EPA either set the emission limits at levels that can be met even during periods of SSM, or allow for an exemption to cover situations in which properly operated equipment failed to meet those limits during periods of SSM.

One commenter (4228) asserts that the affirmative defense provisions in the proposed rule should be deleted and appropriate exemptions from rule standards should be added that account for operating periods when even well managed BSER control technology would not provide compliance.

**Response:** The EPA disagrees with commenters that state that the EPA’s proposed approach of not providing an exemption for the 1-2 percent of the time when even well-managed BSER technology will not be able to comply does not comport with the CAA and deprives industry of their due process rights. Neither the statute nor the case law support this position and the *Sierra Club* decision on this very issue makes commenters’ arguments highly suspect. Under section 112, the EPA must establish emission standards that “limit the quantity, rate, or concentration of emissions of air pollutants on a continuous basis.” 42 U.S.C. § 7602(k) (defining “emission limitation and emission standard”); *Sierra Club v. EPA*, 551 F.3d 1019, 1021 (D.C. Cir. 2008) (emissions limitations under CAA section 112 must both continuously apply and meet section 112’s minimum stringency requirements, even during periods of SSM). Under section 111, EPA must promulgate a “standard of performance” which also requires a continuous system of emissions reduction. See 42 U.S.C. §§ 7411(a)(1), (7), 7602(l) (defining “standard of performance” to mean “a requirement of continuous emission reduction, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction.”). Thus, the EPA is required to ensure that section 111 emissions standards (in addition to 112 standards) are continuous.

With respect to periods of startup and shutdown, the EPA agrees that in some circumstances separate standards for such periods may be appropriate. However as explained in the preamble of the proposed rule, “the EPA has taken into account startup and shutdown periods and expects that sources will be able to meet emission limits during such periods. We believe that operations and emissions do not differ from normal operations during these periods such that it warrants a separate standard.” 76 FR 52738, 52787 (Aug. 23, 2011) The control devices employed in most cases are vapor recovery units (VRU) or enclosed combustion devices. The startup or shutdown of the process unit, which is the source of the emissions, should not affect the performance of the control device, and therefore does not require a separate standard for startup and shutdown events. Further, startup and shutdown of the control device should not be an issue. For a VRU the devices will perform at the necessary level immediately upon startup. Enclosed combustion devices are typically units that receive gas from the process units and combust the gas immediately when it contacts the pilot flame. Such control devices are either on (i.e., the pilot is lit) or off. In the case where a catalytic thermal oxidizer is used as the enclosed combustion device, we believe the 24-hr averaging time is sufficient to allow compliance with the standards and we have addressed this in more detail elsewhere in this document. Thus, we do not believe that different standards are required for periods of startup or shutdown. In addition, no commenter provided enough specificity in their comments or emissions data that established the need for an alternate standard during startup and shutdown.

For malfunctions, the EPA recognizes that even equipment that is properly designed and maintained can sometimes fail and that such failure can cause a violation of an emission

standard. Therefore, the EPA is finalizing an affirmative defense to civil penalties for violations of emission standards that are caused by malfunctions as we have in other recent section 111, section 112 and section 129 rules in an attempt to balance the tension, inherent in many types of air regulation, to ensure adequate compliance while simultaneously recognizing that despite the most diligent of efforts, emission standards may be violated under circumstances beyond the control of the source.

The affirmative defense for malfunction events meets this requirement by ensuring that even where there is a malfunction, the emission standard is still enforceable through injunctive relief. While “continuous” standards, on the one hand, are required, there is also case law indicating that in many situations it is appropriate for the EPA to account for the practical realities of technology. For example, in *Essex Chemical v. Ruckelshaus*, 486 F.2d 427, 433 (D.C. Cir. 1973), the D.C. Circuit acknowledged that in setting standards under CAA section 111 “variant provisions” such as provisions allowing for upsets during startup, shutdown and equipment malfunction “appear necessary to preserve the reasonableness of the standards as a whole and that the record does not support the ‘never to be exceeded’ standard currently in force.” See also, *Portland Cement Association v. Ruckelshaus*, 486 F.2d 375 (D.C. Cir. 1973). Though intervening case law such as *Sierra Club v. EPA* and the CAA 1977 amendments undermine the relevance of these cases today, they support the EPA’s view that a system that incorporates some level of flexibility is reasonable. The affirmative defense simply provides for a defense to civil penalties for violations that are proven to be beyond the control of the source. By incorporating an affirmative defense, the EPA has formalized its approach to upset events. In a Clean Water Act setting, the Ninth Circuit required this type of formalized approach when regulating “upsets beyond the control of the permit holder.” *Marathon Oil Co. v. EPA*, 564 F.2d 1253, 1272-73 (9th Cir. 1977). See also, *Mont. Sulphur & Chem. Co. v. United States EPA*, 2012 U.S. App. LEXIS 1056 (Jan 19, 2012)(rejecting industry argument that reliance on the affirmative defense was not adequate). But see, *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1057-58 (D.C. Cir. 1978) (holding that an informal approach is adequate). The affirmative defense provisions give the EPA the flexibility to both ensure that its emission standards are “continuous” as required by 42 U.S.C. § 7602(k), and account for unplanned upsets and thus support the reasonableness of the standard as a whole.

The EPA does not agree that failure to provide an exemption violates due process. The commenter cites to cases addressing vague laws, yet does not explain or even argue that the standards are vague. Further, as the EPA explains above, the EPA’s approach to malfunction events is consistent with *Portland Cement. United States v. Dalton* addressed an argument that compliance was a legal impossibility and is thus distinguishable from the commenter’s argument that it may be technologically infeasible to comply with standards at certain times. The EPA’s approach for handling such circumstances is explained at length in the preamble and elsewhere in this response to comment document and is reasonable. In any enforcement action, sources that

truly could not have complied with the standard despite best efforts will have an opportunity to assert an affirmative defense to penalties, and such opportunity provides due process. In addition, if penalty assessment occurs, the EPA and courts consider good faith efforts to comply in assessing penalties under section 113(e) of the CAA.

**Comment:** One commenter (4266) states that EPA’s proposal fails to provide record evidence as to how it has “taken into account startup and shutdown periods.” The commenter states that the EPA’s assertion that it has taken into account startup and shutdown periods is therefore unsupported and fundamentally arbitrary. According to the commenter, the EPA further undermines its position by asserting that “any comments that contend that sources cannot meet the proposed standard during startup and shutdown periods should provide data and other specifics supporting their claim.” The commenter asserts that the EPA unambiguously has the obligation to support its proposed standards with substantial evidence and must include in the proposed rule “the factual data on which the proposed rule is based.” CAA § 307(d)(3)(A).

**Response:** As noted in the proposal preamble, we took into account startup and shutdown periods. 76 FR 52738, 52787 (Aug. 23, 2011) We believe that the expected startup and shutdown emissions established for the NSPS are not likely to cause a violation of the standards because of the processes regulated, the emission control methods typically employed and the format of the proposed standards.

For storage vessels VOC emissions are generally controlled by a VRU or enclosed combustion device. The startup or shutdown of the process unit, which is the source of the emissions, should not affect the performance of the control device, and therefore does not require a separate standard for startup and shutdown events. Further, startup and shutdown of the control device should not be an issue. For a VRU the devices will perform at the necessary level immediately upon startup. Enclosed combustion devices are typically units that receive gas from the process units and combust the gas immediately when it contacts the pilot flame. Such control devices are either on (i.e., the pilot is lit) or off. In the case where a catalytic thermal oxidizer is used as the enclosed combustion device, we believe the 24-hr averaging time is sufficient to allow compliance with the standards. Thus, we do not believe that different standards are required for periods of startup or shutdown. In addition, no commenter provided enough specificity in their comments or emissions data that established the need for an alternate standard during startup and shutdown.

The EPA has no evidence that suggests that emissions are higher during startup or shutdown that would indicate a need for an alternate standard for these periods and the commenter provided no data or basis to show that sources cannot comply with the standards as proposed. Thus, we set standards based on available information as contemplated by section 111.

**Comment:** One commenter (4242) supports the EPA’s requirement for natural gas processing plants to comply with the proposed NSPS at all times. The commenter (4242) reports that a significant percentage of emissions from natural gas processing plants occur during SSM events. This commenter provides the results of an analysis they conducted of emission events and emissions inventory data in Texas and states their analysis indicates that SSM emissions have the potential to exceed the total amount of compliance emissions reported to the state’s inventory for the same year. The commenter provides the following examples:

- The Goldsmith Gas plant in Ector County reported 999.98 tons of sulfur dioxide to the emissions inventory for 2009. This report is supposed to reflect total emissions from all causes (i.e., from both normal operations and SSM events) for the entire year. But the Goldsmith plant separately reported just of 1,000 tons of SO<sub>2</sub> emissions from multiple SSM episodes in 2009, according to a separate “emission events” data base maintained by TCEQ.
- The East Vealmoor Gas plant reported over 500 tons of SO<sub>2</sub> emissions from multiple SSM events in 2009; but only 22 tons to the Emissions Inventory.
- The Big Lake Gas Plant reported 380 tons of SO<sub>2</sub> emissions from SSM events so far in 2011, or more than the total annual emissions it reported to the EI in 2008.

Eight commenters (4104, 4174, 4192, 4218, 4245, 4246, 4266, 4273) opine that the EPA should maintain the SSM exemption in subpart OOOO.

One commenter (4219) asserts that the EPA has not provided adequate justification for not providing an SSM exemption in the current rule.

Another commenter (4218) states that the EPA has not explained what is different about the oil and gas sector that justifies not including the general SSM exemption that most other industries have under the NSPS.

Four commenters (4104, 4192, 4266, 4273) state that the EPA is not legally required to not include the SSM exemption in subpart OOOO and that the *Sierra Club v. EPA* decision applies only to MACT standards.

One commenter (4104) states that the Court’s decision in *Sierra Club v. EPA* was in large part based on the more limited flexibility granted to the EPA under section 112 than had been provided under section 111. *See* 551 F.3d at 1022. The commenter also asserts that, under the part 63 General Provisions, the EPA generally exempted facilities from complying with MACT standards during SSM events; during these periods, facilities were instead required to comply with the general duty to operate using “good air pollution control practices.” 40 CFR. §§63.6(e)-(h). According to the commenter, the Court held that the CAA requires “continuous section 112-

compliant standards”; the “general duty” that applied during SSM events did not qualify as either a section 112(d)-compliant MACT standard or a section 112(h)-compliant alternate standard. 551 F.3d at 1028-29. Accordingly, the commenter believes that the Court voided the EPA’s reliance on the “general duty” under §63.6(e) to control emissions during SSM events.

The commenter (4273) asserts that the EPA states that it is “reasonable to interpret CAA section 111 as not requiring the EPA to account for malfunctions in setting emission standards” but provides no basis for this conclusion, merely citing to the definition of “standard of performance” and referencing only the EPA’s determination that the system of emission reduction be adequately demonstrated. 76 Fed. Reg. 52,766. The commenter states that the case law that the EPA included in the proposal preamble was applicable to section 112 and not section 111 standards and no one has successfully challenged the longstanding NSPS SSM provisions. One commenter (4192) states that the NSPS provisions of the CAA could reasonably be interpreted to allow an exemption for SSM.

Two commenters (4192, 4246) recommend the following revision to the proposed NSPS amendments:

40 CFR 60.5370(b) currently reads:

The provisions for exemption from compliance during periods of startup, shutdown, and malfunction provided in 40 CFR 60.8(c) do not apply to this subpart.

40 CFR 60.5370(b) recommended edit:

The provisions for exemption from compliance during periods of startup, shutdown, and malfunction provided in 40 CFR 60.8(c) do apply to this subpart.

**Response:** The EPA appreciates the support of the commenter that agrees with the EPA’s proposal that natural gas processing plants comply with the NSPS at all times.

As for commenters that believe that *Sierra Club v. EPA* only applies to section 112 standards, we disagree. The EPA believes the reasoning in the D.C. Circuit’s decision in *Sierra Club v. EPA* applies equally to section 111. The EPA’s proposed approach to SSM periods has been used consistently in CAA section 112, CAA section 111, and CAA section 129 rulemaking actions since the D.C. Circuit’s decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008) vacated the SSM exemption contained in CFR 63.6(f)(1) and 40 CFR 63.6(h)(1). (See, e.g., National Emission Standards for Hazardous Air Pollutants From the Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants, 75 FR 54970 (September 9, 2010); Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Sewage Sludge Incineration Units; Final Rule, 76 FR 15372 (March 21, 2011); National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-fired Electric



Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units; Final Rule, 77 FR 9304 (February 16, 2012).

In response to the commenter that states that the court vacated the SSM provisions because they were based on the “general duty” clause rather than a continuously applicable section 112 standard, the EPA agrees that the court found that the “general duty” was not a 112-compliant standard. The EPA does not claim that the *Sierra Club* case constrains its authority to prescribe different standards for periods of startup and shutdown or for periods of malfunction. However, as explained in the preamble to the proposed and final rules, the EPA has determined that CAA section 112 does not require that emissions that occur during periods of malfunction be factored into development of CAA section 112 standards. The EPA’s rationale for this view is explained in detail in the preambles as well.

As for the commenter that states that the NSPS provisions of the CAA could reasonably be interpreted to allow an exemption for SSM, we disagree. The commenter did not provide justification for their position and the EPA believes that the *Sierra Club v. EPA* decision equally applies to section 111 and section 112 standards and there is nothing in the NSPS provisions of the CAA that would lead the EPA to treat SSM events differently.

We also disagree with the commenter that recommends that the EPA leave the regulation of SSM emissions to the respective State agencies. States may seek to have equivalent or more stringent requirements apply in lieu of the Federal requirements but the EPA maintains its authority to set the minimum requirements that need to be enforced nationally. Therefore, for the reasons provided above, we have maintained the proposed §60.5370(b) regulatory text stating that the “provisions for exemption from compliance during periods of startup, shutdown, and malfunction provided in §60.8(c) do not apply...” in the final rule.

**Comment:** One commenter (4266) states that, under an NSPS, the EPA is obliged to show that covering SSM periods within the NSPS is cost effective. The commenter asserts that the CAA does not contain any provision that allows the EPA to ignore cost-effectiveness when setting NSPS and SSM events are no different. The commenter further states that the EPA has failed to estimate and take into account the added costs associated with a rule that requires compliance during malfunctions (i.e., the costs of installing redundant equipment or the business interruption costs of shutting down). According to the commenter, if the EPA continues to impose the NSPS at all times (including during SSM periods), the EPA must identify SSM events, the controls required to maintain the emission standard and justify the cost impact of including the emission standard during the SSM event.

Another commenter (4242) believes that any cost/benefit analysis should take into account the ripple effects of SSM events at gas plants. For example, according to the commenter, a single “emission event” at the Goldsmith Gas Plant caused a total of 195 tons of SO<sub>2</sub> to be released at tank batteries connected to the plant. (The commenter refers to Exhibit 3 of their comment letter for documentation of the subject event.) The commenter believes that it is critical for the EPA to properly evaluate the benefits of technology in their cost/benefit analysis that can reduce the frequency of and severity of SSM events that trigger shutdowns and flaring at satellite units.

**Response:** The EPA disagrees with both commenters. The EPA’s rationale for its approach to SSM events is discussed in the preamble to the proposed rule and this final action. As explained in the preamble, the EPA has determined that section 111(a)(1) of the CAA provides that NSPS are to “reflect the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any non-air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.” This level of control is commonly referred to as best demonstrated technology (BDT) or the best system of emission reduction (BSER). Costs are also considered in evaluating the NSPS. The EPA generally compares control options and estimated costs and emission impacts of multiple, specific emission standard options under consideration. As part of this analysis, the EPA considers numerous factors relating to the potential cost of the regulation, including industry organization and market structure; control options available to reduce emissions of the regulated pollutant(s); and costs of these controls. The commenters do not provide evidence that the NSPS fails to meet this statutory requirement. Additionally, commenters have not shown how the EPA is obligated, under the statute, to specifically account for SSM events when setting an NSPS, including any statutory mandate that the EPA specifically account for the cost-effectiveness or benefits of technology in their cost/benefit analyses of SSM events when setting NSPS.

CAA section 111 does not require that emissions that occur during periods of malfunction be factored into development of CAA section 111 standards. This equates to the commenter asking that the EPA determine the likelihood, frequency, duration, and nature of a failure at the facility when setting the standard, and then estimating and considering the cost impacts of that failure when setting the NSPS. Such an approach is not required under section 111.

As for startup and shutdown periods, as discussed previously in this section, for storage vessels, VOC emissions are generally controlled by a VRU or enclosed combustion device. The startup or shutdown of the process unit, which is the source of the emissions, should not affect the performance of the control device, and therefore does not require a separate standard for startup and shutdown events. Further, startup and shutdown of the control device should not be an issue. For a VRU the devices will perform at the necessary level immediately upon startup. Enclosed combustion devices are typically units that receive gas from the process units and combust the

gas immediately when it contacts the pilot flame. Such control devices are either on (i.e., the pilot is lit) or off. In the case where a catalytic thermal oxidizer is used as the enclosed combustion device, we believe the 24-hr averaging time is sufficient to allow compliance with the standards and we have addressed this in more detail elsewhere in this document. Thus, we do not believe that different standards are required for periods of startup or shutdown. In addition, no commenter provided enough specificity in their comments or emissions data that established the need for an alternate standard during startup and shutdown.

Ultimately the decision of how to comply with the applicable standards, and plan for contingencies, lies with the source owner and operator.

**Comment:** One commenter (3469) recommends that the EPA follow the SSM approach that is used in the final NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (ICI Boiler MACT); namely, that work practice standards apply during periods of startup and shutdown to minimize air pollution emissions, while malfunctions would not be considered a distinct operating mode. The commenter states that, in the ICI Boiler rule, the EPA determined that it is not technically feasible to monitor these periods of startup and shutdown and therefore established separate work practice standards for periods of startup and shutdown. Additionally, the commenter states that, in the ICI Boiler rule, the EPA requires operators to follow manufacturers' specifications for minimizing periods of startup and shutdown. Specifically, §63.7530(h) requires that owners/operators of covered ICI boilers "minimize the unit's startup and shutdown periods following the manufacturer's recommended procedures, if available. The commenter provides that, if manufacturer's recommended procedures are not available, the recommended procedures for a unit of similar design for which manufacturer's recommended procedures are available must be followed. The commenter reports that a signed statement in the Notification of Compliance Status report would be included that indicates startups and shutdowns were conducted according to the manufacturer's recommended procedures or procedures specified for a unit of similar design if manufacturer's recommended procedures are not available." The commenter believes a similar approach, which requires an affected piece of equipment to minimize periods of startup and shutdown and associated emissions is appropriate for oil and gas equipment.

**Response:** The EPA, based upon a comprehensive review of the emission units affected by this NSPS, has determined that there is no demonstrated need for alternate standards during startup and shutdown and expects that sources will be able to meet the emission limits during such periods. In comparison, in the major source ICI Boiler rule, the EPA determined that it was not practicable to apply measurement methodology due to technological and economic limitations during periods of startup and shutdown and, therefore, established separate work practice standards for these periods. The operation of boilers falling under the major source ICI Boiler rule is not analogous to that of storage vessels within the oil and natural gas NSPS. Boilers are

designed to combust various fuels and in doing so they destroy organic HAP and VOC. In fact, boilers are commonly used as control devices to reduce organic HAP and VOC. In contrast, storage vessels do not reduce VOC, they merely emit VOC, and, in most cases, an add-on control device is required to meet the VOC emission standard under the oil and natural gas NSPS. The control devices employed in most cases are VRU or enclosed combustion devices. The startup or shutdown concern is not with the process unit (i.e., storage vessels) but with the control device. VRUs will perform at the necessary level when operating and we are not aware of any periods that can be classified as startup or shutdown for these devices. Enclosed combustion devices are typically units that receive gas from the process units and combust the gas immediately when it contacts the pilot flame. Such devices are either on (i.e., the pilot is lit) or off. In the case where a catalytic thermal oxidizer is used as the enclosed combustion device, we believe the 24-hr averaging time is sufficient to allow compliance with the standards and we have addressed this in more detail elsewhere in this document. There should not be any periods of non-operation for any of these control devices where the limits cannot be met that we consider being startup or shutdown activities. In addition, no commenter provided enough specificity in their comments or emission data that established the need for an alternate standard during startup and shutdown.

**Comment:** Four commenters (4159, 4220, 4266, 4273) assert that the EPA has not shown that emission standards are achievable during malfunction periods.

Three commenters (4159, 4266, 4273) report that the support for the EPA's proposed rules does not contain data on emissions during malfunctions and has not shown that the standards can be achieved during such periods.

Four commenters (4159, 4220, 4266, 4273) do not agree with the EPA's decision to apply a standard for normal operating periods to periods of malfunctions because it would find it difficult to develop a standard for such events. One commenter (4192) opines that it is impractical to impose a performance standard on malfunctioning equipment.

Two commenters (4192, 4246) state that certain control devices (such as flares) are not capable of meeting NSPS during upsets or malfunctions, and could not be feasibly modified to do so. The commenters report that most existing flares subject to 40 CFR part 60, subpart OOOO that are compliant with either 40 CFR 60.18 or State construction permit requirements will not be able to meet the new standard during upsets when a new tank is added to the site. One commenter (4266) acknowledges (as the EPA has) that it is not feasible to develop an emission standard that governs malfunction periods. The commenter provides that section 112(h) of the CAA allows the EPA to set work practice standards for situations where "it is not feasible in the judgment of the Administrator to prescribe or enforce an emission standard . . ." The commenter states that malfunctions fit within the situations described in the definition of "not feasible to prescribe or enforce an emission standard" as any situation where "the application of measurement

methodology to a particular class of sources is not practicable due to technological and economic limitations.” Consequently, the commenter recommends that the EPA set work practice requirements to address periods of malfunction. The commenter believes that the steps set forth in §60.5415(h)(1)(i)-(ix) would constitute an appropriate work practice standard for malfunctions, in which case (according to the commenter) the notifications specified in §60.5415(h)(2) should be replaced by a semi-annual reporting requirement.

Commenter 4266 disputes the EPA’s case law support and provides their own case law support for why the EPA is both authorized and obligated to account for periods of malfunction when setting part 60 standards. The commenter states that the EPA begins its analysis by asserting that it “has determined that malfunctions should not be viewed as a distinct operating mode and, therefore, any emissions that occur at such times do not need to be factored into development of CAA section 111 standards.” 76 Fed. Reg. at 72766. According to the commenter, in support of this assertion, the EPA first cites *Weyerhaeuser v. Costle*, 590 F.2d 1011, 1058 (D.C. Cir. 1978) for the proposition that “nothing in CAA section 111 or in case law requires that the EPA anticipate and account for the innumerable types of potential malfunction events in setting emission standards.” 76 FR at 52766.

The commenter (4266) believes that *Weyerhaeuser* is inapposite – it is a Clean Water Act case that has no bearing on the EPA’s authorities and responsibilities under CAA section 111. According to the commenter, more directly relevant cases – those decided under section 111 itself – tell a very different story. The commenter states that, as explained in the SSM Coalition’s comments (Attachment D to their comment letter), the courts have long recognized that a “technology based standard discards its fundamental premise when it ignores the limits inherent in technology.” *NRDC v. EPA*, 859 F.2d 156, 208 (D.C. Cir. 1988). For example, according to the commenter, the D.C. Circuit recognized, in *Portland Cement Ass’n v. Ruckelshaus*, 486 F.2d 375, 398 (D.C. Cir. 1973), a decision reviewing standards under CAA section 111, that “‘start-up’ and ‘upset’ conditions due to plant or emission device malfunction, is an inescapable aspect of industrial life and that allowance must be made for such factors in the standards that are promulgated.” *Id.* at 399. Similarly, the commenter opines that, in *Essex Chem. Corp. v. Ruckelshaus*, 486 F.2d 427, 432 (D.C. Cir. 1973), cert. denied, 416 U.S. 969 (1974), another section 111 case, the court held that SSM provisions are “necessary to preserve the reasonableness of the standards as a whole.” *Id.* at 433. The commenter states that, in *National Lime Ass’n v. EPA*, 627 F.2d 416 (D.C. Cir. 1980), another case reviewing emission standards promulgated under CAA section 111, the court held CAA technology-based standards must be capable of being met “under most adverse circumstances which can reasonably be expected to recur,” such as during periods of SSM. 627 F.2d at 431 n.46. Thus, according to the commenter, the relevant case law makes clear that the EPA is authorized and obligated to account for periods of malfunction when setting part 60 standards.

Nevertheless, the commenter (4266) argues that the EPA presses on by arguing that “it is reasonable to interpret CAA section 111 as not requiring the EPA to account for malfunctions in setting emissions standards” because “[t]he “application of the best system of emission reduction” is more appropriately understood to include operating units in such a way as to avoid malfunctions.” 76 FR at 52766. The commenter opines that this rationale makes no sense because the EPA effectively is defining BDT as an affected facility that does not malfunction. The commenter asserts that the EPA has asserted no record basis for such a determination and could not if it tried because malfunctions are inevitable, notwithstanding best efforts. In any event, the commenter believes that the EPA has failed to estimate and take account of the added costs associated with a rule that requires compliance during malfunctions (i.e., the costs of installing redundant equipment or the business interruption costs of shutting down).

According to the commenter (4266), the EPA lastly asserts that “even if malfunctions were considered a distinct operating mode, we believe it would be impracticable to take malfunctions into account in setting CAA section 111 standards for affected facilities” because “it would be difficult to set a standard that takes into account the myriad different types of malfunctions that can occur across all sources in the category.” *Id.* The commenter argues that four decades of operating under the existing part 60 malfunction provision belie this claim. The commenter opines that a work practice requiring best efforts to minimize emissions during malfunction events consistent with the application of good air pollution control practices is a tried and true way to “account for the myriad different types of malfunctions that can occur.” According to the commenter, the EPA’s failure to explain why such an approach cannot continue to be successfully applied represents a critical flaw in its conclusion that standards cannot and should not be developed for malfunction events.

**Response:** For malfunctions, the EPA is finalizing the proposed affirmative defense language for exceedances of the standards that are caused by malfunctions with minor revisions discussed elsewhere in this section. As the EPA explained in the preamble to the proposed rule and final rule, the EPA recognizes that even equipment that is properly designed and maintained can fail and that such failure can cause an exceedance of the relevant emission standard. The EPA is including an affirmative defense in the final rule as we have in other recent section 111, 112 and section 129 rules so as to balance the tension, inherent in many types of air regulation, to ensure adequate compliance while simultaneously recognizing that despite the most diligent of efforts, emission limits may be exceeded under circumstances beyond the control of the source. Under section 112, the EPA must establish emission standards that “limit the quantity, rate, or concentration of emissions of air pollutants on a continuous basis.” 42 U.S.C. § 7602(k) (defining “emission limitation and emission standard”); *Sierra Club v. EPA*, 551 F.3d 1019, 1021 (D.C. Cir. 2008) (emissions limitations under CAA section 112 must both continuously apply and meet section 112’s minimum stringency requirements, even during periods of SSM). Under section 111, EPA must promulgate a “standard of performance” which also requires a

continuous system of emissions reduction. See 42 U.S.C. §§ 7411(a)(1), (7), 7602(l) (defining “standard of performance” to mean “a requirement of continuous emission reduction, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction.”). Thus, the EPA is required to ensure that section 111 and 112 emissions limitations are continuous. The affirmative defense for malfunction events meets this requirement by ensuring that even where there is a malfunction, the emission limitation is still enforceable through injunctive relief. While “continuous” limitations, on the one hand, are required, there is also case law indicating that in some situations it is appropriate for the EPA to account for the practical realities of technology. For example, in *Essex Chemical v. Ruckelshaus*, 486 F.2d 427, 433 (D.C. Cir. 1973), the D.C. Circuit acknowledged that in setting standards under CAA section 111 “variant provisions” such as provisions allowing for upsets during startup, shutdown and equipment malfunction “appear necessary to preserve the reasonableness of the standards as a whole and that the record does not support the ‘never to be exceeded’ standard currently in force.” See also, *Portland Cement Association v. Ruckelshaus*, 486 F.2d 375 (D.C.Cir. 1973). Though intervening case law such as *Sierra Club v. EPA* and the CAA 1977 amendments calls into question the relevance of these cases today, they support the EPA’s view that a system that incorporates some level of flexibility is reasonable. The affirmative defense simply provides for a defense to civil penalties for excess emissions that are proven to be beyond the control of the source. By incorporating an affirmative defense, the EPA has formalized its approach to upset events. In a Clean Water Act setting, the Ninth Circuit required this type of formalized approach when regulating “upsets beyond the control of the permit holder.” *Marathon Oil Co. v. EPA*, 564 F.2d 1253, 1272-73 (9th Cir. 1977). See also, *Mont. Sulphur & Chem. Co. v. United States EPA*, 2012 U.S. App. LEXIS 1056 (Jan 19, 2012)(rejecting industry argument that reliance on the affirmative defense was not adequate). But see, *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1057-58 (D.C. Cir. 1978) (holding that an informal approach is adequate). The affirmative defense provisions give the EPA the flexibility to both ensure that its emission limitations are “continuous” as required by 42 U.S.C. § 7602(k), and account for unplanned upsets and thus support the reasonableness of the standard as a whole.

As noted above and discussed in the preamble, the relevance of the cases such as *Portland Cement* is called into question in light of subsequent case law and the 1977 amendments to the Clean Air Act’s definition of emission standard requiring that such standards be continuous. In any event, even if those cases are relevant, as also explained in the preamble to the final rule, the EPA’s overall approach to malfunction events in this rule, including the promulgation of an affirmative defense, is consistent with the approach set forth in EPA’s 1972 proposed rules cited favorably in *Portland Cement* in that both EPA’s approach today and in 1972 —impart a construction of “reasonableness” to the standards as a whole and adopts a more flexible system of regulation than can be had by a system devoid of “give.” *Portland Cement* at 399. *Portland Cement* criticized the EPA regulations that contained no specific provisions to address malfunctions and the EPA’s assertion that malfunctions would be dealt with by the informal

exercise of discretion in the Agency's enforcement activities. Those decisions did not require exemptions or less stringent standards for malfunction events as the commenter suggests. The EPA's approach to malfunctions goes further than reliance on the informal exercise of enforcement discretion in that it includes regulatory provisions establishing an affirmative defense to civil penalties for exceedances of emission limits that are caused by malfunctions.

The EPA acknowledges that certain control devices (such as flares) may not be capable of meeting the NSPS during upsets or malfunctions, and may not be feasibly modified to do so. However, the EPA believes that the standards adopted are flexible enough to allow at least some variability without causing a violation of the standard. In cases where a violation has occurred, an owner or operator of a source may choose to assert an affirmative defense.

**Comment:** One commenter (4192) reports that, in Table 3, §60.11 "compliance with standards and maintenance requirements" is shown as not applicable to this subpart. The commenter requests that the EPA modify Table 3 of the rule to make §60.11(c) applicable to subpart OOOO. According to the commenter, the NSPS subpart A contains an exemption for opacity during upsets in §60.11(c), that states: "The opacity standards set forth in this part shall apply at all times except during periods of startup, shutdown, malfunction, and as otherwise provided in the applicable standard." The commenter states that many flares that are currently in use are not capable of meeting opacity standards during upsets. The commenter opines that, with the elimination of the SSM exemption, each opacity exceedance during plant or station upsets and malfunctions will need to be reported and will require an affirmative defense. The commenter states that, without an exemption, there will be a need for new paperwork that they lack the resources to complete.

**Response:** Flares are subject to applicable standards at all times the source is operating and therefore the exception in §60.11(c) to meeting the opacity standards other than periods of SSM cannot be provided. Under the subpart OOOO standards, flares are to be designed for and operated with no visible emissions, except for periods not to exceed a total of 2 minutes during any hour. Owners and operators should have procedures in place to shut down operations or to re-route emissions during an upset to minimize the potential for a violation of the standard. If procedures fail, it is then up to an owner or operator to decide whether they should prepare and submit a report to assert an affirmative defense.

### **2.8.1 Affirmative Defense Provisions for Malfunctions**

**Comment:** Three commenters (4240, 4375, 4415) oppose the EPA's proposal to promulgate an "affirmative defense" to penalties due to a malfunction because it would create a new loophole in the standards and is unlawful. Two of the commenters (4375, 4415) opine that if the EPA does not eliminate the affirmative defense from the rule, adverse health impacts could result and that



the EPA should be protecting vulnerable residents in regions with natural gas, and not providing a shield for industry.

One commenter (4240) asserts that the EPA unlawfully proposes to promulgate an “affirmative defense” to penalties due to a malfunction. See 76 FR at 52,787-88 (proposing §§63.761-62, §§ 63.1271-72). The commenter opines that this would create a new loophole in the standards and is unlawful. The commenter states that the statute makes clear how the courts are to assess civil penalties, whether a case is brought by the EPA or a citizen. 42 U.S.C. § 7413(e). The commenter opines that Congress plainly intended citizens to be able to enforce emission standards under the CAA using the full range of civil enforcement mechanisms available to the government, and, in the HAP context, subject only to the limitation that government not be “diligently prosecuting” its own civil enforcement action, CAA §304(b)(1)(B), 42 U.S.C. § 7604(b)(1)(B). Specifically, the commenter states that the affirmative defense that the EPA proposes to allow in case of malfunctions goes directly against congressional intent in two ways. First, according to the commenter, Congress expressed a clear intent as to how judges should determine the size of civil penalties whenever they are sought and thus Congress flatly barred the EPA from limiting when civil penalties can be assessed. See *Chevron, U.S.A., Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 842-43 (1984). The commenter believes that the EPA acts outside of its delegated authority to limit civil penalties available in citizen suits or its own enforcement actions in its proposal. Second, the commenter asserts that the proposal will impermissibly chill citizen participation, and the ability to win an effective, deterrent remedy, in CAA enforcement actions.

The commenter (4240) argues that the CAA grants the EPA minimal discretion that only applies to administrative penalties, allowing the EPA to “compromise, modify, or remit, with or without conditions, any administrative penalty which may be imposed under [subsection 113(d)].” 42 U.S.C. § 7413(d)(2)(B) (emphasis added). However, according to the commenter, there is no similar grant of authority to the EPA to compromise, modify or limit civil penalties that a court may impose under section 113(e) or section 304. Section 304(a), 42 U.S.C. § 7604(a), grants courts the sole authority “to apply any appropriate civil penalties” in citizen suits. According to the commenter, the explicit reference to the EPA’s ability to modify penalties in one subsection and its absence in the other subsection of the same provision can only be understood as an intentional decision by Congress that the EPA may not contravene by rule.

The commenter (4240) believes that an affirmative defense would likely be used on a routine basis by polluters seeking to avoid penalties, just as the malfunction exemption was. Thus, the commenter believes that the affirmative defense also runs counter to two clearly expressed intentions of Congress: (1) the burden it places on citizens makes it less likely that they will enforce the CAA, see, e.g., *Pennsylvania v. Del. Valley Citizens’ Council for Clean Air*, 478 U.S. 546, 560 (1986); and (2) several of the factors at issue in the affirmative defense undercut

Congress's intent that citizen suit enforcement should avoid re-delving into "technological or other considerations." *NRDC v. Train*, 510 F.2d 692, 724 (D.C. Cir. 1974). According to the commenter, both result from the technical burden the EPA imposes on citizens with the affirmative defense, and both render the defense impermissible.

The commenter (4240) argues that the EPA has failed to demonstrate any need or rational justification for an affirmative defense to penalties to be written into the regulations and cause the harm that will result. According to the commenter, the EPA has discretion to decide what cases to prosecute, to consider settlements, and to request civil penalties in a case-by-case manner, as long as it acts consistent with the CAA to protect clean air as its top priority, see 42 U.S.C. § 7401.

The commenter (4240) states that, if the EPA had the authority to promulgate any type of affirmative defense penalties for malfunctions, the statute requires that they also promulgate the following:

- A specific amount of compensatory penalties must apply to each reported malfunction (consistent with the CAA).
- The EPA must modify the regulations so that the affirmative defense cannot be used by a specific facility or company more than once within a set period of time, such as 10 years.
- The EPA must promulgate specific public reporting and notification requirements for malfunctions, or any emission exceedance that occurs of which an operator is aware.

**Response:** The EPA's view is that the affirmative defense is consistent with CAA sections 113(e) and 304. Section 304 gives district court's jurisdiction "to apply appropriate civil penalties." Section 113(e)(1) identifies the factors that the Administrator or a court shall take into consideration in determining the amount of a penalty to be assessed only after it has been determined that a penalty is appropriate. The affirmative defense regulatory provision is not relevant to the amount of any penalty to be assessed under section 113(e) because if a court determines that the affirmative defense elements have been established, then a penalty is not appropriate and penalty assessment pursuant to the section 113(e)(1) factors does not occur.

In exercising its authority under section 112 to establish emission standards (at a level that meets the stringency requirements of section 112), the EPA necessarily defines conduct that constitutes a violation. The EPA's view is that the affirmative defense is part of the emission standard and defines two categories of violation. If there is a violation of the emission standard and the source demonstrates that all the elements of the affirmative defense are met, only injunctive relief is available. All other violations of the emission standard are subject to injunctive relief and penalties. The CAA does not require that all violations be treated equally. Further, a citizen suit

claim under section 304 allows citizens to commence a civil action against any person alleged to be in violation of “an emission standard or limitation under this chapter.” The CAA, however, allows the EPA to establish such “enforceable emission limitations.” Thus, the citizen suit provision clearly contemplates enforcement of the standards that are defined by the EPA. As a result, where the EPA defines its emissions limitations and enforcement measures to allow a source the opportunity to prove its entitlement to a lesser degree of violation (not subject to penalties) in narrow, specified circumstances, as the EPA did here, penalties are not “appropriate” under section 304.

The EPA’s view is that an affirmative defense to civil penalties for exceedances of applicable emission standards during periods of malfunction appropriately balances competing concerns. On the one hand, citizen enforcers are concerned about additional complications in their enforcement actions. On the other hand, industrial sources are concerned about being penalized for violations caused by malfunctions that could not have prevented and were otherwise appropriately handled (as reflected in the affirmative defense criteria). The EPA has utilized its Section 301(a)(1) authority to issue regulations necessary to carry out the Act in a manner that appropriately balances these competing concerns.

The EPA disagrees that the affirmative defense provision will hamper citizen enforcement. First, injunctive relief is still available and the threat of penalties would not deter violations in cases where all of the conditions of the affirmative defense have been satisfied because the affirmative defense criteria ensure that all reasonable steps were taken to prevent a malfunction that causes excess emissions.

Further, litigating whether a source has met the affirmative defense will not burden citizen groups any more or less than would litigating the appropriate penalty amount in the penalty assessment stage of a citizen suit enforcement action, because the 113(e) penalty assessment criteria and the affirmative defense criteria are similar and in fact overlap. For example, the requirement that the Administrator or the court consider “good faith efforts to comply” is bound to generate the type of fact-intensive disputes that the commenter complains of. In addition, several of the affirmative defense criteria are exactly the type of criteria the Administrator or Court might consider in determining whether a source made “good faith efforts to comply.” For example, to take advantage of the affirmative defense, the source must prove by a preponderance of the evidence that, among other things, the excess emissions “were caused by an unavoidable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner” and “could not have been prevented through careful planning, proper design or better operation and maintenance practices” and “did not stem from any activity or event that could have been foreseen and avoided, or planned for.”

Thus, the EPA does not expect the affirmative defense provision to significantly alter the burden of bringing a citizen enforcement action. For those cases that do proceed to trial, even in the absence of this affirmative defense, sources generally raise equitable arguments to argue for a low penalty and citizens often rebut such arguments. Therefore, as a practical matter, the EPA does not expect the affirmative defense provision to materially affect the practice of CAA enforcement.

The EPA is not adopting commenters' suggestion with respect to compensatory damages or limits on the frequency of use of the affirmative defense. It is not clear that the EPA has authority to require the automatic imposition of compensatory damages and even if such authority exists, the EPA does not think automatic imposition of damages is appropriate, as it would unduly complicate the enforcement process. Ensuring that malfunctions do not recur can be handled through imposition of appropriate injunctive relief. In addition, the EPA's view is that it would not be appropriate to limit a source's ability to take advantage of the affirmative defense to one time over a specified period of time such as ten years given that the affirmative defense is only available when the source could not have prevented the excess emissions. With respect to commenters' suggested reporting requirements, the reporting requirements in the rules promulgated today already require malfunction reporting and the affirmative defense provisions require that parties choosing to assert the affirmative defense meet additional malfunction reporting requirements. Any such reports submitted to the EPA are publicly available pursuant to CAA section 114.

**Comment:** Three commenters (4218, 4258, 4266) state that proving an affirmative defense will be close to impossible for malfunctions that occur at many of their facilities because they are located in remote areas that are not continually staffed. Commenters report that excess emissions can result from weather conditions or gathering system/processing plant outages that are beyond the control of the operator. According to commenters, inspection and maintenance visits occur on average anywhere from weekly to twice per month. Commenters note that winter weather often makes it difficult to visit sites causing extended periods between site visits. According to the commenters, although telemetry is often utilized for new production well sites to optimize the need for operator attention, weather conditions can affect not only the control device (flare flameout) but can also affect telemetry which would catch and report such discrepancies. Commenters report that system outages to the gathering system, gas treating plants, or gas processing plants occur infrequently but can occur several times during the year. They report that these outages immediately result in a stop in production, but that most wells must be visited manually in order to shut down the well and associated equipment. One commenter (4266) requests that the EPA specify how they would consider weather and "system" outages that are beyond the control of the upstream operator in a malfunction work practice.

Three commenters (4192, 4241, 4246) report that VRUs that are electric will not operate during power outages.

**Response:** In response to commenters that state that aspects of the affirmative defense would be “close to impossible” to prove, other than sources being remote and unmanned, specifics were not provided. However, the EPA is revising certain criteria of the affirmative defense that may ease the burden for owners and operators of remote sources. The EPA is eliminating both the immediate notification and 45-day malfunction report requirement. The final rule language requires the owner or operator seeking to assert an affirmative defense to submit a written report to the Administrator with all necessary supporting documentation. This affirmative defense report shall be included in the first periodic compliance, deviation report or excess emission report otherwise required after the initial occurrence of the violation of the relevant standard (which may be the end of any applicable averaging period). If such compliance, deviation report or excess emission report is due less than 45 days after the initial occurrence of the violation, the affirmative defense report may be included in the second compliance, deviation report or excess emission report due after the initial occurrence of the violation of the relevant standard. This change provides sources with sufficient time to demonstrate that they have met the required affirmative defense criteria.

**Comment:** Four commenters (4192, 4219, 4258, 4356) report that a variety of States, such as Texas and New Mexico, apply affirmative defense criteria that differ from what is proposed in subpart OOOO. One commenter (4192) opines that the EPA’s proposal would complicate enforcement in those States by necessitating that facilities submit two affirmative defenses (one corresponding to the State standard and the other corresponding to the EPA’s standard).

One commenter (4258) reports that New Mexico’s “affirmative defense” found in 20.2.7 NMAG allows operators a 30-day timeframe within which to assert “affirmative defense,” which is inconsistent with the proposed Federal requirements.

Three commenters (4219, 4258, 4356) request that the EPA expressly provide in the proposed rules that a SIP-approved State affirmative defense program would be sufficient to establish the affirmative defense for the Federal rules, or that the EPA defer to the State’s exceedance policies and regulations in lieu of the Federal affirmative defense provisions.

**Response:** Pursuant to CAA section 111(c) and the EPA regulations at 40 CFR 60.10, States may require equivalent or more stringent requirements. States that have SIP approved affirmative defense provisions that are equivalent to or more restrictive than the affirmative defense provisions in the final rule applicable to malfunction periods may seek to have those programs apply in lieu of those in the final rule.

**Comment:** Two commenters opine (4192, 4246) that the EPA should not require an affirmative defense document for what are typically very small VOC process units. The commenters state that the proposed affirmative defense documentation is too detailed and burdensome (in that it requires, for instance, a “root cause” analysis), especially considering the nature of the excess emissions likely to occur under subpart OOOO. The commenters explain that excess emissions under subpart OOOO are not likely to trigger a violation of major source thresholds (for either criteria pollutant or HAP emissions), but would instead reflect brief emissions from very small sources with very little “uncontrolled” emissions. The commenters opine that the amount of documentation and level of proof for an affirmative defense are too high for the types of sources covered by subpart OOOO.

The commenters (4192, 4246) state that the strict requirements in the EPA’s proposed affirmative defense are the same as those that a refinery or chemical plant must meet. The commenters assert that their sources are vastly different than large emissions sources such as refinery process units, chemical plants, power plants, and large boilers, and request that the EPA streamline the affirmative defense procedures to reflect the differences between their sources and large process units. In developing streamlined affirmative defense procedures, the commenters request that the EPA also keep in mind that without a SSM exemption, owners and operators will engage in far more frequent reporting of excess emissions due to malfunctions.

One commenter (4241) recommends that the EPA reconsider the proposed affirmative defense language in light of the nature of the sources affected, and that it consider simply requiring that the operator maintain records documenting that: (1) the event was truly a malfunction, and (2) that the operator took all reasonable steps to minimize emissions during the malfunction and to correct the malfunction as expeditiously as possible. According to the commenter, this language would provide a more appropriate threshold for exceedances of emissions limits caused by malfunctions of properly designed and maintained equipment at small emissions sources. The commenter also requests that the EPA reexamine the affirmative defense language as it is proposed, specifically in the context of storage vessels. The commenter explains that the proposed language was specifically developed for large sources with significant levels of emissions, and that the proposed rules cover small individual sources of VOCs where the proposed stringent affirmative defense language is not warranted.

Four commenters (4104, 4192, 4246, 4273) assert that the proposed affirmative defense requirements are too onerous or detailed, and restrictive.

One commenter (4104) supports inclusion of a malfunction exemption in the proposed new subpart OOOO. The commenter asserts that both the CAA and the Constitution require an upset defense as part of any technology-based standard. According to the commenter, as drafted, however, the proposed defense is far too narrow and restrictive to satisfy the CAA’s and the

Constitution's requirements. For example, according to the commenter, the proposed rule would excuse only those events that do not "stem from any activity or event that could have been foreseen and avoided, or planned for[.]" 76 FR at 52829. However, the commenter asserts that, any number of events may be "foreseen" and "planned for," but still interfere with a facility's ability to comply with the standards. The commenter cites events such as a power failure or natural disaster as examples that may be anticipated, where the facility may have developed an appropriate emergency response plan to implement during these periods – yet may still find itself unable to comply with the standard, due to events such as lack of power, lack of access to the site, flooding, severe weather, earthquakes, mud slides, vandalism or terrorism, or upstream upsets that affect the natural gas that arrives at a natural gas transmission facility. According to the commenter, for all of the reasons discussed above, these types of foreseeable yet unpreventable events must either be reflected in the overall requirements, or excused as a malfunction.

One commenter (4192) requests that the EPA delete the proposed affirmative defense provisions. This commenter mostly opposes the onerous nature of the provisions and believes that less restrictive provisions are needed.

One commenter (4273) states that there is no justification for including criteria to establish an affirmative defense against an alleged violation that are more onerous than the requirements of the regulation. They state that the requirements to show a malfunction under the proposed revised definition and general duty standard are less stringent than the criteria listed for establishing an affirmative defense against an alleged violation and that the EPA does not explain their reasons. The commenter acknowledges that the EPA cites two memoranda to support the proposed criteria, but asserts that the criteria outlined in the proposed rule are even more stringent than what is set out in the cited memoranda. For example, the commenter states that there is no reference to the malfunction event being "short;" there is no reference to a "written root cause analysis;" there is no reference to minimizing the impact of the excess emissions on the environment and human health; and there is no reference to limitations on the use of the bypass stack. According to the commenter, for technology-based standards, the EPA and courts have recognized that the EPA must either: (a) consider SSM in setting the standards or (b) provide an upset defense.

One commenter (4192) requests that if the EPA does not retain the exemption for SSM periods in subpart OOOO, that the EPA streamline the elements it has proposed for the affirmative defense.

One commenter (4219) states that the EPA proposes to include an exemption for malfunctions, but that they believe it is too narrow or restrictive. The commenter states that the exemption would excuse events that could not have been foreseen and avoided or planned for, but that

events that might be foreseen or planned for can still interfere with a facility's ability to comply with the proposed standards. The commenter argues that these types of foreseeable yet unpreventable events (e.g., weather upsets) should either be reflected in the overall BSER requirements or they should be excused.

One commenter (4273) believes that the EPA fails to explain how the system of emissions can be demonstrated for malfunction periods when it is not working during those periods. The commenter provides extensive comments regarding why malfunction periods are not reflective of normal steady-state operations.

One commenter (4273) asserts that the EPA's proposed affirmative defense criteria are arbitrary and capricious. The commenter states that the EPA does not explain why it proposes to limit affirmative defense to malfunction events (and not allow for an affirmative defense for startup and shutdown events).

**Response:** The EPA disagrees with comments that criticize the affirmative defense criteria as being arbitrary, capricious and overly vague or unduly restrictive and complex. The EPA believes that courts are well equipped and often do evaluate and apply the type of criteria set forth in the affirmative defense. Many of the conditions were modeled after the conditions of the affirmative defense in the EPA's SIP SSM policy, which several States have adopted into their SIPs. (See, e.g., State Implementation Plans: Policy Regarding Excessive Emissions During Malfunctions, Startup, and Shutdown (Sept. 20, 1999); Policy on Excess Emissions During Startup, Shutdown, Maintenance, and Malfunctions (Feb. 15, 1983)). We do not have any indication that parties to enforcement proceedings have had any significant difficulties applying the terms of these SIP affirmative defenses. In addition, the EPA's view is that use of consistent terms in establishing affirmative defense regulations and policies across various CAA programs will promote consistent implementation of those rules and policies.

Some commenters suggest that many malfunction excess emissions may be very small and not worth the burdensome effort of asserting an affirmative defense. The EPA reminds these commenters that sources are not required to assert an affirmative defense, so if it is not worth the effort, then sources do not have to take these additional steps. Indeed, if the excess emissions are very small, it may well be that enforcement officials will likewise not seek any remedy.

With respect to commenter's concern that events such as floods or earthquakes that are foreseeable and have been planned for would not be eligible for the affirmative defense, the EPA believes that malfunctions that are caused by such events and that lead to violations could, depending on the circumstances, be eligible for the affirmative defense if the resulting violations could not have been prevented whether or not there was an attempt to plan for the event.



Preparing and having a plan in place that addresses floods generally does not mean that all consequences of flooding can be planned for or avoided.

The EPA has evaluated some of the affirmative defense criteria, and is revising both the immediate notification and 45-day malfunction report. Instead, the final rule allows owners or operators seeking to assert an affirmative defense to demonstrate, with all necessary supporting documentation, that it has met the affirmative defense criteria by submittal of the affirmative defense report in the first periodic compliance, deviation report or excess emission report otherwise required after the initial occurrence of the violation of the relevant standard (which may be the end of any applicable averaging period). If such compliance, deviation report or excess emission report is due less than 45 days after the initial occurrence of the violation, the affirmative defense report may be included in the second compliance, deviation report or excess emission report due after the initial occurrence of the violation of the relevant standard. This change provides sources with sufficient time to demonstrate that they have met the required affirmative defense criteria.

**Comment:** Two commenters (4104, 4273) state that criteria outlined in the Proposed Rule are significantly more stringent than that provided in the analogous “upset defense” under the Clean Water Act, imposing substantial burdens on regulated entities for actions that, by definition, are not the fault of the facility. The commenters state that the EPA provides no explanation as to why it has chosen to move away from the long-standing upset defense at 40 C.F.R. §122.41(n), promulgated under the Clean Water Act. The commenters assert that, under the CWA, an “upset constitutes an affirmative defense.” 40 C.F.R. §122.41(n)(2). To establish the defense under the Clean Water Act, the commenters state following criteria must be met:

- an upset occurred and the permittee can identify the cause(s) of the upset;
- the permitted facility was at the time being properly operated;
- the permittee submitted notice of the upset (required within 24 hours);
- the permittee took all reasonable steps to minimize or prevent the violation. See 40 C.F.R. §122.41(n)(3), (l)(6)(i).

One commenter (4104) specifically recommends that the EPA replace the proposed language with the language used at 40 CFR §122.41(n), the upset defense provided under the Clean Water Act. The commenter asserts that the language was crafted to cure the same statutory and constitutional deficiencies that compel the inclusion of a malfunction defense here, see, e.g., *Train*, 539 F.2d at 986, and so is the most appropriate and efficient mechanism for addressing these same deficiencies for subpart OOOO.

One commenter (4228) opines that the affirmative defense provisions in the proposed rule should be deleted and appropriate exemptions from rule standards should be added that account for

operating periods when even well managed BSER control technology would not provide compliance. According to the commenter, the EPA should replace the proposed rule malfunction defense language with the upset defense provided under the Clean Water Act (40 CFR 122.41(n)).

**Response:** The EPA does not find the commenter’s preference for the affirmative defense under the Clean Water Act persuasive enough to deviate from the affirmative defense approach that has been used under the CAA for nearly 20 years. While we recognize that certain characteristics of the two approaches are similar, our preference is to adopt an approach that has been practiced under the CAA.

**Comment:** One commenter (4104) requests that the affirmative defense criteria be modified considering the following:

- *Timely notification:* The availability of the affirmative defense should not be negated by a failure to notify, especially for events that involve small quantities of emissions.
- *“Infrequent” events:* Restricting the malfunction defense to “infrequent” events is legally acceptable only if more “frequent” events are excepted under some version of the startup/shutdown defense.
- *“Off-shift and overtime labor”:* The requirement to use off-shift and overtime labor should be deleted, because it impairs the site’s ability to respond in the manner most appropriate under the circumstances.
- *“Severe property damage”:* The word “severe” should be struck. Determining whether property damage is sufficiently “severe” to merit application of the defense is highly subjective and vague.
- *Signed operating logs:* The EPA should remove the requirement that operating logs be signed. Many facilities now use some form of electronic media to document response actions; other facilities may use paper records that do not require a signature.
- *Root cause analysis:* The requirement to perform a root cause analysis is vague and does not put industry on notice of the type of analysis that the EPA will deem sufficient, or the time in which such an analysis must be performed. Such an analysis is also unnecessarily burdensome and serves no environmental protection purpose for many malfunction events where the “root cause” is clearly identifiable (e.g., power outage, hurricane).

Another commenter (4356) requests that the EPA provide clarification on the following criteria:

- *Operating Logs:* Proposed §60.5415(h)(1)(vii) lists a requirement that “All actions in response were properly documented by properly signed contemporaneous operating

logs,” but does not define or accurately describe what would fulfill that requirement. This requirement is impractical for many sites that are unmanned, where there will be no operator logs.

- *Root Cause Analysis.* Proposed §60.5415(h)(1)(ix) stipulates that “a written root cause required to determine, correct, and eliminate the primary cause of the malfunction.” This inevitably leads to an owner or operator attempting to describe a preventative action to an event that (by definition in §60.5415(h)(1)(i)(B)) could not have been prevented.
- *Control Device Bypass Requirements.* Proposed §60.5415(h)(1)(iv) unnecessarily requires additional conditions to meet an affirmative defense to bypass a control device. In some circumstances, the bypass may be the most appropriate temporary implementation while correcting or repairing a condition of upset, since the upset may be with the control device itself.

**Response:** The EPA has considered the commenter’s suggestions associated with specific affirmative defense criteria changes. Although not all of the changes were accepted, some are reflected in recent changes the EPA has made to these provisions.

- *Timely Notification:* The EPA has removed the requirement to notify the EPA within two days of violation of a standard in order for sources to be able to avail themselves of a claim for an affirmative defense. The owner or operator seeking to assert an affirmative defense shall submit a written report to the Administrator with all necessary supporting documentation. This affirmative defense report shall be included in the first periodic compliance, deviation report or excess emission report otherwise required after the initial occurrence of the violation of the relevant standard (which may be the end of any applicable averaging period). If such compliance, deviation report or excess emission report is due less than 45 days after the initial occurrence of the violation, the affirmative defense report may be included in the second compliance, deviation report or excess emission report due after the initial occurrence of the violation of the relevant standard.
- *“Infrequent” Events:* The EPA believes that if malfunctions occur on a frequent basis that the basis for the malfunction more likely falls in the categories of poor design, poor operational decision making, or failure to operate a source in a normal manner and has retained the word “infrequent” in this criteria element.
- *“Off-shift and overtime labor”:* The EPA believes that rather than impair a sources response to a malfunction, the use of off-shift and overtime labor supports the premise that urgency is necessary to minimize to the maximum extent practicable all excess emissions associated with a malfunction and has retained this language in the criteria.

- *Severe Property Damage:* The EPA believes that a bypass of control equipment or a process, which results in a violation, should be an exception and not undertaken lightly, and has maintained the word “severe” in this criteria.
- *Signed Operating Logs:* As an alternative, the EPA accepts electronically signed operating logs where the format and method of submission meets the regulatory criteria and are compatible with the EPA and the delegated authorities’ electronic submission systems. Any source submitting records electronically should exercise due diligence to assure receipt by the EPA and the delegated authority.
- *Root Cause Analysis:* The EPA believes it has provided clear criteria within the affirmative defense provisions to support the development of an affirmative defense report. The EPA believes that these provisions will result in a minor administrative burden, but will result in sources analyzing their violation emissions to reduce or avoid those emissions in the future, which is an environmental benefit. A root cause analysis is not mandatory and is only required if a source seeks to assert an affirmative defense. However, such an analysis is beneficial in resolving or preventing violations and excess emissions whether the source seeks to assert the affirmative defense or not. A root cause analysis is one example of what constitutes good air pollution control practices to minimize emissions. A root cause analysis is not required for every malfunction, as specified above, and is only required for those malfunctions for which the source chooses to assert an affirmative defense.
- *Control Device Bypass Requirements:* The EPA has not received compelling evidence on how releasing uncontrolled regulated pollutants to the atmosphere while repairing a control device could be the most appropriate course of action during a malfunction. However, affirmative defense provides the opportunity for a source to assert such a conclusion. The criteria listed in the rule references the use of bypasses, and stipulates the underlying reason why a bypass might be justified: “if the excess emissions resulted from a bypass of control equipment or a process, then the bypass was unavoidable to prevent loss of life, personal injury, or severe property damage.” Nonetheless the EPA cannot pre-judge the validity of any justification for asserting affirmative defense beyond the guidance provided in the rule.

**Comment:** One commenter (4218) recommends deleting §§60.5370(b) and 60.5415(h). According to the commenter, if the EPA makes the recommended deletions and would like to require reporting regarding malfunctions, the commenter suggests that the EPA require a submission of information similar to what is specified in §63.6650(c)(4) in the annual report required under proposed §60.5420(b).

One commenter (4266) asserts that the proposed 2-day notification is unrealistic, unnecessary, and burdensome. The commenter asserts the provisions of §60.5415(h)(1)(i)-(ix) would specify a 9-step procedure for determining whether a given malfunction event qualifies for the affirmative

defense. In most cases, according to the commenter, it would not be realistic to complete this determination process within 2 days following the occurrence of the event. The commenter believes that facilities might therefore tend to routinely submit the 2-day notification in order to preserve the potential for an affirmative defense, even in cases which subsequently are determined to not qualify. Furthermore, the commenter states, there is no environmental benefit that would accrue from this notification, and similar provisions in refinery consent decrees do not require it. The commenter believes the result of this unrealistic and unnecessary requirement, then, would be to burden both the facility and the regulatory agency having jurisdiction with the processing of paperwork that has no associated environmental benefit. As proposed, the commenter believes these notifications would be required for the smallest of emission exceedances with no reportable quantity threshold being set. The commenter asserts this is contradictory to other EPA reporting rules such as those under CERCLA and EPCRA where reportable quantities are established for unauthorized releases. The commenter believes that requirements for immediate reporting of excess emissions of VOCs should be left to the States as they are best equipped to handle any response that might be required as a result of the release. The commenter adds that immediate reporting to the EPA serves no beneficial purpose. The commenter concludes that if the EPA insists on a notification requirement, the rules should allow at least 15 business days following the occurrence of the event for this notification to be submitted.

One commenter (4242) requests that the EPA allow malfunction reports to be submitted with the excess emissions reports on a semi-annual basis. The commenter believes that there is no reason to require a reporting frequency that differs from the semi-annual basis.

One commenter (4218) requests that, if the EPA does not delete §§60.5370(b) and 60.5415(h), that the EPA remove the requirements for the 2-day and 45-day malfunction reports required by proposed §60.5415(h)(2) and instead require that the owner or operator (1) maintain records of the information necessary to prove the affirmative defense, and (2) notify the EPA of each emission limit exceedance for which the owner or operator is claiming the affirmative defense in the annual report required under proposed §60.5420(b). The commenter also requests that the EPA remove the requirements for the owner or operator to provide a root cause analysis, (h)(1)(ix), in order to establish the affirmative defense. The commenter provides suggested revisions to proposed §60.5415(h) regulation language that reflects their requests (refer to comment letter for their suggested regulation language revisions).

**Response:** The EPA has evaluated some of the affirmative defense criteria, and is removing both the immediate notification and 45-day malfunction report requirement. Instead, the final rule allows owners or operators seeking to assert an affirmative defense to demonstrate, with all necessary supporting documentation (as was required under the proposed 45-day report), that it has met the affirmative defense criteria by submittal of the affirmative defense report in the first

periodic compliance, deviation report or excess emission report otherwise required after the initial occurrence of the violation of the relevant standard (which may be the end of any applicable averaging period). If such compliance, deviation report or excess emission report is due less than 45 days after the initial occurrence of the violation, the affirmative defense report may be included in the second compliance, deviation report or excess emission report due after the initial occurrence of the violation of the relevant standard. This change provides sources with sufficient time to demonstrate that they have met the required affirmative defense criteria.

### 2.8.2 Other Comments

**Comment:** One commenter (4236) requests that the EPA acknowledge that malfunctions can happen, and may in fact happen more frequently, during periods of startup and shutdown and that the factors considered in determining whether an event is a malfunction apply equally if the malfunction occurs during a period of startup and shutdown.

**Response:** As the EPA explained in the preamble to the proposed rule, the EPA recognizes that even equipment that is properly designed and maintained can fail and that such failure has the potential to cause a violation of the relevant emission standard. The EPA included an affirmative defense in the final rule in an attempt to balance a tension, inherent in many types of air regulation, to ensure adequate compliance while simultaneously recognizing that despite the most diligent of efforts, emission limits may be exceeded under circumstances beyond the control of the source. The affirmative defense simply provides for a defense to civil penalties for excess emissions that are proven to be beyond the control of the source and appropriately balances competing concerns.

**Comment:** One commenter (4273) opines that deviations should not be construed or assumed to be “non-compliance” or violation of a regulatory requirement (see proposed §60.5420(b)(2)(ii) and (c)(1)(ii)). The commenter states that by construing a deviation as a violation of a regulatory requirement, the EPA is defining a deviation in the context of a legal conclusion, which will operate as an admission of liability. The commenter provides that not all deviations are violations (e.g., deviations from parameter monitor requirements) and facilities may have defenses available to them where a deviation would not be a “noncompliance” situation.

Two commenters (4192, 4246) recommend that deviations be identified in semiannual or annual reports, in lieu of the 2-day and 45-day notification and report requirements.

One commenter (4226) recommends that, to avoid the slightest malfunction from resulting in a civil action, the EPA could develop small/de minimis incidents that could be tracked as deviations rather than exceedances. Under this scenario, the commenter asserts that industry

would still track the incidents and report them to EPA but the affirmative defense and associated criteria would not need to be met.

**Response:** The EPA does not assert that all deviations are violations. The EPA has not changed the definition of deviation in this subpart, and deviation reporting is to continue operating as before. It should be pointed out, however, that deviations are generally instances where a source has failed to meet a standard. The second step, the determination of whether a deviation was an infraction of the law, is determined through an enforcement proceeding.

Reporting for affirmative defense, which seems to be the object of commenters 4192 and 4246, is not the same as reporting a deviation in a deviation report. The EPA has eliminated the requirement to submit a 2-day malfunction notification and 45-day report requirement if a source decides to assert an affirmative defense. Instead, the final provisions require submittal of the affirmative defense report in the first periodic compliance, deviation report or excess emission report otherwise required after the initial occurrence of the violation of the relevant standard (which may be the end of any applicable averaging period). If such compliance, deviation report or excess emission report is due less than 45 days after the initial occurrence of the violation, the affirmative defense report may be included in the second compliance, deviation report or excess emission report due after the initial occurrence of the violation of the relevant standard. Submitting this report to assert an affirmative defense is entirely at the discretion of the source, and is not a condition of compliance. A report to assert affirmative defense may contain most or all the information with respect to a specific deviation, but only the deviation report is a requirement.

**Comment:** One commenter (4254) requests that the EPA clarify that neither the new EPA interpretation of SSM explained in the preamble (section V.E.5) nor the requirements for continuous compliance in §60.5415(e) of the proposed rule require a backup control device.

Two commenters (4231, 4254) suggest that the EPA should include a provision that a combustor or flare that continues to emit without a functioning flame constitutes a per se malfunction, and a source would not be required to mount an affirmative defense to prove the malfunction. The commenters support ANGA's position that if a combustor or flare emits while there is no flame, emissions from such an upset or malfunction (SSM, or SSM) should not count against the 95 percent control of VOC emissions required under normal conditions. Another commenter (4241) states that flares are generally equipped with a flame arrestor to ensure safe operation of the device and they seek clarification from the EPA on whether such events would be treated as “malfunctions” where a good faith effort is made to minimize emissions by limiting the period of time that a pilot flame might be extinguished.

One commenter (4254) requests that the EPA clarify that any emissions resulting from a proven or EPA-defined malfunction will not count against a source's total emissions allowance.

**Response:** The use of a flare or combustor as a control device is subject to the requirement that standards be met at all times. In the event that such a device operates and emits without flame, this would contravene the requirement to operate a flare or combustion device to reduce emissions to the atmosphere. The EPA further clarifies for the commenter that a combustor or flare that continues to emit without a flame may be emitting regulated pollutants, and those pollutants should be quantified and included in the calculation of emissions to determine compliance for the source.

The EPA cannot provide the clarifications requested, because the EPA is not prepared to assert in this case that a secondary or backup control technique would not be warranted. It remains the domain of the source to manage their process and control equipment, and choose the control strategy that best meets the needs of the source to comply with applicable standards. In certain cases it may be in the interest of a source to develop a secondary or backup control strategy to avoid failing to comply with standards during or as a result of malfunctions. While the EPA generally believes that standards governing flares are flexible enough to allow some variation in operating efficiency, the EPA is not prepared to issue a blanket statement that sources need not invest in equipment to ensure continuous compliance with applicable standards.

The EPA's rationale for its approach to malfunctions is explained in the preambles to the proposed and final rules. The EPA thinks the commenter misinterprets the meaning of malfunction and affirmative defense. To avoid a judgment that includes civil penalties, a source must prove not only that the event in question meets the definition of malfunction, but must also show that the operation and maintenance prior to the event and the source's response to it meet the criteria of affirmative defense. Second, to exclude emissions from a flare that is malfunctioning from a compliance calculation is to continue to grant another form of a malfunction exemption. Finally, following a malfunction with a good faith effort to minimize emissions is one of several actions required to meet the criteria to successfully assert affirmative defense.

Finally, by "emissions allowance" the EPA takes the commenter to mean the quantity of emissions allowed by an applicable standard. Emissions of HAPs or criteria pollutants from a malfunction are to be included in any compliance calculation, because to do otherwise would be to allow sources to emit beyond what the EPA has determined is an appropriate safe level of emissions to be protective of human health and the environment.

**Comment:** Two commenters (3469, 4254) request that the EPA confirm that States have enforcement discretion and can determine whether or not to prosecute an incident with excess emission:



"[S]tates may ... as an exercise of their inherent enforcement discretion, choose not to penalize a source that has produced excess emissions" as long as this discretion does not prevent EPA or third parties from bringing an enforcement action. EPA Memorandum, State Implementation Plans: Policy Regarding Excess Emissions During Malfunctions, Startup, and Shutdown (Sept. 20, 1999).

**Response:** The EPA affirms the language. The EPA reminds the commenters that affirmative defense is asserted when it is established that a violation of a standard has occurred. In affirming this language, the EPA is affirming that delegated authorities enforce regulations with established principles of discretion. In affirming that a source “has produced excess emissions” the EPA is not providing anything that the States do not already have. States already have the ability to examine excess emissions events and determine whether a violation of an applicable standard has occurred, and if so, what enforcement action is appropriate.

**Comment:** Two commenters (4231, 4254) recommend that the EPA provide up to 24 hours before equipment downtime is determined to be a malfunction, after which reporting is required. The commenters explain that companies can be responsible for hundreds of process units spread over considerable distances that are often difficult to get to, which differs from other process units that the EPA regulates that are centrally located and operated. The commenters suggest that, if equipment downtime is less than 24 hours, the EPA could require facilities to keep records of the incident and emissions, but not require reporting. In cases where repair is not completed within 24 hours, the commenters suggest that the EPA could require the EPA or delegated authority be notified with a justification as to why the repair was not completed.

Another commenter (4266) requests that the EPA provide an allowance for a reasonable period of routine maintenance for the control device. The commenter states that proper operation of a control device includes periodic routine maintenance, and manufacturers of control devices typically recommend preventive maintenance on a semi-annual basis. According to the commenter, the EPA has stipulated in other rulemakings that standards do not apply during planned routine maintenance, other than a work practice standard that such periods shall not exceed 240 hours per year and records must be maintained to document such periods.

One commenter (4219) states that startups and shutdowns are periodically required for testing and installation of new equipment that can result in increased efficiency and enhanced environmental benefit. The commenter opines that if owners and operators risk non-compliance during periods of SSM, they would have a disincentive to install equipment that would improve air quality.

**Response:** The EPA must establish emission standards that “limit the quantity, rate, or concentration of emissions of air pollutants on a continuous basis.” 42 U.S.C. §7602(k) (defining

“emission limitation and emission standard”). See generally *Sierra Club v. EPA*, 551 F.3d 1019, 1021 (D.C. Cir. 2008) (emissions limitations under CAA section 112 must both continuously apply and meet section 112’s minimum stringency requirements, even during periods of SSM). Thus, the EPA is required to ensure that section 111 emissions limitations (as well as section 112 emissions limitations) are continuous. The EPA’s rationale for its approach to malfunctions is explained in the preamble to the proposed rule. The commenter failed to provide any data, define any process or operational limitations, or to provide a specific rationale or basis to support a maintenance allowance or work practice during maintenance activities specific to control devices.

The commenter generally asserts that the EPA should include a maintenance allowance provision in this rule, but did not identify any specific process or operational limitations or provide any data or explanation to support its assertion. The EPA, therefore, has not included such a provision in the final rule.

The commenter did not provide an explanation or information to support the claim that owners and operators would risk noncompliance during periods of startup and shutdown when installing or testing a new control device. The EPA, therefore, has not included alternate standards for startup and shutdown in the final rule.

Additionally, as noted in response to a comment on malfunction reporting, the EPA has evaluated some of the affirmative defense criteria, and is revising both the immediate notification and 45-day malfunction report. Instead, the final rule allows owners or operators seeking to assert an affirmative defense to demonstrate, with all necessary supporting documentation (as was required under the proposed 45-day report), that it has met the affirmative defense criteria by submittal of the affirmative defense report in the first periodic compliance, deviation report or excess emission report otherwise required after the initial occurrence of the violation of the relevant standard (which may be the end of any applicable averaging period). If such compliance, deviation report or excess emission report is due less than 45 days after the initial occurrence of the violation, the affirmative defense report may be included in the second compliance, deviation report or excess emission report due after the initial occurrence of the violation of the relevant standard. This change provides sources with sufficient time to demonstrate that they have met the required affirmative defense criteria, and addresses some of the commenters’ concerns.

**Comment:** Three commenters (4159, 4220, 4273) request that the EPA exclude drilling and completion activities as they are effectively startup after initial construction rather than steady-state operations aimed at creating an ongoing producing well. The commenters assert that the EPA has historically excluded startup emissions from regulation under NSPS and should do the same here.

**Response:** The EPA disagrees with the assertion that drilling or completing a well constitutes a “startup” or “shutdown.” Generally, standards regulate identifiable emission points, and production process equipment. The affected facility covered by these standards is the well, which includes the well bore, casing, tubing, and wellhead. The operational standard imposed by the NSPS applies to the completion operation involving the well. The completion operation is not considered a startup, but is a discrete operation conducted on the affected facility. The completion operation begins with flowback following hydraulic fracturing and ends with well shut-in or continuous flow of gas to the sales line, whichever is earlier. The drilling operation is not affected by the NSPS since it precedes the completion operation as defined in the final rule.

**Comment:** One commenter (4240) requests that, if the EPA finalizes any form of an affirmative defense, it requires that all reports related to that defense be submitted by electronic media, and that the EPA make those reports available immediately to the public on its website. The commenter asserts that the public has the right to all collected reports under the CAA, 42 U.S.C. §7414(c), and that the EPA must disclose this information to the public on the Internet, without the need for any person to submit a FOIA request for such report.

**Response:** The EPA accepts documents in electronic format, as long as the format is compatible with the requirements of the standards. The written reports required to demonstrate that the affirmative defense provisions have been met and requests for an extension of the deadline for these reports may be submitted electronically. Owners and operators that submit documentation for affirmative defense electronically should exercise due diligence to ensure receipt by the Administrator and the delegated permit authority.

In response to the commenter that requests that the EPA require all reports related to an affirmative defense be submitted by electronic media and be made available immediately to the public on its website, we have not adopted their request. The NSPS sources subject to regulation under this rulemaking are typically small individual sources that are spread out and often in remote areas. It is important for the EPA to allow various options for submittal of reports, though it is likely that most sources will opt to submit their reports electronically. Additionally, any such reports submitted to the EPA are publicly available pursuant to CAA section 114, and some States make this information publicly available on their websites.

**Comment:** One commenter (4242) states that the EPA needs to evaluate technology and improved work practices that would eliminate or reduce malfunction events at natural gas processing plants. The commenter recommends that, in evaluating this technology, the EPA consider that a large proportion of emissions from natural gas processing plants occur during malfunction events.

**Response:** The EPA agrees that it would be helpful to be able to evaluate technology and work practices with respect to malfunctions, and overall effectiveness of control devices and processes to operate reliably. However, retrospective data would be of reduced value to that effort, given that such malfunctions did not result in violations of the standard. Henceforth, sources will monitor and report such events more thoroughly, with particular interest in reducing their frequency, duration, and severity. The data that will be generated and collected during such events will help stakeholders, and the EPA, to understand what technology is most effective at pollution control, including with respect to avoiding malfunctions.

**Comment:** One commenter (4245) asserts that SSM emissions will no longer be exempt from permitting and control requirements. The commenter states that the noted exemption in the proposed regulation from title V (federal permit) specifically does not apply to emission increases triggered by accounting for SSM emissions. The commenter is concerned that, by forcing operators to account for startup, shutdown, and maintenance emissions as part of their operating emissions “footprint” it will shift the permitting, control, monitoring and reporting requirements upward (in the direction from permit-by-rule registration to standard permit to major permit). Thus, according to the commenter, countless oil and gas facilities in Texas that are presently covered by permit-by-rule (most requiring registration due to H<sub>2</sub>S) will be moved to standard permit requirements and many presently covered by standard permit will be pushed upward to major (title V) permit requirements. The commenter asserts that this is a tremendous challenge for the Permian Basin in Texas, which is constrained with respect to sour gas handling and processing capacity. The commenter asserts that the EPA’s proposal to require the inclusion of start-up, shut-down and maintenance emissions will have the effect of vastly expanding the scope of regulatory requirements for small oil and gas producers. According to the commenter, it will also create, on a wide scale, circumstances where operators cannot physically comply with emission standards due to real limitations in gas gathering systems, thus forcing them to curtail or shutdown their operations.

**Response:** The changes that we proposed to the startup, shutdown and malfunction (SSM) provisions of the Oil and Natural Gas Production MACT do not affect how a source determines whether it is a “major source” and, therefore, required to obtain a title V operating permit.<sup>25</sup> Rather, the proposed changes simply propose to eliminate the exemption in the original Oil and Natural Gas Production MACT, which provides that sources do not need to comply with the emission standards in the rule during periods of SSM, and thus require compliance with the standards at all times. Removing that exemption does not alter how the source or a permitting authority determines a source’s potential to emit (PTE) or whether the source is required to obtain a title V operating permit.

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<sup>25</sup> As a general matter, area sources that are subject to subpart HH are exempt from the requirement to obtain a title V operating permit.

With respect to commenter's suggestion that EPA leave the regulation of SSM emissions to the respective state agencies, EPA notes that in accordance with the decision in Sierra Club v. EPA, 551 F.3<sup>rd</sup> 1019 (D.C. Cir. 2008), EPA is required to establish emission standards under section 112 that apply at all times, including during periods of startup, shutdown or malfunction. Thus, EPA cannot defer the regulation of SSM emissions to state agencies.

## **2.9 Notification, Recordkeeping and Reporting Requirements for the Proposed NSPS**

**Comment:** One commenter (4356) requests that the EPA confirm that the recordkeeping, monitoring, and reporting requirements under these rules are sufficient to comply with all necessary title V requirements.

**Response:** The EPA cannot confirm that the recordkeeping, monitoring, and reporting requirements under the rule are sufficient to comply with all necessary title V requirements, nor are we required to do so as the programs are established under separate authorities. Where information is already submitted for the title V program, we have clarified in the final rule that the same information may be used for the annual report, as long as all of the required elements of the annual report are included.

**Comment:** One commenter (4251) notes that the 30-day notification for wildcat wells would conflict with the need to protect proprietary business information.

**Response:** The final rule no longer contains a 30-day advance notification for well completions. Instead, the final rule relies on a notification, which may be sent via email, no later than 2 days prior to commencement of the well completion. While this change was not made in response to this comment, we believe that it will address the concerns raised by the commenter. Regardless, we believe the CAA provides ample protection for submittal of confidential business information (CBI). The commenter should contact their State regulatory agency or EPA Regional Office for further instructions on the submittal of CBI.

**Comment:** One commenter (4161) states that in §60.5420, the annual reports subsequent to the initial report are due on the same date as the initial report. The commenter is concerned that if a company submits the report a day early, it would be in violation of this requirement.

**Response:** Due dates are interpreted as "on or before" the specified date. Submitting a report early would not be considered a violation of the requirement to submit.

**Comment:** One commenter (4191) recommends that the EPA consider whether the proposed rule provides adequate reporting and recordkeeping provisions, and enforcement provisions

where the necessary reporting and recordkeeping is either not submitted, or found to be incomplete or inaccurate.

**Response:** The final rule clearly states that the owner or operator of an affected facility must perform the recordkeeping and reporting required by the rule. For example, §60.5375(e) states that the required notification, recordkeeping and reporting requirements must be performed for each gas well affected facility. The final rule contains similar provisions for the other affected facilities. Thus, failure to comply with these requirements is a violation and the EPA may take enforcement actions.

**Comment:** One commenter (4231) believes the applicability date of August 23, 2011, makes compliance very difficult for pneumatic controllers and requested that the compliance date be extended to 60 days after the final rule is issued.

**Response:** As required by law, affected facilities are subject to the rule as of August 23, 2011. The final rule, however, does allow affected facilities until the effective date (30 days after the rule is published in the *Federal Register*) to achieve compliance. As described elsewhere in this document and in the final rule preamble, the final rule also allows a compliance phase-in for certain affected facilities.

**Comment:** Four commenters (4158, 4175, 4209, 4228) state that the classification of each pneumatic controller as an affected facility and the associated monitoring, recordkeeping, and reporting requirements prescribed in the proposed rule makes compliance overly burdensome. Another commenter (4158) disagrees with the EPA's benefit analysis and asked for the following changes: classification of high versus low-bleed should be based on vendor specifications and not on guarantees; and in §60.5420(b)(5)(iii), the term "manufacturer's guarantee" should be replaced with "manufacturer's specification." Another commenter (4231) suggests that "guarantee" be replaced with the word "rated." Another commenter (4104) suggests that "guarantee" be replaced with the word "documentation."

Two commenters (4266, 4268) note that limiting this regulation to high-bleed gas-driven pneumatic controllers in VOC service would greatly reduce reporting and recordkeeping burden in this rule.

A commenter (4246) notes that a single natural gas processing plant may have several hundred pneumatic controllers, with only a small subset of those intended to be subject to the proposed rule. The commenter wonders why they should have to track and report on pneumatic controllers already compliant with subpart OOOO. The commenter suggests that the only pneumatic controllers that require reporting are high-bleed gas-assisted controllers located at any facility, and low-bleed gas-assisted controllers located at natural gas processing plants. The commenter

also suggests that the initial report from owner/operators list all pneumatic controllers that do not already meet subpart OOOO standards at the time of the report.

**Response:** As detailed in the preamble to the final rule, we have revised the recordkeeping and reporting requirements for pneumatic controllers in the final rule to reduce the burden of these requirements. We also agree that a bleed rate guarantee may not be available from the pneumatic controller manufacturers. Therefore, the final rule requires that records be maintained of documentation of the bleed rate. Annual reports need include only documentation for certain exemptions and a listing of pneumatic controller affected facilities constructed, modified or reconstructed during the reporting period.

Concerning the comment on tracking and reporting pneumatic controllers already in compliance with the subpart OOOO requirements, we remind the commenter that the final rule applies only to new, modified or reconstructed affected facilities. Existing pneumatic controllers would not be subject to the rule unless replaced, modified or reconstructed.

**Comment:** One commenter (4266) recommends a way to reduce the reporting requirements for owner/operators. This commenter points out that determination of an affected facility for pneumatic controllers or pneumatic process units can be made on a site-wide basis instead of by individual controllers. For example, if compressed air is available to drive pneumatic controllers at any oil and gas site, the commenter claims it will be available to drive all controllers. According to the commenter, reporting on a site-wide basis for driver medium would reduce the burden on owner/operators.

**Response:** In the final rule, we have defined the affected source as “a single continuous bleed natural gas driven pneumatic controller operating at a natural gas bleed rate greater than 6 scfh ...” Thus, the compressed air driven controllers mentioned by the commenter would not be an affected facility and would not be subject to the rule. While this will address much of the commenter’s concerns, we do not agree that the affected facility determination should be done on any type of group level because of inspection issues related to determining whether each controller is in a regulated group or unregulated group.

**Comment:** One commenter (4104) argues that operator records that document the basis for using high bleed controllers in certain circumstances are all that should be required, not a demonstration to the Administrator.

**Response:** We agree with the commenter. The final rule specifies the appropriate recordkeeping requirements for the use of high bleed controllers in limited circumstances. No demonstration or petition to the EPA is required.

**Comment:** One (4231) commenter suggests a set annual reporting date for all applicable sources (including pneumatic controllers) to avoid tracking different annual report dates by facility.

**Response:** The final rule envisions a single annual report, not an annual report per affected facility. The final rule also provides flexibility in when the report is submitted, as well as combining the annual report with other reports.

**Comment:** One commenter (4246) requests that the EPA add the words “and the reporting requirements found in 40 CFR §§60.5420 and 60.5422” at the end of §60.5401(d). Although the commenter supports the text as written, this exemption should apply to reporting requirements as well as to routine monitoring.

**Response:** There are no reporting or monitoring requirements for these affected facilities in §§60.5420 or 60.5422; therefore, the requested change is not needed.

**Comment:** One commenter (4255) says that administrative expenses associated with the proposed rule would affect the economic viability of low production wells. The commenter states that the administrative cost of achieving initial compliance with the 6 scf per hour standard through a manufacturer’s guarantee of performance and the subsequent recordkeeping and reporting requirements needed to demonstrate standards compliance would be unduly burdensome. Therefore, the commenter suggests low production wells should be exempt from the proposed pneumatic controller requirements.

**Response:** As discussed previously and in the preamble to the final rule, we reviewed all recordkeeping, reporting and monitoring requirements in the proposed rule and retained only those requirements we believe are necessary to assure the public and regulatory agencies that the owner or operator is achieving compliance. As discussed elsewhere in this document, we performed a very detailed analysis of the cost and burden of the recordkeeping, reporting and monitoring requirements. This analysis did not show an excessive burden on the industry, including small sources. Therefore, we did not include an exemption for low production wells in the final rule.

**Comment:** One commenter (3528) states the required annual report of all pneumatic controllers due within one year of start-up or one year after publication of the final rule contradicts the EPA’s GHG Rule, 40 CFR part 98, subpart W for Oil and Gas Production, which allows three years for the completion of a pneumatic controller inventory. The commenter thinks this annual report would be excessively burdensome for operators with hundreds or thousands of pneumatic controllers.



**Response:** There are no regulatory requirements that the reporting requirements of subpart OOOO (or any other NSPS) must coincide with subpart W. The two rules serve very different purposes and it makes sense that reporting requirements would differ.

**Comment:** Once commenter (3560) expresses concern that manufacturer data for low and no bleed devices would be difficult or impossible to provide. The commenter claims that data needed to document that newly installed devices are no or low bleed devices is often lost due to devices being warehoused prior to use or located from other facilities. The commenter recommends that manufacturer data be required only for pneumatic devices manufactured 180 days after promulgation of the regulation.

**Response:** We disagree with the commenter. Our communications with manufacturers and suppliers of pneumatic controllers indicate that this information is readily available. We also believe that should documentation be lost, a replacement is readily available from the manufacturer or the manufacturer's web site.

**Comment:** Once commenter (4266) states that providing records of existing controllers' installation dates may not be possible.

**Response:** We remind the commenter that the final rule does not apply to existing pneumatic controllers unless the existing controller is replaced, modified or reconstructed. Thus, no records would be required for existing pneumatic controllers.

**Comment:** Three commenters (4104, 4209, 4219) request that the EPA reevaluate requirements for pneumatic controller/devices associated with pipelines. The commenters argue that, as written, the proposed rule's applicability would be too broad and would result an undue recordkeeping and permitting burden. The commenters argue that the administrative burden does not justify the regulation of component parts that emit on the order of 100 pounds or less of VOC emissions per year. The commenters suggest that, for natural gas transmission and storage, either pneumatic controllers should be completely excluded or subpart OOOO should limit applicability to equipment located at "conventional" facilities (e.g., within the fence line at a compressor stations).

**Response:** We agree that requirements applied to pneumatic controllers located in the transmission and storage sector would present unreasonable monitoring, recordkeeping and reporting burdens for sources with reliably low VOC emissions. Therefore, the pneumatic controller requirements in the final rule apply only to affected facilities located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment.

## 2.10 Other Comments

### 2.10.1 Use of Data from the Natural Gas STAR Program

**Comment:** Three commenters (3350, 3528, 4160) question the need for command and control regulations when the Natural Gas STAR program is an available, successful, voluntary partnership program, which has achieved emissions reductions of VOC along with methane reductions. One commenter (3350) states that the EPA is required under EO 13563, to the extent possible, to “identify and consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public.” The commenter states that regulating industry now ignores the significant progress toward emissions reductions that have been made through voluntary programs. The commenter states that the EPA acknowledges the achievements of this program in the reductions of methane (and CO<sub>2</sub>e) through the implementation of cost-effective technologies and practices. The commenter believes the EPA should consider whether the existing programs to control natural gas emissions are sufficient to achieve the desired result without the need for new regulation, or whether existing voluntary programs or incentives could be improved to achieve these results. One commenter (3528) adds that continuing to build upon the gas savings and emission reduction efforts already achieved through the Natural Gas STAR program may be a better approach than a new ruling, much of which is covered in various state air quality regulations and oil and gas commissions.

**Response:** While we agree that the Natural Gas STAR program has been beneficial, the EPA is not free to abandon rulemaking under the CAA. We are required periodically to review the source categories listed pursuant to the NSPS and NESHAP programs, and we are required to regulate emissions from those source categories as prescribed by the CAA. In addition, we note that the Natural Gas Star program is voluntary, so there are no provisions in place to assure the public and regulatory agencies that compliance is being achieved on a continuous basis. Also, as a voluntary program, there is no assurance that facilities will in the future continue to participate in the program.

**Comment:** Three commenters (4104, 4228, 4249) believe that the EPA has relied upon limited information derived from the Natural Gas STAR methane reporting program to support the proposed standards. The commenters believe these select data are not representative of the industry, are not indicative of "average" operations, and are not appropriate for rule development. The commenters believe that the resulting EPA emissions and controls data and analysis are flawed and do not reliably establish that subpart OOOO would achieve meaningful, cost-effective VOC emission reductions for the affected emission sources. The commenters state that, because this is a voluntary program, companies naturally selected projects with the greatest potential for natural gas emissions reductions at the lowest cost. The commenters state that non-verified data were used in the STAR program, and many of the reductions were reported using

optimistic data or “best of the best” opportunities or scenarios to highlight various company-specific efforts. According to the commenters, the Natural Gas STAR data were not systematically collected to be representative of the industry, were not collected for the purpose of regulatory development, and are subject to a high emissions reduction bias and a low cost bias due to common sense project selection incentives. The commenters state that the Natural Gas STAR data were developed for completely different purposes and are wholly inappropriate for rule development. The commenters believe that using those data violates the good intentions of industry participants in a voluntary program.

One commenter (4104) adds that information in the preamble to the proposed rule demonstrates deficiencies in Natural Gas STAR data or related historical data, and these data have a tendency to inaccurately represent industry “average” operations. The commenter states, for example, that the EPA indicates that compressor usage rates at natural gas transmission and storage facilities are 79 and 68 percent, respectively. The commenter states these utilization rates are up to two or more times higher than actual average utilization for these two sectors. The commenter believes the EPA’s reliance on biased data can result in inappropriate perceptions of operations and emission reduction over-estimates.

One commenter (4216) points out specific analytical flaws resulting from the misuse and inaccurate application of Natural Gas STAR program data collected from a small number of wells to assume industry-wide emission rates — based on the erroneous assumption that methane reported as captured through “green completions” would otherwise be vented to the atmosphere when a green completion is not performed.

Four commenters (4104, 4228, 4249, 4265) assert the EPA has repeatedly stated that the intent of subpart W reporting is to inform future rulemakings to address natural gas venting and equipment leaks, and initial subpart W reports will not be submitted until September 2012. Until data from subpart W reporting is available, the commenters believe the EPA’s cost-benefit analysis lacks a reliable foundation and regulating natural gas transmission and storage sources through subpart OOOO is premature. According to one commenter (4228), basing subpart OOOO on Natural Gas STAR data implies that the subpart W objective to inform future rulemakings has already been achieved. The commenter believes that if emission sources are regulated under subpart OOOO, then subpart W reporting of these emission sources should no longer be required. The commenter adds that NSPS for associated emission sources should not be proposed until subpart W emissions data have been collected for a sufficient time such that natural gas VOC emissions can be accurately quantified and cost-effective control requirements can be identified.

Two commenters (4249, 4265) believe a full data set of emissions from the natural gas sector, preferably several years’ worth of data, will provide much more robust information upon which

to base NSPS for this rule. The commenters add that it is expected that the required signature of a Designated Representative on the final subpart W report submittal will heighten awareness of emission leaks from the natural gas industry, and it is expected to drive further emission reductions in the absence of a mandatory emission reduction program.

**Response:** The EPA bases its regulations on the best available data. There is a variety of data sources that inform VOC emissions estimates and control technologies from the oil and gas industry. These include data from the U.S. inventory, Natural Gas STAR Program, State programs, and other published studies and materials. The EPA deemed this body of data comprehensive and of an appropriate level of quality and certainty such that action on VOC emissions could be addressed under the current NSPS Subpart OOOO. The EPA conducted detailed analyses to evaluate available data and information, including Gas STAR information, in the proposed and final rule impacts analyses to assess applicability, emission reduction potential, and other key factors in developing emission control standards.

In addition, during the comment period, several commenters provided supplemental data for our consideration where they felt our original data was insufficient. We welcomed these submissions and reviewed all data presented to us. Where that data was credible and verifiable, we adjusted our analyses using the new data. Since the public had ample opportunity to review our data and submit new data, we believe the data set on which the final rule is based represents the best data available to the EPA at this time.

While the EPA based this regulation on an extensive body of published studies, data, and literature, the EPA will continue to evaluate and update our emissions estimates as new data and information become available. In particular, subpart W of the Greenhouse Gas Reporting rule will provide detailed facility level data on greenhouse gas emissions from the oil and gas industry which is indeed of value to the Agency in regard to informing our oil and gas emissions data and as well as future policy considerations.

**Response:** During development of the proposed rule, there were a number of areas in which the EPA had insufficient data to determine the current level of control, effectiveness of control technologies, and cost of controls. One source we used to help fill these data gaps was the Natural Gas STAR program. A wide variety of data on emission reduction methods and the cost of those methods was publicly available through detailed technical information developed by the EPA in collaboration with industry partners. We assumed that the data reported by the industry partners is truthful, accurate, and not misleading, even though this is a voluntary program. We note that we also used data from the NEI and the RBLC.

Several commenters provided supplemental data for our consideration where they felt our original data was insufficient. We welcomed these submissions and reviewed all data presented

to us. Where that data was credible and verifiable, we adjusted our analyses using the new data. Since the public had ample opportunity to review our data and submit new data, we believe the data set on which the final rule is based represents the best data available to the EPA at this time.

### **2.10.2 VOC Content of Natural Gas**

**Comment:** Several commenters (4104, 4174, 4192, 4217, 4225, 4241, 4252, 4266) believe the EPA must establish a minimum VOC content for determining applicability for controlling sources of VOC. The commenters suggest that a VOC content of 10 percent by weight or higher should be required to categorize equipment "in VOC service" and only affected sources in VOC service should be subject to the NSPS. Commenter 4217 notes that, without a minimum applicability threshold for VOCs in natural gas, the regulations will require controls on coal-bed methane (mainly methane and no VOCs) and other low-VOC natural gas sources where the cost-benefit for VOC controls has not been justified. The commenter operates exploration and production facilities where natural gas is produced with no measurable VOC. Two commenters (4104, 4192) also provide examples of low VOC content gas.

Several commenters (4104, 4164, 4192, 4219, 4225, 4228, 4229, 4234, 4241, 4246, 4249, 4252, 4254, 4258, 4263, 4265, 4266) believe this issue can be remedied by establishing a natural gas minimum VOC threshold to ensure cost effectiveness as required by the CAA. The commenters believe the EPA should define an "in VOC service" threshold of greater than or equal to 10 percent by weight, as is the current requirement in other subparts such as KKK. Similarly, the commenters note that §60.5400(f) of the proposed rule retains this threshold for an affected gas processing source. According to the commenters, applicability sections of the rule for completions, pneumatics, and LDAR would then be limited to those facilities in VOC service. One commenter (4225) adds that, considering that the EPA calculated cost effectiveness (in \$/ton of VOC reduced) based on natural gas that is 18 percent by weight VOC, a 10 percent threshold for "in VOC service" seems quite reasonable. The commenter believes the EPA must economically justify its regulations for not just the average "model" facility, but for reasonably expected variations.

One commenter (4266) adds that the average VOC content for shale gas production, the fastest growing sector of the natural gas industry, is only 2.95 percent by weight, and the average VOC content is 2.35 percent by weight for the natural gas transmission segment. The commenter calculated the cost effectiveness for the compositions the EPA included in the docket for determining an "average natural gas stream" (in Attachment G, RIA Review for Completions, Table G-6) and reports their estimated cost effectiveness numbers as being \$4,814/ton at 17.95 percent by weight VOC, \$8,564 at 10.09 percent by weight VOC, and \$16,552/ton at 4.81 percent by weight VOC. The commenter asserts that their estimates mean that the cost benefit approaches infinite \$/ton of VOC for gas with no VOC content (i.e., CBM and some of the shale

gas fields). The commenter states that, when compared to the other cost effectiveness decisions that the EPA made in determining regulatory strategies in the TSD, restricting these regulations to streams “in VOC service,” seems reasonable.

One commenter (4263) recommends adding a definition for “in VOC service” consistent with subpart VVa. Another commenter (4266) recommends that the EPA add a definition of “in VOC service” consistent with subparts VV, GGG and KKK. One commenter (4104) states that if requirements for transmission and storage sources are retained in subpart OOOO, only equipment “in VOC service” should be affected sources. The commenter states that similar to the subpart OOOO provision contained in §60.5400(f) for the onshore natural gas processing segment, equipment in VOC service would be based on natural gas streams that exceed 10 percent by weight VOC. The commenter adds that this percent by weight threshold precedent is consistent with the current NSPS subparts KKK and VVa.

**Response:** It is the EPA’s intent that subpart OOOO regulate significant sources of VOC emissions. However, we do not agree that a global “in VOC service” exemption is warranted for this source category. A threshold based on “in VOC service” introduces the possibility that an emission source with a low VOC concentration, high volume throughput which does not meet the definition of “in VOC service” could escape control yet have appreciable emissions.

However, certain revisions we have made since proposal, though made for different reasons, would also address the concerns of these commenters. For instance, we are not currently finalizing standards for pneumatic controllers and compressors in the transmission and storage and distribution segments. For storage vessels, we have converted the proposed throughput threshold to 6 tpy of VOC emissions, which we had determined in the proposal to approximate the VOC emissions from the proposed throughput.

We believe that the changes described above will eliminate the likelihood of regulating sources with little or no VOC while requiring controls on those with appreciable emissions.

### **2.10.3 Assessing Co-benefits from Greenhouse Gas Emission Reductions**

**Comment:** One commenter (4178) provides quantitative information on the amount of methane emissions from oil and gas exploration and production, concluding that 2.8 percent of global anthropogenic methane emissions from the U.S. are from oil and gas exploration and production. The commenter states that if 100 percent of the methane is removed from oil and gas, it would achieve an overall reduction of methane emissions of approximately 2.8 percent.

One commenter (4178) notes that the proposed rule states that methane is an ozone precursor and that a reduction in methane emissions will reduce ozone exposure. The commenter adds that this

statement is repeated in the RIA, which also references the article, “Linking ozone pollution and climate change: The case for controlling methane.” The commenter believes that the reductions of ozone obtained therein assumed the unrealistic and unsupported proposition of a 50 percent reduction in anthropogenic methane emissions, not the 2.8 percent that might result from this proposed rule. Using the results of the cited article, the commenter asserts a 2.8 percent reduction will yield a 0.2 ppb reduction in background ozone.

One commenter (4240) states that the EPA has identified natural gas systems as the “single largest contributor to United States anthropogenic methane emissions.” The commenter states that industry is responsible for over 40 percent of total U.S. methane emissions, which amounts to 5 percent of all carbon dioxide equivalent (CO<sub>2</sub>e) emissions in the country.

One commenter (4275) states that controlling methane will help to offset high CO<sub>2</sub> emissions from the oil and gas industry in some regions. The commenter states that CO<sub>2</sub> entrained in the gas is removed using acid gas removal units at natural gas processing facilities, and then vented to the atmosphere. Thus, the commenter states, on top of the methane emissions from leaks, well completions, and other sources, CBM wells release CO<sub>2</sub>. The commenter states CBM producers in the San Juan Basin and other regions were required to use RECs, the methane reductions would help offset the currently uncontrolled release of CO<sub>2</sub>.

One commenter (4104) believes the EPA should abide by the current convention for reporting in the U.S. (e.g., under the GHG reporting rule, subpart W). The commenter estimates methane (and VOC) reductions are likely to be biased high, because the EPA inappropriately relies on information from the voluntary Natural Gas STAR program. The commenter believes these estimates could be improved once data is available from the GHG reporting rule, but initial subpart W reporting of emissions for natural gas systems will not occur until September 2012. The commenter believes it is premature for the EPA to credibly estimate emissions, let alone monetize estimated emission reductions, until subpart W data are available.

**Response:** We appreciate the thorough information provided by these commenters.

#### **2.10.4 Harmonization with Other Rules**

**Comment:** One commenter (4251) states that the EPA should assure the language used and definitions cited in the rule are concurrent with the language and associated definitions in subpart W to streamline data gathering, compliance and reporting for industry. The commenter states both subpart W and this NSPS cover many of the same emission sources, including pneumatic controllers, tanks, completion/recompletion events, and compressors with varying definitions between the rules. The commenter adds that the definition of “facility” is drastically different (in subpart OOOO an “affected facility” is one pneumatic controller or one tank for example; in subpart W, a “facility” is an entire basin, for the onshore petroleum and natural gas production

industry segment) adding more confusion to an already complex rule with a short time frame for understanding and compliance.

Three commenters (4104, 4159, 4228) state that the EPA should harmonize nomenclature with the GHG mandatory reporting rule for petroleum and natural gas systems (40 CFR, Part 98, subparts W and A) and provided a number of recommendations.

**Response:** We appreciate the need to harmonize different rules that apply to similar industries. However, each regulatory program has varying goals and enabling laws that in some instances require us to take different approaches. While we have strived to harmonize definitions as much as possible, the differing requirements of the various regulatory programs limit our ability to provide complete harmonization.

**Comment:** One commenter (4219) states that reduction of the number of cross-references would also be consistent with the criticism the EPA has launched at certain state programs. The commenter notes, for example, the EPA has repeatedly criticized TCEQ for using incorporation by reference rather than spelling out the terms of the applicable requirements in the state's title V program. The commenter adds that the EPA should clarify that any facility that once was, but no longer is, covered by subpart OOOO would similarly no longer be covered by any of the part 63 requirements that are incorporated into subpart OOOO by cross-reference. Because the MACT rules have a once-in/always-in feature, the commenter believes clarification is needed so subpart OOOO-covered sources that are subject to the MACT rules via cross-referencing will not always be subject to those rules when they are no longer subject to subpart OOOO. The commenter adds this is another reason why cross-referencing is inappropriate; if the applicable standards were stated in full in subpart OOOO, rather than through the shorthand convention of cross-referencing, then possible misapplication of the MACT rules would not exist. The commenter believes cross-referencing raises questions as to whether generalized attributes of the referenced rule regime - here the MACT rules once-in-always-in feature - are being imported along with the specifically referenced rules.

**Response:** As discussed previously, we have eliminated the cross-referencing to 40 CFR part 63, subpart HH in the final rule.

**Comment:** One commenter (4263) states that the EPA should delete §60.5365(f)(5) because the cited rules (part 60 subparts GGG and GGGa) apply to petroleum refineries. The commenter states that no natural gas processing plant, as defined in the proposed rule at §60.5430, would be co-located with a petroleum refinery. Furthermore, the commenter states that subpart VVa applies to SOCFI facilities and no SOCFI facility would be co-located with a natural gas processing plant. The commenter adds that subpart OOOO cross-references requirements in subpart VVa, but subpart VVa does not apply to gas plants.



**Response:** The cross-referenced rules do not have to apply to the affected facilities in subpart OOOO. We are simply referring to specific provisions within those rules to avoid duplicating identical requirements throughout many rules.

**Comment:** One commenter (4217) notes cross-referencing concerns mainly in the requirements for LDAR and storage vessels. The commenter is especially concerned with the referencing for the storage vessels requirements because the EPA uses the NESHAP subpart HH, a rule for the control of HAP, as the source for the reference. The commenter believes that NESHAP standards are not an appropriate source for requirements under NSPS because they are typically the most stringent requirements to control HAPs and not necessarily the best demonstrated technology (or BSER) for controlling VOCs. The commenter adds that, occasionally, the reference the EPA uses contains emissions limits, performance standards, test methods, etc. for total HAPs or a specific HAP. The commenter believes it is unclear how an owner/operator should apply a requirement referencing HAPs to a VOC standard.

One commenter (4219) notes that part 63 requirements may be appropriate for HAPs but they are overkill as applied to section 111 sources of VOC emissions, many of which are small sources of minimal emissions. The commenter notes, for example, the storage vessel rule of subpart OOOO covers tanks with as little as 1 bbl of condensate throughput per day, which equates to only 0.5 tpy VOC, yet the efficiency standard for the controls for storage vessels is expressed by reference to the MACT standards set forth in part 63 for hazardous emissions.

One commenter (4246) states that MACT standards are excessive for the small sources regulated under subpart OOOO. The commenter believes MACT subpart HH is a complicated regulation, particularly for smaller companies that typically lack in-house environmental staffing capable of handling the complex intricacies of the requirements. The commenter adds that many natural gas processing facilities do not have the financial resources to add the level of staffing necessary to interpret and implement this complicated and confusing regulation and typically use contractor staffing for component monitoring and the initial regulatory interpretation, but much of the periodic testing, monitoring, reporting and recordkeeping fall on the local operating staff.

**Response:** In order to eliminate confusion caused by cross-referencing another regulation and to tailor the requirements for VOC regulation, we have incorporated the storage vessel requirements from subpart HH into subpart OOOO and modified those requirements as appropriate for this rule. Regarding recordkeeping and reporting, the final rule includes various notification, recordkeeping and reporting requirements that we believe provide a robust compliance assurance program while reducing burden and streamlining requirements. We also considered a variety of innovative compliance approaches that could maximize compliance and transparency while minimizing burden on the regulated community and regulators.

**Comment:** Two commenters (4218, 4246) state that the control standards for storage vessels should be revised to accommodate the use of VRUs that capture and route storage tank emissions to the inlet of the gas processing plant. The commenters are concerned that the storage vessel standards in the cross-referenced NESHAP subpart HH standards do not accommodate the VRUs that are used to control storage vessel emissions at many compressor stations and gas processing plants that are existing subpart HH major sources.

One commenter (4218) adds that the description of a vapor recovery device as used in §63.771(d)(1)(ii) does not describe the commenter's VRUs, which do not reduce the TOC or HAP content of the gas they receive. Furthermore, the commenter believes the performance test procedures set forth in §63.772(e)(3)(iii) do not make sense for these VRUs because the procedures require the measurement and comparison of the mass rate of TOC or HAP at the inlet and outlet of the control device and believes these provisions should be revised.

**Response:** In the final rule, we have revised the storage vessel requirements to state that 95 percent control of VOC emissions must be achieved. The owner or operator is free to use any control technology, so long as compliance with the emission reduction requirement can be demonstrated. We believe that this change eliminates the commenters' concerns.

**Comment:** One commenter (4267) states that the proposed rule conflicts with existing BLM, Tribal, Federal, State, county and city regulations. The commenter argues that the State and BLM already get reports on completions so another completion report to the EPA is needless duplication that costs money with no real environmental benefit.

**Response:** We revised the reporting requirements to allow the use, wherever possible, of reports already created for other purposes, so long as the current reports contain all of the information required by the final rule. We also reduced the reporting requirements to include only those that we believe are necessary to demonstrate compliance and inform regulatory agencies of relevant activities at the facility.

#### **2.10.5 Relationship to 40 CFR 98, Subpart W**

**Comment:** One commenter (4104) describes conflicts in the EPA's objectives under subpart OOOO and subpart W. The commenter states that in developing subpart W, the EPA has consistently identified a primary objective of "informing future rulemakings" associated with sources that report GHGs, including natural gas venting and equipment leak sources that report under subpart W. In subpart OOOO, the commenter states the EPA has decided which sources warrant control – i.e., three of the six subpart W reportable sources for transmission and three of the four subpart W reportable sources for underground storage are affected sources in subpart

OOOO. In addition, the commenter states that the EPA has specifically excluded other sources from subpart OOOO (e.g., equipment leaks in the transmission and storage segment). The commenter states that subpart OOOO would regulate pneumatic controllers and compressors despite the fact that the initial subpart W reports for petroleum and natural gas systems will not be submitted until September 2012. The commenter believes the proposed rule is pursuing emission reductions prior to acquiring pertinent subpart W reporting data. The commenter adds that the EPA inappropriately relies upon data reported in a voluntary program designed for completely different purposes. The commenter believes the overlap between subpart OOOO and subpart W and related objectives imply an obvious conclusion: both regulations are not warranted at this time and either subpart W reporting for transmission and underground storage should be rescinded (because the EPA believes it has enough information to impose emission reduction regulations) or transmission and underground storage requirements in the proposed rule should be eliminated from the final rule pending collection of emissions data to inform rulemakings for sources of natural gas venting and equipment leaks.

**Response:** Regarding comments on subpart W and Natural Gas STAR Program data, please see previous comment response. We also clarify that the final rule requirements for reciprocating compressors, centrifugal compressors and pneumatic controllers apply to affected facilities located between the wellhead and the point at which the gas enters the transmission and storage segment. Please refer to section IV of the preamble to the final rule.

**Comment:** One commenter (4243) notes that the proposed green well completion NSPS have important implications for estimating the GHG footprint of natural gas. The commenter states that although the annual “Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2009” showed a decrease in methane and other GHG emissions from the natural gas distribution sector, the inventory offset this decrease with a significant increase in estimated emissions from natural gas production. The commenter argues that this is largely because the Inventory vastly over-estimated the methane emissions from shale gas well completions using hydraulic fracturing, by assuming erroneously that no well completions are performed using methane-capturing green well completion technology. The commenter notes that many producers are already using this technology voluntarily on most of their well completions. The commenter believes the EPA should revise the upcoming annual Inventory to reflect the actual percentage of well completions that used green well completions in recent years, and to note that this percentage is likely to increase each year – both through voluntary action and through compliance with the mandatory provisions of the green well completion NSPS, if made final.

**Response:** Please refer to section 2.2.3.3 of this Responses to Comments document (entitled Accuracy of Cost Estimate for REC Performed by a Contractor, Given the Estimated Number of Wells in 2015).

### **2.10.6 Proposed Standards Would Apply to Affected Facilities that Commence Construction, Reconstruction, or Modification After August 23, 2011**

**Comment:** Several commenters (2803, 4168, 4192, 4209, 4215, 4218, 4219, 4231, 4244, 4246, 4254, 4266, 4317, 4320, 4358) request that the compliance deadline for affected facilities be extended. The commenters provided numerous examples justifying delays ranging from 60 days to 4 years. One commenter (4266) states that the compliance dates of the final rule need to be extended to at least the effective date (60 days after the publication in the *Federal Register*) to comply with the Congressional Review Act.

**Response:** We remind the commenters that subpart OOOO applies to new, reconstructed or modified affected facilities, not existing affected facilities. Upon promulgation of the final rule, existing affected facilities will not have to be replaced or controls installed until the existing affected facility is reconstructed or modified. The final rule states that all affected facilities must be in compliance on the effective date, which is 60 days after promulgation of the rule.

However, due to uncertainties in the supply of equipment and labor over the near-term, we are now requiring RECs for completion operations begun at category (3) wells (non-exploratory and non-delineation wells) on or before January 1, 2015. Completion operations at category (1) wells (wildcat and delineation wells) and category (2) wells (non-wildcat and non-delineation low pressure wells) begun prior to January 1, 2015 are now required to perform REC or route the flowback emissions to a completion combustion device unless it is technically infeasible or unsafe to do so. Similarly, we are providing a one-year compliance phase-in for pneumatic controllers at natural gas processing plants and for storage vessels with VOC emissions equal to or greater than 6 tpy.

**Comment:** Two commenters (4275, 4240) argue that existing sources should be regulated under NSPS using emission guidelines. The commenters describe section 111 requirements and note that the EPA listed Crude Oil and Natural Gas Production on its “priority” list of categories that “cause[s], or contribute[s] significantly to, air pollution” which endangers human health and welfare in 1979. Thus, the commenters state the EPA is obligated to promulgate NSPS for sources within this category which includes a wide range of equipment, but has only issued two performance standards for this category. The commenters state these standards are inadequate because they apply only to a fraction of the sources located within the source category and only to two of the many types of air pollutants emitted from these sources. According to the commenters, although existing sources create the largest portion of emissions from oil and gas, the EPA still has not created emission guidelines to reduce air pollution from existing sources. The commenters state that the CAA requires the EPA to issue emission guidelines for existing sources once it establishes an NSPS for a category of new sources.

**Response:** Whereas CAA section 112 standards are issued for new and existing stationary sources, standards of performance under section 111 are issued for new and modified stationary sources. These standards are referred to as new source performance standards (NSPS). The EPA has the authority to define the source categories, determine the pollutants for which standards should be developed, identify the facilities within each source category to be covered and set the emission level of the standards.

### 3.0 Comments Regarding Subpart HH and Subpart HHH

#### 3.1 Representativeness and Comprehensiveness of NEI Data Used in Analyses

**Comment:** One commenter (4230) notes that it appears the EPA is missing accurate facility and emissions information for sources in West Virginia for the risk analysis and the commenter suggests revisions. Specifically the commenter states that their only major source subject to subpart HHH has been mischaracterized as subject to subpart HH instead. The commenter requests that the EPA remove the Columbia Gas Adaline station from the subpart HHH major source designation, and add Dominion's Lightburn station (041-00013) as a major source subject to this regulation. Further, the commenter states that of West Virginia's 60 title V major facilities that relate to oil and gas, 34 have dehydrators. The commenter also contends that the EPA only listed 21 such facilities as area sources subject to subpart HH.

Therefore, the commenter believes that a significant number of facilities in West Virginia are missing from the EPA's data for subpart HH. The commenter states that a separate submittal of data corrections will be made.

**Response:** We are conducting a residual risk review of the major source MACT standards in subpart HH. As such, the focus of the review is on the major sources subject to the MACT standards in subpart HH. The commenter did not submit substantiating data to the EPA other than what was provided in the comment letter. Therefore, we were unable to make specific determinations on the facilities mentioned by the commenter. However, as discussed in the preamble and Memorandum titled, "Changes to Risk Assessment Facility Information for the Oil and Natural Gas Production and Natural Gas Transmission and Storage Source Categories," dated February 8, 2012, we re-evaluated the emissions associated with several facilities in response to comments received on the proposal. As a result, we identified certain sources that were area sources that should not have been included in the risk assessment, and some of those facilities include facilities in West Virginia.

**Comment:** Regarding the EPA's request for data estimating the number of major sources in the upstream and transmission sectors, two commenters (4192, 4246) state that, in the limited amount of time available for comment, they were not able obtain this information.

**Response:** The preamble to the proposed rule originally provided for a 60-day comment period. The EPA received numerous requests for extending the public comment period and, based on the information provided in the requests, the EPA determined that an extension of 30 days was appropriate. We believe that the extended public comment period was sufficient as evidenced by the large number and detail of the responses received. Moreover, often a proposed rule asks for commenters to provide additional information and data. The fact that the commenters did not

provide the information requested is not material. The Agency made a request for information and reasonably based the final rule on the information currently available to it, including information submitted through comments.

**Comment:** One commenter (4270) states that after performing its NESHAP analysis for subpart HHH using data on 321 sources from the NEI, the EPA did not perform any subsequent analysis for facility type, age, location and other variables that could change emission characteristics. Before proposing performance and emission standards, the commenter believes that the EPA needs to broaden the data set to account for these variables.

**Response:** We believe that the NEI dataset used in both the technology review and the risk review is the best available data for emissions from the natural gas transmission and storage source category. The NEI includes data for over 300 facilities with a MACT code associated with this source category, which is approximately the number of major sources we estimate are in the category. The factors cited by the commenter (i.e., facility type, age, location, etc.) should be reflected in the NEI emissions data. In addition to emissions, the risk review conducted under section 112(f)(2) also takes into account emission point characteristics such as release type, release height, velocity and temperature, and that information is also contained in the NEI. .

### **3.2. Previously Unregulated Sources**

**Comment:** One commenter (4457) supports the EPA's proposal to set a MACT standard for the first time for small glycol dehydrators and previously uncontrolled storage vessels.

**Response:** We appreciate the commenter's support. The final rule establishes MACT standards pursuant to section 112(d)(2) and (d)(3) for the subcategory of small glycol dehydrators. However, based on the comments received, we are not finalizing the MACT standard for the subcategory of storage vessels without the PFE, which was a subcategory that was left unregulated in the initial MACT standards. We believe that we need additional data and information to set emission standards for storage vessels without the PFE, and we intend to collect additional data and propose MACT emission standards under section 112(d)(2) & (3) of the CAA for such storage vessels.

**Comment:** Two commenters (4230, 4241) question whether the EPA would still consider small dehydrators at major sources having a throughput of less than 85,000 scmd or actual average benzene emissions less than 0.9 Mg/yr to be major for HAPs while meeting the exemption conditions. The commenters explain that, under their State requirements, this subcategory of sources has been successful in obtaining synthetic minor permits to reduce their emissions to below the 0.9 Mg/yr, and the use of controls allows them to be reclassified as an area source of HAPs. Therefore, according to the commenter, any existing source which installed controls

before the end of their 3-year compliance deadline would now be exempt from the major source requirements by their State. The commenter inquires how the EPA envisions the excess risk to be addressed if most of the sources no longer qualify as a major source of HAPs. The commenters also ask whether the EPA's finding of excess risk extends to the area source program, which also uses the same exemption and seems to encompass the majority of sources described as "small dehydrators."

**Response:** The final amendments do not apply to area sources. They apply to small glycol dehydration units located at major sources of HAP. As discussed at proposal [76 FR 52767], we only conducted the risk assessment for facilities designated as major sources of HAP, as the risk assessment under 112(f)(2) is not required to extend to area sources which are subject to generally available control technology (i.e., GACT) standards and not MACT. In addition, small glycol dehydration units are defined as only being located at major sources of HAP.

Nonetheless, we believe, the number of major sources in the oil and natural gas sector are likely to be overestimated because the major source designation in the NEI does not take into account the limitations set forth in section 112(n)(4) of the CAA regarding aggregation of emissions from wells and associated equipment in determining major source status. Therefore, we believe that our risk assessment covers many of the dehydration units for which the commenter was concerned.

**Comment:** One commenter (4241) requests that the EPA clarify that a "small glycol dehydration unit" would not lose its classification as a "small" unit if it has an excursion that results in actual emissions in excess of 1 tpy (0.9 Mg/yr). The commenter suggests that such a small "synthetic minor" dehydrator that availed itself of the 1 tpy compliance option by securing a federally enforceable emission limit of less than 1 tpy benzene emissions should not be considered large under revised rules if it has an excursion, provided that the 1 tpy exemption was part of a federally enforceable permit prior to the effective date of the final rule.

**Response:** The commenter is correct that a glycol dehydration unit that qualifies as a small dehydration unit by accepting a 1 tpy benzene emissions federally enforceable limit would not lose its classification if it has an excursion that results in actual emissions greater than 1 tpy. However, the commenter should be aware that any excursion may be a violation of their permit.

**Comment:** One commenter (4189) states that the EPA should require at least 98 to 99 percent control efficiency for storage tanks and dehydrators, to match what some jurisdictions already require, instead of the proposed 95 percent.

**Response:** To the extent the commenter is referring to the standards we proposed on August 23, 2011 for storage vessels without the PFE, we are not finalizing those requirements, as discussed



in the preamble. For the standards being finalized for small glycol dehydrators, those units must meet a BTEX emissions limit, not a percent reduction requirement, so the commenter's suggestion is not applicable.

### 3.2.1 Legal Authority

**Comment:** Four commenters (4271, 4220, 4266, 4273) dispute the EPA's regulatory authority to revise existing MACT standards pursuant to section 112(d)(2) and (3), which they assert is unrelated to the section 112(d)(6) technology review or the section 112(f)(2) residual risk determination requirements.

One commenter (4266) states that the EPA's own statements in the preamble make it clear that EPA is not invoking section 112(d)(6) as the authority for the new proposed standards and that the preamble provides no analysis of "developments in practices, processes, and control technologies" to justify the proposed standards under section 112(d)(6).

One commenter (4273) states that the EPA has expressly recognized that section 112(d)(6) does not require reanalysis of the floor pursuant to section 112(d)(3) during the 8-year technology reviews. 76 FR at 52741 (citing *NRDC v. EPA*, 529 F.3d 1077, 1084 (D.C. Cir. 2008)). In particular, the commenter states that, in *NRDC v. EPA*, the D.C. Circuit upheld the EPA's interpretation that the periodic review requirement in CAA section 112(d)(6) does not impose an obligation to recalculate MACT floors. 529 F.3d at 1084. Rather, according to the commenter, the review and revise provisions require the EPA only to consider developments in pollution control at the sources and to revise the standards based on an evaluation of costs, non-air quality effects, and related energy implications. *See* 71 FR 76603, 76608-76609 (Dec. 21, 2006) (noting EPA has discretion to weigh "all relevant factors" in section 112(d)(6) review).

Two commenters (4266, 4273) believe that section 112(d)(6) requires the Administrator to review and revise emission standards "as necessary," and that the EPA has significant discretion to interpret "as necessary" to mean less than a full-blown MACT floor re-calculation. One commenter provides that perceived "gaps" in the original MACT determinations are not "practices, processes, and control technologies" that are within the scope of a section 112(d)(6) review and the EPA does not have unfettered discretion to revisit a prior MACT determination once that determination has been issued unless it is determined to be "necessary" according to explicit criteria.

One commenter (4189) opines that, in order for the EPA to meet its legal obligations under section 112(d) of the Act, the EPA must update the maximum achievable control technology (MACT) standard based on current data and information. The commenter states that the EPA

must both expeditiously promulgate the vitally important standards for previously uncovered sources and update the now stale 1999 standards to remedy the deficiencies set forth above.

Three commenters (4217, 4266, 4273) argue that the EPA does not have the legal authority to revise the prior MACT floor. These commenters state that removal of the applicability to limit the major source definition to only storage vessels with the potential for flash emissions is essentially redoing the MACT floor. The commenters argue that the EPA is attempting to supplement the MACT floor analysis conducted in 1997, which they did not believe was within the scope of section 112(d)(6).

One commenter (4159) states that the EPA lacks the authority to conduct a new MACT floor analysis of standards currently in effect. The statute contemplates a one-time setting of the MACT floor. According to the commenter, recent case law on MACT floor setting does not require the EPA to reassess the floors for all MACT standards. The commenter asserts that once the EPA conducts its residual risk review and determines that the emissions are protective with an ample margin of safety, requiring further emission reductions through revisions to the MACT standards are both contrary to law and bad policy.

One commenter (4457) states that the EPA is correct in recognizing that, under the statute, a MACT limit is needed for previously uncontrolled sources that emit HAPs in significant quantities, including all storage vessels in the Oil and Natural Gas Production source category.

One commenter (4273) asserts that the setting of the MACT floor under section 112(d) is a one-time requirement. The commenter explains their position by stating that Congress has made distinctions between the initial “promulgation” of a standard and its “revision” throughout the CAA. According to the commenter, unlike in section 112(d), Congress has expressly provided the EPA authority to revise standards in the same manner as the initial promulgation for other standards in the Act. *See, e.g.,* 42 U.S.C. §§7409(b)(1) (“Such primary standards may be revised in the same manner as promulgated.”); 7409(b)(2) (“Such secondary standards may be revised in the same manner as promulgated.”). Again, according to the commenter, in amending section 112, Congress was concerned with the EPA’s delay in promulgating health-based standards for HAPs. The MACT provisions were carefully crafted to ensure that an interim technology-based standard would be established until the EPA could promulgate a health-based standard. *See generally Sierra Club v. EPA*, 353 F.3d 976, 979-80 (D.C. Cir. 2004). The commenter asserts that the EPA has recognized the “ultimate goal” of such emissions standards is protecting public health with an ample margin of safety. 71 FR 76,603, 76,609 (Dec. 21, 2006) (HON). However, the commenter states that once the EPA establishes residual risk standards, it is within EPA’s discretion to find further revisions are not needed due to the efficacy of the standards. 42 U.S.C. §7412(d)(6).

One commenter (4273) believes that the EPA does not have authority to revise the MACT floor determinations that have been incorporated into currently effective standards never invalidated by the D.C. Circuit, even if the floor represents sources with no control. The commenter provides that the time for challenging the standards at issue in the proposed rule has long since passed. 42 U.S.C. §7607(b) (requiring any challenges to such regulations be filed within 60 days). The 60-day deadline is “jurisdictional in nature, and may not be enlarged or altered by the courts.” *Motor & Equip. Mfrs. Ass’n v. Nichols*, 142 F.3d 449, 460 (D.C. Cir. 1998) (citation omitted); see also *NRDC v. EPA*, 571 F.3d 1245, 1265 (D.C. Cir. 2009). The commenter states that this time limit on seeking judicial review “serves the important purpose of imparting finality into the administrative process, thereby conserving administrative resources and protecting the reliance interests of regulatees who conform their conduct to the regulations.” *NRDC v. Nuclear Reg. Comm’n*, 666 F.2d 595, 602 (D.C. Cir. 1981); see also *Sun Enters., Ltd. v. Train*, 532 F.2d 280, 292 (2d Cir. 1976) (noting, in finding a petition to review NPDES permit untimely, “the equities . . . lie heavily with the intervenors who have proceeded at great expense in reliance on the permit and who cannot be charged with any deficiencies in respondent’s performance”) This commenter provides extensive case law support for their position in their comment letter.

One commenter (4273) asserts that the EPA also lacks authority to revisit beyond-the-floor analyses for sources with existing MACT standards. According to the commenter, similar to the EPA not being able to revisit the MACT floor, the EPA has no direct authority under sections 112(d)(2) and (3) to revisit beyond-the-floor analyses for previously promulgated MACT standards which have remained in effect.

One commenter (4189) notes that the EPA’s proposed rule under sections 112(f)(2) and (d)(6) contains significant gaps in the sources of emissions covered. The commenter states that the EPA must address all significant sources of HAP that the current standards do not control, including wastewater pits and impoundments, well pads, well completions, and fugitive toxic air emissions. The commenter states that the EPA must also consider the same controls for natural gas transmission and storage that it is proposing for oil and natural gas production. For example, the commenter states that the EPA is proposing controls for storage vessels and equipment leaks in the production sector, but not for the same sources found in the transmission and storage sector (where the EPA is only proposing to regulate glycol dehydrators). Although the commenter is pleased that the EPA has recognized the need to regulate previously uncontrolled sources, the commenter believes the EPA needs to take this important opportunity to fully assess and address health risks from all emissions in this sector and remove all major gaps in the existing standard.

One commenter (4354) believes that the EPA is not authorized by section 112(d)(2) or (d)(3) to fill “gaps” in existing MACT standards. The commenter asserts that once the EPA establishes a MACT standard for a particular source category, the Agency has the authority under section

112(d)(6) to “review and revise as necessary (taking into account developments in practices, processes, and control technologies), emissions standards promulgated under this section no less often than every 8 years.” The commenter contends that the EPA does not have discretion to revisit a prior MACT determination once that determination has been issued. The commenter believes that, even if the Agency had invoked section 112(d)(6) as authority for revising the existing MACT standards, it still would not have authority to regulate the emissions points for which standards were not established in the first round of MACT rulemaking. The commenter states that prior MACT determinations may be revised only “as necessary (taking into account developments in practices, processes, and control technologies.” The commenter also states that it is not a reasonable exercise of authority to establish new emissions limitations under existing MACT standards when there is no significant risk associated with emissions from sources in the given source category. The commenter contends that establishing new standards under these circumstances is unreasonable and cannot be justified under section 112(d)(6) because the so-called regulatory “gaps” in the current rules clearly are not contributing to unacceptable risk. The commenter asserts that even if, for the sake of argument, the EPA is correct in concluding that “MACT allowable” emissions cause unacceptable risk to public health, that still does not justify establishing new regulations for dehydrators and tanks. In the commenter’s opinion, the EPA has determined that the unacceptable risk can be remedied by eliminating the 0.9 Mg/yr compliance option. The commenter states that, even accepting the EPA’s risk analysis, further regulation of dehydrators and tanks clearly is not needed to adequately protect public health.

**Response:** In *Medical Waste Institute v. EPA*, 645 F. 3d 420, 425-27 (D.C. Cir. 2011), the D.C. Circuit held that the EPA may permissibly amend improper MACT determinations, including amendments to improperly promulgated floor determinations, using its authority under CAA section 112 (d) (2)-(3). The lack of judicial invalidation on these issues is a distinction without a difference. The absence of standards for these HAP is not proper. *National Lime*, 233 F. 3d at 633-34; see also *Medical Waste Institute*, 645 F. 3d at 426 (resetting MACT floor, based on post-compliance data, permissible when originally-established floor was improperly established, and permissibility of EPA’s action does not turn on whether the prior standard was remanded or vacated).<sup>26</sup> The D.C. Circuit’s decision in *Portland Cement Ass’n v. EPA*, 665 F.3d 177, 189

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<sup>26</sup> It is well-settled that an agency generally remains free to revise improperly promulgated or otherwise unsupportable rules, even in the absence of a remand from a Court. *United Gas Improvement Co. v. Callery Props., Inc.*, 382 U.S. 223, 229 (1966) (“An agency, like a court, can undo what is wrongfully done by virtue of its order.”); *Macktal v. Chao*, 286 F.3d 822, 825–26 (5th Cir. 2002) (“[I]t is generally accepted that in the absence of a specific statutory limitation, an administrative agency has the inherent authority to reconsider its decisions.”). Agencies have particularly broad authority to revise their regulations to correct their errors. *Last Best Beef, LLC v. Dudas*, 506 F.3d 333, 340 (4th Cir. 2007); *Friends of the Boundary WaterWilderness v. Bosworth*, 437 F.3d 815, 823 (8th Cir. 2006) (“It is widely accepted that an

(D.C. Cir. 2011) confirms that the EPA is not constrained by section 112 (d)(6) and it may reassess its standards more often, including revising MACT floors pursuant to section 112(d)(2) and (d)(3). The commenters are thus incorrect that EPA lacks authority to set MACT standards under 112(d)(2) and (d)(3) for small glycol dehydrators and storage vessels without the PFE that were not controlled under the initial NESHAP for the oil and gas source categories. Put another way, if the EPA did not adopt a proper MACT standard initially, it is not amending a MACT standard but adopting one for the first time. That is the case here for small glycol dehydrators and storage vessels that were not controlled under the initial NESHAP. The EPA adopted no MACT standard at all for these emission points, an approach soundly rejected by the D.C. Circuit in *National Lime*, 233 F. 3d at 633-34. Consequently, the EPA is not barred from making MACT floor and beyond-the-floor determinations and issuing MACT standards pursuant to section 112 (d)(2) and (3) in this rulemaking.

The EPA is not invoking section 112(d)(6) or 112(f)(2) as its authority to promulgate the MACT standards for currently uncontrolled sources. As one commenter correctly notes, the EPA is promulgating these MACT standards for the first time pursuant to sections 112(d)(2) and (3), the provisions that directly govern the promulgation of MACT standards. Using sections 112(d)(2)-(3) ensures that the process and considerations are those associated with initially establishing a MACT standard. Because the EPA is not establishing these MACT standards under section 112(d)(6), some commenters mistakenly thought that, in setting MACT standards to address certain unregulated sources, the EPA conducted new MACT floor analysis for standards currently in effect. As explained above, the EPA is promulgating new standards, not reevaluating the original standards, under sections 112(d)(2)-(3). The EPA's action to set MACT standards for small glycol dehydrators, which were not regulated in the current MACT, is consistent with several recent rulemakings, in which we have chosen to fix underlying defects or make other

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agency may, on its own initiative, reconsider its interim or even final decisions, regardless of whether the applicable statute and agency regulations expressly provide for such review.”) (citations omitted). Moreover, an agency may reconsider its methodologies and application of its statutory requirements and may even completely reverse course, regardless of whether a court has determined that its original regulation is flawed, so long as the agency explains its bases for doing so. *Motor Vehicle Mfrs. Ass'n v. State Farm Mutual Auto Ins. Co.*, 463 U.S. 29, 42 (1983); *FCC v. Fox Television Stations, Inc.*, 129 S. Ct. 1800, 1810 (2009); *Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs.*, 545 U.S. 967, 981–82 (2005) (internal citations omitted) ('An initial agency interpretation is not instantly carved in stone. On the contrary, the agency \* \* \* must consider varying interpretations and the wisdom of its policy on a continuing basis,' *Chevron*, *supra* at 863–864[], for example, in response to changed factual circumstances, or a change in administration. That is, no doubt, why in *Chevron* itself, this Court deferred to an agency interpretation that was a recent reversal of agency policy.”).

necessary revisions or clarifications in existing NESHAP under sections 112(d)(2) and (3), the provisions that directly govern the initial promulgation of MACT standards (see National Emission Standards for Hazardous Air Pollutants From Petroleum Refineries, October 28, 2009, 74 FR 55670; and National Emission Standards for Hazardous Air Pollutants: Group I Polymers and Resins; Marine Tank Vessel Loading Operations; Pharmaceuticals Production; and the Printing and Publishing Industry, April 21, 2011, 76 FR 22566).

The EPA proposed setting MACT standards for the first time for small glycol dehydrators that were left unregulated in the original NESHAP. Establishing standards for these emission points does not involve doing new MACT floor analysis for MACT standards currently in effect. In the original NESHAP, the EPA created two subcategories of glycol dehydrators. The EPA established MACT standards for one subcategory – large dehydrators - but left unregulated the subcategory of so-called “small dehydrators.” Therefore, the EPA is establishing for the first time MACT standards for the “small dehydrators” subcategory. Based on available data on “small glycol dehydrators,” the EPA performed the MACT floor and beyond-the floor analysis to determine the MACT standards for this subcategory. In doing so, the EPA did not reanalyze the MACT floor analysis for the standards established in the original NESHAP for the large glycol dehydrators.

Regarding the proposed MACT standards under section 112(d)(2) and (d)(3) for the subcategory of storage vessels without the PFE, we are not finalizing those standards today. Based on our review of the comments, we believe that we need additional data in order to set an emissions standard for this subcategory of storage vessels. We intend to collect the appropriate data and propose a MACT emission standard as appropriate under section 112(d)(2) and (3) of the CAA for the subcategory of storage vessels without the PFE.

One commenter claims that sections 112(d)(6) and 112(f)(2) rules must address all significant sources of HAP that the current standards do not control. However, the commenter’s claim is unsupported by the plain language of section 112(d)(6), which directs the EPA to review and revise as necessary “emission standards promulgated.” The residual risk review included evaluation of all emissions sources, including any significant HAP emission points, for which we have available data. As explained in sections VII.A and B of the preamble, based on our revised assessment, we have determined that the MACT standards, including those promulgated in this final rule pursuant to sections 112(d)(2)-(3), reflect an acceptable level of risk and provide an ample margin of safety.

### **3.2.2 Glycol Dehydrators – 40 CFR subpart HH**

**Comment:** One commenter (4266) states that they examined the EPA's small dehydrator dataset to evaluate potential subcategorization and MACT floor options. The commenter provides that Table 20-6 in their comment document illustrates the EPA's small dehydrator dataset sorted by uncontrolled BTEX emissions.

The commenter (4266) asserts that, if the outliers created by applying an assumed 98 percent control efficiency to the controlled streams are not considered (this assumption resulted in uncontrolled BTEX emissions of 125 tpy, 375 tpy, and 2,965 tpy), the data do show some expected outcomes. For example, the commenter states that the average emissions for the 25 percent lowest inlet BTEX concentrations are 2.5 tpy BTEX and 0.2 tpy benzene, while the remaining 75 percent have average emissions of just over 5 tpy BTEX and 1.2 tpy benzene. The commenter also states that the BTEX emissions for the lowest 25 percent of the throughputs average 3 tpy, while the BTEX emissions for the remaining 75 percent of the data set with higher throughputs average over 5 tpy.

According to the commenter (4266), the average benzene emissions from the lowest 25 percent throughput dehydrators (1.3 tpy) are actually higher than the average benzene emissions for the higher throughput dehydrators (0.8 tpy). The commenter provides that evaluation of all the data show a slight correlation between BTEX emissions and inlet BTEX concentration ( $R^2 = 0.2$ ), but the data show a decrease in BTEX emissions with increasing throughput. The commenter concludes that the EPA's dataset indicates that neither inlet BTEX concentration nor dehydrator throughput have a sufficient correlation with emissions to further break small dehydrators into technically and legally sound subcategories based only on these characteristics. Therefore, the commenter recommends that an uncontrolled emissions threshold be established to subcategorize small dehydrators. Given the large number of variables that impact emissions from dehydrators, the commenter believes that emissions are the most relevant and comprehensive indicator of differences in dehydrator class, type, and size.

One commenter (4266) states that the EPA's proposed subcategorization scheme and resulting equations would require controls on every dehydrator, no matter how low the natural BTEX level or the potential dehydrator emissions.

Two commenters (3560, 4266) assert that the EPA's proposed calculation for benzene emissions assumes a lower benzene emission threshold based on a lower benzene concentration in the gas stream. The commenters state that this means that small dehydrators can have a zero benzene emission limit, which they may not be able to meet.

One commenter (4266) states that, in the event that the EPA chooses to continue with the proposed subcategorization approach, the EPA must make changes to the proposed equations. According to the commenter, the equations used in the proposed subparts HH and HHH rules

approach a mass limit of zero. The commenter asserts that the BTEX emission limit equation for small dehydrators should not go to zero. The commenter explains that the equation would give the intended result if the product of Throughput and Concentration ( $C_i$ , BTEX) were assigned a lower bound. The commenter states that their suggested correction to the equations for subparts HH and HHH would result in a minimum emission limit of 0.286 tpy BTEX for oil and natural gas production and 1.45 tpy BTEX for natural gas transmission and storage (i.e., the MACT floors), rather than zero tpy. The commenter opines that, if EPA's proposed equations are promulgated, they would represent a level of control that was beyond the MACT floor.

The commenter (4266) suggests that, if the EPA moves forward with standards, to be legally defensible, the EPA should subcategorize small dehydrators appropriately and develop MACT floors for each subcategory and identify de minimis emission levels for dehydrators with insignificant emission levels.

One commenter (4252) suggests that the EPA remove the proposed requirements for small dehydrators. The commenter states that, if the EPA elects to promulgate standards for small dehydrators, it must establish subcategories that appropriately account for fundamental differences among small dehydrators to be regulated and determine MACT floors for the subcategories. The commenter opines that the dual use of 0.9 Mg/yr benzene as a criterion for separating small and large dehydrators and an emission limitation for large dehydrators effectively creates a situation where all dehydrators are subject to standards.

One commenter (4266) opines that the EPA has already established the appropriate threshold for this subcategorization – 0.9 Mg/yr (1 tpy) benzene. The commenter recommends that the small dehydrator subcategory for oil and natural gas production (subpart HH) be separated into (1) those dehydrators with uncontrolled average benzene emissions less than 0.9 Mg/yr and (2) those dehydrators with uncontrolled average benzene emissions of 0.9 Mg/yr or greater and actual annual average flow rates less than 85,000 SCMD. For natural gas transmission and storage, the commenter states that these subcategories are (1) those dehydrators with uncontrolled average benzene emissions less than 0.9 Mg/yr and (2) those dehydrators with uncontrolled average benzene emissions of 0.9 Mg/yr or greater and actual annual average flow rates less than 283,000 SCMD.

Once the subcategories are established, the commenter (4266) states that the EPA must then determine MACT floors for each subcategory. The commenter asserts that the EPA's dataset available in the docket does not include sufficient levels of detail to fully evaluate process variations or other factors that influence emissions. More importantly, according to the commenter, based on the EPA's data, there is no way that the EPA can determine whether any simple "floor" level calculated from these data can be achievable by all dehydrators in the subcategory. The commenter believes that this is especially germane in this situation where



many aspects that impact emissions are not under the control of the owner or operator. However, the commenter states that the owner or operator can ensure that the dehydrator is operated in a manner to reduce emissions to the maximum extent possible without add-on controls by optimizing the glycol circulate rate. The commenter says that this practice is already recognized as an effective method by the EPA and is required by §63.764(d)(2) for area source dehydrators not located within an urbanized area (UA) plus offset and urban cluster (UC) boundary, as defined in §63.761 of subpart HH. The commenter asserts that this is a clear example of the type of “design, equipment, work practice, or operational standard, or combination thereof,” standard allowed under section 112(h) of the CAA.

In many situations, the commenter (4266) states that emissions from these low-emitting dehydrators are below the detection limit of prescribed test methods. The commenter contends that this clearly meets the criteria of section 112(h), justifying the establishment of standards that require the optimization of glycol circulation rate to reduce emissions.

The commenter (4299) contends that as dehydrator emissions increase (i.e., are above 0.9 Mg/yr), the ability to effectively control increases and differences in inlet BTEX concentration, throughput, and other variables are less critical. Therefore, the commenter believes it is technically valid and legally defensible to determine the MACT floor for those small dehydrators with uncontrolled benzene emissions of 0.9 Mg/yr or greater.

The commenter (4266) reports that, for oil and natural gas production, the average of the lowest 5 emitting dehydrators (since there are less than 30 dehydrators in the data set for the subcategory) is 4 tpy BTEX. According to the commenter, for natural gas transmission and storage, there is only one dehydrator in the dataset with benzene emissions of 1 tpy or greater, and the BTEX emissions for this dehydrator are 5.5 tpy.

**Response:** As explained in the proposal preamble, the 1999 NESHAP created a subcategory of glycol dehydrators but left it uncontrolled. The subcategory of uncontrolled dehydrators are small dehydrators and the subcategory consists of glycol dehydrators with an actual average natural gas flowrate less than 85,000 scmd or actual average benzene emissions less than 0.9 Mg/yr for subpart HH, and an actual annual average natural gas flowrate less than 283,000 scmd or actual average benzene emissions less than 0.9 Mg/yr for subpart HHH. We therefore proposed standards for that subcategory. In so doing, we did not re-examine the subcategorization decisions made in 1999. We do not believe that is necessary for purposes of setting MACT standards for a long-established subcategory. Because we did not reopen the 1999 subcategorization for notice and comment, we are not addressing those subcategorization decisions in this final rule.

In addition, in response to comments regarding the variability of glycol dehydration unit operating parameters discussed elsewhere in this document, we have revised the BTEX emission limits to account for variability, and we believe those changes will address some of the commenters' concern regarding low-emitting units.

**Comment:** One commenter (4104) states that they were not able to obtain legacy docket A-94-04 data or complete the mapping of data in Attachment 2 (ECR memorandum from Heather Brown (EC/R) to Bruce Moore (EPA), "Oil and Natural Gas Production MACT and Natural Gas Transmission and Storage MACT - Glycol Dehydrators: Impacts of MACT Review Options," July 28, 2011; EPA-HQ-OAR-2010-0505-0047) to the floor data during the limited comment period. The commenter requests that the data be made available in the docket for review and further analysis.

One commenter (4457) states that since the EPA is relying on its prior rulemaking, it should make all of the documents from that rulemaking available as part of the current rulemaking docket.

**Response:** We included in the docket to the proposed rule, those materials on which the proposed rule relied. Indeed, the specific memorandum cited by the commenter was available in the docket upon publication of the proposed rules in the *Federal Register*. Moreover, all documents from the EPA legacy docket A-94-04 are available by contacting the EPA Docket Office.

**Comment:** One commenter (4457) states it is unclear how the EPA "considered" the optimization of glycol circulation rates in the prior MACT review since it did not appear to be a MACT requirement at that time, even though many operators are using this approach. The commenter stated that review of the prior rulemaking and its supporting documents did not provide any indication that this was considered.

**Response:** The optimization of glycol circulation rates was considered to be a process modification under the original MACT and the provisions specifying their use in complying with the standard are contained in §63.771(e)(2) of the existing rule. The recognition that properly operated condensers with a flash tank in the system can achieve 95 percent control is addressed in Legacy docket A-94-04, memo number II-A-007, titled "Recommendation of MACT Floor Levels for HAP Emission Points at Major Sources in the Oil and Natural Gas Production Source Category."

### **3.2.3 Glycol Dehydrators – 40 CFR subpart HHH**

#### *3.2.3.1 Appropriateness of Using Data from Previous NESHAP*

**Comment:** According to one commenter (4457), the EPA’s failure to extend HAP standards for small glycol dehydrators to HAPs other than BTEX violates section 112(d)(2), (3) and (6). The commenter states that, under the proposed rule, BTEX are the only HAPs that the EPA proposes to control with any specificity despite the agency’s obligation to regulate each listed HAP emitted by the source categories. 42 U.S.C. §7412(d)(1); see also *Nat’l Lime Ass’n v. EPA*, 233 F.3d 625, 634 (D.C. Cir. 2000). The commenter assumes that the EPA does not intend to regulate additional HAPs through the use of surrogates because the EPA has not identified any surrogates or provided any explanation for the use of surrogates in this rulemaking. See *Nat’l Lime Ass’n*, 233 F.3d at 639; see also *Mossville Envtl. Action Now v. EPA*, 370 F.3d 1232, 1243 (D.C. Cir. 2004) (The EPA must demonstrate that a “correlation exists” between two pollutants when deciding to use a surrogate, and the EPA must memorialize that correlation in “a fashion that commenters, interested members of the public, regulated entities, or ... a reviewing court, can assess.”) According to the commenter, pursuant to sections 112(d)(2), (3) and (6), when setting MACT for the first time for small glycol dehydrators, the EPA must set a numerical limit both on BTEX pollutants and on other HAPs emitted by these sources. For example, the commenter states that there is information available from Colorado showing that glycol dehydrators emit other HAPs such as n-hexane, 2,2,4-trimethylpentane, ethylene glycol, and possibly others.

The commenter (4457) contends that where recent actual emissions data of higher quality than the legacy data are readily available to the Agency, the use of legacy data, that fail to reflect industry developments, for calculating a numeric standard at both the floor and beyond-the-floor stages of the MACT analysis is arbitrary and capricious, and not in accordance with law. The commenter supports the EPA’s efforts to reduce harmful pollution from previously uncontrolled sources, but states that the EPA’s attempt to calculate a MACT floor standard for these unregulated sources using outdated data fails to meet the statutory requirements that new facilities limit their emissions to a level achieved by the “best controlled similar source” and, for existing facilities, to “the average emission limitation achieved by the best performing 12 percent of the existing sources.” The commenter adds that the EPA must determine a MACT floor for all HAPs emitted by small glycol dehydrators and that the EPA’s failure to extend HAP standards for small glycol dehydrators to HAPs other than BTEX violates section 112(d)(2), (3) and (6).

The commenter (4457) states that the process employed by the EPA improperly looks at the expected performance of a single control device rather than the performance demonstrated by the source. The commenter states the EPA acknowledges that where a flash tank is incorporated in the design of the dehydrator system, potential emissions are captured by that device, leading to lower inlet concentrations at the condenser and lower overall emissions. The commenter asserts that rather than recognizing the superior environmental performance of the entire system, the EPA has devised a complex scheme that removes the effect of this part of the control system

from the calculation of the MACT floor. The commenter believes that the EPA should recalculate the MACT floors using current data (which will show that more sources are achieving very low levels) and follow the D.C. Circuit Court's instruction to examine the performance of the system, rather than an individual control device and to set standards that reflect the emission levels that the best performing sources achieve.

**Response:** As stated in the preamble to the proposed rule (76 FR 52768), we did not have new emissions data concerning small dehydration units and therefore, we evaluated the dataset collected from industry during the development of the 1999 MACT standards. We also discussed our rationale for not establishing a MACT floor as a mass limit (i.e., Mg/yr) due to the variability of gas throughput and inlet gas composition. As we stated in section X.A of the preamble, we normalized emissions for a more accurate determination of the best performing sources in terms of emissions per BTEX concentration and natural gas flowrate.

The 2005 NEI was an emissions dataset that was available to us when evaluating the MACT floor. However, the 2005 NEI does not contain throughput data for glycol dehydration units, nor does it contain BTEX emissions data. Therefore, we were not able to determine which units would be considered small glycol dehydration units based on throughput.

We also refute the commenter's assertion that the BTEX emission limit is a surrogate for HAP emissions. The data available to us only contained BTEX emissions for all units and therefore, we were only able to evaluate the emission limit on a BTEX emissions basis. This is not intended to be a surrogate for HAP emissions, although, as a co-benefit from the control of BTEX emissions, other HAP emissions will be reduced. Additionally, we intend to further investigate the non-BTEX emissions from small glycol dehydrators and once we obtain sufficient data, we would propose a MACT standard for those other HAP.

**Comment:** One commenter (4266) states that the EPA estimated the cost effectiveness of the proposed small dehydrator standards to be \$8,360/Mg HAP (76 FR 52768). The commenter believes that this cost effectiveness estimate is high, and that the cost effectiveness analysis significantly underestimates the cost effectiveness of many dehydrators. The commenter reports that the primary reason for this underestimation is because the EPA did not account for the naturally occurring variability in HAP content in natural gas streams that would be covered by the proposed small dehydrator standards.

The commenter (4266) provides that Table 20-3 of their comment letter was generated from GRI-GLYCalc™ runs using a range of dehydrator operating throughputs and actual gas compositions (furnished by API member companies); and the EPA's annualized cost of control for dehydrators from Table 3-7 of the proposal RIA. According to the commenter, unless noted, the provided examples in the table reflect actual dehydrators in operation with their actual

throughputs and gas compositions. Additionally, the commenter states that more detail on the calculations used can be found in Attachment P to the comment letter, which is incorporated in their comments by reference.

The commenter (4266) states that, as seen in Table 20-3 of their comment letter, the cost effectiveness at the small dehydrator threshold ranges from \$152,000,000/ton-HAP to \$6,638/ton-HAP with most of the costs evaluated being substantially greater than the EPA's estimate. The commenter believes these costs to be unreasonable for low BTEX content (San Juan Basin Coal Bed Methane) gasses regardless of throughput; moderate BTEX content (Haynesville shale) gasses with relatively high throughputs; and high BTEX content (Green River Basin Tight Sand) gasses with low throughputs (which are common in the Green River Basin). As defined in the proposed rule, the commenter asserts that these dehydrators would be classified as "small" and subject to application of "Equation 1" to determine allowable emissions. According to the commenter, the application of "Equation 1" results in zero allowable emissions of BTEX. The commenter states that, with the likely prospect of BTEX at some concentration lower than normal gas analysis detection limits this outcome essentially imposes 100% control requirements on dehydrators with almost zero potential for HAP emissions and almost infinite control costs. The commenter opines that these costs are unreasonable and based on a likely technically unachievable requirement and must be corrected.

The commenter (4266) states that the EPA's proposed BTEX emissions limit equation, if promulgated, would represent a level of control beyond the MACT floor. According to the commenter, the EPA has clearly stated that they did not believe the cost effectiveness of beyond the floor controls for both oil and gas production small dehydrators and natural gas transmission and storage small dehydrators were reasonable.

**Response:** The determination of MACT standards under section 112 of the CAA is governed by sections 112(d)(2) and (3). Section 112(d)(3) does not allow the consideration of cost in determining the MACT floor. Rather, the MACT floor is based on the "emission control that is achieved in practice" by the best performing sources. Once we establish the floor, we proceed to evaluate whether to set standards tighter than the floor (beyond-the-floor), under section 112(d)(2). Unlike the floor analysis, our beyond the floor analysis includes a consideration of cost. We conducted both a floor and beyond the floor analysis for small glycol dehydrators and set the MACT standard at the floor level. We rejected going beyond the floor due to costs that we considered to be unreasonable [76 FR 52768]. Therefore, the commenters' concerns regarding costs are not relevant to setting the MACT floor and do not change our determination not to set beyond the floor standards for small glycol dehydrators. As discussed elsewhere in this document, we have revised the BTEX limits since proposal based on variability, and included a minimum combustion control device outlet TOC concentration, both of which may address the commenter's concerns regarding low emitting units.

**Comment:** One commenter (4274) states that it is worthwhile to investigate emission limits for the smaller glycol dehydration unit process vents. The commenter asserts that the Marcellus Shale, as well as other shale plays will have the experience of more industrialized sites close to homes than were ever before considered. The commenter believes that investigating the emission levels and determining what cost effective technologies are available to limit emissions is very worthwhile. The commenter adds that, in lieu of cost effective technologies, just by the investigation, it may be possible that industry will be interested and move forward with appropriate research and development programs to address this and similar initiatives. The commenter recommends that the EPA move forward with this provision.

**Response:** We appreciate the commenter's insight. The docket for this rulemaking contains considerable information on the cost and effectiveness of a number of control technologies. We encourage further development of control technologies that will provide control beyond the levels required by the NESHAP.

**Comment:** According to one commenter (4457), the EPA must update the MACT floor for existing standards and consider setting a beyond-the-floor-standard for large glycol dehydrators under EPA's CAA section 112(d)(6) review. According to one commenter (4457), and as detailed in the Buckheit Report included as an attachment to their letter, the EPA's basis for the 1999 MACT standard for glycol dehydrators was the same as that employed in other MACT standards of that era and that subsequently have been invalidated in court. Specifically, the commenter asserts that the EPA's 1997 survey of emission sources failed to capture the best performing facilities and the EPA made no effort to quantify the emissions achieved in practice of even those facilities reported in the survey results. The commenter argues that, had the EPA considered data in the 1999 rulemaking record demonstrating facilities had achieved HAP control efficiencies of up to 99 percent, a different existing source MACT floor and limit would have been required. The commenter requests that the EPA resolve information gaps that exist and revise the existing standards for emissions from large glycol dehydrators to reflect the level of performance that is being achieved today.

The commenter (4457) also requests that the EPA calculate the MACT floor for each HAP emitted by large glycol dehydrators and set MACT standards for these HAP sources that accurately reflect the emissions levels of the most efficient performers as required by 112(d). The commenter argues that sections 112(d)(6) and 112(d)(3) each require the EPA to set a numeric limit for each HAP emitted by the source category.

**Response:** The EPA disagrees with the commenter that section 112(d)(6) mandates that the EPA must correct any deficiency in an underlying MACT standard when it conducts the "technology review" under that section. We believe that section 112 does not expressly address this issue, and

the EPA has discretion in determining how to address a purported flaw in a promulgated standard. The “as necessary” language in section 112(d)(6) must be read in the context of that provision, which focuses on the review of developments that have occurred since the time of the original promulgation of the MACT standard and thus should not be read as a mandate to correct flaws that existed at the time of the original promulgation. In *NRDC v. EPA*, 529 F.3d 1077, 1084 (D.C. Cir. 2008), the District of Columbia Circuit held that “We do not think the words ‘review, and revise as necessary’ can be construed reasonably as imposing any such obligation” to re-calculate the MACT floors. The Court further held that there was no such duty in that case because the EPA had found that there were no significant developments in practices, processes and control technologies. Similarly, as described in the preambles to the proposed and final rules, we have determined that revision is not necessary because we have found no significant developments in practices, processes and control technologies for reducing emissions from large glycol dehydrators. See preamble section X.C for additional discussion of the technology review.

**Comment:** One commenter (4457) states that the EPA’s BTEX MACT standard for small glycol dehydrators relies on emission factors. The commenter asserts that emission factors are based on the average results of limited testing of some sources within the sector; as such, they cannot be relied on to determine the emissions profile of the category or to identify the best performing sources within the category. The commenter argues that, if using emission factors, the EPA must require robust monitoring to ensure transparency and effective enforcement. The commenter recommends that the EPA adopt numeric standards for the individual pollutants and adopt monitoring and enforcement measures that require facilities to accurately and clearly report their emissions reductions of all HAPs.

**Response:** The commenter misinterpreted the proposed rule preamble discussion where we explain how we established the MACT floor by calculating an emission factor from emissions data. We first determined emissions for each individual glycol dehydration unit using GLYCalc and data provided by the surveyed facilities for those units. These emissions (in terms of tons per year) were then converted to a normalized emission rate in terms of BTEX concentration and natural gas throughput. This normalized BTEX emission rate is what we referred to as an “emission factor,” however this factor is only used for a facility to determine its BTEX emissions limit under the final rule, but we did not use emission factors to calculate source emissions in the process used to establish the MACT floor. As explained above, we could only establish standards for BTEX compounds at this time because we lacked information for other HAP emitted from these sources in the database that contained the necessary inlet concentration and natural gas throughput information. The facilities were then ranked according to the emission rate. The glycol dehydration units with the lowest normalized emission rate were then considered to be the best performing sources.

**Comment:** One commenter (4457) points out that the EPA's proposed MACT limit for new dehydrators in the oil and gas production sector is lower than the proposed limit for similar new dehydrators in the downstream natural gas transmission and storage sector. The commenter says that this is a counter-intuitive result because the EPA did not have emissions data for an adequate number of representative units for such sources from either sector. The commenter contends that while the EPA took appropriate steps by bringing these small dehydrators into the NESHAP, it has not gone far enough; the EPA should base its MACT limits on a more robust dataset, reflecting current emissions from sources in both source categories.

Another commenter (4104) states that the proposed BTEX emission limits for existing small dehydrators in subpart HH is  $1.10 \times 10^{-4}$  gr/scm-ppmv as compared to the subpart HHH standard of  $6.42 \times 10^{-5}$  gr/scm-ppmv. The commenter asserts that this difference is unexplained and not rationalized for similar equipment. The commenter requests that the EPA document why a more lenient standard is appropriate for subpart HH and provide analysis to supplement the background documentation that inaccurately indicates similar standards are proposed.

**Response:** In developing the MACT standards, we are required under section 112(d)(3) of the CAA to evaluate the best performing 12 percent of sources (or the best performing 5 sources if there are fewer than 30 sources in the source category or subcategory). In doing so for each source category or subcategory, we ranked the sources in our database by their emission rate (i.e., in terms of lb BTEX/MMscf-ppmv) from lowest to highest. The units with the lowest emission rates are considered to be the best performing sources.

Intuitively, it is not unexpected that the emission rates for glycol dehydration units located in the transmission and storage source category would be lower than those for production, because the gas is drier further downstream. For existing sources that is the case. For new sources, the limits in the final rule are  $4.66 \times 10^{-6}$  gr/scm-ppmv for subpart HH as compared to the subpart HHH standard of  $5.44 \times 10^{-5}$  gr/scm-ppmv, so the limit is higher for the HHH standard. Nonetheless, the limit is at the MACT floor level of control, based on section 112(d)(2) and (3) and the commenter did not identify any error in our assessment that showed we deviated from the requirements of the CAA.

The MACT floor for subpart HH small glycol dehydration units was calculated by averaging the emission rates from the best performing 12 percent of sources. For subpart HHH, we had fewer than 30 sources in our dataset and so the MACT floor for subpart HHH small glycol dehydration units was calculated as the average of the emission rates from the best performing 5 sources.

**Comment:** Two commenters (3560, 4258) request that small dehydrator benzene emission limits be revised. The commenters believe that assigning a lower benzene emission rate based on lower benzene contents in gas streams is infeasible. The commenters assert that the proposed calculation for establishing the required benzene concentration in gas streams would ultimately



mean that small dehydrators can have a zero benzene emission limit. The commenters state that small units in BTEX service can only reduce benzene emissions to a certain point and cannot necessarily reduce their emissions to zero.

One commenter (4266) states that the EPA has routinely identified equipment with low HAP emission potential that they determine should not be regulated. The commenter insists that there is strong justification for such a threshold in the oil and gas production and natural gas transmission and storage source categories due to the naturally occurring differences in gas composition across the United States and thus, varying differences in dehydrator input stream HAP concentrations, throughputs, and emissions. The commenter recommends that the EPA establish de minimis levels of HAP emissions that would exempt small dehydrators from all requirements under subparts HH and HHH.

The commenter (4266) states that, as was shown in real-world examples provided in Tables 20-3, 20-4, and 20-5 of their comment letter, there are situations across the country where the natural gas being treated in dehydrators has such low benzene, BTEX, and HAP that the emissions will be trivial. The commenter recommends that the EPA establish de minimis levels of HAP emissions that would exempt small dehydrators from all requirements under subparts HH and HHH. The commenter recommends that this de minimis level be 0.5 Mg/yr total uncontrolled BTEX emissions.

One commenter (4246) asserts that, as the gas gets leaner, the standard gets harder. The commenter requests that the EPA amend the proposed MACT subpart HH to provide a strong incentive for sources to reduce HAP emissions. The commenter specifically recommends that the EPA offer owner/operators an exempt status by reducing HAP emissions below an enforceable limit, such as 1 ton per year (tpy) of benzene.

**Response:** The limits established for small dehydrators represent the MACT floor, as discussed elsewhere in this document and the preamble to the final rule, pursuant to sections 112(d)(2) and (d)(3). Therefore, our MACT floor determination is limited to small dehydration units located at major sources of HAP. While the commenter provides examples of units with low HAP content in the inlet gas stream, the commenter does not specify if these units are located at major sources or area sources of HAP. We would expect, in general, that these units would be located at area sources, since by virtue of the low HAP content in the gas stream the facility's potential emissions would be below the 10/25 major source threshold.

In the preamble to the proposed 40 CFR part 60, subpart NNN, NSPS for Air Oxidation Unit Process (48 FR 48932, October 21, 1983), we stated that 20 ppmv is the lowest outlet concentration of total organic compounds achievable by the combustion of low organic concentrations (i.e., inlet concentrations of 2000 ppmv or less). As stated in the preamble to

subpart NNN, the outlet concentration was established based on kinetic calculations of incinerators. It was demonstrated that, at a given temperature and residence time, a stream with a low inlet concentration (approximately 2,000 ppmv) could not be controlled in an incinerator to an outlet concentration below 20 ppmv. We believe that this same option should be available for small glycol dehydration units and as a result, the final rule allows the 20 ppmv limit when combustion devices are used.

**Comment:** Several commenters (4104, 4241, 4252, 4266) request that the EPA revisit the MACT floor to better assess variability. One commenter (4104) argues that assessing variability is an important component of the analysis and consistent with recent court decisions. The commenter states that the EPA suggests that the normalization of emissions includes variability by taking into account unit-specific throughput and inlet BTEX concentration. The commenter argues that the five small dehydrator units considered in the MACT floor analysis all had no control, inlet BTEX concentration was 20 ppmv on 2 units and 155 ppmv on 3 units, and throughputs ranged from 20 to 120 MMscf/day.

The commenter (4104) asserts that the throughput values and BTEX inlet concentration data only capture two values and these are not the only variables that can impact dehydrator emissions performance, and that many additional operating parameters can impact emissions variability. The commenter opines that the category lends itself to emissions modeling using GRI-GLYCalc™ as a method to assess variability.

The commenter (4104) recommends that multiple tests from a single dehydrator be acquired to appropriately assess emission variability or provide operating context for emission limit applicability. At a minimum, the commenter believes that the EPA should complete a series of GRI-GLYCalc™ model simulations to better assess emissions variability and obtain a more robust dataset. The commenter states that the EPA could assess variability from operating parameters through modeling, where GRI-GLYCalc™ uses field conditions and compositional data to simulate and estimate the resulting estimated emissions. The commenter asserts that the emissions data used are based on a “snapshot sample” and do not represent conditions and composition variance over time.

One commenter (4241) asserts that it did not appear that the EPA adjusted the limit for variability, as allowed under the CAA. As was noted in the docket memorandum “Oil and Natural Gas Production MACT and Natural Gas Transmission and Storage MACT - Glycol Dehydrators: Impacts of MACT Review Options” (July 28, 2011), “gas throughput and inlet gas composition is highly variable from one source to another.” Because of this, the commenter believes that the EPA needs to make adjustments in order to reasonably account for the expected inter-unit variability between the 11 units used in the calculation of the floor. The commenter disagrees that a single emissions factor, scaled by gas volume and concentration, is sufficient,

and recommends that the emissions factor itself be adjusted to account for the substantial variation even between units used to calculate the MACT floor.

One commenter (4266) argues that, if the EPA moves forward with standards for small dehydrators, they must account for fundamental differences in naturally occurring inlet gas concentrations and dehydrator design. According to the commenter, subpart HH proposed Equation 1 would require over 90 percent of the “best performing” dehydrators to install additional control. The commenter asserts that there are flaws in the EPA’s small dehydrator floor analysis, derived Equation 1, and control approach to calculate dehydrator-specific BTEX emission limitations are clearly illustrated by the application of Equation 1 to the 11 dehydrator units used by the EPA for the MACT floor analysis for subpart HH. According to the commenter, Table 20-4 of their letter illustrates the flawed construct by applying the proposed equation for subpart HH to the specific dehydrators making up the “top 12 percent” in the EPA’s MACT floor dataset. The commenter states that only one of the 11 dehydrators that were used to calculate the MACT floor for small dehydrators in the oil and natural gas production source category can meet the proposed standard without the installation of additional controls. The commenter asserts that this would mean that the equation represents the average emission limitation achieved by best performing 1 percent of the dehydrators, not the best performing 12 percent. The commenter argues that this does not represent a legitimate MACT floor. The commenter opines that the equations represent a beyond-the-floor level of control that the EPA has not contemplated nor justified.

The commenter (4266) asserts that, despite the EPA’s inclusion of a throughput variable in the equations, the proposed small dehydrator equations are only sensitive to BTEX inlet concentration. Therefore, according to the commenter, throughput or potential emissions have no effect on the control efficiencies required to meet the calculation emission limitation. The commenter states that this artifact is illustrated by the analysis summarized in Table 20-5 of their comment letter, which shows the Equation 1 outcome to be sensitive only to BTEX inlet concentration from the perspective of required control percentage.

**Response:** Based on information in the Technical Reference Manual for GRI-GLYCalc™ and other studies, it is our understanding that while other factors can influence glycol dehydration unit emissions, inlet gas BTEX composition, natural gas throughput, and glycol recirculation rate have the most significant effect on emissions. As a result, we used natural gas throughput and inlet gas composition (namely BTEX) to normalize emissions and identify the best performing sources from the available data. We lacked information on glycol circulation rate in our data (both the 1997 data and 2005 NEI) so did not consider that as a factor.

The proposed MACT floor limit for the oil and natural gas production source category was  $1.1 \times 10^{-4}$  g BTEX/scmd-ppmv. This limit was determined by calculating a straight average for the

top 12 best performing small glycol dehydration units. It should be noted that the commenter's conclusion that of the 11 dehydrators included in the MACT floor, only one of them could meet the proposed standard is incorrect. In fact, eight of the 11 dehydrators could meet the proposed standard. By using the average of the best performing 12 percent of sources, as required by section 112(d)(3), it should be expected that some of the top 12 percent of the sources would have to be controlled in order to meet the floor. However, as pointed out by the commenter, it is recognized in the case law that the EPA may consider variability in estimating the degree of emissions reduction achieved by best-performing sources and in setting MACT floors.

In response to comments, we revised the MACT floor limit, which was calculated based on the average of the best performing 12 percent of small glycol dehydration units in the subpart HH source category (and the best performing 5 for subpart HHH), to account for these units' variability. To account for variability in the operation and emissions, the BTEX emission rates (in terms of g BTEX/scm-ppmv) were used to calculate the average emission rate and the 99 percent upper predictive limit (UPL) to derive the MACT floor limit. For more information on how we performed the MACT floor analysis, see the Oil and Natural Gas Production and Natural Gas Transmission and Storage MACT Floor document, which is available in the docket.

Using this method, the MACT floor (or 99 percent UPL) for BTEX emissions from existing glycol dehydration units in the oil and natural gas production source category is  $3.28 \times 10^{-4}$  g BTEX/scmd-ppmv.

A similar analysis was performed for small glycol dehydration units in the natural gas transmission and storage source category. The proposed MACT floor limit was  $6.42 \times 10^{-5}$  g BTEX/scmd-ppmv. Using the 99 percent UPL, the MACT floor limit for existing glycol dehydration units in the natural gas transmission and storage source category is  $3.10 \times 10^{-4}$  g BTEX/scmd-ppmv.

In addition we believe that the BTEX concentration data used to develop the MACT floor represents an annual average natural gas concentration. As a result, the BTEX emission limit formula has been modified for the final rule to use average annual BTEX concentration.

**Comment:** One commenter (4266) recommends that the EPA apply a control efficiency standard in lieu of a mass emissions limit. The commenter opines that a mass emissions limit imposes complicated costly compliance and recordkeeping obligations when contrasted with a control efficiency standard. The commenter suggests that small dehydrators have the option to comply with a 95 percent control requirement for large dehydrators in §63.765(b) as an alternative to complying with the mass emission limitations determined by equation, which they believe would result in greater emissions reduction for a lower burden.

**Response:** The EPA set the MACT standards for the small dehydrators in accordance with section 112(d)(2) and (3). The commenter did not explain how its suggested alternative is representative of, or otherwise equivalent to, the MACT for the small dehydrators under section 112(d)(2) and (3). We therefore decline to adopt the suggested alternative.

**Comment:** According to one commenter (4457), the EPA must determine a proper beyond-the-floor MACT level for both small glycol dehydrators and storage vessels, by determining the “maximum degree of reduction in emissions” that is achievable, as required under section 112(d)(2). The commenter asserts that the proposed rule fails to provide any discussion of a beyond-the-floor determination for storage vessels.

For the same reasons it cannot rely on the outdated analyses in establishing the MACT floors, the commenter (4457) argues that the EPA must now perform an up-to-date beyond-the-floor analysis based on current emission controls. The commenter opines that, absent this analysis, the EPA’s beyond-the-floor determination for the proposed rule is arbitrary and capricious.

**Response:** A beyond-the-floor analysis was performed for small glycol dehydrators in the proposed rule (76 FR 52768). As we detailed in preamble section X.C, and elsewhere in this document. . Therefore, additional data gathering was not required. With regard to storage vessels, as discussed in preamble section VII.A we are not finalizing requirements for storage vessels without the PFE.

### 3.2.4 Other Comments on Glycol Dehydration Units

**Comment:** One commenter (4270) states that the EPA provides a significance threshold in terms of 0.9 megagrams (Mg) of benzene, yet Equation 1 of the proposed rule shows the calculation for the emission limit of BTEX. The commenter would like the EPA to clarify which parameter they are targeting for reductions, benzene or BTEX? The commenter explains that they do not monitor BTEX levels either in their pipeline gas or gas processed in dehydrators. The commenters request that the EPA delineate which constituent is to be used in emission calculations.

**Response:** As specified in §63.765 of subpart HH and §63.1275 of subpart HHH, you must limit emissions of BTEX and determine the appropriate limit for the small glycol dehydrator using inlet gas BTEX concentration measured at the inlet to the dehydrator.

**Comment:** One commenter (4263) requests that the EPA clarify that the language in §63.765(c)(3)(ii) only applies to dehydration units located at an area source that must be controlled as specified in §63.764(d)(1)(i).

**Response:** We had proposed to eliminate the 0.9 Mg/yr benzene compliance option for large glycol dehydrators. The change suggested by the commenter to §63.765(c)(3)(ii) would have been necessary to clarify that only dehydrators at area sources could then use this compliance option. Since we are instead retaining the 0.9 Mg/yr benzene compliance option for large dehydrators at major sources, in the final rule, we have revised §63.765(c)(3)(ii) to read as follows to clarify that this compliance option is only available for large glycol dehydrators (which can be located at either major or area sources):

(ii) For any large glycol dehydration unit, benzene emissions are reduced to a level less than 0.90 megagrams per year.

**Comment:** One commenter (4241) asserts that the EPA states the glycol dehydration standards can be met by routing emissions to a condenser or to a combustion device. The commenter notes that most glycol dehydrators are routed through flash tanks and rerouted to the boiler. The commenter seeks clarification on whether such units would be required to meet the glycol dehydrator standards applicable to the boiler, or would the unit be eligible to use the alternative for uncontrolled sources to demonstrate compliance with the use of the model GRI-GLYCalc™ (proposed §63.772(d)(2)(iii)).

**Response:** In the situation described by the commenter the boiler would be a control device and the requirements of §63.771(f)(1)(i) and 63.772(e) would apply.

**Comment:** One commenter (4241) states that there is disagreement between the preamble and the rule. The commenter points out that the preamble states that the rule requires that existing small dehydrators located at major sources comply with a  $1.10 \times 10^{-4}$  g/scm-ppmv BTEX limit and new sources with a  $4.66 \times 10^{-6}$  g/scm-ppmv limit. Conversely, the commenter states that the proposed §63.765(b)(1)(iii) does not differentiate between existing and new affected facilities and the emission limit used in the equation to calculate emission limits is the  $1.10 \times 10^{-4}$  g/scm-ppmv listed in the preamble for existing units. The commenter requests that the EPA clarify this discrepancy in the final rulemaking package.

**Response:** We have revised §63.765(b)(1) to address both large and small glycol dehydration units. This section now also includes separate equations for calculating the emission limit for existing and new small glycol dehydration units. We have also added a definition for small glycol dehydration units in §63.761. Similarly, we revised §63.1275 of subpart HHH to address calculating the emission limit for existing and new small glycol dehydration units and added a definition for small glycol dehydration units in §63.1271.

**Comment:** Two commenters (4192, 4246) suggest adding English units to the definitions of both small and large glycol dehydration units because sources are more accustomed to these

units. Similarly, the commenters recommend that the definition for “temperature monitoring device” should include Fahrenheit measurements.

**Response:** The original MACT standard was written using metric units. Since we did not propose the entire subpart on August 23, 2011 we cannot make the requested changes at this time.

**Comment:** One commenter (4320) states that the proposed rule has included the phrase “[e]xcept for control devices used for small glycol dehydrators,” at the beginning of several subparagraphs under section 63.772(e)(1), implying that these control devices are exempt from testing for all affected sources except small dehydrators, which puts the largest burden and focus on the smallest sources.

**Response:** The commenter is correct that the combustion control devices listed are not exempt from performance testing specifically when used to reduce small dehydrator emissions. Since small dehydrators could require a control device to exceed a 95 percent emission reduction level to meet its BTEX limit, we cannot exempt such devices from performance testing and rely on design/operating parameters alone as we have done for large glycol dehydrator control devices.

### 3.2.5 Future Residual Risk Analysis

**Comment:** One commenter (4457) states that the EPA is proposing that, for currently controlled sources, the existing standard, without the 1 ton (0.9 Mg/yr) alternative compliance option, provides an ample margin of safety. According to the commenter, the EPA states that “we do not believe it will be necessary to conduct another residual risk review under CAA section 112(f) for these two source categories 8 years following promulgation of the small dehydrator standards merely due to the addition of these new MACT requirements.” 76 FR at 52769. The commenter asserts that this analysis is unlawful, premature, and unsupported. According to the commenter, the EPA may not decide now that it need not fulfill its statutory duty to review and consider updating these standards in 8 years. The commenter argues that this is a legal duty required by section 112(f)(2) that the EPA cannot change or evade. The commenter states that eight years after finalizing a section 112(d) or MACT limit, section 112(f)(2) requires the EPA to review and set a residual risk standard if required to protect public health or prevent an adverse environmental effect. 42 U.S.C. §7412(f)(2). The commenter opines that the EPA cannot rely on its conclusions in the current proposed rule to evade the statutory requirement to conduct the review every eight years.

**Response:** Section 112(f)(2) requires that the EPA conduct residual risk analysis for a source category within 8 years after promulgating MACT standards for that source category. As explained in the proposal preamble [76 FR 52770], in our residual risk analysis for the two oil

and gas major source categories, we evaluated the risks that remain after the promulgation of the original MACT standards as well as the new MACT standards promulgated in the final rules, thereby fulfilling the section 112(f)(2) requirement to conduct such an analysis within 8 years of the promulgation of these new MACT standards. We therefore disagree with the commenter that we need to conduct another residual risk review in 8 years.

### **3.2.6 Storage Vessels: Previously Unregulated and Regulated Sources**

**Comment:** One commenter (4219) states that subpart HH should not be expanded to cover storage vessels without PFE and questions the validity of the EPA's justification for the proposal to expand subpart HH to do so. The commenter asserts that if the EPA determined in 1999 that the MACT floor for tanks without PFE was no control and that it was not cost effective to go beyond the floor, then the EPA is under an obligation to explain what if anything has changed in the industry between then and now so as to justify the proposed expansion of subpart HH controls to such tanks in 2011. The commenter believes that it would be inappropriate for the EPA to expand the coverage of the subpart HH requirements based on an unexplained decision to reverse a decision made by the Agency 11 years ago concerning the contents of a memorandum written 13 years ago. The commenter states the study in question is dated and certainly is not representative of current conditions, inasmuch as it did not consider the environmental impacts of the production, processing, and transmission of gas extracted from shale plays, which in many cases is dry gas with low VOC content. The commenter contends the EPA should conduct a new analysis to account for current conditions in the natural gas industry prior to any expansion of the subpart HH requirements to tanks without PFE to ensure that there is justification for this significant departure from current practice.

Additionally, the commenter (4219) claims that expansion of the rule is unwarranted because the cost per ton of reduced emissions for storage vessels with low VOC content is very high and little environmental benefit is gained by increasing control requirements. The commenter urges the EPA to delete provisions in the proposed subpart HH rules that would expand control requirements to storage vessels without PFE. Alternatively, the commenter asks that subpart HH control requirements only be made applicable to storage vessels with 12 tpy of VOC emissions to alleviate what is currently a major problem with the proposed expansion of the subpart HH storage vessel rules - the fact that tanks holding but a few barrels of condensate will trigger coverage of subpart HH under the proposed changes. The commenter believes a 12 tpy threshold would be justified because it would limit coverage of the rules to tanks that emit enough pollutants to warrant coverage by the rules.

One commenter (4275) supports the EPA's decision to ensure that the MACT standards protect human health and the environment with a generous margin of safety, as required by the CAA. The commenter urges the EPA to broaden the scope of types of storage vessels covered under the



NESHAP to include produced water tanks and also applying the standard to storage vessels in the natural gas storage and transmission source category. The commenter also recommends that the EPA consider a more stringent control requirement of 98 percent to capitalize on the additional air quality benefits that are possible.

**Response:** In response to comments on the proposed requirements for storage vessels without PFE, we reevaluated the available data for all storage vessels – both NEI data and section 114 survey information that was used to develop the original MACT requirement for storage vessels. Based on that evaluation, we have determined that additional data is needed in order for us to establish an emissions standard for storage vessels without PFE as our existing data is not representative of current operations and emissions. We intend to collect the necessary data and propose a MACT standard under section 112(d)(2) and (3) of the CAA. Therefore, we are not promulgating the proposed amendments that would have required all storage vessels to be subject to control requirements under subpart HH.

As discussed previously, we have revised the definition of “storage vessel” to clearly define the storage vessels subject to the final rule.

**Comment:** One commenter (4263) recommends revising §63.766 to provide for the alternative of routing emissions to a fuel gas system or process by revising paragraph (b). The commenter also suggests adding a new paragraph to §63.766 stating that such systems would comply with certain monitoring, recordkeeping and reporting requirements, but would not have to comply with any other provisions of subpart HH.

**Response:** In the final rule, we have added §63.766(b)(3) to provide the option of venting emissions through a closed-vent system to a process natural gas line. However, we did not exempt these systems from other applicable requirements of subpart HH.

**Comment:** Two commenters (4246, 4266) state that while the EPA predicts that a very small fraction of the production field tank population will be affected by this rulemaking, they believe that the total cost impact of the rule will be dramatically greater than projected by the EPA.

**Response:** The commenter did not provide any population data to support their statement; therefore, no changes have been made in response to this comment.

**Comment:** One commenter (4246) states that the EPA’s proposed MACT standard for storage vessels should offer some reasonable exemptions. As an example, the commenter recommended that any storage vessel subject to subpart OOOO controls should be exempt from subpart HH standards.

**Response:** As previously stated, we are not promulgating the proposed MACT standards for storage vessels without the potential for flash emissions. However, we have established in the final subpart OOOO that storage vessels that are subject to and controlled in accordance with subpart HH are not subject to the requirements of subpart OOOO, and provided the complementary exemption from subpart HH to storage vessels without the potential for flash emissions subject to and controlled under subpart OOOO. Since the reporting period under subpart OOOO is less frequent (i.e., annually) than under subpart HH (semi-annually), we have added in language in subpart HH requiring sources complying with subpart OOOO to still report on the schedule specified in subpart HH.

**Comment:** One commenter (4266) states that changing subpart HH to include all tanks in lieu of tanks “with the potential of flashing emissions” will cause some facilities to become major sources and that the EPA has provided no beginning effective date for this change, any provisions for existing facilities to come into compliance with the newly applicable regulations, or even adequately made the regulated public aware that they need to recalculate their applicability to major per the new subpart HH definitions and obtain compliance with major source requirements if necessary. The commenter recommends that the EPA allow such facilities 3 years to obtain compliance with these new requirements.

**Response:** The effective date for sources affected by the change in the associated equipment definition, as proposed, is stated in §63.760(f)(9), A production field facility, as defined in §63.761, constructed on or before August 23, 2011 that was previously determined to be an area source but becomes a major source (as defined in paragraph 3 of the major source definition in §63.761) on the date of publication of the final rule in the *Federal Register* must achieve compliance no later than three years and 60 days after date of publication of the final rule in the *Federal Register*, except as provided in §63.6(i). Also note we are not promulgating requirements for storage vessels without the PFE.

**Comment:** One commenter (4356) states that the EPA estimated there are 329 sites with a total of almost 2,000 tanks that would potentially be subject to the 95 percent control requirements throughout the country each year. According to the commenter, for the NESHAP requirements the EPA estimated that 1,970 existing tanks would be required to control HAP emissions. The commenter states that in Texas, over 3,500 sites have registered in the last 12 months with an average of 2-3 tanks per site (not including produced water), and this trend is expected to continue. Under the proposed NESHAP, the commenter believes that a large portion of these new tanks and thousands of existing tanks will be required to control emissions since applicability is based on potential to emit (PTE) of HAPs from each tank.

**Response:** As we have stated previously, we are not promulgating the proposed standards for storage vessels without the potential for flash emissions. Thus, we have not revised our estimate of the number of storage vessels subject to the rule.

**Comment:** Two commenters (4246, 4266) request that an alternative definition of “storage vessel” be used in subparts OOOO and HH and suggest detailed language. The commenters state that there is considerable ambiguity under subpart HH as to the population of storage vessels to which these rules are intended to apply and requests that the EPA clarify that the boundaries of the storage vessel provisions. The commenters state that term “storage tank” or “storage vessel” should be defined in a manner that is consistent with other rules, while acknowledging the particular scenarios unique to the oil and gas production sector. The commenters note that activities identified as process functions in other regulations include reactions and blending, collection of material discharged from a process prior to transfer to other equipment within the process or to a storage vessel, surge control, bottoms receiver, and knock-outs.

**Response:** The EPA agrees that a clarification of the subpart HH definition of a storage vessel is appropriate. In the final rule, we have added a sentence to the storage vessel definition to clarify that surge control vessels and knockout vessels are not considered to be storage vessels under subpart HH. We have not excluded wastewater tanks, as there are no separate standards for wastewater tanks in subpart HH.

**Comment:** Two commenters (4246, 4266) note that, based on the MACT floor memo for subpart HH, in the discussion of storage tanks, the storage vessels in this source category are those located in the production field which store condensate or crude oil. The commenters request clarification that the storage vessel provisions of subpart HH are applicable only to tanks storing crude oil or condensate and offer suggested rule text.

Two commenters (4246, 4266) state that the EPA’s authority to extend applicability of a regulation to a given facility is predicated on that facility being reasonably considered a source of the regulated pollutant. The commenters contend that the EPA has recognized this by use of the term “in organic HAP service” or “in VHAP service” for NESHAP regulations. The commenters contend that this is not a matter of requesting an exemption for facilities that are sources of the regulated pollutant, but rather it is a matter of recognizing that below certain de minimis thresholds of concentration, a facility is not reasonably deemed a source of that pollutant and thus is not part of the source category.

The commenters (4246, 4266) state that the term “in VHAP service” as defined in subpart HH should also be applied in the determination of applicability of subpart HH to storage vessels, in that the EPA is not required to regulate de minimis sources of HAPs. The commenters believe

that revision of the rule language would clarify that the rule is applicable to storage vessels that are “in VHAP service” and ensure that applicability of the rule is practicable and effective.

**Response:** The group of controlled storage vessels, at major sources, that we used to establish the MACT floor for the June 17, 1999 rulemaking included units that stored liquids other than those cited by the commenter (e.g., produced water). Therefore, the clarification suggested by the commenter is not appropriate.

The commenters request that certain storage vessels not be subject to the NESHAP requirements. First, we are not promulgating final standards storage vessels without the potential for flash emissions, as discussed elsewhere in this document. Second, we are not modifying the MACT standards in subpart HH applicable to storage vessels with the PFE. Finally, the commenters have not identified a basis for excluding such storage vessels from the MACT requirements where they are a source of HAP emissions subject to subpart HH standards. See National Lime Ass’n v. EPA, 233 F.3d 625, 640 (D.C. Cir. 2000). Therefore we have not adopted the commenters’ request in the final rule.

### **3.2.7 Definition of Associated Equipment**

**Comment:** One commenter (4178) states that applying the current MACT standard of 95 percent emission reduction to all storage vessels at major source ONG production facilities, not just those with the potential for flash emissions (PFE) will result in otherwise minor facilities becoming major sources. The commenter states that facilities will have to evaluate HAP emissions from all of their storage tanks. The commenter adds that being elevated to major source status will require that the rigorous and extensive requirements of title V permitting be met or that the facilities obtain synthetic minor permits to stay below the major source threshold. Due to the added burden, the commenter states they expect that facilities will be seeking synthetic minor permits in significant numbers. The commenter believes the potential for an unwieldy number is great considering the number of facilities currently considered minor sources.

**Response:** We believe the commenter is referring to the change in the definition of associated equipment that will require all storage vessels to be considered in the major source determination. Sources that were previously determined to be area sources, but are subsequently determined to be major sources due to the definition change, may obtain synthetic minor permits as the commenter describes. In 1999, when the MACT standard was originally promulgated, we estimated that there would be 440 existing sources that would become subject to the glycol dehydration unit and storage vessel requirements under subpart HH (64 FR 32616). This number did not take into account an estimate for the number of sources that would obtain synthetic minor permits to stay below the major source threshold and avoid being subject to subpart HH. We are

not aware of any issues or undue burden that occurred during the three year period prior to the compliance deadline following the 1999 promulgation for existing sources seeking synthetic minor permits. The commenter provides no supporting information, nor do we have any, to suggest that there would be such burden due to this definition change.

**Comment:** One commenter (4457) states that the EPA proposes to amend the definition of “associated equipment” to exclude all storage vessels and glycol dehydrators because they are significant sources of HAP emissions that must be controlled and therefore must be part of the major source aggregation equation. The commenter supports the EPA’s proposal on that and also urges the EPA to exclude all other similarly situated components. The commenter asserts that the EPA does not explain whether it considered other components in its assessment of unregulated emission points beyond storage vessels and small glycol dehydrators. The commenter further states that, if it did consider them, the EPA does not explain why it excluded them; and if it did not consider them, the EPA offers no explanation for excluding them from consideration. According to the commenter, by leaving the definition of “associated equipment” up to the EPA, Congress intended that the agency identify and control substantial HAP emitters that pose a threat to human health and the environment. As such, according to the commenter, the EPA must analyze each of the significant HAP emission points in the Oil and Natural Gas Production and Natural Gas Transmission and Storage source categories to consider excluding them from the definition of associated equipment. The commenter states that this analysis is a critical component of the public’s understanding of the scope and quantity of HAP emissions and the associated risks to human health.

**Response:** The EPA rejects the commenter’s claim that the EPA must analyze each of the significant HAP emission points in the Oil and Natural Gas Production and Natural Gas Transmission and Storage source categories to consider excluding them from the definition of “associated equipment.” Nothing in the CAA prescribes such specific duty on the EPA. Neither did the commenter provide any legal support for this claim. On the contrary, the commenter acknowledges that Congress leaves the EPA discretion in defining the term “associated equipment.” In any event, the commenter has not provided supporting evidence or even specified any HAP emission point that the EPA should have, but failed to, consider for exclusion from the definition of “associated equipment.” For the reasons stated above, the EPA rejects this comment.

#### *3.2.7.1 Exclusion of All Storage Vessels*

**Comment:** One commenter (4266) believes the proposed changes to the definition of an affected facility will likely cause some existing sites that were not previously major sources to become major sources, due to the expansion of emission points that the EPA proposes to include in the major source determination. The commenter asserts that tanks at these facilities would then

become subject to NESHAP HH controls, but that the EPA does not appear to have taken these tanks into account when evaluating the impact of the proposed rule revisions.

**Response:** We disagree with the commenter. Our calculation of the cost and environmental impacts of the MACT compliance options for storage vessels (see Docket ID No. EPA-HQ-OAR-2010-0505-0046) was based on a dataset obtained from the NEI of storage vessels at major source facilities. To determine major source status of the NEI facilities, we used the proposed list of emission sources. Thus, the estimated number of affected sources we used to scale up costs to nationwide levels included the additional number of major sources due to our revised major source determination procedure. As discussed elsewhere in this document and preamble section VII.A, we are not promulgating control requirements for storage vessels without the PFE.

### 3.2.8 Other Comments

**Comment:** One commenter (4270) requests that the EPA stipulate that dehydrators with BACT or LAER are in compliance with subpart HHH and no further action is necessary. The commenter (4270) also notes that companies participating in the EPA's voluntary Natural Gas STAR program that have implemented Best Management Practices correlating to subpart HHH should be exempted from the proposed rule. Since the inception of the EPA's Natural Gas STAR program in 1993, the commenter claims that they have voluntarily reduced emissions by implementing many of the best management practices detailed in the program. By now mandating the best management practices in the voluntary program, and requiring compliance monitoring, recordkeeping and reporting, the commenter claims that the EPA is adding costly monitoring, recordkeeping and reporting burden and undermining participating companies' voluntary actions to reduce emissions.

**Response:** The EPA has no basis in the administrative record for this rulemaking, from the commenter's submission or otherwise, to conclude that BACT or LAER requirements for dehydrators uniformly would comply with requirements in subpart HH or HHH, as applicable. Concerning Natural Gas STAR participants, this is a voluntary program, as noted by the commenter, lacking enforceable requirements, and therefore compliance is not assured to the public or regulatory agencies sufficient to satisfy applicable CAA requirements.

**Comment:** One commenter (4245) recommends that the EPA continue to defer to the States to regulate emissions from small glycol dehydrators.

**Response:** We are required to establish MACT standards for these small glycol dehydrators. The CAA does not allow the EPA to delegate this obligation to the States.

**Comment:** One commenter (4237) reports that the accounts of individuals at the Pittsburgh Public Hearing on this matter indicate that many persons are experiencing negative health

impacts from breathing the air near horizontal drilling sites. The commenter asserts that it is clear that the emissions of section 112(b) hazardous air pollutants from these sites may not be completely understood. The commenter urges the EPA to conduct an investigation into what Section 112(b) pollutants are emitted at these sites and in what concentrations.

**Response:** The emissions we used in our analysis were reported by facilities to their State regulatory agencies and then reported to the NEI. We have no reason to believe the NEI data are incorrect or inadequate for the purposes of this rulemaking, nor does the commenter provide any reason.

**Comment:** One commenter (4184) states that, although the EPA has not proposed to open for comment the section of subpart HH relative to dehydrators at area sources, they believe it would be prudent to apply to those dehydrators the requirements applicable to small dehydrators at major sources under subparts HHH and HH. The commenter states that the residual risk analysis required under section 112(f) performed as part of the Risk and Technology Review shows that the benzene emissions from TEG sources can have significant offsite benzene concentrations and unacceptable risks. According to the commenter, the high inhalation cancer risks are attributed to the 0.9 Mg per year of benzene allowed as an alternative "control" measure. Given the high predicted cancer risk, the commenter states that the EPA has proposed to remove this "alternative" compliance option for major sources. Therefore, the commenter believes it is reasonable to apply the same regulatory approach to area source dehydrators whether these are located at the well pad or at off-site compressor locations.

One commenter (4208) states that the EPA has already proposed to regulate small and large dehydrators for major sources; and that they believe this approach should also be approved for area sources. The commenter asserts that the residual risk analysis required under section 112(f) shows that the benzene emissions from dehydrators can have significant offsite benzene concentrations with the current stack configurations, and area sources have the potential to emit up to 0.9 Mg and are capable of producing similar offsite impacts as major sources.

According to one commenter (4457), currently, the EPA has in place a benzene limit of 0.9 Mg/yr for glycol dehydrator area sources. The commenter states that this limit is the same as the alternative compliance option for major sources. The commenter asserts that the EPA has recognized that removing this compliance option for major sources would significantly reduce public health risk. In view of that recognition, the commenter believes that the EPA cannot justify keeping this compliance option for area sources and asserts that doing so would be arbitrary and capricious.

**Response:** The EPA acknowledges the comment on area sources. However, as one commenter notes, this action relates to the EPA's review of the two oil and gas major source categories. The

EPA did not review area sources and did not reopen any area source standards for notice and comment and is therefore not addressing area sources in this final rule. In any event, as discussed in the preamble to the final rule, in response to comments noting certain errors in the EPA's risk assessment, the EPA has reviewed and revised the risk assessments for both oil and gas major source categories. Based on the revised risk assessment, we have determined that the MACT standards, including those promulgated in this final rule pursuant to sections 112(d)(2)-(3), reflect an acceptable level of risk and provide an ample margin of safety. We are also retaining the 0.9 Mg per year of benzene alternative compliance option, which we had proposed to remove based on our incorrect determination that it was driving the MIR.

**Comment:** One commenter (4192) recommends that §63.760(f)(7) be modified to be consistent with 40 CFR part 60, subpart OOOO (which generally applies to facilities undertaking construction after August 23, 2011), as follows: “Each affected small glycol dehydration unit and each storage vessel that is not a storage vessel with the potential for flash emissions located at a major source, that commenced construction [add: on or] before August 23, 2011 must achieve compliance no later than 3 years after the date of publication of the final rule in the *Federal Register*, except as provided in §63.6(i).”

One commenter (4192) recommends that §63.760(f)(8) and (f)(9) be modified by removing the phrase “on or” to be consistent with subpart OOOO.

**Response:** We disagree with the recommendations made by the commenter. We believe that §§63.760(f)(7) and (f)(8) are consistent with the requirements of §63.6.

**Comment:** One commenter (4263) requests that the EPA correct paragraph §63.771(f) as follows:

(f) *Control device requirements for small glycol dehydration units.* (1) The control device used to meet the BTEX emission limit calculated in §63.765(b)(1)(iii) shall be one of the control devices specified in paragraphs (f)(1)(i) through (iii) of this section.

**Response:** We agree that the suggested change would provide clarity to this paragraph and have made the change in the final rule.

### 3.3 Risk Assessment

#### 3.3.1 General Comments on the Methods Used to Assess Risk

**Comment:** For Subpart HHH, one commenter (4174) states that the EPA improperly used formaldehyde emissions from reciprocating internal combustion engines (RICE) to justify



emission controls for benzene for this source category. The commenter believes that the EPA should withdraw these proposed provisions.

**Response:** The commenter's assertion that we used formaldehyde emissions from RICE to propose emission controls for benzene for subpart HHH is incorrect. The BTEX limits for small dehydrators are MACT requirements, and are not based on risk or emissions from RICE, and the proposed elimination in the large glycol dehydrator MACT standards of the alternative compliance option of 0.9 Mg/yr benzene was based on risk results from benzene emissions from the two oil and gas source categories and not from RICE. In addition, as discussed in the preamble and elsewhere in this document, we are retaining the existing alternative compliance option of 0.9 Mg/yr benzene for large glycol dehydrators.

**Comment:** One commenter (4215) is concerned that the EPA has made the decision to go forward with these expansive rules without properly quantifying the need for regulation. According to the commenter, the EPA states that it did not have time (because of the truncated timeline it agreed to in the consent order) to do air quality monitoring. The commenter states that what data the EPA does have (the residual risk analysis) shows nearly non-existent health-based risks.

One commenter (4266) asserts that available data overwhelmingly show that the current standards protect public health with an ample margin of safety. The commenter states that regulation for the sake of regulation contradicts the Congress's clear intent that an ample margin of safety is an appropriate stopping point for emissions limitations under section 112.

**Response:** The final rule is based on the information available to the Administrator, including data and emissions information provided by commenters. The commenter alleges that the EPA didn't have enough time to do air quality monitoring. However, nowhere in the proposal did the EPA suggest that it had to have new air quality monitoring data to complete the residual risk analysis. For that review, we used NEI data, as we have done for most other source categories. It is not clear as to what the commenter is referring when it posits that we need additional "air quality monitoring." We typically do not perform air quality monitoring as part of an RTR rulemaking. Further, as explained in the preamble to the final rule, we concluded that the MACT standards in subpart HH (coupled with the new MACT standard for small glycol dehydrators) provide an ample margin of safety to protect public health and prevent adverse environmental effects, and thus did not revise those standards pursuant to section 112(f).

**Comment:** Two commenters (4266, 4354) state that the EPA inappropriately proposes to apply new measures in the determination of acceptable risk and ample margin of safety. Commenters state that the "total facility" approach to conducting risk assessment exceeds the EPA's authority. Commenters also state that demographics may not be considered in conducting risk assessments

under section 112(f). The commenters state that while the EPA can consider other health-based factors in making its decision, it cannot replace or undermine the original 1989 Benzene NESHAP framework. The commenters believe that consideration of facility-wide risks is contrary to the express language of the statute, is bad policy, and should not apply to the EPA's residual risk review under section 112(f).

Another commenter (4354) states that because the term “public health” cannot reasonably be interpreted to include consideration of environmental justice in the section 112(f) context, the EPA’s proposal to consider demographic analyses in conducting risk reviews under section 112(f) is not a proper exercise of Agency authority. The commenter contends that section 112(f)(2)(A) expressly instructs the EPA to impose additional emissions controls if needed to provide an ample margin of safety “to protect public health.” The commenter points out that the term “public health” is not defined in section 112 or in the EPA’s Part 63 regulations. The commenter states that the EPA’s approach would inappropriately cause arbitrary policy and political considerations to trump objective scientific analysis. The commenter stated that this is unreasonable and is not a supportable interpretation of section 112(f).

Two commenters (4159, 4273) state that the EPA cannot exceed its statutory authorities in addressing environmental justice concerns under section 112. The commenters assert that the EPA should not consider demographics in making regulatory decisions without evidence showing that the demographic category is more vulnerable to the specific health effects caused by the source category emissions beyond mere proximity to the source. The commenters state the EPA is correct in concluding that no demographic group is exposed to an unacceptable level of risk. The commenters believe that the EPA should consider the potential repercussions to communities of the potential loss of industry when taking into account environmental justice issues.

**Response:** We disagree that examining facility-wide risk in a risk assessment conducted under section 112(f) exceeds the EPA’s authority. We examined facility-wide risks to provide additional context to the source category risks. In May 2010, the SAB advised us “RTR assessments will be most useful to decision makers and communities if results are presented in the broader context of aggregate and cumulative risks, including background concentrations and contributions from other sources in the area.” The development of facility-wide risk estimates provides additional information about the potential cumulative risks in the vicinity of the RTR sources, as one means of informing potential risk-based decisions about the RTR source category or categories in question. While we recognize that, because these risk estimates were derived from facility-wide emissions estimates which have not generally been subjected to the same level of engineering review as the source category emission estimates, they may be less certain than our risk estimates for the source categories in question, but they remain important for providing context as long as their uncertainty is taken into consideration in the process.

Our evaluation of facility-wide risks did not change our decisions under section 112(f)(2) about acceptability and ample margin of safety of the risks associated with the two oil and gas source categories. Therefore, comments on how these factors were used by the EPA in determining acceptable risks and ample margin of safety are not germane to the final rule. We note, however, that section 112(f)(2) of the CAA expressly preserves our use of the two-step process for developing standards to address residual risk and interpret “ample margin of safety” as developed in the Benzene NESHAP. In both the Benzene NESHAP and our Residual Risk Report to Congress, we explain that we do not define “rigid line(s) of acceptability” and that we will consider a series of other health measures and factors in determining if risk is acceptable. Our authority to use the two-step process laid out in the Benzene NESHAP, and to consider a variety of measures of risk to public health, is discussed more thoroughly in the preamble to the proposed rule. Nothing in the CAA or the Benzene NESHAP in any way forecloses us from considering facility-wide risks in making a determination under section 112(f)(2), as such information can constitute relevant health information. While we also provided a demographic analysis of populations surrounding the facilities in the source categories addressed by this RTR, the results of our demographic analysis only serve to provide information about the demographic make-up of the populations exposed to each of these source categories which might benefit from the proposed rules and did not affect any decision in this rulemaking.

**Comment:** Two commenters (4184, 4208) state that the socio-demographic analysis in the RTR fails to fully evaluate potential environmental justice issues because it did not consider fundamental aspects of disproportionate impacts to these neighborhoods. The commenters are unsure why a different approach was used in the demographic analyses for the Oil and Natural Gas Production and Natural Gas Transmission source categories than in the recent RTR analysis for Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks. The analyses for the chrome categories considered individuals projected to experience a risk greater than 1-in-1-million and individuals living within 5 km of the facility, regardless of projected risk. The commenter is concerned that the 50 km radius used in the RTR for the oil and gas source categories has the potential to include a greater proportion of individuals not in the target demographic groups, in instances where the operation is located in a minority and low-income community. The commenters recommend an additional analysis at the 5 km distance be conducted to assess facility impacts to nearby environmental justice communities since the sources associated with this industry have relatively low stacks that could result in nearby impacts. One of the commenters (4208) added that the EPA needs to develop criteria and specific guidance on how to interpret and apply the outcome of these types of analyses in the rulemaking process.

**Response:** The commenter is correct that we performed the demographic analyses for the oil and gas source categories differently than we did for the October 2010 proposed RTR for the chrome

source categories. We performed the demographic analyses for the chrome source categories using two approaches as examples of how such analyses might be developed, and invited public comment on the approaches used and the interpretations made from the results. In the first approach, we focused the analysis on the total populations residing within 5 km of each facility, regardless of their estimated risks, and examined the distributions across various demographic groups within those 5 km circles. That analysis was a “proximity” analysis in that it considered only the distance from the emission sources to surrounding populations, and not the estimated risks to those populations

In the second approach, we focused the analysis on the populations within 5 km of any facility estimated to have exposures to HAP which result in cancer risks of 1-in-1 million or greater or non-cancer hazard indices of 1 or greater. We examined the distributions of those risks across various demographic groups. In each approach, we compared the percentages of particular demographic groups to the total number of people in those demographic groups nationwide. We stated in the proposed rule for the chrome source categories that in future rules we planned to extend the analyses to cover the entire modeled domain for a facility (50 km radius) to capture all individuals with risks above 1-in-1 million or greater or non-cancer hazard indices of 1 or greater. We also stated that generally we have found that using a 5 km radius in the analysis will capture more than 90 percent of the individuals with cancer risks above 1-in-1 million.

In the February 2012 supplemental proposal for the RTR for the chrome source categories, our demographic analyses included populations within 50 km of each source (including those very near the sources) with risks of 1-in-1 million or greater or non-cancer hazard indices of 1 or greater. (77 FR 6628, Feb. 8, 2012). We did not include analyses using a 5 km radius in that supplemental proposal nor in the RTR proposal for the oil and gas source categories. We believe that, where a risk assessment has been performed, it is more informative to consider the demographics of all populations (including those beyond 5 km) with elevated risks than to limit the demographics analysis to populations located within 5 km of a facility. Where risk assessment has been performed, these populations are identified, and the source parameters (like the low release height mentioned by the commenter) are accounted for. As discussed above, we have found that most exposure locations with the highest estimated risks are within 5 km of a facility, so extending the radius to 50 km has little impact on an analysis based on risks, but makes more sense because 50 km corresponds to the risk modeling radius and includes all populations with elevated risk estimates. As indicated above, our evaluation of demographics did not affect our decisions about acceptability and ample margin of safety of the risks associated with these source categories.

**Comment:** Several commenters (4159, 4220, 4273) support the EPA's continued reliance on the decision framework included in the 1989 Benzene NESHAP in determining whether further regulation is appropriate under section 112(f), but question the EPA's reliance on conservative

risk assumptions to make these determinations. The commenters state that the EPA has used multiple conservative approaches that arbitrarily inflate final estimates of risk by a factor of 100 to 1,000 over the most likely/central estimates of risk. Specifically, the commenters object to the following approaches: 1) assuming that all members of the population are continuously exposed for their lifetimes; 2) failing to consider time-activity patterns; 3) using only the high end of the benzene URE for decision-making; and 4) using only ultra-conservative URE from CalEPA in the absence of IRIS values.

**Response:** As discussed in the preamble to the final rule and pursuant to section 112(f)(2)(A) and (B), we agree that the decision framework set forth by the Benzene NESHAP is appropriate for residual risk determinations, but we disagree with the commenters' assertions that our risk estimates are improper or arbitrarily inflated. Regarding exposure times and the consideration of time-activity patterns, we believe our risk assumptions are appropriately conservative; moreover, we do not believe that such considerations would significantly lower the general estimates of individual risks. Results from EPA's National-Scale Air Toxics Assessment (NATA)<sup>27</sup> (which model daily activity using EPA's HAPEM model) indicate that while considering microenvironment concentrations and daily activities would, on average, reduce risk estimates about 25 percent for particulate HAPs, such considerations would reduce risk estimates for gaseous HAPs like benzene (which are the HAPs at issue) by much less. Further, the Benzene NESHAP defines the maximum individual risk (MIR) as "the estimated risk that a person living near a plant would have if he or she were exposed to the maximum pollutant concentrations for 70 years" and explains that this measure of risk "is an estimate of the upper bound of risk based on conservative assumptions, such as continuous exposure for 24 hours per day for 70 years." 54 FR at 38044-38045.

The high end of the reported benzene cancer URE range was used in our assessments to provide a conservative estimate of potential cancer risks. Use of the high end of the range provides risk estimates that are approximately 3.5 times higher than use of the equally-plausible low end value. As stated in the preamble to the proposed rule (76 FR 52771), however, we also evaluated the impact of using the low end of the URE range on our risk results, and we considered both results in the determination of acceptability and ample margin of safety.

Commenters do not state which pollutants they consider as having overly conservative URE values. The CalEPA Office of Environmental Health Hazard Assessment has developed dose-response assessments for many substances, based both on carcinogenicity and health effects other than cancer. The process for developing these assessments is similar to that used by the EPA to develop IRIS values and incorporates significant external scientific peer review. The non-cancer information includes available inhalation health risk guidance values expressed as

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<sup>27</sup> [www.epa.gov/nata](http://www.epa.gov/nata).

chronic inhalation and oral reference exposure levels (RELs). CalEPA defines the REL as a concentration level at (or below) which no health effects are anticipated, a concept that is substantially similar to the EPA's non-cancer dose-response assessment perspective. CalEPA's quantitative dose-response information on carcinogenicity by inhalation exposure is expressed in terms of the URE, defined similarly to the EPA's URE. We have a prioritization process designed to incorporate into our assessments the best available science with respect to dose-response information. This information is obtained from various sources and prioritized according to (1) conceptual consistency with the EPA risk assessment guidelines and (2) level of peer review received. Where we are lacking dose-response information with higher priority (e.g., IRIS), we use other information sources, such as CalEPA.

**Comment:** One commenter (4184) believes that the national median household income figure should be updated from the 1999 figure used for the past three NESHAPs. The number of people in poverty in 2010 is much larger than it was in 1999. Because historical Census values have been used, the commenter is concerned that the impact to minority and low-income communities has not been adequately addressed.

Another commenter (4208) states that poverty statistics used to identify low-income communities should be updated to include 2010 Census data, rather than relying on older information. The commenter notes that the number of people in poverty in 2010 is the largest number in the 52 years for which poverty estimates have been published.

**Response:** The EPA agrees that the estimate of the percentage of people in poverty has increased between the 2000 Census (13 percent) and the 2010 Census (14 percent), but disagrees that this increase warrants re-doing the demographic analyses for these source categories. However, we intend to use the 2010 Census data in future analyses.

**Comment:** One commenter (4184) is concerned about the use of emergency planning response levels to assess acute risk to the general public, especially when these levels exceed current occupational standards or guidelines that were developed to protect healthy workers from acute chemical exposures. The commenter believes that calculating the hazard quotient from the acute occupational exposure values when they are below the emergency response values would represent a more valid approach to evaluating the potential for acute health effects from a source's emissions. The commenter believes this procedure will better characterize and validate the determination of worse case emissions as appropriately representative of the conditions the EPA is seeking to address in the acute exposure scenario.

Another commenter (4208) has concerns with the EPA's use of AEGL or ERPG values to address acute exposures in the residual risk assessments. The commenter states that, unlike the RfCs for chronic exposures, the AEGLs and ERPGs do not include adequate safety and

uncertainty factors and cannot be relied upon to protect the public from the adverse effects of exposure to toxic air pollutants. The commenter notes that the use of AEGLs or ERPGs in residual risk assessments is not appropriate and does not ensure that public health is adequately protected from the acute impacts of HAP exposure. The commenter supports the EPA's increased reliance on the California Reference Exposure Levels (RELs) to address acute exposures in the residual risk assessments and urges the EPA to use the RELs for these assessments. The commenter recommends that the EPA not rely on the AEGL, especially in cases where it exceeds the acute occupational guidelines. The commenter adds that EPA's analysis shows a high level of acute health risk for both source categories and is unclear why the EPA is not proposing to reduce those health risks.

One commenter (4457) states that occupational exposure levels help demonstrate why the AEGL is not protective enough, but that the EPA should not use the occupational levels in place of the reference exposure level (REL) values created for the purpose of community resident exposure near a facility. The commenter also asserts that, after finding acute exposure levels 5 and 9 times the REL, the EPA has failed to justify not requiring the reduction of acute health risks.

Another commenter (4170) states that the use of occupational values is appropriate for this risk assessment and recommends that setting acute exposure limits on benzene, and any other air pollutant, be based upon the National Institute for Occupational Safety and Health (NIOSH) short-term exposure limit (STEL). The commenter recommends modifying the 15-minute time weighted average (TWA) STEL by dividing by 4 to convert the 15 minute TWA to a 1-hour TWA, and dividing by 10 to account for sensitivity variation in the general human population, resulting in a benzene acute exposure benchmark of  $0.4 \text{ mg/m}^3$ . The commenter notes that the EPA's maximum 1-hour benzene concentration exceeds this value, but states that this likely would not cause non-cancer health concerns because the acute modeling scenario is worst-case due to the confluence of peak emission rates and worst case conditions.

**Response:** As discussed in the preamble to the proposed rule (76 FR 52772), the EPA considers various acute health effect reference values, including the California acute REL, and AEGL and ERPG values, in assessing the potential for risks from acute exposures. Occupational values, including STELs, typically are not used for the purpose of characterizing public health risks in RTR assessments because they are developed for a worker population of presumed healthy working-age adults and are not typically considered protective for the general public. Because they are developed for healthy working-age adults, occupational values usually exceed AEGL-1 and ERPG-1 levels. However, for a few chemicals (including benzene), the one-hour AEGL-1 and ERPG-1 values are higher than the STELs, and for this reason the comparison of the estimated maximum one-hour exposure to the AEGL and ERPG values is not appropriate as a secondary guideline for assessing potential acute risks from benzene exposure in community settings. The NIOSH benzene STEL for exposures of 15 minutes or less ( $8 \text{ mg/m}^3$ ) is below the

AEGL-1 value of 170 mg/m<sup>3</sup> and the ERPG-1 value of 160 mg/m<sup>3</sup>. Although we agree that in the case of benzene the level of the STEL indicates that the AEGL-1 and ERPG-1 values are not appropriate as secondary guidelines, we do not agree that the STEL should be used in place of an existing REL as a primary value to characterize acute exposures for RTR assessments because the population they are intended for is not representative of the general public, including sensitive subpopulations. The REL is one of the preferred acute values for use in RTR, as endorsed by SAB.

We disagree with the comment that recommends modifying the NIOSH STEL value. First, the California REL value is 1.3 mg/m<sup>3</sup> for a 6-hour exposure, but is applicable to any duration less than that.<sup>28</sup>

Based on the conservative nature of the acute exposure scenario used in the screening assessment for these source categories, the EPA has judged that, considering all associated uncertainties, the potential for effects from acute benzene exposures is low. Screening estimates of acute exposures were evaluated for each HAP at the point of highest off-site exposure for each facility (i.e., not just the census block centroids) assuming that a person is present at this location at a time when both the peak emission rate and worst-case dispersion conditions occur. Under these worst-case conditions, we estimate the benzene acute HQ values (based on the REL) could be as high as 9. Although the REL (which indicates the level below which adverse effects are not anticipated) is exceeded in this case, we believe the potential for acute effects is low for several reasons. First, the acute modeling scenario is worst-case because of the confluence of peak emission rates and worst-case dispersion conditions. Also, the generally sparse populations near the facilities with the highest estimated 1-hour exposures make it less likely that a person would be near the plant to be exposed.

**Comment:** One commenter (4208) recommends that the EPA use the truly maximum individual risk, irrespective of its location in the census block, in its section 112(f)(2) risk assessments.

**Response:** As we have explained in previous RTRs, such as the SOCFI HON RTR (71 FR 76603, December 21, 2006), the EPA believes that, in a national-scale assessment of lifetime inhalation exposures and health risks from facilities in a source category, it is appropriate to identify exposure locations where it may be reasonably expected that an individual will spend a majority of his or her lifetime. Further, in determining chronic risks, the EPA believes that it is

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<sup>28</sup> OEHHA. (1999). *The Air Toxics Hot Spots Program Risk Assessment Guidelines. Technical Support Document For the Derivation of Noncancer Reference Exposure Levels*. Air Toxicology and Epidemiology Section, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency. June 2008.  
[http://oehha.ca.gov/air/hot\\_spots/2008/NoncancerTSD\\_final.pdf](http://oehha.ca.gov/air/hot_spots/2008/NoncancerTSD_final.pdf).



appropriate to use census block information on where people actually reside, rather than points on a fence-line, to locate the estimation of exposures and risks to individuals living near such facilities.

Census blocks are the finest resolution available as part of the nationwide population data (as developed by the US Census Bureau); each is typically comprised of approximately 40 people or about 10 households. In EPA risk assessments, the geographic centroid of each census block containing at least one person is used to represent the location where all the people in that census block live. The census block centroid with the highest estimated exposure then becomes the location of maximum exposure, and the entire population of that census block experiences the maximum individual risk. In some cases, because actual residence locations may be closer to or farther from facility emission points, this may result in an overestimate or underestimate of the actual annual concentrations (although there is no systematic bias for average levels). Given the relatively small dimensions of census blocks in densely-populated areas, there is little uncertainty introduced by using the census block centroids in lieu of actual residence locations. There is the potential for more uncertainty when census blocks are larger, although there is still no bias on average. The EPA concludes that the most appropriate locations at which to estimate chronic exposures and risks are the census block centroids because: 1) census blocks are the finest resolution available in the national census data, 2) facility fencelines do not typically represent locations where chronic exposures are likely, and 3) there is no bias introduced into the estimate of the MIR by using census block centroid locations.

**Comment:** Two commenters (4208, 4457) state that the EPA needs to fully consider and address multipathway risk and also add this risk to the inhalation risk, when assessing the level of public health risk to which communities are exposed. One commenter (4457) believes the EPA failed to fulfill its duty to consider or address whether a more stringent limit than the existing MACT is required to protect the environment. The commenter states that the EPA must perform an ecological risk assessment for the oil and gas sector, and may not rely solely on the human health assessment without a reasoned explanation for doing so that is not supported by scientific evidence in the record. The commenter asserts that the EPA has neither carried out the required ecological risk assessment, including evaluating whether there are effects that would warrant consultation under the ESA, nor presented a reasoned explanation supported by science in the record.

**Response:** Contrary to the commenter's assertions, we considered and addressed the potential for multipathway and environmental effects. The potential for significant human health risks or environmental effects due to exposures via routes other than inhalation (i.e., multipathway chronic exposures) was screened by first determining whether any sources emitted any hazardous air pollutants known to be persistent and bioaccumulative in the environment (PB-HAP). The only PB-HAP identified in the emissions inventories for the oil and gas source categories was

polycyclic organic matter (POM). These emissions were compared to levels developed for each PB-HAP using a hypothetical worst-case screening exposure scenario (See 76 FR 52773), where the levels represent a maximum lifetime cancer risk of 1 in a million or a hazard quotient of 1 for noncancer impacts. The POM emissions from the Oil and Natural Gas Production source category were below these levels, and the POM emissions from one facility in the Natural Gas Transmission and Storage source category exceeded (by a factor of 6) the level equivalent to 1 in a million lifetime cancer risk.

For POM, we identified dairy, vegetables, and fruits as the three most dominant exposure pathways driving human exposures in the screening exposure scenario. The single facility with emissions exceeding the screening level for POM is located in a highly industrialized area. Therefore, the exposure pathways driving human exposure are unlikely for this facility, and the ingestion cancer risk in this case would likely be much lower than 6-in-1 million. The inhalation cancer risk for this facility is 0.6-in-1 million, so even if the risks from all pathways were combined, they would be low. For the reasons discussed above, multi-pathway exposures and environmental risks (due to exposures via routes other than inhalation) were deemed low for these source categories, and we determined that no further quantitative multipathway analysis was necessary.

We evaluated the potential for significant ecological effects due to exposures via inhalation from exceedances of chronic human health inhalation thresholds in the ambient air near these facilities. Human health dose-response threshold values are generally derived from studies conducted on laboratory animals (such as rodents) and developed with the inclusions of uncertainty factors that could be as high as 3000. As a result, these human threshold values are often significantly lower than the level expected to cause an adverse effect in an exposed rodent. It should be noted that there is a scarcity of data on the direct atmospheric impact of these HAPs on other receptors, such as plants, birds, and wildlife and that the EPA will continue to monitor the scientific literature for new data in this area. Thus, if the maximum inhalation hazard in an ecosystem is below the level of concern for humans, which is the case for these source categories, see preamble discussion addressing risk review, we have generally concluded that mammalian receptors should be at no risk of adverse effects due to inhalation exposures from non PB-HAP, and have assurance that other ecological receptors are also not at any significant risk from direct atmospheric impact. Given the record, we reach such conclusion here. No comments were received that provided any additional information indicating potential environmental effects of the pollutants in the oil and gas source categories.

**Comment:** One commenter (4248) states that the proposed rule is subject to the EPA and OMB Information Quality Act (IQA) guidelines yet has failed to rely on the best available science in developing the proposed rule. The commenter states that, contrary to IQA guidelines, the EPA inappropriately applies the outdated IRIS dose-response values in determining formaldehyde

inhalation exposure risk in support of the proposed rule. The commenter also states that the NAS report should be used in determining what constitutes the best available science and that the deference given to the 1991 IRIS assessment is directly at odds with the EPA's mandate to "consider all credible and relevant information" in a rulemaking proceeding. The commenter adds that the EPA's proposed rule should be based on the best available science at the time of the rulemaking and recommends incorporating the CIIT dose-response value in accordance with the recommendation of the NAS panel.

**Response:** In 2004, the EPA determined that the Chemical Industry Institute of Toxicology (CIIT) cancer dose-response value for formaldehyde ( $5.5 \times 10^{-9}$  per  $\mu\text{g}/\text{m}^3$ ) was based on better science than the IRIS cancer dose-response value ( $1.3 \times 10^{-5}$  per  $\mu\text{g}/\text{m}^3$ ), and we switched from using the IRIS value to the CIIT value in risk assessments supporting regulatory actions. Subsequent research published by the EPA suggested that the CIIT model was not appropriate and, in 2010, the EPA returned to using the 1991 IRIS value. The EPA has been working on revising the formaldehyde IRIS assessment and the National Academy of Sciences (NAS) completed its review of the EPA's draft assessment in April of 2011.<sup>29</sup> The EPA will follow the NAS Report recommendations and will present results obtained by implementing the biologically-based dose-response (BBDR) model for formaldehyde. The EPA will compare these estimates with those currently presented in the External Review draft of the assessment and will discuss their strengths and weaknesses. As recommended by the NAS committee, appropriate sensitivity and uncertainty analyses will be an integral component of implementing the BBDR model. In the interim, we will present findings using the 1991 IRIS value as a primary estimate, and the EPA may also consider other information as the science evolves. Although formaldehyde was a driver of the risks attributable to facility-wide emissions, it did not change our decisions about acceptability and ample margin of safety of the risks associated with these source categories.

**Comment:** One commenter (4208) recommends that the EPA consider potential or allowable emissions, rather than actual emissions, in evaluating residual risk. The commenter states that because facility emissions could increase over time for a variety of reasons, and with them the associated impacts, the use of potential or allowable emissions is more appropriate. The commenter believes an analysis based on actual emissions from a single point in time could underestimate the residual risk from a source category. Further, the commenter states that major source HAP thresholds are based on the potential to emit, as opposed to actual emissions, and air agencies issue permits based on potential emissions. The commenter states that limiting the scope of a risk evaluation to actual emissions would be inconsistent with the applicability section of Part 63 rules. Further, the commenter recommends that the EPA assess acute health risks based on allowable emissions.

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<sup>29</sup> [http://www.nap.edu/catalog.php?record\\_id=13142](http://www.nap.edu/catalog.php?record_id=13142)

Two commenters (4266, 4354) believe that the EPA fails to provide a rational basis for using allowable emissions in conducting risk assessments under section 112(f). The commenters state that the EPA proposes to find that the “risks are unacceptable” under the current subpart HH “due to MACT-allowable emissions” and, therefore, proposes to eliminate the 0.9 Mg/yr compliance alternative for dehydrators. The commenters state that the EPA cannot lawfully use MACT allowable emissions in the proposed risk assessments and residual risk determinations because the Agency has failed to provide any reasoned explanation for why risk assessments based on actual emissions estimates are inadequate. The commenters contend that section 112(f)(1)(B) required the EPA also to report on “the actual health effects with respect to persons living in the vicinity of affected sources.” The commenters assert that it is unreasonable for the EPA to construe section 112(f) as authorizing the Agency to conduct risk assessments based on hypothetical “MACT allowable” emissions. According to the commenters, the Agency’s risk assessment methodology already is rife with conservative assumptions. The commenters similarly assert that the dispersion models used to predict off-site ambient HAP concentrations attributable to emissions from affected sources incorporate numerous conservative assumptions to simplify the analysis of highly complex factors, such as meteorology and atmospheric chemistry. In addition, the commenters state that risk assessments assume exposure to the most exposed individual on a continuous basis for an entire lifetime. The commenters believe that the failure to provide a reasoned explanation as to why this approach is justified and the failure to provide any record evidence supporting the use of MACT allowable emissions render this proposal insupportable under the law.

**Response:** Consistent with previous risk assessments, the EPA considers both allowable and actual emissions in assessing chronic exposure and risk under section 112(f)(2). (see, e.g., National Emission Standards for Coke Oven Batteries (70 FR 19998-19999, April 15, 2005); proposed and final National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry (71 FR 34428, June 14, 2006, and 71 FR 76603, December 21, 2006). This approach is both reasonable and consistent with the flexibility inherent in the Benzene NESHAP framework for assessing ample margin of safety. As a general matter, modeling allowable emissions levels is inherently reasonable since this reflects the maximum level sources could emit and still comply with national emission standards. But it is also reasonable to consider actual emissions, where such data are available, in both steps of the risk analysis. *See* National Emission Standards for Coke Oven Batteries, 70 FR 19992, 19998 (April 15, 2005).

For emission points without MACT standards, we used actual emissions levels. We disagree with the commenter who suggested the use of allowable emissions in the assessment of acute effects. Our acute health risk screening in this rulemaking already uses conservative assumptions for emission rates, meteorology, and exposure location, including 1) peak 1-hour emissions that

are 10 times the average 1-hour emission rates; 2) worst-case meteorology (from one year of local meteorology); and 3) that a person is located downwind at the point of maximum impact during this same 1-hour period.

We disagree with the commenter who does not support the consideration of allowable emissions because the “risk assessment methodology already is rife with conservative assumptions.” As explained above, we believe that considering allowable emissions is reasonable and consistent with the flexibility inherent in the Benzene NESHAP framework for assessing chronic risk. The commenter also does not provide specific details supporting their conclusion about how the chronic risk assessment is conservative. Elsewhere in this document we provide responses to comments on conservatism in specific aspects of our assessment. In addition, as discussed in the preamble, we updated our risk assessment, conclude that the MACT standards (including those promulgated in this rulemaking) for the two source categories provide an ample margin of safety, and are retaining the existing alternative compliance option of 0.9 Mg/yr benzene for large glycol dehydrators.

### **3.3.2 Uncertainties in the Risk Assessment**

**Comment:** One commenter (4189) states that in setting residual risk standards under section 112(f)(2), the EPA must assess and set limits to protect the most vulnerable populations living near ONG facilities from the health threats caused by toxic air pollution. The EPA should follow the lead of the California Office of Environmental Health Hazard Assessment by including early life vulnerability in all cancer assessments and accounting for increased prenatal susceptibility to carcinogens, and by accounting for early life vulnerability to other health risks. To address the additional health risk to children and overburdened communities, the commenter suggests that the EPA should use an additional 10-fold uncertainty factor. The commenter states that the EPA barely mentions health in its “ample margin” analysis and focuses almost exclusively on cost considerations. The commenter believes that the EPA must correct this error by assessing the level of emissions needed to provide an “ample” margin of safety for public health, explaining that analysis, and finalizing a rule that provides that level of protection.

Another commenter (4208) states that the EPA needs to better assess and address the public health impacts of the oil and natural gas sector to ensure that local communities receive the required protection from unacceptable health risk. The commenter encourages the EPA to pay special attention to the needs of children and those communities that have had a history of disproportionate risk and are exposed to multiple sources of air pollution.

**Response:** We acknowledge that population subgroups, including children, may have the potential for risk greater than the general population due to greater relative exposure and/or greater susceptibility to the toxicant. As explained in previous actions, including the final

SOCMI HON RTR (71 FR 76603, Dec. 21, 2006), the assessments we undertake to estimate risk account for this potential vulnerability. With respect to exposure, the risk assessments we perform implicitly account for this greater potential for exposure by assuming lifetime exposure, in which populations are conservatively presumed to be exposed to airborne concentrations at their residence continuously, 24 hours per day for a full lifetime, including childhood. With regard to children's potentially greater susceptibility to non-cancer toxicants, the assessments rely on Agency (or comparable) hazard identification and dose-response values which have been developed to be protective for all subgroups of the general population, including children. For example, a review of the chronic reference value process<sup>30</sup> concluded that the Agency's reference concentration (RfC) derivation processes adequately considered potential susceptibility of different subgroups with specific consideration of children, such that the resultant RfC values pertain to the full human population "including sensitive subgroups," a phrase which is inclusive of childhood.

On the issue of cancer dose-response values, the EPA's revised cancer guidelines<sup>31</sup> and supplemental guidance<sup>32</sup> recommend applying default adjustment factors to account for exposures occurring during early-life exposure to those chemicals thought to cause cancer via a mutagenic mode of action. For these chemicals, the supplemental guidance indicates that, in lieu of chemical-specific data on which age or life-stage specific risk estimates or potencies can be determined, default "age dependent adjustment factors" can be applied when assessing cancer risk for early-life exposures to chemicals which cause cancer through a mutagenic mode. There are three HAPs (acrylamide, benz[a]anthracene, and benzo[a]pyrene) emitted from these source categories that the EPA has determined have a mutagenic mode of action for carcinogenesis. The UREs for these HAPs include adjustments by age dependent adjustment factors and were used in the risk assessment.

**Comment:** One commenter (4267) states that the use of a draft document on risk assessment (*Draft Residual Risk Assessment for the Oil and Gas Production and Natural Gas Transmission and Storage Source Categories*, see proposal preamble at 76 FR 52770) does not meet any objective criteria for decision.

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<sup>30</sup> *A Review of the Reference Dose and Reference Concentration Process*. U.S. Environmental Protection Agency. Risk Assessment Forum. EPA/630/P-02/002F. December 2002.

<sup>31</sup> US EPA, 2005. *Guidelines for Carcinogen Risk Assessment (2005)*. U.S. Environmental Protection Agency, Washington, DC, EPA/630/P-03/001F, 2005.  
<http://cfpub.epa.gov/ncea/raf/recordisplay.cfm?deid=116283>

<sup>32</sup> US EPA, 2005. *Supplemental guidance for assessing early-life exposure to carcinogens*. EPA/630/R-03003F. [http://www.epa.gov/ttn/atw/childrens\\_supplement\\_final.pdf](http://www.epa.gov/ttn/atw/childrens_supplement_final.pdf).

**Response:** The commenter did not identify any specific deficiencies in the draft risk assessment, and we have updated and revised the final risk assessment as discussed in the preamble to the final rule.

### 3.3.3 Actions Taken Based on Risk Results

**Comment:** One commenter (4457) states that the EPA failed to justify relying on the presumption of 100-in-1 million as the benchmark for cancer risk acceptability, rather than ensuring a greater reduction of cancer risk. The commenter believes that the EPA must update and reduce its presumption that 100-in-1 million lifetime cancer risk is acceptable based on new circumstances and evolving values since the 1980s. The commenter states that the EPA has both full authority and a responsibility to update its approach and reduce the presumptive level of what cancer risk is acceptable under section 112(f)(2). The commenter states that in setting this presumption of acceptable risk, the EPA recognized that it could not easily compare the risk from hazardous air pollution with the risk from other activities studied because of numerous differences. Specifically, the EPA stated that the consideration of the acceptability of a specific level of risk depends on factors including, but not limited to: the certainty and severity of the risk, the reversibility of the health effect, the knowledge or familiarity of the risk, and whether the risk is voluntarily accepted or involuntarily imposed. The commenter states that significant new information has been discovered and major circumstances have changed that each should affect how the EPA applies these factors to a source category in a rulemaking today. The commenter states that during the more than two decades since the EPA established that presumption, dramatic scientific and societal advances have occurred that the EPA must take into account in its risk analysis, including:

- 1993 National Research Council published *Pesticides in the Diets of Infants and Children*, finding that children are not little adults, and have greater exposures and susceptibility.
- 1994 President Clinton signed Executive Order 12898 on Environmental Justice.
- 1996 Food Quality Protection Act passed unanimously with a 10-Fold Children's Safety Factor.  
Safe Drinking Water Act amendments required attention to susceptibility of children.  
EPA announced a new National Agenda to Protect Children's Health.
- 1997 President Clinton signed the Children's Environmental Health Executive Order 13045.
- 2000 EPA first published *America's Children and the Environment*.
- 2008 National Academy of Science published *Science and Decisions: Advancing Risk Assessment*.
- 2009 Administrator Jackson declared environmental justice and children's health

priorities.

2011 Administrator Jackson announced Plan EJ 2014 including rulemaking and science goals.

**Response:** In 1990, Congress codified in section 112(f) of the CAA the approach we use for our residual risk analyses (i.e., the Benzene NESHAP, 54 FR 38044). Under that approach, the 100 in a million cancer risk is not a bright line indicating that risk is “acceptable,” but rather we consider this health metric in conjunction with a variety of health factors to determine whether the risk is acceptable. Where we conclude that the risk is not acceptable, we cannot consider costs in requiring controls to bring risks down to an acceptable level. However, the analysis of whether risk is acceptable is not the endpoint. Once we determine that controls are sufficient to ensure risk is acceptable, we again review the health metrics in conjunction with considering the costs of controls to determine whether additional controls should be required to provide an ample margin of safety. Other than the chronology described above, the commenter does not provide support for its contention that “the risk that was acceptable in the world of the 1980s is no longer acceptable in today’s world.” Nor does the commenter explain how science has evolved in a way that would undermine the codified framework for determining acceptability.

### *3.3.3.1 Elimination of the Benzene Alternative Compliance Option for Glycol Dehydrators*

**Comment:** One commenter (4174) is concerned that the part 63 subparts HH and HHH amendments are based on questionable residual risk analyses. For subpart HH, the commenter states that the EPA creates a “theoretical” facility with “maximum allowable” emissions under the current rules to justify the changes. The commenter believes that the EPA overstepped its authority by creating a “fictional” oil and gas facility to impose controls on the entire industry. The commenter believes these provisions should be removed.

Another commenter (4208) agrees with the EPA’s determination that the current lifetime cancer risk the Agency found for the ONG production category is unacceptable. The commenter also supports the EPA’s proposal to reduce cancer risk for both source categories by removing the alternative compliance option for glycol dehydrators. However, the commenter recommends the EPA analyze whether it is necessary to further reduce cancer risk from both this category and the Natural Gas Transmission and Storage category to reach an acceptable level of risk and to provide the required “ample margin of safety to protect public health.” The commenter believes that because of the gaps in the EPA’s analysis and the use of emission estimates, the EPA should consider limiting HAP emissions more than proposed.

**Response:** As discussed in sections VII.A and B of the final rule preamble, we updated our risk assessment, and conclude that the MACT standards (including those promulgated in this rulemaking) for the two source categories provide an ample margin of safety, and are retaining



the existing alternative compliance option of 0.9 Mg/yr benzene for large glycol dehydrators. Accordingly, we are not revising subparts HH or HHH based on any risk analysis.

**Comment:** One commenter (4320) states that the EPA is not justified in its proposed elimination of the 0.9 Mg/yr benzene emission threshold in the oil and gas production MACT (subpart HH) affecting dehydrators. The commenter believes that the EPA has underestimated costs and overestimated the health risks associated with the proposed action.

**Response:** As discussed in section VII.A of the preamble to the final rule, we are retaining the existing 0.9 Mg/yr benzene compliance option for subpart HH. New and existing large glycol dehydration units continue to have the option of complying with the emission reduction limitation or reducing actual annual benzene emissions to less than 0.9 Mg/yr.

**Comment:** Three commenters (4158, 4229, 4241) request that the EPA clarify that glycol dehydration units that accepted a 1 ton (0.9 Mg) per year benzene federally enforceable limit under the current subpart HH and HHH rules be continued to be designated as "small glycol dehydration units." The commenters explain that, under the current subpart HHH rules, a glycol dehydration unit that accepted a federally enforceable 1 ton per year benzene limit is exempt from the standards and control requirements of subpart HHH. The commenters state that, under the current proposal, the EPA proposes to eliminate the 1 ton per year (tpy) benzene limit compliance option. According to the commenters, classification between a large and small glycol dehydration unit is basically dependent on a throughput rate and actual emissions being equal or greater than 1 ton per year of benzene. The commenters add that large dehydration systems would have 90 days from promulgation of the final rules to comply with the 95% control requirement or concentration limits. One commenter (4266) argues that, independent of any decisions related to small dehydrators, the EPA must restore the 0.9 Mg/yr benzene emissions for large dehydrators.

One commenter (4241) requests clarification that a dehydrator that previously had taken federally enforceable restriction to meet the 1 tpy "compliance option" qualifies as a "small glycol dehydration unit" subject to the new MACT requirements for small dehydrators, rather than a large dehydration unit, and that such a dehydrator is subject to the relevant three year compliance deadline. One commenter (4229) states that the proposed rule would require existing small dehydrators to comply with an emission standard based on a MACT floor determination that considered uncontrolled units, and would not mandate emission controls for these units. One commenter (4158) opines that, while the intent of the EPA may have been to only classify those glycol dehydrators that emit over 1 ton per year of benzene as large, it is not clear whether those emission sources that accepted a federally enforceable condition to limit its emissions less than 1 tpy under current subpart HHH rules would be classified as a large glycol dehydration unit under the proposed rule.

Two commenters (4249, 4265) state that existing glycol dehydrators that are already controlled to less than 1 ton per year benzene need to be clearly defined as a “small” dehydrator in subpart HHH. The commenter provides that it is their understanding that dehydrators that are currently exempt from subpart HHH (63.1274(d)(2)), would be classified as “small dehydrators” under the proposed revisions to the rule and would be required to comply with the standards and control equipment requirements for “small dehydrators.” The commenter requests that the final rule clearly indicate that a unit controlled to less than 1 tpy of benzene that is exempt under the original June 1999 rule is classified as a “small dehydrator” under the final rule.

Two commenters (4192, 4246) requests that, for glycol dehydrators at major sources, the EPA remove the 3 million standard cubic feet per day throughput proposed exemption and retain the existing less than 1 tpy benzene exemption, and express MACT floor standards in English units.

**Response:** As we discuss in the final rule preamble, we are retaining the 1 tpy (0.9 Mg/yr) compliance option for large glycol dehydration units under subparts HH and HHH. However, the compliance option is unrelated to the subcategorization of these source categories to include large and small glycol dehydration units. A small glycol dehydration unit is defined as a unit with an actual annual average natural gas flowrate less than 3 MMscf/d (85,000 scmd)(subpart HH) or less than 10 MMscf/d (283,000 scmd) (subpart HHH) or actual annual average benzene emissions less than 1 tpy. Therefore, glycol dehydration units that have accepted federally enforceable conditions to limit emissions to less than 1 tpy and were exempted from control under the 1999 MACT standards, are classified as small glycol dehydration units, and are required to meet the MACT standards issued in this rulemaking for small glycol dehydration units under §§63.765(b)(1)(iii) and 63.1275(b)(1)(iii).

### *3.3.3.2 Compliance Date for Facilities Currently Relying on the Benzene Alternative Compliance Option*

**Comment:** Three commenters (4178, 4185, 4229) request that the EPA extend the proposed 90-day compliance deadline for large glycol dehydration units that had been using the 1 tpy compliance option. One commenter (4178) states that if the proposal goes final, “large” glycol dehydration units that became compliant with subpart HH by reducing benzene emissions to less than 1 tpy before August 23, 2011 must achieve compliance no later than 90 days after publication of the final rule. The commenter believes that this requirement appears to contain an internal contradiction in the definition of “large” dehydration unit in that no dehydration unit that has less than 1 tpy of benzene emissions is a “large” dehydration unit. Further, according to the commenter, in order to comply with subpart HH, many dehydration units will be required to install monitoring and possibly additional emission control equipment. The commenter believes that it may be difficult for some facilities to obtain and install such equipment within the 90-day

time period. The commenter recommends that, in lieu of a 90-day time period, the EPA allow 180 days in order to ease the burden on facilities and reduce the potential for unnecessary enforcement actions by the state.

One commenter (4229) argues that, if the 1 tpy benzene emission compliance option is deleted, 90 days is not enough time for units currently complying with that standard to meet new requirements. The commenter explains that, in addition to deleting the 1 tpy compliance option for large dehydrators, the proposed rule requires that operators using this compliance option meet one of the other two compliance options no later than 90 days after the final rule effective date. The commenter provides several factors for why they believe more than 90 days to comply is warranted.

One commenter (4185) urges the EPA to significantly extend the proposed deadline for large glycol dehydration units that presently rely on the “alternative compliance” pathway under subparts HH and HHH to comply with MACT standards for benzene emissions. The commenter recommends that the EPA provide at least 12 months from the promulgation of the rule, and provides suggested revisions to §§63.760(f)(10) and 63.1270(d)(5) changing the compliance date from 90 days to 12 months.

**Response:** The final rule retains the 1 tpy benzene emissions compliance option in both subparts HH and HHH; therefore, it will not be necessary to modify the regulation to extend the compliance date for large glycol dehydrators.

### **3.3.4 Other Comments**

**Comment:** One commenter (4357) states that emissions of methane, monitored over time using mobile devices at the fence-lines are good surrogates for other toxic gases that may be emitted. The commenter states that specific correlation of HAPS to methane can easily be done for each site by collecting gas samples using a summa canister.

**Response:** We thank the commenter for this information.

**Comment:** One commenter (4273) states that the EPA should delist all source categories that meet section 112(c)(9) criteria and use title V to enforce emission limits and standards as part of the delisting. The commenter states that, to the extent the EPA’s risk assessment finds the source category or subcategory has low risk, the EPA should delist the source category or subcategory. The commenter states that if a source category that poses a low risk to the public is not delisted, the EPA may continue to revise the standard based on new technologies, and sources will be subject to an endless technology ratchet, uncertainty, and increased costs as new technologies are developed. According to the commenter, delisting is appropriate even after MACT standards

have been in place, as section 112(c)(9) states the EPA has the authority to delist categories “whenever.” The commenter states that those elements of the MACT standard that might be needed to sustain the low risk determination could be established as part of the source category delisting decision. The commenter believes these requirements could be enforceable and maintained in existing title V permits to ensure the public health protection contemplated by section 112(c)(9).

**Response:** The commenter asks that the EPA delist the source categories at issue here so it can avoid additional regulation if the EPA revises the standards in the future if technologies change. The commenter has provided no evidence that it can meet the test for delisting set forth in CAA section 112(c)(9)(B). That section provides that “[t]he Administrator *may* delete any source category” from the section 112(c) source category list if the Agency determines that: (i) for HAP that may cause cancer in humans, “no source in the category (or group of sources in the case of area sources) emits such hazardous air pollutants in quantities which may cause a lifetime risk of cancer greater than one in one million to the individual in the population who is most exposed to emissions of such pollutants from the source (or group of sources in the case of area sources)”; *and* (ii) for HAP that may result in human health effects other than cancer or adverse environmental effects, “a determination that emissions from no source in the category or subcategory concerned (or group of sources in the case of area sources) exceed a level which is adequate to protect public health with an ample margin of safety and no adverse environmental effect will result from emissions from any source.”

The commenter has failed to demonstrate that the requirements for delisting in section 112(c)(9)(i) and (ii) have been met. Our risk analysis identifies sources that exceed a risk of 1-in-1 million and as such the source categories at issue, both of which emit carcinogens, cannot be delisted.

**Comment:** One commenter (4189) states that the proposed rule under both section 112(f)(2) and (d)(6) contains gaps in the pollutants (e.g., 1, 3 butadiene, mercury and chemicals used in the hydraulic fracturing process), human exposures, and health risks analyzed. The commenter believes the EPA needs to assess the health risks from all dangerous pollutants emitted by oil and gas facilities, as shown by the scientific literature, known to be part of the chemical composition of oil and gas, or detected in air monitoring conducted by community groups and others near oil and gas facilities.

**Response:** The commenter did not identify or provide any information regarding any specific HAP from the oil and gas source categories that we failed to consider in our risk review. In the preamble to the proposed rule, we discuss our approach for selecting the emissions data used in the risk assessment (i.e., we use emissions data from a variety of sources and review these data to ensure the emissions sources are in the Oil and Natural Gas Production or Natural Gas

Transmission and Storage MACT source categories). While our facility-wide emissions files do contain emissions for 1,3 butadiene and mercury, we determined in our review that those emissions are from sources outside these two MACT categories. The commenter did not provide any data to contradict this determination.

### **3.4 Technology Review**

#### **3.4.1 General Comments on the Technology Review Methodology**

**Comment:** One commenter (4457) states that CAA section 112(d)(6) requires the EPA to revise its standards in accordance with section 112(d)(2)-(3), (6) and the EPA has failed to update the existing MACT standards to meet the CAA section 112(d)(6) requirement by, at minimum, matching the emissions levels that sources are achieving, and considering setting an appropriate beyond-the-floor standard. According to the commenter, the EPA's failure to update the existing MACT standards is especially problematic because the original MACT calculation was flawed, because there are "developments" in technology, practices, and processes, and sources have achieved lower levels of emissions "in practice" than the current MACT standards. The commenter adds that the EPA fails to satisfy CAA section 112(d)(2)-(3) as there is evidence, including evidence in the record from the 1999 MACT determination, that, due to improvements in technology, many sources have "achieved" a level of "actual" HAP emissions that is below the existing MACT standard and the standards proposed by the EPA. The commenter asserts that the EPA's analysis indicates the amount of emissions that are "allowable" under the existing MACT standard far exceed what the EPA calls "actual" emissions and may be "up to 50 times greater than actual emission levels" because many oil and gas facilities have achieved greater emission reductions than the EPA's prior standard anticipated. The commenter argues that the CAA requires any section 112(d) standard to meet section 112(d)(2) requirements, including those standards set under section 112(d)(6). The commenter states that if as a result of "developments in practices, processes and control technologies" the EPA's old MACT standards no longer comport with section 112(d)(2)-(3), the agency must revise them "as necessary" to bring them into compliance and that section 112(d)(6) requires the EPA to ensure its standards continue to satisfy section 112(d)(2)-(3) as practices, processes and control technologies develop.

One commenter (4457) states that section 112(d)(6) serves as an ongoing ratchet to continually require the EPA to update standards to keep pace with new technology in order to decrease emissions. The commenter believes that the CAA is intended to be a technology-forcing statute that drives industry to continue finding new ways to reduce air pollution. In particular, according to the commenter, the MACT regulatory regime is structured to push polluting industries to control emissions to the greatest degree possible. The commenter states that the review and revision provision is a key method of implementing the Act's technology-forcing objective. The commenter adds that where there are developments in technology, practices, and processes

demonstrating that greater emissions reductions are achievable and sources have achieved significantly lower level of emissions in practice than the current MACT standards, the EPA is required to revise its standards in accordance with CAA section 112(d)(2)-(3), (6).

The commenter states that a revision to the existing standard is especially necessary under section 112(d)(6) if that prior standard was not established in a manner that complies with the requirements of the Clean Air Act. The commenter reports that, since the adoption of the Oil and Natural Gas Production MACT, the D.C. Circuit has specifically rejected a number of practices employed by the EPA to set MACT limits; including but not limited to: (1) requiring that MACT limits be achievable by all sources; (2) basing the standard on an evaluation of control technology performance rather than plant performance; (3) adopting “no control” MACT limits where active pollution controls were not in use in a subcategory; (4) employing regulatory limits where actual performance data are available; and (5) rejecting MACT floor technologies and limits based on cost or feasibility. The commenter claims the EPA has recognized its obligation to reconsider earlier-set standards where its prior approach resulted in “no control” MACT floors. Similarly, according to the commenter, because the EPA employed improper analysis in setting the initial MACT standards for oil and gas source categories, as discussed in the Buckheit Report, this demonstrates a particular need to update the standards in this rulemaking.

Moreover, the commenter asserts that the D.C. Circuit has affirmed the EPA’s approach in other rulemakings to “reset[] the MACT floors in order to correct its own errors.” *Med. Waste Inst. & Energy Recovery Council v. E.P.A.*, 645 F.3d 420, 424 (D.C. Cir. 2011) (*HMIWI*). The commenter asserts that, in *HMIWI*, the court disagreed with Petitioner’s arguments that (1) the “CAA only authorizes a one-time establishment of floors based on the level of emission control ‘achieved in practice by the best controlled similar unit’ for new units, and at ‘the average emissions limitation achieved by the best performing 12 percent of units in the category’ for existing units;” (2) that if the EPA sets standards more stringent than those set during the original MACT, it must “consider cost and other factors listed in the statute—either as part of an initial standard-setting process or as part of the five-year review;” and (3) that in resetting the MACT floor, EPA cannot rely on data collected after the original MACT was set. *Id.* at 424-25. Instead, the commenter reports that the court concluded that the EPA was not required to “proceed from the data set it had employed in the initial setting of the floors” because its approach was “unsupportable,” *e.g.*, it “did not reliably approximate the emissions levels achieved in practice by best performing units.” *Id.* at 425-26. The commenter states that, as explained in *HMIWI*, emissions levels set in a new rule, in which the EPA resets the floor, are “properly characterized not as ‘beyond-the-floor,’ or as a revision conducted as part of the five-year review, but as the floor setting that is the initial step in establishing emissions standards. *See* 42 U.S.C. § 7429(a)(2). According to the commenter, the former requires consideration of the costs of compliance, but the latter does not.” *HMIWI*, 645 F.3d at 426. The commenter asserts that the EPA’s original MACT calculation for both oil and gas subcategories is unsupported and

sufficient information exists demonstrating that facilities are achieving greater reductions in HAPs than in the existing and proposed rule.

The commenter opines that the situation here is distinguishable from the facts in *NRDC v. EPA*, 529 F.3d 1077, 1084 (D.C. Cir. 2008) (*HON*), in which the court explained that recalculating the floors was not necessary because “petitioners have not identified any post-1994 technological innovations that the EPA has overlooked.” *NRDC*, 529 F.3d at 1084. According to the commenter, the *HON* Court expressly declined to decide whether the EPA was required to recalculate floors where, as here, there have been developments in practices, processes, and control technologies. The commenter states that, as noted below and discussed further in the attached Reports by Sahu and Buckheit, for these source categories, there are such “developments.” Therefore, the commenter opines that the EPA cannot rely on the *HON* case to evade its duty to satisfy section 112(d)(6).

The commenter states that, consistent with the *HON* decision, assuming that its section 112(d)(6) holding is relevant here, section 112(d)(6) requires the EPA to recalculate the MACT floor when there have been advances in technology, practices, and processes, and when there is information showing that greater emission reductions have been “actually achieved.”

One commenter (4457) states the EPA’s failure to update the existing MACT standards is especially problematic because the original MACT calculation was flawed, because there are “developments” in technology, practices, and processes, and sources have achieved lower levels of emissions “in practice” than the current MACT standards. The commenter adds that the 8-year MACT review also fails to satisfy CAA section 112(d)(2)-(3) as there is evidence, including evidence in the record from the 1999 MACT determination, that, due to improvements in technology, many sources have “achieved” a level of “actual” HAP emissions that is not only below the existing MACT standard, but also below the standards proposed by EPA in the proposed rule. The commenter asserts that, consistent with the *HON* decision, assuming that its section 112(d)(6) holding were relevant here, section 112(d)(6) requires the EPA to recalculate the MACT floor when there have been advances in technology, practices, and processes, and when there is information showing that greater emission reductions have been “actually achieved.” The commenter believes that by relying on an incomplete and outdated dataset to set MACT floors and limits, the EPA has ignored data demonstrating trends in practices, processes and technologies and the resulting improved performance that section 112(d) mandates. The commenter believes the EPA overlooks the potential lower emissions that sources are achieving by failing to use more recent data.

The commenter (4457) states that the EPA must update the MACT floor and consider setting a beyond-the-floor-standard for large glycol dehydrators. The commenter also states that the EPA

must update the MACT floor and consider setting a beyond-the-floor standard for storage vessels with PFE, and set an adequate MACT standard for leak detection.

**Response:** Section 112(d)(6) requires the EPA to “review, and revise as necessary (taking into account developments in practices, processes, and control technologies), emission standards promulgated under this section no less often than every 8 years.”

As EPA has explained on several prior occasions, section 112(d)(6) does not require MACT standards to be recalculated. *See* 70 FR at 20008 (April 15, 2005); 529 F. 3d at 1084. The EPA is not reopening that issue here, or otherwise reconsidering its interpretation of section 112(d)(6). Moreover, the argument that EPA must recalculate floors in conducting a 112(d)(6) review was rejected by the D.C. Circuit in the HON opinion. *See* 529 F. 3d at 1084 (“It is argued that EPA was obliged to completely recalculate the maximum achievable control technology-in other words, to start from scratch. We do not think the words ‘review, and revise as necessary’ can be construed reasonably as imposing any such obligation.”). We thus disagree with the commenter’s assertion that the HON Court’s ruling provides only that CAA section 112(d)(6) does not require re-calculation of MACT floors in instances where there have been no developments in practices, processes, or control technologies. In fact, the Court was quite clear on this point, and declined to rule only on whether it was appropriate for the EPA to consider costs and risks in conducting CAA section 112(d)(6) reviews, as the issue was rendered moot by the litigants’ failure to preserve it. Accordingly, we did not, as the commenter requests, re-calculate the MACT standards that we developed in the 1999 rule as part of our section 112(d)(6) review. Moreover, to the extent the commenter is arguing that section 112(d)(6) mandates that the EPA correct any deficiency in an underlying MACT standard when it conducts the “technology review” under that section, we disagree. We believe that section 112 does not expressly address this issue, and the EPA has discretion in determining how to address a purported flaw in a promulgated standard. Section 112(d)(6) provides that the Agency must review and revise “as necessary.” The “as necessary” language must be read in the context of the provision, which focuses on the review of developments that have occurred since the time of the original promulgation of the MACT standard and thus should not be read as a mandate to correct flaws that existed at the time of the original promulgation.

In several recent rulemakings, we have chosen to fix underlying defects in existing MACT standards under sections 112(d)(2) and (3), the provisions that directly govern the initial promulgation of MACT standards (see National Emission Standards for Hazardous Air Pollutants From Petroleum Refineries, October 28, 2009, 74 FR 55670; and National Emission Standards for Hazardous Air Pollutants: Group I Polymers and Resins; Marine Tank Vessel Loading Operations; Pharmaceuticals Production; and the Printing and Publishing Industry, April 21, 2011, 76 FR 22566). We believe that our approach is reasonable because using those provisions ensures that the process and considerations are those associated with initially establishing a MACT standard, and it is reasonable to make corrections following the process



that would have been followed if we had not made an error at the time of the original promulgation. In this rule, we are setting MACT standards under section 112(d)(2) and (d)(3) for the subcategory of small glycol dehydration units. These units were left unregulated in the 1999 NESHAP. We are not, however, finalizing MACT standards for the subcategory of storage vessels without the PFE, which also were unregulated in the 1999 rule, because after evaluating the available data and comments received, we believe that we need additional data in order to set an emission standard for these vessels. Once we obtain additional data, we intend to set standards for the subcategory of storage vessels without the PFE pursuant to section 112(d)(2) and (d)(3).

Further, whether or not section 112 (d)(6) is “technology forcing”, the EPA retains very significant discretion in balancing relevant factors in determining whether it is “necessary” to revise the existing technology-based MACT standards. *Sierra Club v. EPA*, 325 F. 3d 374, 378 (D.C. Cir. 2003). In reviewing section 112 (d) (2) standards, and determining whether to revise them is “necessary” under section 112 (d)(6), the EPA may take into consideration cost and feasibility when evaluating developments in practices, processes, and control technologies. Indeed, it is reasonable that any such “review” consider the same factors which the EPA is required to consider under section 112 (d)(2) – cost, non-air environmental impacts, potential impacts on energy usage among them.

As discussed in the preamble to the proposed rule as well as in this response to comment document, we found no significant developments in practices, processes and control technologies for reducing emissions from large glycol dehydrators and storage vessels with the potential for flash emissions for Subpart HH sources. With regard to Subpart HHH, we found no significant developments in practices, processes and control technologies for reducing emissions from large glycol dehydrators. Accordingly, we are not revising these standards under section 112(d)(6).

For Subpart HH, the EPA conducted a technology review evaluating various options for controlling HAP emissions from equipment leaks. As described in our analysis, we evaluated advancements in controlling this emission source since the original standards were promulgated, including the emission reduction potential and associated cost effectiveness of these advancements. As a result of our review, we revised the leak definition for valves to 500 ppm at natural gas processing plants, thus requiring the application of the leak detection and repair requirement at this lower detection level.<sup>33</sup>

**Comment:** One commenter (4457) states that the EPA’s technology analysis suffers from a number of flaws, not the least of which are its failure to cast a wide enough net in evaluating control options – including practices, processes, and technologies that have achieved greater

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<sup>33</sup> Memorandum from Brown, H., EC/R Incorporated to Nizich, G. and Moore, B., EPA/OAQPS/SPPD/FIG. Technology Review for the Final Amendments to Standards for the Oil and Natural Gas Production and Natural Gas Transmission and Storage Source Categories. April 17, 2012

emission reductions – and its dismissal of options with little or no analysis or grounds. The commenter states that the EPA should have considered the following: the use of desiccant dehydrators for at least some portion of the source categories; the use of control options demonstrated by the Natural Gas STAR program; technologies and practices in BACT determinations, including greater control efficiency levels; technologies and practices used in the EPA’s own refinery enforcement actions including more stringent leak detection and repair; researching vendor literature and discussed options with vendors regarding newer technologies and improvements to old technologies that make them more cost-effective and more efficient; evaluating the requirements and programs to address such emissions in various states such as California, Colorado, and Wyoming, including stronger leak detection and repair requirements and improved control technology efficiency; and considered the additional and similar options outlined in the Paranhos summary (EPA-HQ-OAR-0505-0016). The commenter asserts that the EPA’s failure to consider these options is arbitrary and capricious.

One commenter (4457) also states that the EPA provides no summary or analysis of Natural Gas Star developments that should inform the rule proposal. According to the commenter, the EPA’s docket memoranda on the technology reviews state that “[n]ew practices, processes, and control technologies were reviewed from the Natural Gas STAR program...” but no further analysis appears in the docket. The commenter reports that the EPA’s docket memo contains a summary of the RBLC data but no summary of Natural Gas Star program information and no indication when the RBLC was searched. The commenter states that Attachment A to their report includes a Table providing a summary of Natural Gas Star program information found on EPA’s website. The commenter asserts that the EPA’s conclusory assertion that the Natural Gas Star program information was “reviewed,” is not supported by the record.

The commenter (4457) further states that the EPA recognizes that its prior rulemaking could not have included examples of emissions reduction approaches that have been demonstrated via the Natural Gas STAR program, as the EPA noted that “for glycol dehydrators, many of the practices, processes, or control technologies listed by the Natural Gas STAR program were not identified and evaluated during the original MACT development.” Instead of evaluating these approaches, however, the commenter contends that the EPA improperly seeks to minimize their relevance. The commenter states that the EPA’s emphasis on the potential limitation of control device applicability for dehydrators is irrelevant and contrary to the goals and requirements of section 112. According to the commenter, the EPA cannot reject a technology development because it fails to “work for all glycol dehydrators...” The commenter states that the purpose of section 112(d) is to drive technology forward, and advance the standards by following developments in technology. For example, the commenter believes that the use of optimized glycol circulation rates, the use of flash separators, and even the replacement of glycol dehydrators with desiccant dehydrators will not be carefully evaluated by sources as control options unless the current rule properly evaluates their application. According to the commenter,

it is likely that the use of these technologies would result in far lower emissions than what the EPA has proposed, and that the performance of these technologies will help set the MACT standards for new sources. Further, the commenter states that it is unclear how the EPA considered the flash tank separator option in the MACT technology analysis.

**Response:** The technologies cited by the commenter were considered under our section 112(d)(6) review (76 FR 52784; EPA-HQ-OAR-2010-0505-0062 ).<sup>34</sup> For glycol dehydrators, most of the emission control practices identified in the Natural Gas STAR program are considered to be new and unproven practices that may not be applicable to all production or transmission facilities. Only one of the technologies identified in the Natural Gas STAR literature, a glycol dehydrator with a desiccant dehydrator, may result in zero HAP emissions. However, this technology cannot be used for natural gas operations that operate at high temperature, high volume, or low pressure. Therefore, this technology was not considered to be a development under section 112(d)(6) for glycol dehydrators for the oil and natural gas production or natural gas transmission and storage source categories. The commenter provided no data to refute these findings. We also point out that our analysis of the RBLC database (based on a July 2011 extraction of the RBLC database) did not identify any practices, processes, or control technologies applicable to the emission sources in these categories that were not identified and evaluated during the original MACT development, therefore we did not consider them under our section 112(d)(6) review.

**Comment:** One commenter (4457) states that the EPA failed to conduct a comprehensive evaluation of advances in control technologies for storage vessels. The commenter contends that the EPA must examine advances in vapor recovery unit technology and reconsideration of floating roof technology for tanks containing liquids that do not have the potential for flash emissions. As described in the Buckheit Report provided by the commenter, the commenter states that the EPA improperly rejected technology advances and developments in pollution prevention systems found in its own RBLC database and employed by its own Natural Gas STAR partners. Specifically, the commenter states that the EPA failed to evaluate the performance achieved by systems that use thermal or catalytic oxidizers, either alone or in combination with condensers. According to the commenter, the EPA's RBLC review identified a BACT determination for dehydrator efficiency of 98 percent (Michigan, Consumer's Energy). The commenter also urges the EPA to evaluate the use of combustion devices and vapor recovery units that capture vent steam from the tank and turn it into a saleable product by recompressing the hydrocarbon vapors. The commenter adds that the EPA rejects technology advances by asserting that those technologies were considered in the 1999 rulemaking, but fails to provide support for its decision in either the record of the 1999 rulemaking or the current

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<sup>34</sup> Memorandum from Brown, Heather, EC/R Inc., to Moore, Bruce, U.S. EPA, titled Technology Review for the Final Amendments to Standards for the Oil and Natural Gas Production and Natural Gas Transmission and Storage Source Categories. Dated April 17, 2012.

record. The commenter states that the EPA must provide a basis for its decisions and conclusions.

**Response:** In response to comments, we re-evaluated the cost effectiveness of increasing the level of control from 95 percent to 98 percent. We found that the controls required to achieve 98 percent were not cost effective.<sup>35</sup> In addition, we also received information from other commenters (see section 3.5.1) on the performance of these combustion control devices that brings into question their ability to meet 98 percent control and therefore, we are not increasing the 95 percent control requirements for storage vessels.

### 3.4.2 Actions Taken Based on the Technology Review

**Comment:** One commenter (4266) requests that the EPA clarify and modify the video recording requirements required in the Alternative Work Practice (AWP) to Detect Leaks from Equipment (§60.18(g)) by amending rule language to clarify that video records will identify regulated equipment via a defined area grouping, not by a recording of each equipment component. The commenter recommends that the EPA also evaluate how the video data will be used and whether a complete video recording is really needed. The commenter believes that OGI has the potential to be useful for difficult or unsafe to monitor components. However, in order to make it work in the field, the commenter states that an extended or conditional repair schedule is needed for difficult to access and unsafe to access components, with the final repair falling under the delay-of-repair provisions.

**Response:** The proposed rule did not include any revisions to the Alternative Work Practice requirements in §60.18(g), so the commenter's requests are not within the scope of this rulemaking. The EPA notes for informational purposes that this issue was identified by the American Petroleum Institute in their February 20, 2009, request for administrative reconsideration of the AWP provisions, and the EPA is currently considering this request separately from this rulemaking.

**Comment:** One commenter (4159) states that Congress intended that EPA use risk criteria as the only "sensible" approach in interpreting when additional controls are necessary under section 112(d)(6). Therefore, the commenter contends that the EPA erred in its section 112(d)(6) determination for the Oil and Gas Production source category by basing its decision primarily on a cost-per-ton comparison of control options. The commenter believes that once EPA conducts its residual risk review and determines that emissions from a source category present an acceptable risk with an ample margin of safety, EPA has discretion to find further revisions not

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<sup>35</sup> Memorandum from Brown, Heather, EC/R Inc., to Moore, Bruce, U.S. EPA, titled Technology Review for the Final Amendments to Standards for the Oil and Natural Gas Production and Natural Gas Transmission and Storage Source Categories. Dated April 17, 2012.

“necessary” under section 112(d)(6). The commenter contends EPA should evaluate further controls under section 112(d)(6) only in terms of their incremental cost and their incremental potential to reduce risk.

Another commenter (4273) agrees with this position, stating that Congress intended that the EPA use risk criteria in interpreting when additional controls are necessary under section 112(d)(6), which requires the Administrator to review, and revise emission standards “as necessary.” The commenter states that in the ONG production source category, the EPA incorrectly bases its proposed decision on cost estimates without evaluating the incremental health risk benefit of the new controls against the incremental costs of such controls. The commenter states that comparing cost-per-ton estimates of different controls does not provide sufficient information regarding whether the controls would have any discernible benefit on public health, even with the EPA’s multiple conservative risk assumptions. The commenter states that implementing the technology review decisions absent an analysis of risk is likely to result in endless changes in control technology, pointless regulatory uncertainty, and increases in capital and operating costs with no measurable public health benefit. The commenter believes that the EPA should evaluate further controls under section 112(d)(6) only in terms of their incremental cost and incremental potential to reduce risk.

**Response:** Pursuant to section 112(d)(6), the EPA proposed that there were no developments in practices, processes or control technologies for large dehydrators and storage vessels with the PFE for Subpart HH and no developments in practices, processes or control technologies for large dehydrators for Subpart HHH. The EPA is finalizing those conclusions today. The commenter argues that were we to find a development in practices, processes or control technologies we can only require such development if the development causes a material reduction in risk. In the commenter’s view, considerations of cost alone are not sufficient to require a control under section 112(d)(6). We disagree. CAA section 112(d)(6) does not mandate consideration of risk in the determination of whether revised standards are “necessary”<sup>36</sup>. The “core requirement” of CAA section 112(d)(6) is the existence or non-existence of developments in practices, processes, and control technologies, not a public health or risk-based determination. *NRDC v. EPA*, 529 F.3d 1077, 1084 (D.C. Cir. 2008). CAA section 112(d)(6) is also a continuation of the technology-based section 112 (d) standard-setting process, again indicating that the determination is not primarily based on risk-based considerations. Consequently the EPA does not believe that a revised CAA section 112(d)(6)

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<sup>36</sup> Because the meaning of “necessary” is ambiguous and “varies with context . . . [.] dueling over dictionary definitions is pointless, for it fails to produce any plain meaning of the disputed word.” *Cellular Telecomms. & Internet Ass’n v. FCC*, 330 F.3d 502, 509-10 (D.C. Cir. 2003). The Supreme Court has directed that “a statutory reference to ‘necessary’ must be construed in a fashion that is consistent with the ordinary and fair meaning of the word,” and EPA’s interpretation of “necessary” is entitled to *Chevron* deference if it is “rationally related to the goals of the Act.” *AT & T Corp. v. Iowa Utils. Bd.*, 525 U.S. 366, 388 (1999).

standard is “necessary” only if justified based on public health/risk considerations. We did identify developments in practices, processes or control technologies in relation to the equipment leak requirements at natural gas processing plants in 40 CFR part 63, subpart HH, and as such, are lowering the leak definition for valves at natural gas processing plants to an instrument reading of at least 500 ppm. We found this revision to be reasonable from a cost perspective and are thus requiring this revision under section 112(d)(6).<sup>37</sup>

#### *3.4.2.1 Revise Leak Definition for Valves in Subpart HH*

**Comment:** One commenter (4457) states that, in establishing the subpart HH standards for equipment leaks, the EPA identified the worst expected performance of those plants that employed a broadly defined class of equipment leak prevention, detection and repair processes, rather than the performance achieved by the best performing facilities. The commenter contends that several aspects of the MACT floor analysis for existing subpart HH MACT standards were inadequate.

According to the commenter, the EPA failed to set the MACT floor at a level as stringent as that set by the subpart KKK program. The commenter states that the subpart KKK leak detection program applies to all components in VOC service, thus exempting components servicing streams with less than 10 percent VOC content, while the subpart HH rule adopted by the EPA provides an exemption for all components servicing streams with less than 10 percent volatile HAP content. This exemption, according to the commenter, just as the VOC exemption in the NSPS rules, is provided without any evaluation of the impact on emissions, level of control, or rule effectiveness.

The commenter (4457) also states that the EPA carried over to part 61, subpart V (and thereafter to part 63, subpart HH) a number of exemptions and deferred monitoring and repair options that are artifacts of the part 60 NSPS program that is permitted to consider cost, while the MACT floors may not.

**Response:** To the extent that the commenters are addressing the leak detection requirements in the original subpart HH, such comments are untimely. If the commenters are requesting that the EPA recalculate the MACT standards established in 1999, we point out that we are under no obligation to revisit previous MACT determinations under section 112(d)(6). See response to section 3.4.1. The proposed rule did not re-open the original MACT standards for equipment leaks. Instead, for equipment leaks, we evaluated whether there had been any developments in practices, processes and control technologies under our 112(d)(6) review and as the result of our

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<sup>37</sup> Memorandum from Brown, Heather, EC/R Inc., to Moore, Bruce, U.S. EPA, titled Technology Review for the Final Amendments to Standards for the Oil and Natural Gas Production and Natural Gas Transmission and Storage Source Categories. Dated April 17, 2012

review, we are requiring a lower leak definition for valves to an instrument reading of at least 500 ppm.

**Comment:** One commenter (4457) states that the EPA proposes to lower the leak definition for valves to an instrument reading of at least 500 ppm, which is an improvement, but could be stronger and the commenter points to the Buckheit Report in their comment submittal for further rationale. The commenter (4457) states that, at minimum, the new source MACT LDAR program should not be less stringent than the Bay Area Air Quality Management District (BAAQMD) rules that currently cover 5 refineries with over 200,000 components. The commenter states that BAAQMD's Regulation 8, Organic Compounds, Equipment Leaks does not provide an exemption for streams with less than 10 percent VOC content. The commenter contends that the EPA has not attempted to quantify the impact of its exemption on source wide emission rates. The commenter argues that Regulation 8 applies to leaks of TOCs, including methane, whereas the proposed Federal rule excludes methane. According to the commenter's analysis, if one assumes that the gas stream at a natural gas processing plant is 95 percent methane, then a detection limit of 500 ppm, excluding methane, is equivalent to a detection limit of 10,000 ppm, including methane. The commenter then asserts that the BAAQMD LDAR rules effectively detect HAP at 5 ppm. Thus, according to the commenter, in terms of detecting leaks of VHAP, the proposed Federal detection limit is approximately 100 times higher than the existing BAAQMD detection limit because the Federal detection limit does not require detection of the entire emission stream in order to find potential HAP leaks.

The commenter adds that the BAAQMD limit on the number of components awaiting repairs is 0.3 percent for valves, 0.025 percent for valves with major leaks (leaks greater than 10,000 ppm, including methane) and 1.0 percent for pumps and compressors. The commenter states that it also requires mass emission testing for non-repairable components with high leak rates and places an emission limit of 15 lbs/day on non-repairable components. The commenter adds that by comparison, the South Coast Air Quality Management District limit is 0.5 percent for valves and 1.0 percent for pumps.

One commenter (4189) states that the EPA must require greater emission reductions based on recent improvements in practices, processes, and technologies. The commenter contends that California has stronger leak detection and repair standards than what the EPA has proposed. While local standards in California (specifically in the Bay Area, South Coast, and Ventura air districts) require facilities to fix leaks, the commenter states that the EPA's standard allows 2% of equipment to leak forever. According to the commenter, the EPA must remove this loophole.

**Response:** The EPA appreciates the comments on the proposed equipment leak requirements. However the commenter did not provide sufficient information for the EPA to determine that the Ventura County APCD LDAR program as described in the Buckheit Report would result in

greater HAP reductions. We conducted a technology review to assess lowering the leak definition for valves to the 100-ppm level used by BAAQMD.<sup>38</sup> We evaluated the incremental cost effectiveness between the proposed subpart VVa-level of control (a leak definition of 500 ppm) and a leak definition of 100 ppm. According to our analysis, the incremental cost effectiveness was \$42,800/ton of HAP. We do not consider this to be cost effective. In our technology review, we also evaluated the BAAQMD program for number of components awaiting repair.<sup>39</sup> We determined that the HAP emission reduction associated with the BAAQMD regulation is 0.539 tpy HAP and the cost effectiveness ranged from \$43,600 to \$219,000 per ton HAP. We do not consider this to be cost effective. As a result, the final rule requires the subpart VVa-level of control for valves, with a leak definition of 500 ppm.

**Comment:** One commenter (4266) states that it is not feasible to expect existing facilities to be able to be in compliance instantaneously upon promulgation. The commenter contends that upon promulgation of the final rule, it is expected that at an existing facility, a great number of valves which were previously not a leaker would suddenly become a leaker. The commenter states that an adequate supply of maintenance personnel and valve parts necessary to repair that many leakers within the time frame allowed in the rule is very questionable. In certain cases, according to the commenter, the needed personnel and/or parts would simply not be available. The commenter prefers to keep the 10,000 ppm leak definition. However, if the leak definition is to drop down to 500 ppm, then the commenter believes that additional time to comply should be allowed, at least a year for existing facilities, and 180 days for new facilities to implement work practice requirements.

One commenter (4219) notes that the proposed subpart HH requirements would apply both to new and to existing facilities. The commenter states that existing facilities, however, should not be expected to immediately be in compliance with the proposed new and much more stringent requirements. For example, the commenter asserts that the proposal in subpart HH to lower the leak threshold for valves to 500 ppm would cause sites to devote a significant amount of manpower and equipment to repairing the valves that had become regulated “leakers” overnight. In many cases, the commenter claims the needed resources would not be available despite the best efforts of the owner or operator. The commenter adds that compliance with the proposed new requirements would involve a substantial amount of effort and time for procuring new equipment, as well as engineering, design, and installation. In no case should immediate compliance be required.

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<sup>38</sup> Memorandum from Brown, H., to Nizich, G. and Moore, B., EPA/OAQPS/SPPD/FIG. *Technology Review for the Final Amendments to Standards for the Oil and Natural Gas Production and Natural Gas Transmission and Storage Source Categories*. April 17, 2012.

<sup>39</sup> Memorandum from Brown, H., to Nizich, G. and Moore, B., EPA/OAQPS/SPPD/FIG. *Technology Review for the Final Amendments to Standards for the Oil and Natural Gas Production and Natural Gas Transmission and Storage Source Categories*. April 17, 2012.



**Response:** We agree that the proposed subpart HH requirements for existing and new sources will require time to repair the valves that are identified as leakers based on the lower leak definition, and that the number of valves determined to be leakers following the initial LDAR monitoring session could be significant. Therefore, subpart HH has been revised to allow existing sources up to 1 year following publication of the final rule in the *Federal Register* to achieve compliance. New sources must be in compliance on [60 days after the date of publication in the Federal Register] or startup, whichever is later.

We believe the 1 year compliance period is needed at existing natural gas processing plants since these facilities typically have several thousand of equipment components, and over one thousand valves, many of which are subject to the LDAR provisions in subpart HH. It is conceivable that many valves, not previously identified as leakers, will be classified as leakers under the lower 500 ppm leak threshold in the final rule. We agree with the commenter and are allowing the 1 year compliance period so companies have sufficient time to both assess the leak status of their valves on schedule with the rest of the facility under its LDAR provisions (typically quarterly), and make the necessary repairs to valves now determined to be leaking. We do not believe new sources require any additional time for compliance since the number of leaking components at a new facility should be less than at an existing plant.

**Comment:** One commenter (4193) proposes that the leak threshold for natural gas processing plants should be 5,000 ppm rather than 500 ppm. The commenter believes the 500 ppm threshold is not appropriate as natural gas processing plants have a substantially lower density of components requiring monitoring compared to chemical plants and refineries. In addition, the commenter states that natural gas processing plants are often operated by a minimum number of staff or remotely so they do not typically have the required maintenance personnel onsite, requiring them to rely on scheduling roving technicians or contractors in order to perform the initial attempt at repair, and then to monitor the repaired components, as required. The commenter contends that these circumstances would add considerably to the resource burden including time spent to reach facilities, need to spend extra time at facilities in order to implement a more extensive monitoring program, and additional logistics planning and training. A second commenter (4246) also does not support the 500 ppm leak definition.

One commenter (4192) notes that the EPA lowered the subpart HH leak definition for valves to 500 ppm. The commenter does not support a 500 ppm leak definition because the justification for achieving 10,000 ppm in the original 1984 KKK preamble is still valid today. The commenter notes that in the January 20, 1984 *Federal Register* to the KKK program, the EPA stated on page 2643 "...EPA is unable to conclude that a leak definition lower than 10,000 ppm would provide additional emission reductions...".

**Response:** As explained in the preamble to the proposed rule and in the TSD, we evaluated four options for LDAR programs for equipment leaks as part of our technology review under section 112(d)(6) for subpart HH. The EPA has determined that the technology review provisions for NESHAP under section 112(d)(6) must take into account the cost of controls. In the technology review process, we evaluated the cost of the four identified control options for equipment leaks and found that lowering the leak definition for valves to an instrument reading of at least 500 ppm was cost effective (see EPA-HQ-OAR-2010-0505-0062). Since the commenter did not question our reasoning or costs as presented in the preamble and the TSD, nor did the commenter provide quantitative information on the claimed increased burden, we are not changing the 500 ppm leak definition for valves as provided in the final rule.

**Comment:** One commenter (4246) supports the EPA’s proposal to “Revise 40 CFR §63.769(b) for clarification of the equipment leak provisions in 40 CFR §63, subpart HH relative to source applicability if that source is already required to control equipment leaks under either 40 CFR part 63, subpart H or 40 CFR part 60, subpart KKK.” However, the commenter requests that the EPA include a MACT subpart HH exemption provision for sources already in compliance with equipment leak controls under 40 CFR part 60, subpart OOOO.

Two commenters (4192, 4262) note that the EPA proposes to revise §63.769(b) to clarify that the equipment leak provisions in subpart HH do not apply to a source if that source is required to control equipment leaks under either subpart H or subpart KKK. The commenters ask that the EPA add that a source that complies with equipment leak controls under 40 CFR 60, subpart OOOO is also exempt from the equipment leak provisions of subpart HH.

The commenters (4192, 4246) add that §63.760(g)(1) should be revised to read: “After the compliance dates specified in paragraph (f) of this section, ancillary equipment and compressors that are subject to this subpart and that are [delete: also subject to and] controlled under the provisions of 40 CFR §60, subpart KKK [add: or subpart OOOO], are only required to comply with the requirements of 40 CFR §60, subpart KKK [add: or subpart OOOO.]” The commenters explain that this will provide owners and operators that are not subject to NSPS Subparts KKK or OOOO, but apply those LDAR requirements, flexibility to implement those requirements in lieu of the Subpart HH LDAR provisions.

**Response:** We have revised §63.769(b) to provide that sources complying with the LDAR requirements in 40 CFR part 60, subpart OOOO are deemed to be in compliance with the LDAR requirements in subpart HH. However, since the valve leak definition in subpart HH has been revised to 500 ppm we have removed the similar provision in §63.769(b) for sources controlled under 40 CFR part 60, subpart KKK because that subpart has a 10,000 ppm leak definition for valves and is no longer equivalent to subpart HH LDAR provisions. As a result, the language cited by the commenters in §63.760(g)(1) has been deleted in the final rule.

Concerning the comment to exempt sources complying with equipment leak provisions in 40 CFR 63, subpart H and 40 CFR 60, subpart OOOO, we have included regulatory text that provides that sources that are in compliance with subpart OOOO are deemed to be in compliance with the LDAR requirements of subpart HH provided they meet the periodic reporting frequency specified in subpart HH (i.e., semi-annual vs. annual).

**Comment:** Two commenters (4246, 4266) state that §63.769(c) may apply not only to large natural gas processing plants that are subject to subpart KKK but also to smaller natural gas processing plant units where certain streams might be in VHAP service, which are currently not subject to subpart KKK per the intent expressed in §63.769(b). Therefore, the commenters believe that the EPA's analysis overestimates the potential for emission reductions by lowering the leak definition for valves to 500 ppm. Thus, according to the commenters, imposing a lower leak definition for valves at both new and existing natural gas processing plants is not warranted in terms of exposure reduction from plant operations. The commenter notes that the risk benefit from the lower leak definition has not been demonstrated by the EPA especially for smaller natural gas processing units. The commenters recommend that the EPA retain the leak definitions for equipment leaks as currently promulgated in subpart HH to prevent added compliance confusion and high costs to industry without demonstrated significant risk reductions.

**Response:** We believe the commenter mistakenly attributed our revision of the leak definition for valves to our risk review under section 112(f)(2) of the CAA. This is incorrect, as we revised the leak definition as part of our technology review analysis under section 112(d)(6). As we described above, we determined that revising the leak definition to 500 ppm was cost effective for valves. Since the commenters did not provide any information to dispute our analysis, we are not changing the revision to the leak definition for valves in the final rule.

## **3.5 Other Proposed Actions**

### **3.5.1 Alternative to Use Manufacturer's Testing Results for Certain Enclosed Combustion Control Devices**

**Comment:** One commenter (4191) suggests that the EPA reset the subpart HH and HHH destruction efficiency for combustion devices from 98 percent to 95 percent. The commenter is concerned that basing the assumption of 98 percent control on manufacturer testing may not be valid, as, according to the commenter, these units operate under widely varying field conditions, including variations in fuel gas, ambient temperatures, and ambient pressures, among others. In addition, the commenter states that natural gas operations often are located in rural areas, at un-

manned stations, that commonly rely upon weekly or less frequent monitoring of the combustion device to verify operation. The commenter states that, while the combustion units may be capable of achieving 98 percent destruction efficiency, the actual control efficiency may differ if the unit is not consistently monitored to ensure proper operation. The commenter explains that their State's policy allows for 95 percent destruction efficiency from combustion devices used at oil and gas sources, absent supplemental site-specific information approved by them which indicates that a higher destruction efficiency is appropriate. The commenter reports that they can provide the EPA with test data upon request.

**Response:** We received compelling information (i.e., source test data) from the commenter on the performance of combustion control devices located at oil and natural gas production facilities, controlling emissions from storage vessels and glycol dehydrators. The data brings into question the ability of these combustion control devices to reliably achieve that 98 percent control cannot be achieved in the field. Therefore, we have lowered the control efficiency for manufacturer tested combustion control devices to 95 percent in the final rule.

**Comment:** Two commenters (4192, 4246) support the EPA's proposal to adopt an alternative performance test for non-flare combustion control devices.

One commenter (4320) believes that the EPA should expand its proposed reliance on enclosed combustion device (ECD) manufacturer testing instead of requiring significant and potentially frequent performance testing of devices in the field by owner/operators, particularly for tanks. The commenter recommends that the EPA also allow for reduced or waived performance testing requirements in cases where ECDs currently in use are planned for removal due to the planned consolidation of tank batteries and their associated ECDs. The commenter currently plans for consolidation for its operations in the Eagle Ford Shale, which would render the expense and burden of field testing of all currently deployed or soon to be deployed ECDs much less beneficial in terms of demonstrating compliance going forward.

**Response:** As proposed, §63.772(e)(3)(vi) allows 3 years from the publication date of the final rule for existing sources to complete a performance test. Enclosed combustion devices planned for removal before that time would incur no costs for performance testing. In addition, sources have the option to use a manufacturer tested model of control device which carries no additional performance testing requirements for the life of the unit.

**Comment:** One commenter (4457) states that the EPA should not allow a manufacturer-only test for combustion devices. According to the commenter, such testing cannot anticipate local conditions that may adversely affect the performance of such devices. In addition, the commenter stated that the EPA, State regulatory agencies, and people who live near these sources need a way to verify ongoing compliance.

**Response:** As we stated at proposal, we believe that testing of certain combustion control devices in the field is not practical, thus we provided the option for the unit to be tested at the site of manufacturing. The commenter did not provide any information to contradict our belief that field testing is not practical. Therefore we are retaining the option for manufacturer testing of combustion control devices.

**Comment:** One commenter (4263) states that “fuel gas” and “inlet gas flow” to a combustion control device are different parameters. The commenter (4263) recommends replacing the term “fuel” with “inlet gas” in §§63.1282(g)(4)(i), (g)(4)(iii), (g)(4)(iii)(A) and (g)(4)(iii)(B).

One commenter (4263) recommends that the EPA delete §63.1282(g)(4)(iii)(B)(3) and consider deleting §63.1282(g)(4)(iii)(B) altogether. The commenter states that §63.1282(g)(2) states that “[p]ropene (propylene) gas shall be used for the testing fuel.” The commenter asserts that it is not necessary therefore to analyze the inlet gas for benzene and sulfur compounds. Also, according to the commenter, the EPA has not proposed performance standards related to the composition of the inlet gas, so the analysis of the inlet gas is not useful, other than to demonstrate that propylene was used.

One commenter (4263) argues that the determination of the volumetric flowrate from the combustion control device outlet using the methods referenced or described in §63.1282(g)(5) (i) and (ii) is not relevant to a demonstration that such a device achieves the performance requirements in §63.1282(g)(7), which is based on outlet pollutant concentrations. The commenter recommends that the EPA delete §63.1282(g)(5) (i) and (ii) and correct paragraph numbers.

**Response:** The EPA has modified the usage of the term “fuel” to be consistent with the term “inlet gas.” We have further modified the manufacturer’s certification test procedure to eliminate analysis for sulfur compounds and reduce the burden of the inlet gas sampling and analysis. The EPA will continue to require flow rate measurement for manufacturer’s performance testing.

**Comment:** Several commenters (4104, 4263, 4266) note that §63.1282(h)(3) and §63.772(i)(3) require monthly visible emissions tests using Method 22 of 40 CFR 60, Appendix A. Two commenters (4104, 4266) state that monthly testing is excessively burdensome and not needed to assure combustor compliance because continuous monitoring of combustion control ignition is already required. One commenter (4104) maintains that the rule should be revised to eliminate visual emissions tests, or performed at reduced frequency and duration. Two commenters(4104, 4266) state that tests should be required every 6 months with an allowance for less frequent testing for units that routinely pass the visible emissions test. One commenter (4263) recommends a quarterly frequency with a duration of no more than 5 minutes. Two commenters

(4104, 4266) believe that, at a minimum, similar relaxed testing requirements for a compliant unit should be added. According to one commenter (4104), if visible testing is retained, this would apply to some existing small dehydrators that may require control to meet the MACT floor emission standard. The commenter (4104) states that the EPA has not considered the associated compliance costs and additional analysis is warranted to justify visible emissions (and other) testing requirements in the proposed rule for newly affected small dehydrators.

**Response:** The EPA disagrees with the commenters' assertion that a quarterly five minute observation is sufficient to determine appropriate control device operation. While we do agree that quarterly observations are appropriate given the distances between, and remote locations of, many facilities in this sector, we hold that the observation period per control device shall be maintained at a maximum of one hour per observation, while the control device is known to be combusting waste gas.

**Comment:** One commenter (4104) states that §63.1282(h)(4)(iii) requires the replacement of fuel nozzle(s) and burner tubes after one failed visible emissions test. The commenter states that the EPA should not stipulate specific equipment replacement or maintenance practices. The commenter notes that simple procedures (e.g., cleaning) may suffice, and other actions may be unnecessary and wasteful, or possibly not address the problem. The commenter contends that these requirements should be deleted and the final rule should state that operators must perform maintenance and/or replace equipment as needed to restore combustion control device functionality. One commenter (4266) suggests the same changes be made to §63.772(i)(4)(iii).

**Response:** The EPA agrees with the commenter and has removed the requirement to replace the fuel nozzles(s) and burner tubes after the first Method 22 failure from the sections in subparts HH and HHH.

**Comment:** One commenter (4230) notes that the proposed rules allow sources to use a flare to control emissions from the affected storage vessels in accordance with NSPS §60.18 or MACT §63.11(b). The commenter notes that subpart HH and new NSPS subpart OOOO specify when performance tests (e.g., 180 days) must occur; however, these regulations do not specify when a flare compliance demonstration must occur. The commenter states that the MACT General Provisions in §63.11(b) requires Method 22 visible emission compliance demonstration and, depending on the flare compliance demonstration type, requires testing to demonstrate exit velocity (i.e., Method 2) and concentration ( $C_i$ ) testing (i.e., Method 18 and ASTM D1946). Also, according to the commenter, §63.772(e)(2)(1) requires sources using a flare as a control device to conduct Method 22 visible emission readings. The commenter requests guidance and clarification as to when the initial flare compliance demonstration/testing must occur for these sources.

**Response:** The criteria specified for flares in the General Provisions (i.e., for NSPS §60.18(c) and for MACT §63.11(b)) must be met upon operation of the flare. This includes all required calculations and associated testing specified under those sections. A source using a flare to comply with subpart HH would have to comply with the Notification of Compliance Status provisions in §63.772(d)(2) for flares. Since this report is due within 180 days of the applicable compliance date, the initial compliance demonstration would have to be completed within that period.

**Comment:** One commenter (4263) states that the EPA should revise §63.772(e) to exclude flares from the requirements to conduct a performance test in accordance with §63.772(e)(3) and provides suggested regulatory language. The commenter explains that flares are subject to provisions of §63.772(e)(2).

**Response:** The EPA disagrees with the commenter and maintains that flares operated to meet the requirements of §§63.771(d)(1), (e)(3)(ii) or (f)(1) must meet the requirements of §63.772(e)(3). The EPA believes the existing language in §63.772(e)(1)(i) and (e)(2)(ii) is clear regarding the requirements for flares and no revisions are necessary.

**Comment:** One commenter (4263) states that the EPA should revise §63.772 (e)(3)(v) to apply only to small glycol dehydration units that use a control device to comply with the limits set out at §63.765(b)(1)(iii) and provides suggested regulatory language. The commenter explains that the cited paragraph only applies to small glycol dehydration units that are equipped with a control device, as referenced by §63.772(d)(1).

**Response:** The section the commenter is referring to, §63.772(e)(3)(v), only applies to control devices that are used to comply with the BTEX limit specified in §63.771(f)(1).

**Comment:** One commenter (4263) states that the EPA should revise §63.772(e)(3)(i)(B) and §63.772 (e)(3)(v) to provide correct citations/references and provides suggested regulatory language. The commenter explains that the cited §63.765(b)(1)(iii) specifies BTEX emission limits, not total HAP concentration limits, and §63.771(f)(1) does not specify BTEX emission limits.

**Response:** The commenter is correct that §63.771(f)(1) does not specify a BTEX limit. The EPA will revise the rule language in §63.772(e)(3)(v) to reference §63.765(b)(1)(iii).

**Comment:** One commenter (4266) notes that many of the revisions to the control equipment requirements of §63.771 apply to equipment that is currently required. The commenter adds that no provisions have been made to indicate when these requirements were changed. The commenter states that the EPA should revise the proposed rule so that the new performance

testing requirements apply only to control equipment installed for the purpose of complying with this subpart after the effective date of this rule.

**Response:** The revisions to require performance testing for all control devices except condensers was intended to apply to all control devices complying with the provisions of subparts HH and HHH. We provided a 3 year compliance period for existing sources in subpart HH in §63.772(e)(3)(vi)(A), and in subpart HHH in §63.1272(d)(3)(vi)(A). We have added dates in both of these sections specifying which control devices have up to 3 years to conduct the performance test or install a unit tested by a manufacturer.

#### *3.5.1.1 Miscellaneous Comments*

**Comment:** One commenter (4191) suggests that the EPA require that the waste gas flow, pressure, and temperature range be listed by the manufacturer and monitored by the operator in the field to ensure that actual operation is within the specification of the passing test for control devices. The commenter further suggests that operators be required to develop a maintenance schedule to ensure control devices are operating at manufacturer specifications.

**Response:** The EPA is revising the final rule to stipulate such flow volumes may be modeled by computer software tools that are standard in the industry for such purposes. We are also requiring a maintenance and repair log for such devices which must be updated by actions taken following the failure of any failed visual inspection, which is to be performed quarterly.

**Comment:** One commenter (4104) notes that §63.1283(b) requires semi-annual inspections of manufacturer performance tested combustion control devices. The commenter states that the EPA should not stipulate a specific inspection frequency. Instead, the commenter recommends that inspection and maintenance practices should be based on manufacturer specifications or industry practices with procedures documented in the required inspection and monitoring plan. Another commenter (4266) makes the same comment with respect to §63.773(b).

**Response:** The EPA believes semi-annual inspections should be required to ensure manufacturer performance tested combustion control devices are operating properly. There may be cases where a manufacturer does not specify periodic inspections. In those cases, it is important that source owners perform periodic inspections. The EPA believes that semi-annual inspections are not overly burdensome. A semi-annual visual inspection is sufficient and appropriate for manufacturer performance tested combustion control devices.

**Comment:** One commenter (4266) also notes that §63.773(d)(3)(i)(C) should clarify that a heat sensing monitoring device to indicate continuous ignition of the pilot flame is not required for flares equipped with electronic ignition systems.



In addition, one commenter (4104) states that, for combustion control devices performance tested by the manufacturer, §63.1283(d)(3)(i)(H)(2) requires a heat sensing monitoring device equipped with a continuous recorder that indicates the continuous ignition of the pilot flame. The commenter states that this requirement should not apply for control systems with electronic ignition systems.

Similarly, one commenter (4266) notes that §63.772(i)(2) requires that a pilot flame be present at all times of combustion control device operation. According to the commenter, this requirement is not applicable for combustion control devices equipped with electronic ignition systems. The commenter adds that for combustion control devices equipped with electronic ignition systems, the rule should add a requirement that these be operational at all times of combustion control device operation. The commenter provides suggested regulatory text.

**Response:** We do not believe that an electronic ignition system is equivalent to a heat sensing monitoring device for either a flare or a combustion control devices tested by the manufacturer under subparts HH and HHH. There is not sufficient data at this time to suggest that electronic ignition systems on combustion devices are capable of continuously supplying a constant source of ignition to keep a flame present on a continuous basis. In addition, for flares, test data for which the current standards in §§63.11(b) and 60.18 were written show that operating a flare with a continuously lit pilot adds an additional degree of flame stability to the flare itself. Therefore, no changes are being made to §§63.773(d)(3)(i)(C), 63.1283(d)(3)(i)(H)(2), or 63.772(i)(2) in response to this comment.

**Comment:** One commenter (4266) states that the EPA should clarify that the requirements in §63.771(d)(1)(i) for enclosed combustion control devices for "sources except small glycol dehydration units" (i.e., large dehydration units and tanks) is correctly interpreted as:

- Operators may comply with the requirements to reduce HAP emissions in accordance with §§63.771(d)(1)(i) (A), (B), (C), or (D).
- Operators that comply with the requirement to reduce HAP emissions in accordance with §63.771(d)(1)(i)(C) are only required to conduct an initial performance test that demonstrates that the combustion zone profile has a minimum temperature of 760°C.

**Response:** The commenter is incorrect. Section 63.771(d)(1)(i)(D) is a clarification of A, B or C, not a standalone requirement. Concerning §63.771(d)(1)(i)(C), the owner or operator must perform an initial performance test to determine the performance (control efficiency) of the control device at a combustion zone temperature of at least 760°C and must be using the combustion zone temperature as an indicator of control efficiency. In other words, the owner/operator must verify the control efficiency achieved at the desired combustion zone temperature before that combustion zone temperature can be used as an indicator of control efficiency.

Additionally, in order to use combustion zone temperature as an indicator of control efficiency, the combustion zone temperature must be at least 760°C.

**Comment:** Two commenters (4104, 4266) state that "uniform" should be deleted from §63.771(d)(1)(i)(C) because "uniform" is not defined in the rule, and the complex interactions of flame zone reactions, mixing, and convective and radiative heat transfer preclude "uniform" combustion zone temperature profiles. The commenters state it appears that the EPA's intent is that the combustion zone profile must have a minimum temperature of 760°C such that there are no low temperature pathways for HAPs to escape destruction.

**Response:** We agree with the commenters. This section now specifies a minimum temperature rather than a uniform temperature. We made similar changes to §63.772(e)(3)(vi)(B)(2).

**Comment:** One commenter (4266) notes that §63.772(f)(3) states: "For inlet gas flow rate, compliance with the operating parameter limit is achieved when the value is equal to or less than the value established under §63.772(h)." However, the commenter notes that §63.772(h) only applies to manufacturer performance tested combustion control devices and would not apply to dehydrators that are not equipped with manufacturer performance tested combustion control devices. Another commenter (4104) made the same comment with respect to §63.1282(e)(3) and §63.1282(h).

**Response:** We agree with the commenters and have revised these sections to allow for manufacturer or non-manufacturer tested units.

**Comment:** One commenter (4266) notes that §63.772(i)(1) requires the continuous monitoring of the inlet flow rate for manufacturer performance tested combustion control devices, and the flowmeter is required to have an accuracy of +/- 2 percent. The commenter asserts that flowmeters for this type of low pressure low velocity stream application and service are not feasible and demonstration of flow to the enclosed combustion device should rely on appropriate models (E&P TANK or process simulation model for tanks, GRI-GlyCalc™ or process simulation model for dehydrators) to set volumetric operating parameters for conforming with a manufacturer's range for a combustion device. The commenter states that a process simulation model may be used to establish a lower and upper limit for oil throughput in a storage tank which corresponds with a manufacturer's Btu operating range for a combustion device. The commenter adds that an operator could then use their average production rates, as determined by normal production volume accounting methods and frequencies, to ensure they are within this range and demonstrate compliance. The commenter requests that the EPA modify the proposed rule to eliminate continuous flow metering to control devices and enable the use of appropriate models to set limits on normally measured parameters to demonstrate compliance. Given the small size, dispersed nature, and large number of units affected by this rule, the commenter contends that

these changes would appropriately reduce burden while providing for compliance demonstration and monitoring.

**Response:** We agree with the commenter and have revised §§63.772(i)(1) and 63.1282(h)(1) to allow a flow calculation.

### **3.5.2 Addition of Definition for Flare**

**Comment:** One commenter (4192) supports the definition of flare (“Flare means a thermal oxidation system using an open flame (i.e., without enclosure)”), and another commenter (4246) suggests adding a definition of “flare” to §63.761.

One commenter (4263) states that the EPA should revise the definition of flare to reflect the types of flares evaluated by the EPA in its development of the general control device requirements for flares, i.e., those flares that were evaluated as part of the *Flare Efficiency Study*, EPA-600/2-83-052, U. S. Environmental Protection Agency, Cincinnati, OH, July 1983. The commenter states that flares do not include ground flares or enclosed combustors. The commenter also states that the proposed definition of flare is appropriate, but is too broad and goes beyond the meaning of the term flare, as regulated by the general control device provisions, part 60 and part 63.

**Response:** We agree that the final rule should include a definition for flare, which we provided in the proposed rule. However, the definition is intended to clarify which flares must follow the requirements in §63.11 and which can rely on manufacturer’s testing. Thus, we did not modify the definition to reflect all the types of flares evaluated by the EPA.

### **3.5.3 Monitoring, Recordkeeping and Reporting**

**Comment:** One commenter (3529) believes that the notification, recordkeeping, monitoring and annual reporting requirements in the proposed NSPS and NESHAP rules are extremely burdensome for operators and for state regulators with limited resources. The commenter states that the proposed rules require operators to install expensive monitoring systems with questionable environmental benefits. The commenter believes that the proposed rules will have devastating economic impacts on small operators.

One commenter (4358) states that the system of notifications, monitoring, recordkeeping, performance testing and reporting requirements for compliance assurance is overly burdensome for the small and/or temporary affected facilities that the EPA is regulating.

**Response:** We estimate the burden to the industry imposed by the final rule and found that the burden was not unreasonable, even for small sources. *See* the discussion of the cost impacts in section XI. of the preamble.

#### *3.5.3.1 Calibration Procedures Associated with Parametric Monitoring*

**Comment:** One commenter (4266) notes that requirements for using an enclosed combustion device for HAP control under subpart HH or HHH are specified in §63.771. However, the commenter states that operational conditions in the oil and natural gas production sector are very different from those experienced at refineries or chemical plants. According to the commenter, conditions of intermittent, variable and turbulent flow and variable temperature and pressure make it infeasible to perform the test methods in the production field that are typically used in refineries or chemical plants. The commenter adds that coupled with the dispersed and remote nature of the small sources regulated under this rule, the proposed requirements are not appropriate and are unnecessarily burdensome.

The commenter (4266) requests that the requirement in §63.771(d)(1)(i)(A) should be modified to require reduction of either TOC or HAP emissions by 95 percent on a volumetric concentration basis using a “carbon balance” methodology for analysis of the exhaust stack effluent from an “enclosed combustion device” being used as a control device to demonstrate reduction efficiency. The commenter suggests test methods and a procedure to determine TOC. The commenter provides a table that shows this calculation and outcome for an assumed stack effluent composition. The commenter states that the suggested carbon balance methodology is similar to that described in EPA’s Technical Report “EPA-AA-SDSB-80-05” *Carbon Balance and Volumetric Measurements of Fuel Consumption* used by the EPA for vehicle testing.

**Response:** The EPA agrees that operational conditions in the oil and natural gas sector are unique. For that reason, the EPA gives the option for sources to purchase an enclosed combustor that has passed a test performed by the manufacturer. The EPA evaluated the “carbon method” suggested by the commenter but found that the destruction efficiency measurement should remain as it is. The inclusion of CO as an indicator of destruction is not entirely accurate. The equation, as the commenter suggests, would make it extremely difficult for a combustion control device to fall below 95 percent.

**Comment:** One commenter (4266) states that the EPA should modify the requirement in §63.771(d)(1)(i)(B) of the proposed rule to demonstrate that TOC (as propane – method 25A) concentration in the stack exhaust from an enclosed combustion device is less than 200 ppmv corrected to 3 percent CO<sub>2</sub> in the stack. The commenter notes that using the carbon balance methodology described above a 200 ppmv TOC would correspond to slightly above 98 percent

destruction efficiency which leaves a wide margin between the alternative of 95 percent destruction efficiency.

The commenter notes that the proposed rule indicates an alternative control device exhaust concentration requirement of less than 20 ppm corrected to 3 percent oxygen. According to the commenter, combustors typically have carbon dioxide concentrations of approximately 3 percent and oxygen concentrations of approximately 16 percent. The commenter states that 20 ppm corrected to 3 percent oxygen corresponds to an in-stack actual concentration of approximately 5 ppm which would likely correspond to a destruction efficiency approaching 100 percent (the alternative requirement is 95 percent destruction). The commenter believes this is a simple mistake and the correct formulation would be corrected to 3 percent CO<sub>2</sub>. The commenter states that this would be consistent with §§63.772(h)(6)(vi) and 63.772(h)(7)(i)(B), where the proposed rule indicates the concentration limits for the manufacturers of combustors conducting a performance test and specifies an exhaust concentration requirement of being less than 10 ppm corrected to 3 percent carbon dioxide. The commenter notes that this appears inconsistent with the 3 percent oxygen correction stated in §63.771(d)(1)(i)(B), where it outlines the general field performance test requirements. As stated, according to the commenter, the manufacturers of combustors would actually have a less restrictive limit than owners conducting a field performance test.

**Response:** The EPA does not agree with the commenter that CO is equivalent to destruction of TOC and we have not modified the calculation of destruction efficiency as suggested. The EPA has reviewed O<sub>2</sub>/CO<sub>2</sub> correction and found that it was referenced appropriately in the rule for the referenced combustion controls.

**Comment:** One commenter (4266) adds that the EPA should modify the requirements in §63.772(h) to conform with the carbon balance test methodologies for field performance testing. The commenter suggested that the ppmv performance criteria stated in §63.772(h)(7)(i)(B) should be modified to 100 ppmv TOC (as propane) corrected to 3 percent CO<sub>2</sub>, which corresponds to approximately 99 percent destruction efficiency and provides ample buffer between a manufacturers tests for certification and the required 95 percent destruction efficiency for field demonstration. As currently constructed, the commenter states that the manufacturers certification testing must show approximately 99.97 percent destruction which is unreasonable and certainly not supportable from the standpoint of rule cost effectiveness.

**Response:** The EPA has targeted 10 ppmv TOC (as propane) corrected to 3 percent CO<sub>2</sub> as the benchmark to provide for an ample margin of safety in contrasting a device tested in a controlled environment versus a device operating at field conditions. Field gas is neither available nor practical for use in manufacturer-testing these devices, and a homogenous fuel such as propene is unlikely to present all the combustion challenges that field gas would provide in actual operation.

Furthermore, field conditions involve greatly varying wind and ambient humidity conditions that present further combustion challenges for operation these devices. Given the differences between field operation and controlled environment, the EPA has set the bar at a level calculated to provide 99 percent confidence in the ability of a manufacturer-tested device to meet the field demonstration requirement under a variety of field operating conditions. Lowering the standard to the level suggested by the commenter reduces this margin of safety to a level that is several times more likely to result in a certified device failing the field demonstration requirement of 95 percent destruction.

**Comment:** One commenter (4266) suggests that the EPA should remove §63.772(h)(7)(i)(C) to eliminate the consideration of CO concentration in the manufacturers certification testing. By imposing a CO concentration, the commenter contends that the EPA is effectively converting the destruction efficiency testing to combustion efficiency testing which is not required by nor appropriate for the proposed rule.

**Response:** The EPA disagrees with the commenter and holds that CO measured during the manufacturers' certification test is for the purpose of ascertaining complete destruction of organic hydrocarbon compounds.

#### *3.5.3.2 Limit Use of Design Analysis to Condensers*

**Comment:** Several commenters (4104, 4214, 4249) state that the EPA does not provide or reference test results, studies, or source data from subpart HHH (or subpart HH) affected sources to support what they “have learned regarding control devices and compliance” and the decision to remove the design analysis compliance option. The commenters state that if the EPA lacks evidence from units currently complying with subpart HHH (or subpart HH) to support this decision, such as non-compliant tests from design analysis-compliant control equipment, then the final rule should retain the design analysis compliance option consistent with the existing rule.

**Response:** The EPA believes that periodic testing of affected sources is the best method for determining compliance. In the case of enclosed combustors, sources have the alternative option to purchase a combustion control device that has been tested (and passed) by the manufacturer. The EPA believes that periodic testing for other noncondenser controls is appropriate and necessary to show compliance.

**Comment:** One commenter (4039) believes that the EPA should clarify that design analysis is an acceptable tool for determining facility emissions status. The commenter states that removal of this option will result in the loss of the ability to use design analysis to determine major or minor status. If this is the case, the commenter contends that states and permittees would be forced to conduct sampling at all facilities using controls solely for the purposes of determining if they are

subject to the rule, not only to demonstrate compliance with the rule (assuming that a facility is, indeed, subject to the rule.) The commenter requests that the EPA clarify that design analysis will remain a tool for determining facility status and that sampling is only required to demonstrate compliance with the emission reduction requirements.

**Response:** The proposed changes that removed the design analysis option for certain control devices applies to sources that are subject to the either subpart HH or HHH and does not pertain to sources determining their major source status.

**Comment:** One commenter (4230) raises concerns over elimination of the design evaluation alternative and whether the alternative would still be appropriate for demonstrating the flare assessment requirements under §63.11(b). According to the commenter, one option would be to allow the flare assessment to be based on design principles and GRI-GLYCalc™ emission estimates. The commenter adds that then the challenge becomes to assure the proper BTU and tip velocities are met under actual operating conditions. From experience, the commenter states that this has been addressed by visible emission testing and pilot light records. In West Virginia, the commenter states that sources have spent a great deal of money testing dehydration units only to find that the test data was questionable due to leaking Method 18 bags and/or questionable audit spike results, which is further compounded by trying to capture a representative sample within the high moisture content dehydration still vent stream. The commenter says that it seems the testing of dehydration units has been plagued with technical difficulties from the start. It was noted by the commenter that within the development of the GRI-GLYCalc™ software, GRI had to use a total condensation method to verify emissions during their case studies. Therefore, the commenter contends that the sampling and analysis methods used by the natural gas industry seem to conflict with those prescribed by Method 18.

According to the commenter (4230), in light of the previously allowed design alternative and due to the high water content of these production streams, flares used at minor source dehydrators in West Virginia have been allowed to use a design analysis in order to demonstrate compliance with the heat content and tip velocity requirement by using GRI-GLYCalc™ predictions. However, the commenter states that it was noted that the federal flare provisions actually require Method 18 and Method 2 to be utilized as field test methods in order to assess compliance with the minimum BTU and tip velocity requirements specified by §63.11(b). As an alternative, if field testing of flares remains a priority to assess whether the flare is being operated as designed, the commenter requests that the EPA specify when this field testing should be completed as well as develop guidance on how this testing can be accommodated by one of the Method 18 options or develop a new methodology that can be used to handle the condensibles when obtaining grab samples. The commenter states that grab samples are specifically mentioned here since the onsite GC analysis required by the alternative ASTM Method D6420-99 (2004) may not be practical in all instances.

**Response:** It was not our intent to disallow the design criteria under §63.11(b) from being used to demonstrate compliance for flares. We have revised §§63.772(e) and 63.1282(d) to clarify that the design criteria in §63.11(b) still applies to flares complying with subparts HH and HHH.

**Comment:** One commenter (4265) requests that the EPA allow a design analysis, as under the existing subpart HHH, as a means to demonstrate control device performance for all control equipment. The commenter asserts that the elimination of the design analysis for demonstrating control device performance for all but condensers in the proposed rule is unsubstantiated. According to the commenter, the EPA does not provide sufficient test data or other supporting evidence to justify the elimination of this compliance option in the proposed rule.

Several commenters (4104, 4192, 4214, 4246, 4249) state that the EPA should allow a design evaluation as an alternative for noncondenser controls.

One commenter (4457) supports periodic testing requirements proposed for all non-condenser control devices (and elimination of design evaluation alternative). However, the commenter states that the EPA must apply these requirements to all devices, including condensers. The commenter contends that the EPA fails to justify not doing so.

**Response:** Regarding the design evaluation, such a requirement in lieu of a performance test is only appropriate for condensers. Emissions from condensers are accurately predictable using readily available physical properties information (e.g., vapor pressure data and condensation calculations). In most cases, one may not even need to conduct emissions testing to determine actual emissions using such data for the compounds of interest. For example a requirement that “the temperature at the outlet of the condenser shall be maintained at 50°F below the condensation temperature calculated for the compound of interest using the reference equation” (e.g., NIST Chemistry WebBook at <http://webbook.nist.gov/chemistry/>) is sound.

For other types of control technologies such as carbon adsorption systems and combustion devices, the ability to predict emissions depends on data developed by the vendor and such data may not reliably result in an accurate prediction of emissions from a specific facility. There are variables (e.g., A/F ratios and waste constituents for combustion; varying organic concentrations, constituents, and capacity issues including break-through for carbon adsorption) that make theoretical predictions less reliable. The effects of these site-specific variables on emissions are not easily predictable and establishing monitoring conditions (e.g., combustion temperature, vacuum regeneration) based on vendor data will likely not account for those variables.

That is not to eliminate entirely the use of vendor data in establishing initial or conservative compliance monitoring conditions for carbon adsorption and combustion devices. An alternative



requirement is to allow the source owner to establish some initial conditions based on vendor-supplied data (e.g., 50°F above the demonstrated laboratory or pilot model destruction temperature) but which must be substantiated and redefined, as necessary, with a performance test (e.g., initial, annual, permit term). For carbon adsorption installations, specifically, another alternative is to use very conservative capacity factors to assure compliance (e.g., replace adsorption material at 50 percent of the predicted capacity/life of the adsorbent). This approach combined with a periodic break through check with a VOC analyzer can be an effective compliance monitoring approach.

### *3.5.3.3 Remove Residence Time Requirement for Combustion Control Devices*

**Comment:** Two commenters (4192, 4246) support the EPA’s proposal to remove the 0.5-second residence time requirement for combustion control devices.

**Response:** The EPA agrees with the commenter and has removed the residence time requirement.

### *3.5.3.4 Clarify Location of Temperature Sensor*

**Comment:** Two commenters (4104, 4266) find the proposed language regarding the location of a temperature sensor for thermal vapor incinerators (§63.1283(d)(3)(i)(A)) to be poorly written and confusing. The commenters state that a literal reading infers that a thermal vapor incinerator performance test that does not demonstrate that combustion zone temperature is an accurate indicator of performance is not required to install a temperature monitoring device. Further, the commenters state demonstrating that “combustion zone temperature is an accurate indicator of performance” would require testing over a range of temperatures and correlating performance with temperature. According to the commenters, this is not a performance testing requirement in the proposed rule nor should it be. In addition, the commenters state that the proposed rule does not define or discuss how to determine “a location representative of the combustion zone temperature.” To address these issues, the commenters provide proposed revised text for this paragraph and for similar text in §63.1283(d)(3)(i)(D) for boilers and heaters used as a control device. One of the commenters (4266) recommends making the same types of changes to §63.773(d)(3)(i)(A).

One commenter (4266) adds that the phrase “or downstream temperature” that has been added to the recommended rule text is because of the practical considerations associated with measuring combustion zone temperatures. The commenter states that high temperatures and reactive chemical species rapidly degrade in situ measurement devices. The commenter adds that equipment properly installed for downstream temperature measurements typically have a much longer operational life and provide an accurate indication of combustion conditions. As long as

the compliance temperature is in the same location as the temperature measured during the performance test, the commenter contends that location provides compliance assurance. The commenter also recommends revisions to §63.773(d)(3)(i)(D) to address the temperature sensor location issue, previously discussed for thermal vapor incinerators, for boilers and heaters where the waste gas is not mixed with or used as the primary fuel.

**Response:** The EPA agrees with the commenter that the temperature sensor location can be downstream of the combustion zone for a boiler or process heater or thermal vapor incinerator, as long as the compliance temperature is in the same location as the sensor during the performance test.

#### *3.5.3.5 Revised Temperature Monitoring Device Minimum Accuracy Criteria*

**Comment:** Two commenters (4104, 4266) disagree with the EPA's proposal to change the temperature monitoring device accuracy requirements from +/- 2 to +/- 1 percent of the temperature being monitored. The commenters state that the EPA provides no data or analysis to support the need for a more stringent accuracy requirement. At typical control device temperatures, the commenters state that any change in combustion efficiency and emissions caused by a temperature change represented by the difference between 1 and 2 percent accuracy is most likely not detectable. Further, according to the commenters, the EPA contradicts the need for the rule revision by stating that it believes that current temperature monitoring devices can meet the criteria without modification. If current devices are sufficiently accurate, the commenters question why there is a need for a new accuracy standard. While stating this is a relatively minor issue, the commenters believe it provides another example of the proposed rule imposing an administrative burden without good cause. The commenters contend that the primary effect of the rule revision would be to impose burden to modify internal procedures and/or recalibrate select devices.

**Response:** The EPA agrees with the commenters and has removed the stricter temperature accuracy requirements from the rule.

#### *3.5.3.6 Recordkeeping, Reporting, and Monitoring Requirements for Carbon Adsorbers*

**Comment:** Two commenters (4104, 4266) state that the current rule flow meter accuracy requirement of +/- 10 percent for regenerative-type carbon adsorption systems should be retained in §63.1283(d)(3)(i)(F)(1). The commenters state that the EPA has not demonstrated the need for a revised flow meter accuracy requirement including how this revision will improve emission control, nor demonstrated that the additional cost to replace existing equipment and install alternative flowmeters is justified.

**Response:** The EPA agrees with this comment and will keep the 10 percent accuracy requirement in the rule.

**Comment:** Two commenters (4104, 4266) state that the checks of mechanical connections for leakage for regenerative-type carbon adsorption systems required by §63.1283(d)(3)(i)(F)(1) should be performed every 3 months, rather than monthly, in concert with the required visual inspections. Absent moving parts, the commenters contend that the mechanical connections are extremely slow to develop leaks and more frequent checks add unnecessary labor and recordkeeping burden. One commenter (4266) makes the same comment regarding §63.773(d)(3)(i)(F)(1).

**Response:** We have revised the two sections cited by the commenters to allow quarterly monitoring for all components.

#### *3.5.3.7 Parametric Monitoring of Control Device for BTEX Emissions from Small Glycol Dehydration Units*

**Comment:** Several commenters (4104, 4170, 4185, 4241) agree with the EPA's decision that BTEX CEMS are not practical due to attributes of the affected sectors – e.g., relatively remote locations, unmanned facilities, etc. In addition, the commenters state that BTEX CEMS operation and performance are questionable (i.e., not an established technology), emission levels are very low, and the benefit from such a high cost compliance assurance approach cannot be supported. The commenters state that both capital and ongoing operation and maintenance costs would be significant even if the technology was feasible. The commenters add that CEMS should not be considered for this rule. One commenter (4185) adds that given the availability of an acceptable alternative (parametric monitoring), requiring the use of CEMS on small glycol dehydration units is not justified.

Two commenters (4170, 4185) agree that the parametric monitoring approach that the EPA has proposed as an alternative to CEMS is a reliable and cost-effective way of ensuring that BTEX controls on small glycol dehydration units are functioning properly. One commenter (4185) notes that small glycol dehydration units are in widespread use throughout the natural gas supply chain.

Three commenters (4192, 4193, 4246) believe that CEMS should not be required for small dehydrators. The commenters state that small dehydrators are usually in remote locations lacking access to electricity, are often exposed to weather that would reduce CEMS reliability, and without easy access to qualified personnel to monitor and maintain CEMS devices. The commenters state such a requirement would be entirely infeasible.

**Response:** We agree with the commenters and have not included CEMS in the final rule.

**Comment:** One commenter (4266) states that the requirements for continuous monitoring of parameters to demonstrate continuous compliance are unnecessarily complex, likely not technically achievable in certain instances, and unnecessarily costly. The commenter states that the EPA should redraft the performance testing and continuous compliance monitoring requirements of the rule to: (1) simplify requirements, include only requirements appropriate for the large number and type of dispersed small sources which would be subject to the rule, (2) reduce the extensive cross referencing in the testing and monitoring requirements to reduce the confusing nature of the proposed rule and lessen the chance that the confusing construction of the rule will inadvertently lead to non-compliance incidents through misunderstanding, and (3) reduce the unnecessary economic burden.

Several commenters (4192, 4193, 4246) believe that CPMS should not be required for small dehydrators. The commenters state that small dehydrators are usually in remote locations lacking access to electricity, are often exposed to weather that would reduce CPMS reliability, and without easy access to qualified personnel to monitor and maintain CPMS devices.

**Response:** The EPA disagrees with the comment that monitoring required to demonstrate compliance is unnecessarily complex or costly. Monitoring is vital to ensure compliance with these regulations. The EPA acknowledges that some sources are very dispersed and/or have no electricity and we designed the monitoring requirements with that in mind.

**Comment:** One commenter (4263) objects to a requirement for CPMS for vapor combustion units because it is reasonable to equip small vapor combustion units with sensing equipment to indicate the presence of a pilot flame or auto-ignitor signal, but it is not cost-effective to install and operate a continuous recorder or data acquisition system. The commenter states that many regulated entities operate numerous vapor combustion devices in certain fields or operating areas and the aggregate cost to install a CPMS on each unit would far exceed the benefit. The commenter notes that CPMS is not practical or cost-effective for unmanned facilities without remote communication. Another commenter (4228) agrees that CPMS may not be feasible at remote locations due to lack of electricity and accessibility. The commenter adds that alternative manual data logging procedures are needed and should occur on the normal site visitation schedule.

**Response:** It is unclear which type of CPMS the commenter is referring to. There are inexpensive ways to ensure that a pilot light is on at all times. A CPMS does not necessarily mean that the parameter value needs to be recorded.

**Comment:** One commenter (4246) states that the EPA did not include costs associated with installing, maintaining, and operating a CPMS. The commenter notes that most storage tanks subject to these requirements are located in remote areas without access to sufficient available electricity or limited remote transmitting unit (RTU) space. In addition, the commenter states that the use of a programmable logic controller (PLC) is often necessary to record, average, and analyze data to determine if a threshold has been exceeded. According to the commenter, the calibration, maintenance, and repair of a CPMS requires specialized personnel knowledgeable in this type of instrumentation and controllers. The commenter adds that it is normally not possible for plant personnel to perform these activities during regular visits.

**Response:** The EPA disagrees with the commenter. Our calculation of the cost and environmental impacts of the MACT compliance options for storage vessels (see Docket ID No. EPA-HQ-OAR-2010-0505-0046) took into account the cost of CPMS systems for a flare. In addition, the Information Collection Request Supporting Statement for subpart HH (see Docket ID No. EPA-HQ-OAR-2010-0505-0043) and subpart HHH (see Docket ID No. EPA-HQ-OAR-2010-0505-0044) each included CPMS costs.

**Comment:** One commenter (4263) states that the EPA should amend §63.773(d)(3)(i)(A) to provide uniform inspection and monitoring requirements for small vapor combustion control devices equipped with a continuous pilot or auto ignition system and provides suggested regulatory text. The commenter explains that there are thousands of small vapor combustion units used by the industry throughout the U.S. to combust vapors emitted from crude oil and condensate tank batteries and glycol dehydration unit process vents. According to the commenter, these devices are often located in remote locations where there is no electricity and where access can be limited during winter months. The commenter states that the vapor combustion units may be equipped with a continuous pilot or an auto-ignition system designed to ignite gas/vapor that may be vented intermittently from the controlled equipment.

The commenter (4263) believes that operators would be obligated to submit a request for approval of the selected process parameters to be monitored for each vapor combustion unit, which would result in an unnecessary burden on industry and a substantial administrative burden on the delegated state or local authorities and the EPA for sites under federal jurisdiction. Given that small vapor combustion units are commonplace in the industry, with many thousands of units currently in service throughout the U.S., the commenter recommends that the EPA promulgate uniform standards for testing, inspections and monitoring for such units. To demonstrate performance of these devices, the commenter states that it is sufficient to rely on initial performance testing, or manufacturer's performance testing supplemented with periodic inspections or monitoring to document proper operation in conformance with each device's design.

**Response:** The EPA believes that only in certain cases (those proposed in the rule) is periodic testing not necessary. In all other cases, periodic performance testing is necessary to ensure compliance with these regulations. Monitoring and inspections are good indicators of performance for combustion control devices, but they are not fail-safe. We have edited the rule language to take into account ignition systems other than those with a pilot flame.

**Comment:** One commenter (4263) adds that the EPA should amend §63.773(d)(3)(i)(H) to remove the requirement to install a continuous monitoring system that measures gas flow rate at the inlet to the control device and provides suggested regulatory text. The commenter explains that the inlet gas flow rate to the control device is not an indicator of performance. The commenter adds that control devices should be properly sized for the intended use. Performance is demonstrated by the manufacturer's performance test and periodic monitoring or inspections documenting that the device is operated properly in conformance with its design.

**Response:** We have added §63.773(d)(3)(i)(H)(I) to allow calculation of the flow rate using various process simulation programs. Similarly, section §63.1283(d)(3)(i)(H)(I) has been added to subpart HHH.

**Comment:** One commenter (4191) suggests that waste gas flow, pressure, and temperature range be listed by the manufacturer and monitored by the operator in the field to ensure that actual operation is within the specification of the passing test for control devices. The commenter further suggests that operators develop a maintenance schedule to ensure control devices are operating at manufacturer specifications.

**Response:** The EPA agrees that operators should develop a maintenance schedule or follow such a schedule provided by the manufacturer, if available. The EPA communicated with flare/combustion control device manufacturers before proposal and learned that some manufacturers do not typically specify operating parameters for the control device. Therefore, the EPA does not feel it is practical to rely solely on manufacturer-recommended operating parameters.

**Comment:** One commenter (4266) notes that §63.773(d)(1)(iii) requires that the owner or operator conduct CPMS equipment performance checks, system accuracy audits, or other audit procedures specified in the site-specific monitoring plan at least once every 12 months. The commenter contends that the EPA should not stipulate a specific frequency for CPMS checks and audits. Rather, the commenter recommends that the appropriate frequency should depend on the monitoring parameters and equipment. The commenter recommends that the frequency of CPMS checks and audits will be documented in the site-specific monitoring plan, and supported by manufacturer recommendations.

**Response:** The EPA maintains that performance checks and system accuracy audits be completed at least once every 12 months. These types of checks are necessary to ensure that monitoring systems are operating properly and accurately.

**Comment:** One commenter (4457) states that the EPA must also require continuous monitoring of glycol dehydrators. According to the commenter, the EPA proposes not to do so due to practical concerns for some facilities. The commenter suggests that the EPA could find a way to address those on a case-by-case basis, if they arise, rather than weakening the national rule for all sources.

**Response:** The final rule requires CPMS to be installed on all control devices, which by definition provide continuous monitoring.

#### *3.5.3.8 Differences in Requirements for Small and Large Dehydrators*

**Comment:** One commenter (4246) states that the control requirements are essentially identical for large and small dehydrators. The commenter recommends that there should be a more lenient standard for smaller units.

Another commenter (4104) states that rule requirements for small glycol dehydrators should be no more stringent than the analogous large glycol dehydrator rule requirement. For small dehydrators, the commenter recommends that the EPA should consider less rigorous requirements that properly consider relative impacts. The commenter adds that requirements that may warrant less rigor for small dehydrators include controls performance testing exemptions, monitoring exemptions for certain boilers, recordkeeping, and reporting.

**Response:** The EPA established the MACT standards for the small dehydrators in accordance with section 112(d)(2) and (3), which does not authorize the EPA to take into account the stringency of other standards and/or loosen the standards based on such comparison.

#### *3.5.3.9 Information Submittal Using the Electronic Reporting Tool (ERT)*

**Comment:** One commenter (4457) supports the requirement for electronic reporting of all initial and periodic test results and suggests that it is vital for the EPA to require prompt public reporting on the Internet of test results. One commenter (4457) supports the EPA's proposal for electronic reporting as vital to strengthen the EPA, state, and citizen enforcement, and provide prompt information transparency for local communities near oil and gas facilities. As the public has a right to all collected reports under the CAA, the commenter states that the EPA must require immediate disclosure to the public on the Internet, without the need for any person to submit a FOIA request for such a report.

One commenter (4266) believes electronic reporting should not be mandatory and should only be voluntary. Even with the ERT, the commenter contends that paper notification, test plans, and reports may still be required to satisfy individual state requirements. The commenter does not advocate duplicate effort and until state requirements for redundant reporting have been eliminated it is premature to consider mandatory electronic performance test reporting. The commenter states that the added burden for preparing and inputting data into the ERT is cumbersome and the cost has not been adequately addressed.

**Response:** In the final rule, as a step to increase the ease and efficiency of data submittal and improve data accessibility, the EPA is requiring the electronic submittal of select performance test data. Data entry will be through an electronic emissions test report structure called the ERT. Please see sections VIII.C and IX.G of the preamble for further discussion of the ERT.

#### *3.5.3.10 Miscellaneous Comments*

**Comment:** Two commenters (4192, 4246) refer to §63.765 which reads: “(a) This section applies to each glycol dehydration unit subject to this subpart that must be controlled for air emissions as specified in either paragraph (c)(1)(i) or paragraph (d)(1)(i) of §63.764.” According to the commenters, the equation to calculate the BTEX emission limit cannot be used until data is available, which in turn requires the unit to be operated for a period of time before the emission limit is established. The commenters believe this is a backward approach that is likely to lead to non-compliance in certain cases. The commenters state that the EPA should provide a way of determining an emission limit prior to operation, or waive non-compliance during the operating period used to establish the BTEX emission limit. The commenters state that control requirements are essentially the same for large dehydrators and small dehydrators. According to the commenters, there should be an advantage to being a smaller unit. Also, the commenters state that as the gas gets leaner, it becomes more difficult for a unit to meet the 95 percent standard.

**Response:** We disagree that a period is required to excuse or waive non-compliance while data is collected on actual operation of the unit. Prior to operation of the unit, the owner or operator should have information regarding expected BTEX inlet and throughput to calculate the emission limit.

**Comment:** One commenter (4104) requests that the EPA confirm or clarify their interpretation of §63.1281(d)(1)(i).

- Operators may comply with the requirements to reduce HAP emissions in accordance with §63.1281(d)(1)(i)(A) or (B) or (C) or (D).



- Operators that comply with the requirement to reduce HAP emissions in accordance with §63.1281(d)(1)(i)(C) are only required to conduct an initial performance test that demonstrates that the combustion zone profile has a minimum temperature of 760°C.

One commenter (4104) notes that operators that comply with the requirements to reduce HAP emissions in accordance with §63.1281(d)(1)(i)(D) are not required to conduct a performance test because this compliance option is an operating standard and does not have a numerical component. The commenter states that §63.1281(f)(1)(i) provides requirements for enclosed combustion control devices for small glycol dehydration units, and is restrictive because it lacks compliance options parallel to §63.1281(d)(1)(i) (C) and (D).

According to the commenter (4104), confusion results from the failure to define how to demonstrate “a uniform combustion zone temperature.” The commenter states that a minimum temperature target measured at a representative location is all that should be required. Therefore, the commenter suggests adding the initial performance testing requirements in §63.1282(d)(3)(vii) to investigate combustion zone temperature and provides suggested regulatory text.

**Response:** The commenter is incorrect. Section 63.1281(d)(1)(i)(D) is a clarification of A, B or C, not a standalone requirement. Concerning §63.1281(d)(1)(i)(C), the owner or operator must perform an initial performance test to determine the performance (control efficiency) of the control device at a combustion zone temperature of at least 760°C and must be using the combustion zone temperature as an indicator of control efficiency. In other words, the owner or operator must verify the control efficiency achieved at the desired combustion zone temperature before that combustion zone temperature can be used as an indicator of control efficiency. Additionally, in order to use combustion zone temperature as an indicator of control efficiency, the combustion zone temperature must be at least 760°C.

Concerning the use of “uniform combustion zone temperature,” we agree with the commenter. This section now specifies a minimum temperature rather than a uniform temperature. We made similar changes to §63.1282(e)(3)(vi)(B)(2).

**Comment:** One commenter (4266) requests that compliance options parallel to options §63.771(d)(1)(i) (C) and (D) and appropriate for small dehydrators be added to §63.771(f)(1)(i).

**Response:** The compliance options of §63.771(d)(1)(i)(C) and (D) are equivalent to 95 percent control. Under §63.771(f)(1)(i), the source may have to perform at a higher control efficiency than 95 percent to comply with the applicable BTEX limit. Therefore, the combustion zone temperature monitoring option is not appropriate for source complying with §63.771(f)(1)(i).

**Comment:** Several commenters (4192, 4219, 4246) urge the EPA to ensure that the use of GRI-GLYCalc™ or other approved models/process simulators is allowed in order to meet the control requirements for dehydrators contained in subparts HH and HHH. The commenters contend that such methods tend to be relatively inexpensive and they have been commissioned and approved by the EPA in the past.

One commenter (4263) states that the EPA should revise §63.772(b)(2)(i) and §63.1282(a)(2)(i) to allow for the use of ProMax®, AspenTech HYSYS®, or other process simulation software programs for estimating vent emissions from glycol dehydration units. The commenter provides suggested regulatory text. The commenter notes that subpart W of the Greenhouse Gas Reporting Rule, §98.233, provides for the use of process simulation computer programs in calculating emissions from glycol dehydration unit process vents, sweetening units and tanks. The commenter states that subpart W specifically lists AspenTech HYSYS® as an example of a program that may be used. The commenter adds that ProMax®, currently version 3.2, is also commonly used by both regulatory authorities and industry in calculating emissions from oil and gas industry equipment, including dehydrators, tanks and sweetening units. The commenter notes that results of process simulations using PROSIM, the predecessor of ProMax®, compared very favorably with measured emissions, as reported by the American Petroleum Institute.

**Response:** We are not making any changes to the final rule based on these comments. The EPA completed a study<sup>40</sup> that indicated there was an acceptable correlation between stack test results and emissions calculated using GRI-GLYCalc™ such that these calculations could be used for CAA emissions determinations. We have no such information on the other models suggested by the commenter.

**Comment:** One commenter (4263) states that the EPA should revise §63.772(d)(2) to reference paragraph (b)(2) for the GRI-GLYCalc™ procedure (i.e., remove redundancy), clarify that GRI-GLYCalc should be the primary alternative and make technical corrections. The commenter also states that the EPA should revise §63.1282(c)(2) to reference paragraph (a)(2) for the GRI-GLYCalc procedure. The commenter provided suggested regulatory text. The commenter clarified that this is because uncontrolled emissions from the still vent of a glycol dehydration unit are comprised primarily of water vapor with smaller fractions of BTEX and other hydrocarbons. According to the commenter, the water vapor in the still vent stream interferes with traditional Method 18 sampling and analytical methods, which is the reason GRI-GLYCalc is commonly accepted for quantifying emissions from glycol dehydration unit process vents. The

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<sup>40</sup> Memorandum from Jones, Larry G., U.S. EPA, to Mobley, J. David, U.S. EPA, *Glycol Dehydrator Emissions Test Report and Emissions Estimation Methodology*. April 13, 1995. Docket ID No. EPA-HQ-OAR-2004-0383-0034.

commenter stated that most, if not all, owners and operators of small (and large) glycol dehydration units will choose GRI-GLYCalc™ for calculating emissions.

One commenter (4263) adds that direct measurement may be an alternative, but the traditional methods for measuring volumetric flow rate and mass emissions of BTEX from still vents (Methods 1 through 4 and 18) will present challenges in obtaining accurate results, given the water content and very small diameter of the vent pipe. Also, the commenter stated that if Method 18 is used, the water fraction of the sample will have to be condensed and analyzed separately. The commenter stated that the GRI-GLYCalc™ alternative should be listed as the primary alternative, consistent with paragraph (b)(2) of §63.772. Also, the commenter added that the last sentence of the proposed §63.772(d)(2)(iii) should be removed. When BTEX mass emissions are determined using GRI-GLYCalc™, according to the commenter it is not necessary or required to conduct Method 18.

**Response:** We do not believe any changes are necessary based on this comment. The GRI-GLYCalc™ option is clearly stated and we believe it would serve no useful purpose to move it to the first option, regardless of whether the commenter believes it would be the most chosen option. Concerning the comment on conducting a Method 18 analysis, the commenter has misread this section. We are requiring only that the GRI-GLYCalc™ data for the HAPs listed in Method 18 be summed, not that a Method 18 test has to be performed.

**Comment:** One commenter (4266) notes that in §63.772(e)(3)(iii)(B)(4) the proposed rule refers to using GRI-GLYCalc™ 3.0 or higher for determining the mass emission rate of TOC and HAP at the inlet to a control device. The commenter believes this is confusing because it refers to GRI-GLYCalc™ 3.0 or higher but then later in the same paragraph it refers to EPA Methods 18 and 25A, which of course are testing methods. The commenter also requests that §63.772(e)(3)(iii)(B)(4) be modified to clearly allow use of GRI-GlyCalc™ to determine the mass emission rate of TOC and HAP at the inlet to a control device.

**Response:** The section referred to by the commenter was not part of the proposed changes; therefore, we cannot make changes to it in this final action. However, we clarify for the commenter that the referenced section does indeed state that GRI-GLYCalc™ can be used to determine the emissions at the inlet to the control device. Also, as stated in the response to the previous comment, this section does not require a Method 18 or 25A test.

**Comment:** One commenter (4266) states that the test protocols, requirements, and methodologies specified in the rule are unnecessarily complex, likely not technically achievable in certain instances, and unnecessarily costly. The commenter states that the EPA should redraft the performance testing and continuous compliance monitoring requirements of the rule to: simplify requirements, include only requirements appropriate for the large number and type of

dispersed small sources which would be subject to the rule, reduce the extensive cross referencing in the testing and monitoring requirements to reduce the confusing nature of the proposed rule and lessen the chance that the confusing construction of the rule will inadvertently lead to non-compliance incidents through misunderstanding, and reduce the unnecessary economic burden.

The commenter (4266) states that they are not attempting to provide a full “mark-up” of the current proposed rule language due to the confusing complexity and extensive cross-referenced manner of its current construction. The commenter would be willing to draft, or work with the EPA to draft, replacement testing and monitoring requirements and rule text. The commenter asserts that the replacement requirements must be appropriate for the large number of dispersed small sources subject to the rule with the rule text constructed in a straight forward and non-confusing manner with minimization of the use of cross-references. The commenter believes it is likely that cooperating on this issue will yield better results in a quicker time period.

**Response:** Since we proposed changes to only portions of this section of the rule, we cannot now revise the entire section. Therefore, we are unable to make any further changes at this time.

**Comment:** One commenter (4104) notes that §63.1282(a)(2)(ii) requires the determination of a mass emission rate of benzene or BTEX, but only references EPA Method 18, which determines concentration of these species. The commenter notes that EPA Method 1 and EPA Method 2, in addition to EPA Method 18, are required to measure mass emission rates. The commenter recommends that the rule should be reviewed for complete and accurate references to required test methods and appropriate engineering units (e.g., units for emission rate or concentration).

**Response:** The EPA agrees with the commenter and will revise the rule language to reflect this comment.

**Comment:** One commenter (4266) states that the EPA should eliminate the requirements for measurement of inlet flow to an enclosed combustion device and outlet flow from an enclosed combustion device, as per §63.772(e)(3)(i)(A), or outlet flow from an enclosed combustion device, as per §63.772(e)(3)(i)(A). The commenter believes that these measurements are unnecessary to accurately determine destruction and removal efficiency (DRE) for the control device.

The commenter (4266) adds that requiring Method 2, 2A, 2C, or 2D to determine volumetric inlet flow is not appropriate and likely not technically feasible for accurate measurement. The commenter clarifies that a waste gas inlet stream to an enclosed combustion device being used for control for either a storage tank or a small or large dehydrator will be a low pressure (essentially atmospheric) low flow stream with very low velocity which is almost impossible to

measure accurately using the specified methods. Rather than attempting to measure such a stream, the commenter states that the EPA should specify the use of E&P TANK or a process simulation model such as ProSim or HySys to determine the inlet flow and composition of a waste gas stream routed to an enclosed combustion device from a storage tank and GRI-GlyCalc™ 3.0 or higher dehydrator model or a process simulation model such as ProSim or HySys to determine the inlet flow and composition of a waste gas stream routed to an enclosed combustion device from either a small or large dehydrator. The commenter explains that problems with attempting to measure such a stream are more completely described in Attachment H of the comment letter. The commenter notes that the outlet flow from a typical enclosed combustion device has the same low pressure, low velocity, and difficulty for measurement issues as the waste gas inlet. If the EPA insists on a mass balance approach rather than the much simpler and accurate carbon balance approach, the commenter recommends the rule enable the use of Method 2B to calculate outlet flow for the combustion device using the model output information discussed above to calculate inlet flow and composition to the combustion device.

Another commenter (4104) notes that §63.1282(e)(3) states: “For inlet gas flow rate, compliance with the operating parameter limit is achieved when the value is equal to or less than the value established under §63.1282(h).” However, the commenter points out that §63.1282(h) only applies to manufacturer performance tested combustion control devices and would not apply to dehydrators that are not equipped with manufacturer performance tested combustion control devices. One commenter (4266) makes the same comment with respect to §63.772(f)(3) and §63.772(h).

**Response:** In response to the comments, subparts HH and HHH have been revised to allow the inlet flow gas rate to be calculated rather than measured.

**Comment:** One commenter (4263) states that the EPA should replace the term "fuel" with inlet gas in several paragraphs in §63.772 (h)(4), including (h)(4)(i), (h)(4)(iii), (h)(4)(iii)(A) and (h)(4)(iii)(B) and in several paragraphs in §63.1282 (g)(4)(i), (g)(4)(iii), (g)(4)(iii)(A) and (g)(4)(iii)(B) because fuel gas and inlet gas flow to a combustion control device are different parameters.

**Response:** The EPA agrees that fuel gas and inlet gas flow to a combustion control device are different. The EPA has revised the final rule as appropriate where fuel gas should be renamed to inlet gas.

**Comment:** One commenter (4263) states that the EPA should delete §63.772(h)(4)(iii)(B)(3) and consider deleting §63.772(h)(4)(iii)(B) altogether. The commenter adds that the EPA should also delete §63.1282(g)(4)(iii)(B)(3) and consider deleting paragraph §63.1282(g)(4)(iii)(B)

altogether. The commenter explains that §63.772(h)(2) and §63.1282(g)(2) provide that "[p]ropene (propylene) gas shall be used for the testing fuel." The commenter states that it is not necessary therefore to analyze the inlet gas for benzene and sulfur compounds. Also, the commenter states that the EPA has not proposed performance standards related to the composition of the inlet gas, so the analysis of the inlet gas is not useful, other than to demonstrate that propylene was used.

The commenter (4263) states that the EPA should delete §63.772(h)(5)(i) and (ii) and correct paragraph numbers, and also delete §63.1282(g)(5)(i) and (ii) and correct paragraph numbers. The commenter explains that the determination of the volumetric flowrate from the combustion control device outlet using the methods referenced or described in paragraphs (g)(5)(i) and (ii) is not relevant to a demonstration that such a device achieves the performance requirements in (g)(7), which is based on outlet pollutant concentrations. The commenter contends that exhaust volumetric flowrate determinations are only relevant to mass emissions calculations.

**Response:** The EPA agrees that benzene and sulfur compound analysis is not a necessary part of the manufacturer's performance test and has removed those requirements from the final rule. We have also reduced the number of inlet fuel samples necessary for the certification testing to reduce the cost burden for manufacturers. The EPA is interested in mass emissions measurement from these devices as well as concentration based destruction efficiency measurement.

**Comment:** One commenter (4104) notes that the proposed rule revisions add ASTM D6420–99 (2004) as an optional method for measuring BTEX emissions from small glycol dehydrators. The commenter states that it is not apparent that ASTM D6420–99 (2004) can be used for measurements on large glycol dehydrators.

Another commenter (4266) states that it is not apparent that ASTM D6420–99 (2004) can be used for HAP measurements. The commenter states that the rule should clarify that ASTM D6420–99 (2004) is applicable for measuring benzene, BTEX, or total HAP emissions from any affected source, and it should be clearly indicated that this method provides an alternative to other allowed methods in the rule – i.e., Method 18 in 40 CFR part 60, appendix A and any other method or data that have been validated according to the applicable procedures in Method 301, 40 CFR part 63, appendix A.

**Response:** We have made revisions to the final rules to clarify that ASTM D6420–99 (2004) can be used for measuring any HAP compounds from any affected source as an alternative to Method 18 or other method validated according to Method 301.

**Comment:** One commenter (4230) quotes the EPA regarding the statement that "... HAP emissions can increase despite decreases in natural gas throughput due to the change in gas

composition" and responds to the EPA's request for comment regarding the likelihood of this occurrence and the data demonstrating the circumstances where it occurs. The commenter tabulated a number of wet gas analyses supplied by various companies over the last few years and has enclosed this data as Table 1 of the comment letter. The commenter states that the effect on emissions was noted to be proportional to the wet gas composition as well as throughput, which is demonstrated by a sensitivity analysis enclosed as Table 2. The wet gas composition, according to the commenter, clearly changes over time as shown within the data supplied in Table 1. The commenter envisions that the BTEX composition within the wet gas is a function of well pressure and the dehydrator contactor pressure, or basically the pressure of the knockout pot prior to the contactor column. The commenter adds that since the wet gas is typically sampled after the knockout pot and prior to the contactor column, the higher pressure results in more BTEX components being removed within the knockout liquids and therefore less being sent to the contactor column. Additionally, the commenter states that from the perspective of the wells, the lower pressure wells, which are typically older wells, would have higher BTEX compositions in accordance with Raoult's Law. According to the commenter, since the gathering lines introduce multiple factors such as new wells coming on line and old wells being depleted there is no way to predict the overall change of composition coming into the dehydration unit unless the stream is sampled periodically. The commenter recommends a requirement for periodic wet gas sampling at the point where the gas enters the TEG contactor column for all sources without controls.

The commenter (4230) requests guidance on whether new PTE calculations and major source determinations should be based on a single new wet gas composition analysis of BTEX compounds or an average, representative analyses (if available), and if so, over what timeframe. The commenter also asks whether a single new wet gas composition test leading to a major source PTE determination would result in a once-in, always-in major source determination, or could an average of BTEX results from multiple wet gas composition tests over the 3-year period before the major source compliance date be used. The commenter further inquires that, if an average can be used, and the resulting average across the 3 year period was less than major, would the source instead be considered minor. The commenter points out that subpart HH directs that GRI-GLYCalc™ be used to determine emissions from the dehydrator, including actual average benzene emissions. The wet gas composition data, according to the commenter, are used in the GRI-GLYCalc™ software in accordance with the procedures presented in the associated Technical Reference Manual. The commenter explains that inputs to the model must be representative of actual operating conditions of the glycol dehydration unit. The commenter states that ideally these inputs are annual average values, but site specific data may not be available and in such cases estimates provided by the facility are instead used. However, the commenter believes the regulation also states that parameters used to determine major source status are to be based on either the highest measured values or an annual average. The

commenter adds that while the regulatory language implies that enforcement discretion may be used, the timeframe over which this determination can be made is unclear.

One commenter (4230) asks whether facilities currently considered to be area sources, but not using controls, would also be required to periodically obtain new wet gas composition analysis in order to ensure that their past determinations are still accurate over time, and if so, what timeframe is recommended. While the wet gas composition is a dynamic property, the commenter states that the regulation does not directly require periodic monitoring of this property. In West Virginia the commenter states that their experience has been that a facility typically triggers area-becoming-major under subpart HH due to a change in the composition of the wet natural gas being sent through the dehydrator. The commenter explains that the BTEX composition changes over time due to natural variability in wells, varying pressures and levels in storage fields, different wells coming on-and-offline, etc. So while no new equipment is added, and there is no change in the maximum design throughput of the dehydrator, the commenter contends that the change in BTEX composition of the wet natural gas may significantly change the actual and potential emissions. Further, the commenter adds that even though the concentrations of BTEX compounds in the wet natural gas are very low, and fluctuations may appear to be small, the volume of throughput over the year amplifies the effect on actual and potential emissions of HAPs from the dehydrator.

One commenter (4039) states that the frequency of re-determining major or area status should be set at once per permit term. The commenter contends that this approach is not overly-burdensome for either the permitting agency or the permittee and allows the source to be evaluated and appropriately permitted at a set interval based on the results of the determination.

Two commenters (4192, 4246) note that the EPA seeks comment on whether to require confirmation that area sources are, in fact, area sources and whether verification calculations must be performed on an annual or biannual basis to confirm potential changes in gas composition have not resulted in an emissions increase. The commenters note that their members perform GRI-GLYCalc™ analysis annually to satisfy emission inventory requirements for larger facilities. The commenters support inlet gas sampling and analysis on the dehydration unit every 2 years. The commenters add that it is not necessary for area sources having a federally enforceable permit limit to recalculate PTE already incorporated in the permit.

**Response:** We have reviewed the data provided by the commenter and agree that facility HAP emissions can increase due to inlet gas composition changes over time. We also agree that these changes in gas composition can occur independent of natural gas throughput. Therefore, sources that make an initial determination that they are an area source for HAP could later on experience an increase in emissions that would change its status to a major source. In response to the comment, we are adding regulatory text to §63.760(c) to require owners/operators of sources



initially determined to be area sources to conduct determinations each year thereafter if their actual emissions exceed 50 percent of the major source threshold (i.e., 5 tons/year of a single HAP or 12.5 tons/year of total HAP). The 50 percent threshold is based on the data received from the commenter and our belief that sources initially determined to have actual emissions at or below 50 percent of the major source threshold (i.e., 10/25) are unlikely to exceed the 10/25 threshold due to gas composition changes alone. In cases where sources make changes such as adding a well(s), or increasing natural gas throughput, they would be required to perform a new source determination under §63.10(b)(3) of the General Provisions which specifies the following:

. . . If an owner or operator determines that his or her stationary source that emits (or has the potential to emit, without considering controls) one or more hazardous air pollutants regulated by any standard established pursuant to section 112(d) or (f), and that stationary source is in the source category regulated by the relevant standard, but that source is not subject to the relevant standard (or other requirement established under this part) because of limitations on the source's potential to emit or an exclusion, the owner or operator must keep a record of the applicability determination on site at the source for a period of 5 years after the determination, *or until the source changes its operations* to become an affected source, whichever comes first. [emphasis added]

### **3.5.4 Startup, Shutdown and Malfunction**

#### *3.5.4.1 Elimination of the SSM Exemption in Subparts HH and HHH*

**Comment:** Three commenters (4104, 4220, 4266) believe that the EPA's revised SSM provisions are impractical, arbitrary and capricious.

Five commenters (4104, 4159, 4246, 4266, 4273) do not agree that the decision in *Sierra Club v EPA* requires the EPA to abolish SSM emissions exemptions from compliance with the NESHAP.

One commenter (4266) asserts that the proposal to eliminate the SSM provisions in the two existing rules is not based on an accurate reading of *Sierra Club*, is not supported by any rational explanation as to why the elimination of the SSM provisions is justified, and is arbitrary and capricious given that the EPA fails to provide any analysis of why affected sources reasonably can be expected to meet the emissions limitations and standards that the Agency proposes to apply during periods of SSM.

Two commenters (4159, 4246) argue that the court vacated the SSM provisions because they were based on the "general duty" clause rather than a continuously applicable section 112

standard and that the EPA's elimination of the SSM exemption is based on an overly-broad and incorrect reading of *Sierra Club*. Commenter 4159 provides case law and statute support for their position.

Commenters (4159, 4273) assert that in the SSM decision, the D.C. Circuit vacated the application of a "general duty" to minimize emissions during SSM periods for standards promulgated under section 112. 551 F.3d at 1027-28. The commenters state that it did so because it found that the general duty standard was not a "section 112-compliant" standard. *Id.* ("Because the general duty is the only standard that applies during SSM events-and accordingly no section 112 standard governs these events-the SSM exemption violates the CAA's requirement that some section 112 standard apply continuously."). The commenters argue that the D.C. Circuit did not hold that the EPA must apply the same standard for normal operations during SSM periods. In fact, according to the commenters, the Court expressly rejected that contention. *Id.* at 1027 ("section 302(k)'s inclusion of this broad phrase in the definition of 'emission standard' suggests that emissions reduction requirements 'assure continuous emission reduction' without necessarily continuously applying a single standard."). The commenters state that the EPA has not established that the standards for SSM periods are "section 112-compliant," and, therefore, the SSM decision cannot support its proposed actions to remove the SSM provisions for MACT standards.

According to commenters (4104, 4266), the EPA's proposal "that the standards in these rules apply at all times" is not, as the EPA claims, "[c]onsistent with *Sierra Club v. EPA*." The commenter opines that the decision in that case was grounded in the court's assertion that section 112 requires emissions standards to apply at all times. *Sierra Club* at 1027 ("Congress has required that there must be continuous section 112-compliant standards."). According to the commenters, based on this, the court held that the SSM General Provisions do not comport with section 112 because, in the eyes of the court, the SSM provisions are not "section 112-compliant" emissions standards. *Id.* at 1028 ("Because the general duty is the only standard that applies during SSM events — and accordingly no section 112 standard governs these events — the SSM exemption violates the CAA's requirement that some section 112 standard apply continuously."). The commenters assert that the court did not hold that the EPA is prohibited from setting separate standards for periods of SSM. According to the commenters, it simply held that standards for such periods must be developed according to the section 112(d) MACT process.

One commenter (4104) argues that the *Sierra Club* decision simply requires the EPA to establish some standard(s) under section 112 that will apply during all facets of a facility's operation — whether that be an emission standard under section 112(d), or a work-practice standard under section 112(h). According to the commenter, it did not, however, overrule the significant pre-existing case law that controls how these standards must be developed. Accordingly, the commenter believes that the EPA must establish standards for the 1-2 percent of operational

periods that were excluded when the MACT standard was developed; those periods when even well-managed technology cannot achieve the mandated control levels.

Thus, according to the commenters (4104, 4266), the proposal to eliminate the SSM provisions from the two source categories (in subparts HH and HHH) subject to this proposal is not “consistent” with *Sierra Club* because there is nothing in that case that supports the conclusion that vacatur of the part 63 General Provisions necessarily requires “the established standards in these rules [to] apply at all times.” The commenters opine that the EPA’s flawed legal analysis provides no support for the proposal to eliminate the SSM provisions in the two rules.

Two commenters (4266, 4273) assert that the EPA is obligated to set standards that are “achievable” under section 112(d)(2) of the CAA.

One commenter (4104) argues that it is axiomatic that limitations based on “demonstrated” or “achievable” technology must be attainable with the EPA-designated model MACT technology. According to the commenter, by its very terms, the CAA requires that the EPA establish emission limits that are “achievable” through the application of MACT-level technology. CAA §112(d)(2). According to the commenter, limitations based on MACT must be achievable by the technology that the EPA has designated as MACT. See *Portland Cement Assoc. v. Ruckelshaus*, 486 F.2d 375, 402 (D.C. Cir. 1973) (“the [Clean Air Act] expressly requires, for the standards [the Administrator] promulgates, that technology be achievable”); *Marathon Oil Co. v. EPA*, 564 Fed.2d 1253, 1272-73 (9th Cir. 1977) (remanding permits to the EPA because they required permittees to meet the standards 100 percent of the time but the permittees could only be expected to achieve the standards 97.5 percent to 99 percent of the time with the best practicable control technology currently available); *FMC Corp. v. Train*, 539 F.2d 973, 986 (4th Cir 1976) (remanding effluent limitations to the EPA because a properly operating treatment facility could be in violation of those limitations on a few occasions).

According to one commenter (4104), the EPA has two viable alternatives for managing those periods when even well-operated MACT technology cannot achieve the same emissions as during normal, routine operations: (1) it may establish emission standards high enough that the reference technology can achieve the standard at all times, even during SSM; or (2) it may set the standard at a level that the reference technology can achieve most of the time, and then provide an exemption – or alternate standard, per *Sierra Club* – for those periods in which even a well-operated system cannot achieve the standard. The commenter asserts that, historically, the EPA here has chosen the latter approach. 76 FR at 52766.

According to the commenter, under the proposed subparts HH and HHH NESHAPs, the EPA has specifically deleted the exemption for startup and shutdown periods. According to the commenter, the EPA bases this conclusion on its belief that the affected equipment can comply

with the relevant standards at all times and under all foreseeable operating conditions, including startup and shutdown. *See* 76 FR at 52766, 52787. The commenter opines that this conclusion is incorrect. For example, the commenter states, catalytic incinerators are an allowed control device under subparts HH and HHH. During startup, the commenter reports that time will elapse before the minimum temperature needed for adequate performance is achieved, and the EPA has not considered or evaluated the implications.

According to the commenter (4104), if the EPA is going to base the regulatory standards on an emissions level that MACT technology can achieve only 98-99 percent of the time, the Agency must also provide an adequate exemption for the other 1-2 percent of the time, when MACT-level technology cannot comply.

At the outset, the commenter (4104) provides that non-standard operating conditions involve two separate types of events: those that can be foreseen and planned for (e.g., startup and shutdown); and those that cannot be foreseen and planned for (e.g., malfunctions). The commenter provides that foreseeable events are those events where there are foreseeable operating periods when they cannot achieve the same emissions limits as under “normal” operations. For example, the commenter states that, a boiler cannot achieve its typical high destruction efficiency until it reaches full operating temperature. Similarly, the commenter states that a batch process unit may generate emissions at varying rates across its entire operating cycle. The commenter provides that the EPA has historically recognized these kinds of foreseeable operating scenarios in a number of ways. According to the commenter, to address the situation posed by the boiler, the Agency has historically exempted startup and shutdown periods from compliance with emission standards. Alternatively, the commenter states, for emissions that vary over a process cycle, the EPA may set the emissions rate at the highest level emitted across the cycle, or set an averaging time that reflects operations across the entire cycle. According to the commenter, under the proposed rules for subpart HH and HHH, the EPA has entirely deleted the startup and shutdown exemption. The commenter believes that this leaves owners and operators in an untenable situation, in which it will be foreseeable that emissions limits exceedances will occur (and thus violations will be found) even though owners and operators are using practices that comply with MACT standards.

**Response:** The EPA disagrees with commenters that state that the EPA’s proposed approach of not providing an exemption for the 1-2 percent of the time when even well-managed MACT technology will not be able to comply does not comport with the CAA. The EPA must establish emission standards that “limit the quantity, rate, or concentration of emissions of air pollutants on a continuous basis.” 42 U.S.C. § 7602(k) (defining “emission limitation and emission standard”). *See generally Sierra Club v. EPA*, 551 F.3d 1019, 1021 (D.C. Cir. 2008) (emissions limitations under CAA section 112 must both continuously apply and meet section 112’s

minimum stringency requirements, even during periods of SSM). Thus, the EPA is required to ensure that section 112 emissions limitations are continuous.

The commenters state that the court vacated the SSM provisions because they were based on the “general duty” clause rather than a continuously applicable section 112 standard. The EPA agrees that the court found that the “general duty” was not a 112-compliant standard. The EPA does not claim that the *Sierra Club* case constrains its authority to prescribe different standards for periods of start and shutdown or for periods of malfunction. However, as explained in the preamble to the proposed and final rules, the EPA has determined that section 112 does not require that emissions that occur during periods of malfunction be factored into development of section 112 standards. The EPA’s rationale for this view is explained in detail in the preamble as well.

With respect to periods of startup and shutdown, the EPA agrees that in some circumstances separate standards for such periods may be appropriate. However as explained in the preamble to the final rule, “the EPA has taken into account startup and shutdown periods and expects that sources will be able to meet emission limits during such periods. We believe that operations and emissions do not differ from normal operations during these periods such that it warrants a separate standard.” 76 FR 52738, 52787 (Aug. 23, 2011)

The EPA agrees with the commenter that catalytic oxidizers require a period of time to reach optimal operating temperature. While the commenter did not specify a specific warm-up period, we believe that normal operating temperature is met in approximately 30-45 minutes. Since compliance is determined based on the 24 hour average combustion zone temperature, meeting the required compliance temperature should be achievable with a properly functioning device.

For malfunctions, the EPA recognizes that even equipment that is properly designed and maintained can sometimes fail and that such failure can cause a violation of an emission standard, but does not agree with commenters that argue that the EPA’s approach to malfunctions is flawed. As discussed in the preamble to the final rule, the relevance of the cases such as *Portland Cement* is called into question in light of subsequent case law and the 1977 amendments to the CAA’s definition of emission standard requiring that such standards be continuous. In any event, even if those cases are relevant, as also explained in the preamble to the final rule, the EPA’s overall approach to malfunction events in this rule, including the promulgation of an affirmative defense, is consistent with the approach set forth in EPA’s 1972 proposed rules cited favorably in *Portland Cement* in that both the EPA’s approach today and in 1972 —impart a construction of “reasonableness” to the standards as a whole and adopts a more flexible system of regulation than can be had by a system devoid of “give.” *Portland Cement* at 399. *Portland Cement* criticized the EPA regulations that contained no specific provisions to address malfunctions and the EPA’s assertion that malfunctions would be dealt with by the

informal exercise of discretion in the Agency's enforcement activities. Those decisions did not require exemptions or less stringent standards for malfunction events as the commenter suggests. The EPA's approach to malfunctions goes further than reliance on the informal exercise of enforcement discretion in that it includes regulatory provisions establishing an affirmative defense to civil penalties for exceedances of emission limits that are caused by malfunctions. The court in *Marathon Oil Co. v. EPA*, 564 F.2d 1253, 1272 (9th Cir. 1977) held that the EPA must formalize its approach to upsets under the Clean Water Act. The affirmative defense does so. See, *Mont. Sulphur & Chem. Co. v. United States EPA*, 2012 U.S. App. LEXIS 1056 (5<sup>th</sup> Cir. Jan 19, 2012) (in rejecting industry argument based on *Marathon Oil* that reliance on the affirmative defense was not adequate, court stated "[h]owever, here the EPA does not rely on enforcement discretion alone, but specifically promulgates an affirmative defense in the FIP, which clearly defines the requirements to avoid penalties."). But see, *Weyerhaeuser v Costle*, 590 F.2d 1011, 1057-58 (D.C. Cir. 1978) (holding that an informal approach is adequate). In fact, the affirmative defense comports with the court's suggestion in *Marathon Oil* that the EPA place the burden on the permit holder of producing the relevant data and proving that the upset could not have been prevented. *Id.*

**Comment:** For MACT standards, two commenters (4159, 4273), state that the EPA's proposed revisions to SSM provisions violate the CAA procedural requirements. According to the commenters, section 307(d) requires the EPA to provide the public a meaningful opportunity to comment on a proposed rulemaking. 42 U.S.C. section 7607(d)(3), (5); see also *Kennecott Corp. v. EPA*, 684 F.2d 1007, 1018-19 (D.C. Cir. 1982). The commenters state that part and parcel of this requirement is the EPA's obligation to provide a statement of basis for its proposed rule. 42 U.S.C. §7607(d)(3). The commenters argue that the statement of basis must include: (a) the factual data on which the proposed rule is based; (b) the methodology used in obtaining the data and in analyzing the data; and (c) the major legal interpretations and policy considerations underlying the proposed rule. *Id.* The commenters assert that the EPA's only purported legal basis for these revisions is to make the SSM provisions "[c]onsistent with *Sierra Club v. EPA*" (also referred to as the "SSM Decision"). 76 *Fed. Reg.* at 52,747. But, according to the commenters, the EPA fails to explain how application of the standards for normal operations to SSM otherwise meets the requirements of section 112. In addition, the commenters assert that the EPA provides no factual support for its proposed changes. As such, the commenter believes that the EPA's proposed rule fails to meet the procedural requirements of the Clean Air Act, and the public cannot meaningfully comment on the legal or factual bases for its proposed SSM provisions.

**Response:** The EPA discussed its rationale for its approach to periods of startup and shutdown and for its approach to malfunctions in the preamble to the proposed rule at 76 FR 52787 and has thus provided commenters with a reasonable opportunity to comment on that rationale. The EPA relies on *Sierra Club* for the elimination of the SSM exemption, not for its decision to require

that during periods of startup and shutdown and during periods of malfunction, sources must meet the standards that apply during normal operations. The EPA's rationale for the standards that it set for periods of startup and shutdown and for periods of malfunction is also discussed in the preamble for the proposed rule and in the preamble to the final rule.

**Comment:** One commenter (4104) states that, by the EPA failing to provide an exemption for the 1-2 percent of operating modes that cannot meet the standard, the EPA violates not only the CAA language, but also the industry members' constitutional rights to due process, by subjecting them to penalties, and even incarceration, for (i) failing to comply with an unattainable standard; and (ii) engaging in conduct that the CAA expressly makes legal. The commenter asserts that a law that requires an individual to do the impossible leaves an individual no choice but to violate the law; because individuals must be given the opportunity to conform their conduct to the law, such a law violates due process. See *Grayned v. City of Rockford*, 408 U.S. 104, 108 (1972) (vague laws violate due process in part because they fail to provide individuals a choice of whether to obey); *Portland Cement Ass'n v. Ruckelshaus*, 468 F.2d 375, 398 n.91 (D.C. Cir. 1973) ("Companies must be on notice as to what will constitute a violation."); *United States v. Dalton*, 960 F.2d 121, 122-23 (10th Cir. 1992) (individual cannot be convicted for having unregistered machine gun when there is no available mechanism for registering machine guns). Furthermore, according to the commenter, subjecting affected sources to sanctions for doing that which the Act expressly makes legal – continuing to operate their facilities using properly-managed MACT-level controls – would also violate due process. "To punish a person because he has done what the law plainly allows him to do is a due process violation of the most basic sort." *United States v. Goodwin*, 457 U.S. 368, 372 (1982) (internal quotations omitted).

**Response:** The EPA does not agree that failure to provide an exemption violates due process. The commenter cites to cases addressing vague laws, yet does not explain or even argue that the standards are vague. Further, as the EPA explains above, the EPA's approach to malfunction events is consistent with *Portland Cement*. *United States v Dalton* addressed an argument that compliance was a legal impossibility and is thus distinguishable from the commenter's argument that it may be technologically infeasible to comply with standards at certain times. The EPA's approach for handling such circumstances is explained at length in the preamble and elsewhere in this response to comment document and is reasonable. In any enforcement action, sources that truly could not have complied with the standard despite best efforts will have an opportunity to assert an affirmative defense to penalties and such opportunity provides due process. In addition, if penalty assessment occurs, the EPA and courts consider good faith efforts to comply in assessing penalties under section 113(e) of the CAA.

**Comment:** According to one commenter (4266), the EPA has made no effort to obtain emissions information from the two source categories subject to 40 CFR part 63 subparts HH and HHH for periods of SSM and provides no other evidence or analysis supporting its assertion that it is

appropriate to apply the existing standards to periods of SSM. Additionally, the commenter asserts that the EPA failed to investigate the record data developed during the promulgation of the existing standards to assess whether those data are characteristic and representative of emissions during periods of SSM. In short, according to the commenter, the EPA simply asserts, with no record basis, that the existing standards should apply to periods of SSM. The commenter argues that this unsupported assertion provides no basis for extending the existing standards to periods of SSM and is therefore facially arbitrary and capricious and provides inadequate support for the proposal.

**Response:** As noted in the proposal preamble, we took into account startup and shutdown periods. We believe that the expected startup and shutdown emissions over the averaging periods established for the NESHAP are not likely to cause a violation of the standards. We also found no evidence that suggested that emissions were higher during startup or shutdown that would indicate a need for an alternate standard for these periods and the commenter provided no data or basis to show that sources cannot comply with the standards as proposed. Thus we set standards based on available information as contemplated by section 112.

As for malfunctions, as explained in the proposed and final rules preambles, the EPA has determined that CAA section 112 does not require that emissions that occur during periods of malfunction be factored into development of CAA section 112 standards. As the EPA further explained, accounting for malfunctions would be difficult, if not impossible, given the myriad different types of malfunctions that can occur across all sources in the category and given the difficulties associated with predicting or accounting for the frequency, degree, and duration of various malfunctions that might occur.

**Comment:** One commenter (4104) states that the MACT floor for subpart HHH does not account for emission deviations during SSM events. According to the commenter, since SSM provisions are being rescinded, this issue is relevant not only for the new standards for small dehydrators, but also for the large dehydrator standards (e.g., for units already subject to subpart HHH). The commenter states that, although the averaging time for compliance dampens concerns regarding startup and shutdown emissions, the EPA has an obligation to assess the implications from foreseeable events (e.g., inadequate temperature for a catalytic incinerator during startup) when developing standards.

In summary, the commenter (4104) does not believe that the proposed standard is a reasonable estimate of the performance of the “best controlled similar unit” under the worst reasonably foreseeable circumstances. At a minimum, the commenter suggests that the EPA complete a series of GRI-GLYCalc™ model simulations to better assess emissions variability and obtain a more robust basis for including variability in the standard.



One commenter (4266) asserts that the EPA has failed to account for the costs of a standard that does not accommodate malfunctions. According to the commenter, to assure continuous compliance, affected facilities have only two choices – install redundant processing and pollution control equipment so that operations can continue during a malfunction, or shut down the affected facility until the malfunction can be rectified. The commenter states that, in either case, affected facilities would incur substantial costs directly attributable to the standard that have not been accounted for in the formulation of the rule. The commenter suggests that, for these reasons, the EPA should set aside the proposed affirmative defense for periods of malfunction and, instead, set a work practice standard for such periods.

**Response:** The EPA’s rationale for its approach to malfunctions is discussed in the preamble to the proposed rule and this final action. As explained in the preamble, the EPA has determined that CAA section 112 does not require that emissions that occur during periods of malfunction be factored into development of CAA section 112 standards. We are likewise obligated to set standards at a level at least as stringent as the level achieved in practice by the best performing sources and costs are not considered in that determination. Further, the commenter does not provide support for its conclusion that to assure continuous compliance, sources must either install redundant processing and pollution control equipment or shut down the affected facility until the malfunction can be rectified. Different sources may employ different strategies to address a particular type of malfunction and there are a myriad of different types of malfunctions that can occur across all sources in the category.

**Comment:** One commenter (4273) argues that the D.C. Circuit ruling recognized that the EPA may utilize section 112(h) to support SSM-specific standards, which the EPA ignored. The commenter opines that the SSM decision indicates that the EPA may justify the general duty standard for SSM periods under the alternative provisions of section 112(h). *Sierra Club*, 551 F.3d at 1028.

One commenter (4266) acknowledges (as the EPA has) that it is not feasible to develop an emission standard that governs malfunction periods. The commenter provides that section 112(h) of the CAA allows the EPA to set work practice standards for situations where “it is not feasible in the judgment of the Administrator to prescribe or enforce an emission standard . . .” According to the commenter, malfunctions fit within the situations described in the definition of “not feasible to prescribe or enforce an emission standard” as any situation where “the application of measurement methodology to a particular class of sources is not practicable due to technological and economic limitations.” Consequently, the commenter recommends that the EPA set work practice requirements to address periods of malfunction. The commenter believes that the steps set forth in §63.762(d)(1)(i)-(ix) would constitute an appropriate work practice standard for malfunctions, in which case the commenter believes that the notifications specified in §63.762(d)(2) should be replaced by a semi-annual reporting requirement.

One commenter (3469) recommends that the EPA follow the SSM approach that is used in the final NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (ICI Boiler MACT); namely, that work practice standards apply during periods of startup and shutdown to minimize air pollution emissions, while malfunctions would not be considered a distinct operating mode. The commenter reports that, in the ICI Boiler rule, the EPA determined that it is not technically-feasible to monitor these periods of startup and shutdown and therefore established separate work practice standards for periods of startup and shutdown. The commenter furthers states that, in the ICI Boiler rule, the EPA requires operators to follow manufacturers' specifications for minimizing periods of startup and shutdown. Specifically, the commenter states that §63.7530(h) requires that owners/operators of covered ICI boilers "minimize the unit's startup and shutdown periods following the manufacturer's recommended procedures, if available. The commenter suggests that, if manufacturer's recommended procedures are not available, recommended procedures for a unit of similar design for which manufacturer's recommended procedures are available must be followed. The commenter asserts that a signed statement in the Notification of Compliance Status report would be included that indicates startups and shutdowns were conducted according to the manufacturer's recommended procedures or procedures specified for a unit of similar design if manufacturer's recommended procedures are not available." The commenter believes a similar approach, which requires an affected piece of equipment to minimize periods of startup and shutdown and associated emissions, is appropriate for oil and gas equipment, recognizing that in most cases emissions will be below the applicable NESHAP standards by virtue of the lower emitting fuel.

**Response:** The EPA, based upon a comprehensive review of the emission units affected by this NESHAP, has determined that there is no demonstrated need for alternate standards during startup and shutdown and expects that sources will be able to meet the emission limits during such periods. In comparison, in the major source ICI Boiler rule, the EPA determined that it was not practicable to apply measurement methodology due to technological and economic limitations during periods of startup and shutdown and, therefore, established separate work practice standards for these periods. The commenter did not indicate or provide support for the position that, for oil and gas equipment, it is not practicable to apply measurement methodology due to technological and economic limitations. Further, the operation of boilers falling under the major source ICI Boiler rule is not analogous to that of storage vessels and glycol dehydrators within the oil and natural gas NESHAP. Boilers are designed to combust various fuels and in doing so they destroy organic HAP. In fact, boilers are commonly used as control devices to reduce organic HAP. In contrast, neither storage vessels nor glycol dehydrators reduce organic HAP, they merely emit HAP, and, in most cases, an add-on control device is required to meet the HAP emission standard under the oil and natural gas NESHAP. The control devices employed in most cases are vapor recovery units (VRU), enclosed combustion devices and ambient air-cooled condensers. Therefore, the startup or shutdown of the emission source should not affect the

performance of the control device and is not an issue. Further, startup and shutdown of the control device should not be an issue. For a VRU or natural-draft-cooled condenser, the devices will perform at the necessary level (i.e., 95 percent) immediately upon startup. Enclosed combustion devices are typically units that receive gas from the emission units and combust the gas immediately when it contacts the pilot flame. Such devices are either on (i.e., the pilot is lit) or off. In the case where a catalytic thermal oxidizer is used as the enclosed combustion device, we believe the 24-hour averaging time is sufficient to allow compliance with the standards and we have addressed this in more detail elsewhere in this document. Thus, we do not believe that different standards are required for periods of startup or shutdown. In addition, no commenter provided enough specificity in their comments or emission data that established the need for an alternate standard during startup and shutdown.

The EPA does not agree that the *Sierra Club* decision addresses the question of whether the EPA may justify the general duty standard for SSM periods under the alternative provisions of section 112(h). The decision merely noted that the EPA had not purported to act under section 112(h) in establishing the general duty standard.

The EPA's rationale for its approach to malfunctions is discussed in the preambles to the proposed rule and this final action. As explained in those preambles, the EPA has determined that CAA section 112 does not require that emissions that occur during periods of malfunction be factored into development of CAA section 112 standards. As the EPA further explained, accounting for malfunctions would be difficult, if not impossible, given the myriad of different types of malfunctions that can occur across all sources in the category and given the difficulties associated with predicting or accounting for the frequency, degree, and duration of various malfunctions that might occur. The EPA's rationale for its approach to malfunctions is not based on the criteria that must be used to justify a finding that it is not feasible to prescribe or enforce an emission standard under section under section 112(h). Section 112 (h)(2) provides that such a finding must be based on a determination that "a hazardous air pollutant or pollutants cannot be emitted through a conveyance designed and constructed to emit or capture such pollutant, or that any requirement for, or use of, such a conveyance would be inconsistent with any Federal, State or local law" or "the application of measurement methodology to a particular class of sources is not practicable due to technological and economic limitations." Further, setting work practice standards under section 112 presents the same issues as setting numerical emission limits given the varied nature of malfunctions. In any event, the commenter has not provided information to support that the criteria of 112(h) have not been met.

#### *3.5.4.2 Remove Provision Allowing Shutdown of Control Device During Maintenance or Repair*

**Comment:** One commenter (4266) opines that the EPA should provide an allowance for a reasonable period of routine maintenance for the control device. The commenter asserts that

proper operation of a control device includes periodic routine maintenance, and manufacturers of control devices typically recommend preventive maintenance on a semi-annual basis. According to the commenter, the EPA has stipulated in other rulemakings that standards do not apply during planned routine maintenance, other than a work practice standard that such periods shall not exceed 240 hours per year and records must be maintained to document such periods. The commenter informs the EPA that examples of regulatory provisions for maintenance of the control device can be found in §63.119(e)(3) & (4).

**Response:** The commenter generally asserts that the EPA should include a maintenance allowance provision in this rule, but did not identify any specific process or operational limitations or provide any data or explanation to support its assertion. The EPA, therefore, has not included such a provision in the final rule.

**Comment:** One commenter (4219) reports that shutdowns and startups are periodically required for testing and installation of new equipment that can result in increased efficiency and enhanced environmental benefit. The commenter asserts that, if owners and operators risked non-compliance during periods of SSM, then they would have a disincentive to install equipment that would improve air quality.

**Response:** The commenter did not provide an explanation or information to support the claim that owners and operators would risk noncompliance during periods of startup and shutdown when installing or testing a new control device. The EPA, therefore, has not included alternate standards for startup and shutdown in the final rule.

#### *3.5.4.3 Revisions to the General Provisions Applicability Table*

**Comment:** One commenter (4266) states that, given that the SSM exemption in part 63 subpart A has been vacated by the courts, they support the EPA's edits to Table 2 of NESHAP subpart HH that render SSM references in the General Provisions not applicable.

**Response:** The EPA appreciates the commenter's support.

**Comment:** One commenter (4104) states that the preamble notes that requirements related to SSM events and the need for SSM Plans (SSMPs) are revised because the SSM exemption no longer applies. The commenter further states that the part 63 General Provisions (subpart A) include requirements related to SSM events and SSMPs, and the EPA requests comment on whether linkages have been appropriately addressed. In response to that request, the commenter provides that a perfunctory review of the General Provisions and subpart A applicable sections (according to subpart HHH, Table 2) indicates that minor additional revisions are needed. The commenter asserts that the EPA needs to clean up Table 2 citations because inappropriate

references to subpart A sections could imply that documents (e.g., SSMPs), records, or reporting are still required. The commenter cites the following relevant subpart A sections as containing linkages that should be addressed:

- §63.6(e) citation in Table 2 should explain selective applicability rather than simply stating “Yes” (i.e., Table 2 currently indicates that the section applies);
- §63.8(c)(1)(iii) should not apply;
- §63.10(b)(2) citation in Table 2 should explain selective applicability rather than simply stating “Yes” (i.e., Table 2 currently indicates that the section applies);
- §63.10(c)(7) – (8) require records related to the previous SSM paradigm and should no longer be required.

**Response:** The EPA appreciates the commenters’ input and made one change to the final rule to address a SSM-related linkage/reference issue. Specifically, the applicability of §63.8(c)(1)(iii) was changed from “pending” to “No.” All other recommended changes were rejected.

#### *3.5.4.4 Affirmative Defense Provisions*

**Comment:** Three commenters (3469, 4236, 4274) provide general support for the EPA’s proposed affirmative defense to civil penalties for exceedances of numerical emission limits caused by malfunctions (§63.7575 defining “affirmative defense”).

**Response:** The EPA appreciates the commenters’ support.

**Comment:** One commenter (4159) supports the incorporation of the definition of “malfunction” in §63.2. That section defines “malfunction” as:

Any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

The commenter (4159) asserts that this is a long-established definition that the regulated community is familiar with.

**Response:** The EPA appreciates the commenters’ support.

**Comment:** One commenter (4457) asserts that the EPA unlawfully proposes to promulgate an “affirmative defense” to penalties due to a malfunction. *See* 76 FR at 52787-88 (proposing §§

63.761-62, 63.1271-72). The commenter opines that this would create a new loophole in the standards and is unlawful. The commenter states that the statute makes clear how the courts are to assess civil penalties, whether a case is brought by the EPA or a citizen. 42 U.S.C. § 7413(e). The commenter opines that Congress plainly intended citizens to be able to enforce emission standards under the CAA using the full range of civil enforcement mechanisms available to the government, and, in the HAP context, subject only to the limitation that government not be “diligently prosecuting” its own civil enforcement action, CAA §304(b)(1)(B), 42 U.S.C. § 7604(b)(1)(B). Specifically, the commenter states that the affirmative defense that the EPA proposes to allow in case of malfunctions goes directly against congressional intent in two ways. First, according to the commenter, Congress expressed a clear intent as to how judges should determine the size of civil penalties whenever they are sought and thus Congress flatly barred the EPA from limiting when civil penalties can be assessed. *See Chevron, U.S.A., Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 842-43 (1984). The commenter believes that the EPA acts outside of its delegated authority to limit civil penalties available in citizen suits or its own enforcement actions in its proposal. Second, the commenter asserts that the proposal will impermissibly chill citizen participation, and the ability to win an effective, deterrent remedy, in CAA enforcement actions.

The commenter (4457) argues that the CAA grants the EPA minimal discretion that only applies to administrative penalties, allowing the EPA to “compromise, modify, or remit, with or without conditions, *any administrative penalty* which may be imposed under [subsection 113(d)].” 42 U.S.C. §7413(d)(2)(B) (emphasis added). However, according to the commenter, there is no similar grant of authority to the EPA to compromise, modify or limit civil penalties that a court may impose under section 113(e) or section 304. Section 304(a), 42 U.S.C. §7604(a), grants courts the sole authority “to apply any appropriate civil penalties” in citizen suits. According to the commenter, the explicit reference to the EPA’s ability to modify penalties in one subsection and its absence in the other subsection of the same provision can only be understood as an intentional decision by Congress that the EPA may not contravene by rule.

The commenter (4457) believes that an affirmative defense would likely be used on a routine basis by polluters seeking to avoid penalties, just as the malfunction exemption was. Thus, the commenter believes that the affirmative defense also runs counter to two clearly expressed intentions of Congress: (1) the burden it places on citizens makes it less likely that they will enforce the Act, *see, e.g., Pennsylvania v. Del. Valley Citizens’ Council for Clean Air*, 478 U.S. 546, 560 (1986); and (2) several of the factors at issue in the affirmative defense undercut Congress’s intent that citizen suit enforcement should avoid re-delving into “technological or other considerations.” *NRDC v. Train*, 510 F.2d 692, 724 (D.C. Cir. 1974). According to the commenter, both result from the technical burden the EPA imposes on citizens with the affirmative defense, and both render the defense impermissible.

The commenter (4457) argues that the EPA has failed to demonstrate any need or rationale justification for an affirmative defense to penalties to be written into the regulations and cause the harm that will result. According to the commenter, the EPA has discretion to decide what cases to prosecute, to consider settlements, and to request civil penalties in a case-by-case manner, as long as it acts consistent with the CAA to protect clean air as its top priority, *see* 42 U.S.C. § 7401.

The commenter (4457) asserts that, assuming *arguendo* that the EPA had authority to promulgate any type of affirmative defense to penalties for malfunctions; the EPA should also promulgate the following provisions:

1. A specific amount of compensatory penalties should apply to each reported malfunction (consistent with the CAA).
2. The EPA must modify the regulations so that the affirmative defense cannot be used by a specific facility or company more than once within a set period of time, such as 10 years.
3. The EPA must promulgate specific public reporting and notification requirements for malfunctions, or any emission exceedance that occurs of which an operator is aware. Commenters support EPA's proposal to require reporting of malfunctions, as a proposed revision to §63.1285, but it is important that this information be electronically reported, and made publicly available as soon as possible, and that it include all known information on emissions so that the public can evaluate associated health risks.

**Response:** For malfunctions, the EPA is finalizing the proposed affirmative defense language for exceedances of the standards that are caused by malfunctions with minor revisions as discussed below. As the EPA explained in the preamble to the proposed rule and final rule, the EPA recognizes that even equipment that is properly designed and maintained can fail and that such failure can cause an exceedance of the relevant emission standard. The EPA is including an affirmative defense in the final rule as we have in other recent section 111, 112 and section 129 rules so as to balance the tension, inherent in many types of air regulation, to ensure adequate compliance while simultaneously recognizing that despite the most diligent of efforts, emission limits may be exceeded under circumstances beyond the control of the source. The EPA must establish emission standards that “limit the quantity, rate, or concentration of emissions of air pollutants on a continuous basis.” 42 U.S.C. § 7602(k) (defining “emission limitation and emission standard”). *See generally Sierra Club v. EPA*, 551 F.3d 1019, 1021 (D.C. Cir. 2008) (emissions limitations under CAA section 112 must both continuously apply and meet section 112's minimum stringency requirements, even during periods of SSM). Thus, the EPA is required to ensure that section 112 emissions limitations are continuous. The affirmative defense

for malfunction events meets this requirement by ensuring that even where there is a malfunction, the emission limitation is still enforceable through injunctive relief. While “continuous” limitations, on the one hand, are required, there is also case law indicating that in some situations it is appropriate for the EPA to account for the practical realities of technology. For example, in *Essex Chemical v. Ruckelshaus*, 486 F.2d 427, 433 (D.C. Cir. 1973), the D.C. Circuit acknowledged that in setting standards under CAA section 111 “variant provisions” such as provisions allowing for upsets during startup, shutdown and equipment malfunction “appear necessary to preserve the reasonableness of the standards as a whole and that the record does not support the ‘never to be exceeded’ standard currently in force.” See also, *Portland Cement Association v. Ruckelshaus*, 486 F.2d 375 (D.C.Cir. 1973). Though intervening case law such as *Sierra Club v. EPA* and the CAA 1977 amendments calls into question the relevance of these cases today, they support the EPA’s view that a system that incorporates some level of flexibility is reasonable. The affirmative defense simply provides for a defense to civil penalties for excess emissions that are proven to be beyond the control of the source. By incorporating an affirmative defense, the EPA has formalized its approach to upset events. In a Clean Water Act setting, the Ninth Circuit required this type of formalized approach when regulating “upsets beyond the control of the permit holder.” *Marathon Oil Co. v. EPA*, 564 F.2d 1253, 1272-73 (9<sup>th</sup> Cir. 1977). See also, *Mont. Sulphur & Chem. Co. v. United States EPA*, 2012 U.S. App. LEXIS 1056 (Jan 19, 2012)(rejecting industry argument that reliance on the affirmative defense was not adequate). But see, *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011, 1057-58 (D.C. Cir. 1978) (holding that an informal approach is adequate). The affirmative defense provisions give the EPA the flexibility to both ensure that its emission limitations are “continuous” as required by 42 U.S.C. § 7602(k), and account for unplanned upsets and thus support the reasonableness of the standard as a whole.

Further, the EPA’s view is that the affirmative defense is consistent with CAA sections 113(e) and 304. Section 304 gives district court’s jurisdiction “to apply appropriate civil penalties.” Section 113(e)(1) identifies the factors that the Administrator or a court shall take into consideration in determining the amount of a penalty to be assessed only after it has been determined that a penalty is appropriate. The affirmative defense regulatory provision is not relevant to the amount of any penalty to be assessed under section 113(e) because if a court determines that the affirmative defense elements have been established, then a penalty is not appropriate and penalty assessment pursuant to the section 113(e)(1) factors does not occur.

In exercising its authority under section 112 to establish emission standards (at a level that meets the stringency requirements of section 112), the EPA necessarily defines conduct that constitutes a violation. The EPA’s view is that the affirmative defense is part of the emission standard and defines two categories of violation. If there is a violation of the emission standard and the source demonstrates that all the elements of the affirmative defense are met, only injunctive relief is available. All other violations of the emission standard are subject to injunctive relief and penalties. The CAA does not require that all violations be treated equally. Further, a citizen suit



claim under section 304 allows citizens to commence a civil action against any person alleged to be in violation of “an emission standard or limitation under this chapter.” The CAA, however, allows the EPA to establish such “enforceable emission limitations.” Thus, the citizen suit provision clearly contemplates enforcement of the standards that are defined by the EPA. As a result, where the EPA defines its emissions limitations and enforcement measures to allow a source the opportunity to prove its entitlement to a lesser degree of violation (not subject to penalties) in narrow, specified circumstances, as the EPA did here, penalties are not “appropriate” under section 304.

The EPA’s view is that an affirmative defense to civil penalties for exceedances of applicable emission standards during periods of malfunction appropriately balances competing concerns. On the one hand, citizen enforcers are concerned about additional complications in their enforcement actions. On the other hand, industrial sources are concerned about being penalized for violations caused by malfunctions that could not have been prevented and were otherwise appropriately handled (as reflected in the affirmative defense criteria). The EPA has utilized its section 301(a)(1) authority to issue regulations necessary to carry out the Act in a manner that appropriately balances these competing concerns.

The EPA disagrees that the affirmative defense provision will hamper citizen enforcement. First, injunctive relief is still available and the threat of penalties would not deter violations in cases where all of the conditions of the affirmative defense have been satisfied because the affirmative defense criteria ensure that all reasonable steps were taken to prevent a malfunction that causes excess emissions.

Further, litigating whether a source has met the affirmative defense will not burden citizen groups any more or less than would litigating the appropriate penalty amount in the penalty assessment stage of a citizen suit enforcement action, because the section 113(e) penalty assessment criteria and the affirmative defense criteria are similar and in fact overlap. For example, the requirement that the Administrator or the court consider “good faith efforts to comply” is bound to generate the type of fact-intensive disputes that the commenter complains of. In addition, several of the affirmative defense criteria are exactly the type of criteria the Administrator or Court might consider in determining whether a source made “good faith efforts to comply.” For example, to take advantage of the affirmative defense, the source must prove by a preponderance of the evidence that, among other things, the excess emissions “were caused by an unavoidable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner” and “could not have been prevented through careful planning, proper design or better operation and maintenance practices” and “did not stem from any activity or event that could have been foreseen and avoided, or planned for.”

Thus, the EPA does not expect the affirmative defense provision to significantly alter the burden of bringing a citizen enforcement action. For those cases that do proceed to trial, even in the absence of this affirmative defense, sources generally raise equitable arguments to argue for a low penalty and citizens often rebut such arguments. Therefore, as a practical matter, the EPA does not expect the affirmative defense provision to materially affect the practice of CAA enforcement.

The EPA is not adopting commenters' suggestion with respect to compensatory damages or limits on the frequency of use of the affirmative defense. It is not clear that the EPA has authority to require the automatic imposition of compensatory damages and even if such authority exists, the EPA does not think automatic imposition of damages is appropriate, as it would unduly complicate the enforcement process. Ensuring that malfunctions do not recur can be handled through imposition of appropriate injunctive relief. In addition, the EPA's view is that it would not be appropriate to limit a source's ability to take advantage of the affirmative defense to one time over a specified period of time such as ten years given that the affirmative defense is only available when the source could not have prevented the excess emissions. With respect to commenters' suggested reporting requirements, the reporting requirements in the rules promulgated today already require malfunction reporting and the affirmative defense provisions require that parties choosing to assert the affirmative defense meet additional malfunction reporting requirements. Any such reports submitted to the EPA are publicly-available pursuant to CAA section 114.

**Comment:** One commenter (4266) states that, with regards to malfunctions, the "EPA has determined that malfunctions should not be viewed as a distinct operating mode and, therefore, any emissions that occur at such times do not need to be factored into development of CAA section 112(d) standards, which, once promulgated, apply at all times." *Id.* However, according to the commenter, the EPA does propose to establish "an affirmative defense to civil penalties for exceedances of emission limits that are caused by malfunctions in both of the MACT standards," which would be available if affected sources can prove by a preponderance of the evidence that qualifying criteria have been met. *Id.* at 52788. The commenter opines that, with regard to malfunctions, the EPA's proposal to provide an affirmative defense for periods of malfunction is without merit. The commenter refers to and incorporates comments submitted by the "SSM Coalition" to the Proposed Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Sewage Sludge Incineration Units docket that provide that the EPA's proposed standards for Sewage Sludge Incinerators explain in detail that: (1) EPA must take malfunctions into accounts when setting section 112 emissions standards; (2) the proposed affirmative defense is not a permissible substitute for setting emissions standards for periods of malfunction; and (3) the proposed affirmative defense is unreasonable and impracticable. *See* Letter to EPA Docket Center (EPA/DC) from the American Chemistry Council, et al., Comments on Proposed Standards of Performance for New Stationary Sources

and Emission Guidelines for Existing Sources: Sewage Sludge Incineration Units, Docket ID No. EPA-HQ-OAR-2009-0559, at 6-20 (Nov. 29, 2010). The commenter incorporates these comments by reference.

Two commenters (4159, 4273) state that the EPA acknowledges that malfunctions are inevitable under technology based standards. *See* 76 FR at 52788 ("EPA recognizes that, even equipment that is properly designed and maintained can sometimes fail, and that such failure can sometimes cause or contribute to an exceedance of the relevant emission standard."); see also *Marathon Oil Co. v. EPA*, 564 F.2d 1253, 1272 (9th Cir. 1977) (noting even facilities operated in an "exemplary" fashion will experience periods of upset where it cannot meet normal operation limits); *NRDC v. EPA*, 859 F.2d 156,206 (D.C. Cir. 1988) ("Lacking infallibility, no pollution control technology works perfectly all of the time."). As such, the commenters believe that the EPA must account for emissions associated with malfunctions in setting the applicable standard. "A technology-based standard discards its fundamental premise when it ignores the limits inherent in the technology." *NRDC*, 859 F.2d at 208. The commenters believe that, failing to account for these inevitable failures would "in effect hold dischargers to a higher standard of technology than that demanded by the Act." *Id.* at 207; see also *Cement Kiln Recycling Coalition v. EPA*, 255 F.3d 855, 872 (D.C. Cir. 2001) (noting doubts of legality of technology-based standards that would require "sources to comply with standards even during openings of emergency safety valves caused by events beyond the sources' control"). The commenters argue that, rather than attempt to promulgate section 112-compliant standards, the EPA proposes to establish an "affirmative defense" for malfunctions only. The commenters assert that this "affirmative defense" is wholly insufficient to meet the EPA's obligations under section 112 of the CAA.

One commenter (4159) states that the criteria outlined in the proposed rule to establish the affirmative defense are inconsistent with the proposed definition for "malfunction" and they suggest that the criteria be eliminated. The commenter (4159) asserts that the affirmative defense criteria are substantially more restrictive than the requirements to show a malfunction under the definition, and that these more restrictive criteria would result in only a subset of malfunctions being considered eligible for the affirmative defense, if any at all, undermining the purpose of the provision.

The commenter asserts that there is no justification to include criteria to establish an affirmative defense against an alleged violation that are more onerous than the requirements of the regulations. For example, the commenter asserts that the first affirmative defense criteria listed requires a showing that the excess emissions: (A) Were caused by a sudden, infrequent, and unavoidable failure of air pollution control and monitoring equipment, process equipment or a process to operate in a normal or unusual manner; and (B) Could not have been prevented through careful planning, proper design or better operation and maintenance practices; and (C)

Did not stem from any activity or event that could have been foreseen and avoided, or planned for; and (D) Were not part of a recurring pattern indicative of inadequate design, operation, or maintenance; 76 FR at 52814. The commenter states that other criteria require “[a]ll possible steps were taken to minimize the impact,” and repairs were made “as expeditiously as possible.” The commenter opines that these criteria are substantially more restrictive than the requirements to show a malfunction under the definition, and these more restrictive criteria would result in only a subset of malfunctions being considered eligible for the affirmative defense, if any at all, undermining the purpose of the provision.

The commenter (4159) further states that other criteria are more stringent than, or at least redundant of, the general duty standard and, again, should be eliminated. For example, the commenter states that, the third affirmative defense criteria requires a showing that the "frequency, amount, and duration of the excess emissions (including any bypass) were minimized to the maximum extent practicable during periods of such emissions" while the eighth criteria requires a showing that “the affected source was operated in a manner consistent with good practices for minimizing emissions;” e.g., 76 FR at 52814. The commenter provides that general duty only requires an owner or operator to operate and maintain any affected source “in a manner consistent with safety and good air pollution control practices for minimizing emissions.” *Id.* at 52815. According to the commenter, the listed criteria for establishing an affirmative defense may impose a greater burden on regulated entities than would otherwise be required by the standards. At a minimum, the commenter opines that they are redundant of the general duty standard and may cause undue confusion as to the applicable requirements. According to the commenter (4159), the EPA provides no explanation for using these onerous criteria. The commenter provides that, although the EPA cites to two memoranda addressing the EPA's policy on how State Implementation Plans should treat excess emissions during SSM, 76 FR at 52788, these memoranda are inapplicable to technology based standards. *See* EPA Mem., State Implementation Plans: Policy Regarding Excessive Emissions During Malfunctions, Startup, and Shutdown, at n.6 (Sept. 20, 1999). According to the commenter, for technology based standards, the EPA and courts have recognized that the EPA must either (a) consider SSM in setting the standards or (b) provide an upset defense. Thus, based on the commenters’ arguments, the commenter believes that the EPA must reconsider its SSM provisions, and reissue a proposal that provides its full legal and factual support for its determinations as to the appropriate standard to apply to SSM periods.

One commenter (4104) supports inclusion of a malfunction exemption in the proposed revisions to Subparts HH and HHH. The commenter asserts that both the CAA and the Constitution require an upset defense as part of any technology-based standard. According to the commenter, as drafted, however, the proposed defense is far too narrow and restrictive to satisfy the CAA’s and the Constitution’s requirements. For example, according to the commenter, the proposed rules would excuse only those events that do not “stem from any activity or event that could have

been foreseen and avoided, or planned for[.]” 76 FR at 52829. However, the commenter asserts that, any number of events may be “foreseen” and “planned for,” but still interfere with a facility’s ability to comply with the standards. The commenter cites events such as a power failure or natural disaster as examples that may be anticipated, where the facility may have developed an appropriate emergency response plan to implement during these periods – yet may still find itself unable to comply with the standard, due to events such as lack of power, lack of access to the site, flooding, severe weather, earthquakes, mud slides, vandalism or terrorism, or upstream upsets that affect the natural gas that arrives at a natural gas transmission facility. According to the commenter, for all of the reasons discussed above, these types of foreseeable yet unpreventable events must either be reflected in the overall MACT requirements, or excused as a malfunction.

**Response:** The commenter is correct that the SIP SSM policy was not intended for application to NESHAP and NSPS standards. The EPA explained that “[b]ecause EPA set these standards taking into account technological limitations, additional exemptions would be inappropriate.” State Implementation Plans: Policy Regarding Excessive Emissions During Malfunctions, Startup, and Shutdown, at n.6 (Sept. 20, 1999). However, the *Sierra Club* case held the exemptions in the EPA’s NESHAP rules violated the Clean Air Act and thus the EPA’s approach to accounting for the limits of technology in developing NESHAP standards has evolved. The EPA has determined that for periods of malfunction, inclusion of an affirmative defense is an appropriate and reasonable approach to accounting for the limits of technology. With respect to the commenter that refers to and incorporates comments submitted by the “SSM Coalition” to the Proposed Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Sewage Sludge Incineration Units docket, the EPA believes that those comments have largely been addressed above, however, the EPA also responded to the SSM Coalition’s comments in the context of that rulemaking and directs commenters to those responses as well (Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Sewage Sludge Incineration Units Summary of Public Comments and Responses; Docket No. EPA-HQ-OAR-2009-0559-0171).

The EPA disagrees that the criteria of the affirmative defense undermine the purpose of the malfunction definition. The EPA does not intend that an affirmative defense will be available in every instance of a malfunction.

The EPA recognizes that some of the criteria for establishing an affirmative defense may be redundant of the general duty, but does not agree that such redundancy is a problem. The EPA notes that the affirmative defense criteria and the general duty to minimize emissions do not operate in the same manner. The general duty is applicable to a source at all times. The affirmative defense criteria are only relevant if a source chooses to take advantage of the affirmative defense.

Further, the EPA disagrees with comments that criticize the affirmative defense criteria as being overly vague or unduly restrictive and complex. The EPA believes that courts are well equipped and often do evaluate and apply the type of criteria set forth in the affirmative defense. Many of the conditions were modeled after the conditions of the affirmative defense in the EPA's SIP SSM policy, which several states have adopted into their SIPs. (See, e.g., State Implementation Plans: Policy Regarding Excessive Emissions During Malfunctions, Startup, and Shutdown (Sept. 20, 1999); Policy on Excess Emissions During Startup, Shutdown, Maintenance, and Malfunctions (Feb. 15, 1983)). We do not have any indication that parties to enforcement proceedings have had any significant difficulties applying the terms of these SIP affirmative defenses. In addition, the EPA's view is that use of consistent terms in establishing affirmative defense regulations and policies across various CAA programs will promote consistent implementation of those rules and policies.

With respect to commenter's concern that events such as floods or earthquakes that are foreseeable and have been planned for would not be eligible for the affirmative defense, the EPA believes that malfunctions that are caused by such events and that lead to violations could, depending on the circumstances, be eligible for the affirmative defense if the resulting violations could not have been prevented whether or not there was an attempt to plan for the event. Preparing and having a plan in place that addresses floods generally does not mean that all consequences of flooding can be planned for or avoided.

**Comment:** One commenter (4266) reports that the revisions around the SSM events have no start date. The commenter requests that, if the EPA continues with the affirmative defense provisions, that the regulatory text be added/revised to make a clear distinction of when these provisions become effective. According to the commenter, without this, agency personnel without the knowledge of the regulatory history could try to enforce the provisions around affirmative defense and SSM events retroactively.

**Response:** The effective date of the SSM revisions is the effective date of the rule.

**Comment:** One commenter (4226) asserts that the EPA must propose a threshold for the type, duration or quantity of emissions that could trigger civil penalties. According to the commenter, under the current wording, even the slightest malfunction could result in civil actions. The commenter suggests that, alternatively, small/de minimis incidents could be tracked as deviations rather than exceedances, and that industry would still track and submit them to the EPA; but the affirmative defense and corresponding nine criteria for the affirmative defense would not be required.

**Response:** The affirmative defense criteria are not requirements that a source must meet. In an action to enforce a violation of a standard caused by a malfunction, a source can choose to assert an affirmative defense. The affirmative defense is not relevant to malfunctions that do not result in violations of emission standards.

**Comment:** One commenter (4159) asserts that the EPA's proposal to limit the affirmative defense to malfunctions only and provides no explanation as to why such a defense is not also appropriate for startup and shutdown periods. According to the commenter, the EPA has recognized that it may not be possible to meet normally applicable emission limitations during startup and shutdown activities, not just malfunctions.

**Response:** The EPA is promulgating the affirmative defense for malfunctions only, not for periods of startup and shutdown. As explained in the preamble, the EPA believes that malfunction events should be treated differently than periods of startup and shutdown, which are predictable and routine aspects of a source's operations. In contrast, the EPA has determined that CAA section 112 does not require that emissions that occur during malfunctions be factored into development of CAA section 112 standards. Because startup and shutdown periods are part of a source's normal operations, the same approach to compliance with, and enforcement of, applicable emissions standards during those periods should apply as otherwise applies during a source's operations. Further, as explained above, periods of startup and shutdown – but not malfunctions -- are taken into account when establishing section 112 emissions standards. For these reasons, the EPA does not believe it is appropriate to apply the affirmative defense provisions to startup and shutdown periods.

**Comment:** Three commenters (4218, 4258, 4266) state that proving an affirmative defense will be close to impossible for malfunctions that occur at many of their facilities because they are located in remote areas that are not continually staffed. One commenter (4258) states that some sites are only visited by the operator 2-3 times a month, and although telemetry is often used, and some site operations will automatically shutdown, some must be visited manually to be shut down.

One commenter (4266) states that excess emissions can result from weather conditions or gathering system/processing plant outages that are beyond the control of the operator. According to the commenter, many well sites are remotely located and most are unmanned facilities. The commenter reports that inspection and maintenance visits occur on average anywhere from weekly to twice per month, depending on the location and time of year. In some areas, winter weather makes it difficult to visit sites causing extended periods between site visits. According to the commenter, although telemetry is often utilized for new production well sites to optimize the need for operator attention, weather conditions can affect not only the control device (flare flameout) but can also affect telemetry which would catch and report such discrepancies. The

commenter states that system outages to the gathering system, gas treating plants, or gas processing plants occur infrequently but can occur several times during the year. Additionally, the commenter reports that these outages immediately result in a stop in production, and wells that are equipped to automatically shut down, do so. However, the commenter reports that most wells must be visited manually in order to shut down the well and associated equipment. According to the commenter, once the system is restored and open to production flow, operators must begin the process of visiting the wells to open them back to production and restore associated operating equipment and control devices. The commenter recommends that the EPA specify how they would consider weather and “system” outages that are beyond the control of the upstream operator in a malfunction work practice.

**Response:** The commenter has not specified which aspects of the affirmative defense would be “close to impossible” to prove, however, the EPA is revising certain criteria of the affirmative defense provisions that may ease the burden for owners and operators of remote sources. The EPA is eliminating both the immediate notification and 45-day malfunction report requirement. Instead, the final rule allows owners or operators seeking to assert an affirmative defense to demonstrate, with all necessary supporting documentation (as was required under the proposed 45-day report), that it has met the affirmative defense criteria by including the report in the first periodic compliance, deviation report or excess emission report otherwise required after the initial occurrence of the violation of the relevant standard (which may be the end of any applicable averaging period). If such compliance, deviation report or excess emission report is due less than 45 days after the initial occurrence of the violation, the affirmative defense report may be included in the second compliance, deviation report or excess emission report due after the initial occurrence of the violation of the relevant standard. This change provides sources with sufficient time to demonstrate that they have met the required affirmative defense criteria.

**Comment:** One commenter (4104) requests that the affirmative defense criteria be modified considering the following:

- **Timely notification:** The availability of the affirmative defense should not be negated by a failure to notify, especially for events that involve small quantities of emissions.
- **Infrequent events:** Restricting the malfunction defense to “infrequent” events is legally acceptable only if more “frequent” events are excepted under some version of the startup/shutdown defense.
- **Off-shift and overtime labor:** The requirement to use off-shift and overtime labor should be deleted, because it impairs the site’s ability to respond in the manner most appropriate under the circumstances.
- **Severe property damage:** The word “severe” should be struck. Determining whether property damage is sufficiently “severe” to merit application of the defense is highly subjective and vague.



- Signed operating logs: the EPA should remove the requirement that operating logs be signed. Many facilities now use some form of electronic media to document response actions; other facilities may use paper records that do not require a signature.
- Root cause analysis: The requirement to perform a root cause analysis is vague and does not put industry on notice of the type of analysis that the EPA will deem sufficient, or the time in which such an analysis must be performed. Such an analysis is also unnecessarily burdensome and serves no environmental protection purpose for many malfunction events where the “root cause” is clearly identifiable (e.g., power outage, hurricane).

**Response:** The EPA has considered the commenter’s suggestions associated with specific affirmative defense criteria changes. Although not all of the changes were accepted, some are reflected in recent changes the EPA has made to these provisions.

- Timely Notification: The EPA has removed the requirement to notify the EPA within two days of violation of a standard in order to be able to avail themselves to a claim for affirmative defense and instead requires that the affirmative defense report be included in the first periodic compliance, deviation report or excess emission report otherwise required after the initial occurrence of the violation of the relevant standard (which may be the end of any applicable averaging period). If such compliance, deviation report or excess emission report is due less than 45 days after the initial occurrence of the violation, the affirmative defense report may be included in the second compliance, deviation report or excess emission report due after the initial occurrence of the violation of the relevant standard .
- Infrequent Events: The EPA believes that if malfunctions occur on a frequent basis that the basis for the malfunction more likely falls in the categories of poor design, poor operational decision making, or failure to operate a source in a normal manner and has retained the word “infrequent” in this criteria element.
- Off-shift and overtime labor: The EPA believes that rather than impair a sources response to a malfunction, the use of off-shift and overtime labor supports the premise that urgency is necessary to minimize to the maximum extent practicable all excess emissions associated with a malfunction and has retained this language in the criteria.
- Severe Property Damage: The EPA believes that a bypass of control equipment or a process, which results in a violation, should be an exception and not undertaken lightly, and has maintained the word “severe” in this criteria.
- Signed Operating Logs: As an alternative, the EPA accepts electronically signed operating logs where the format and method of submission meets the regulatory criteria and are compatible with the EPA and the delegated authorities’ electronic submission systems. Any source submitting records electronically should exercise due diligence to assure receipt by the EPA and the delegated authority.

- **Root Cause Analysis:** The EPA believes it has provided clear criteria within the affirmative defense provisions to support the development of an affirmative defense report. The EPA believes that these provisions will result in a minor administrative burden, but will result in sources analyzing their violation emissions to reduce or avoid those emissions in the future, which is an environmental benefit. A root cause analysis is not mandatory and is only required if a source seeks to assert an affirmative defense. However, such an analysis is beneficial in resolving or preventing violations and excess emissions whether the source seeks to assert the affirmative defense or not. A root cause analysis is one example of what constitutes good air pollution control practices to minimize emissions. A root cause analysis is not required for every malfunction, as specified above, and is *only required* for those malfunctions for which the source chooses to assert an affirmative defense.

**Comment:** Three commenters (4104, 4159, 4273) state that criteria outlined in the proposed rule are significantly more stringent than that provided in the analogous “upset defense” under the Clean Water Act, imposing substantial burdens on regulated entities for actions that, by definition, are not the fault of the facility. The commenters state that the EPA provides no explanation as to why it has chosen to move away from the long-standing upset defense at 40 C.F.R. §122.41(n), promulgated under the Clean Water Act. The commenters assert that, under the CWA, an “upset constitutes an affirmative defense” 40 C.F.R. §122.41(n)(2) and that to establish the defense under the Clean Water Act, the following criteria must be met:

- an upset occurred and the permittee can identify the cause(s) of the upset;
- the permitted facility was at the time being properly operated;
- the permittee submitted notice of the upset (required within 24 hours);
- the permittee took all reasonable steps to minimize or prevent the violation. See 40 C.F.R. §122.41(n)(3), (l)(6)(i).

One commenter (4104) specifically recommends that the EPA replace the proposed affirmative defense language with the language used at 40 CFR §122.41(n), the upset defense provided under the Clean Water Act. The commenter asserts that the language was crafted to cure the same statutory and constitutional deficiencies that compel the inclusion of a malfunction defense here, see, e.g., *Train*, 539 F.2d at 986, and so is the most appropriate and efficient mechanism for addressing these same deficiencies for subpart OOOO and subparts HH and HHH.

Another commenter (4228) suggests that the EPA should replace the proposed rule malfunction defense language with the upset defense provided under the Clean Water Act.

**Response:** The EPA does not find the commenter’s preference for the affirmative defense under the Clean Water Act persuasive enough to deviate from the affirmative defense approach that has been used under the CAA for nearly 20 years. While we recognize that certain characteristics of

the two approaches are similar, our preference is to adopt an approach that has been practiced under the CAA.

**Comment:** Two commenters (4246, 4266) assert that the provisions of §63.762(d)(1)(i)-(ix) would specify a 9-step procedure for determining whether a given malfunction event qualifies for the affirmative defense. According to the commenters, in most cases, it would not be realistic to complete this determination process within 2 days following the occurrence of the event. The commenters state that facilities might therefore tend to routinely submit the 2-day notification in order to preserve the potential for an affirmative defense, even in cases which subsequently are determined to not qualify. Furthermore, the commenters state that there is no environmental benefit that would accrue from this notification, and similar provisions in refinery consent decrees do not require it. As proposed, the commenters assert that these notifications would be required for the smallest of emission exceedances with no reportable quantity threshold being set. The commenters argue that this is contradictory to other EPA reporting rules such as those under CERCLA and EPCRA where reportable quantities are established for unauthorized releases. The commenters opine that immediate reporting to the EPA serves no beneficial purpose. The commenters recommend that, if the EPA insists on a notification requirement, the rules should allow at least 15 business days following the occurrence of the event for this notification to be submitted.

Three commenters (4218, 4242, 4266) request that the EPA allow malfunction reports to be submitted with the semi-annual reports.

One commenter (4266) states that the rule already requires, at §63.775(e), the submission of excess emissions reports on a semi-annual basis, and the EPA has established the semi-annual basis as being appropriate for all compliance-related reporting through numerous rulemakings. The commenters assert that it would be contrary to the agency's own assessment of an appropriate reporting frequency to arbitrarily require malfunction reports to be submitted within 30 days.

Another commenter (4242) believes that there is no reason to require a reporting frequency that differs from the semi-annual basis.

**Response:** The EPA has evaluated some of the affirmative defense criteria, and is revising both the immediate notification and 45-day malfunction report. Instead, the final rule allows owners or operators seeking to assert an affirmative defense to demonstrate, with all necessary supporting documentation (as was required under the proposed 45-day report), that it has met the affirmative defense criteria by submittal of the affirmative defense report in the first periodic compliance report, deviation report or excess emission report otherwise required after the initial occurrence of the violation of the relevant standard (which may be the end of any applicable

averaging period). If such compliance report, deviation report or excess emission report is due less than 45 days after the initial occurrence of the violation, the affirmative defense report may be included in the second compliance report, deviation report or excess emission report due after the initial occurrence of the violation of the relevant standard. This change provides sources with sufficient time to demonstrate that they have met the required affirmative defense criteria.

**Comment:** Four commenters (4219, 4245, 4258, 4356) request that the EPA expressly provide in the proposed rules that a SIP-approved State affirmative defense program would be sufficient to establish the affirmative defense for the Federal rules, or that the EPA defer to the State's exceedance policies and regulations in lieu of the Federal affirmative defense provisions.

**Response:** Pursuant to the EPA regulations at 40 CFR 63.93, States may seek approval of State requirements to substitute for requirements included in final section 112 standards if the State requirements are equivalent to the promulgated section 112 standards. States that have SIP approved affirmative defense provisions may seek to have those programs apply in lieu of the affirmative defense provisions applicable to malfunction periods in the final rule.

#### 3.5.4.5 *Did EPA Overlook Any Changes that Should Have Been Made*

**Comment:** One commenter (4222) recommends that the EPA include a statement in §63.752 to make it clear that a SSM plan is not required. According to the commenter, currently, the only place this is specified is in Table 2 to subpart HH.

**Response:** The EPA believes that the commenter mistakenly refers to §63.752 (which refers to a section under the Aerospace NESHAP) when they meant to refer to §63.762. The EPA has eliminated the SSM plan requirements in §63.762 and the final rule contains no SSM plan requirement. Thus, the clarification requested by commenter is not necessary.

**Comment:** One commenter (4457) supports the EPA's proposed removal of the "SSM exemption" that the D.C. Circuit has struck down as a violation of section 112 of the CAA, 42 U.S.C. § 7412. 76 FR at 52787-88; *see Sierra Club v. EPA*, 551 F.3d at 1027-28 (holding that section 302(k), 42 U.S.C. § 7602(k), defines an emission standard as requiring "continuous" control of pollution). However, according to the commenter, although the EPA states that it is removing all SSM exceptions from the standard, the EPA proposes to keep a provision allowing "one excused excursion" for control devices. *See* 76 FR at 52824 (40 C.F.R. § 63.773(d)(8)(ii)), 52839 (40 C.F.R. § 63.1283(d)(8)(ii)). The commenter asserts that this appears to allow sources to violate the section 112 standards once "per semiannual period for any reason." The commenter argues that section 112 requires the standards to apply at all times. *Sierra Club v. EPA*, 551 F.3d at 1027-28. Therefore, according to the commenter, the EPA may not lawfully

include any “excused excursion” provision, and recommends that the EPA remove all SSM exemptions from the rules.

**Response:** We agree with the commenter. Consistent with the changes in the proposed rule to address SSM, we are removing the monitoring and reporting provisions related to excursions from the final rule.

**Comment:** One commenter (4245) asserts that SSM emissions will no longer be exempt from permitting and control requirements. The commenter states that the noted exemption in the proposed regulation from title V (Federal permit) specifically does not apply to emission increases triggered by accounting for SSM emissions. The commenter is concerned that, by forcing operators to account for SSM emissions as part of their operating emissions “footprint” it will shift the permitting, control, monitoring and reporting requirements upward (in the direction from permit-by-rule registration to standard permit to major permit). Thus, according to the commenter, countless oil and gas facilities in Texas that are presently covered by permit-by-rule (most requiring registration due to H<sub>2</sub>S) will be moved to standard permit requirements and many presently covered by standard permit will be pushed upward to major (title V) permit requirements. The commenter asserts that this is a tremendous challenge for the Permian Basin in Texas, which is constrained with respect to sour gas handling and processing capacity. The commenter asserts that the EPA’s proposal to require the inclusion of SSM emissions will have the effect of vastly expanding the scope of regulatory requirements for small oil and gas producers. According to the commenter, it will also create, on a wide scale, circumstances where operators cannot physically comply with emission standards due to real limitations in gas gathering systems, thus forcing them to curtail or shutdown their operations.

**Response:** The changes that we proposed to the startup, shutdown and malfunction (SSM) provisions of the Oil and Natural Gas Production MACT do not affect how a source determines whether it is a “major source” and, therefore, required to obtain a title V operating permit.<sup>41</sup> Rather, the proposed changes simply propose to eliminate the exemption in the original Oil and Natural Gas Production MACT, which provides that sources do not need to comply with the emission standards in the rule during periods of SSM, and thus require compliance with the standards at all times. Removing that exemption does not alter how the source or a permitting authority determines a source’s potential to emit (PTE) or whether the source is required to obtain a title V operating permit.

With respect to commenter’s suggestion that EPA leave the regulation of SSM emissions to the respective state agencies, EPA notes that in accordance with the decision in Sierra Club v. EPA, 551 F.3<sup>rd</sup> 1019 (D.C. Cir. 2008), EPA is required to establish emission standards under section

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<sup>41</sup> As a general matter, area sources that are subject to subpart HH are exempt from the requirement to obtain a title V operating permit.

112 that apply at all times, including during periods of startup, shutdown or malfunction. Thus, EPA cannot defer the regulation of SSM emissions to state agencies.

### 3.5.5 Applicability and Compliance

**Comment:** One commenter (4219) states that owners and operators of large glycol dehydrators should be given 3 years to come into compliance with the new 95 percent reduction standard. The commenter argues that the proposed requirement to comply within 90 days of rule finalization would be unreasonable.

One commenter (4266) states that the 90-day compliance time for large dehydrators is insufficient if the 0.9 Mg/yr benzene compliance option is removed. The commenter believes that the EPA's rationale for eliminating the 0.9 Mg/yr benzene limitation is severely flawed and expects that the EPA will restore the 0.9 Mg/yr benzene limitation after consideration of these comments. However, if the EPA does not restore this alternative limitation, the commenter argues that the EPA must extend the compliance date to the same 3-year period proposed for newly regulated small dehydrators and storage vessels without the potential for flash emissions.

Another commenter (4192) recommends the following revision to §63.760(f)(10): "Each large glycol dehydration unit, as defined in §63.761, that has complied with the provisions of this subpart [add: on or] prior to August 23, 2011 by reducing its benzene emissions to less than 0.9 megagrams per year (1 TPY) must achieve compliance no later than [delete: 90 days] [add: 3 years] after the date of publication of the final rule in the *Federal Register*, except as provided in §63.6(i)."

**Response:** In both the final rule for subpart HH and subpart HHH, we have retained the 0.9 Mg/yr compliance option, and these comments are no longer applicable.

**Comment:** Two commenters (4192, 4246) express concern for sources whose HAP emissions increase despite decreasing natural gas throughput due to changes in gas composition and the impact on compliance timelines. The commenters note that the proposed rule appears to allow no time to achieve compliance under §63.760(f) when this occurs. The commenters recommend that EPA should add a new provision, §63.760(f)(11), that reads, "[a] production field facility, as defined in §63.761, constructed before August 23, 2011 that was previously determined to be an area source but becomes a major source (as defined in paragraph 3 of the major source definition in §63.761) on or after the date of publication of the final rule in the *Federal Register* due to a change in the extended analysis of the gas must achieve compliance no later than 3 years after it becomes a major source, except as provided in §63.6(i)."

**Response:** We believe the commenters suggestion to add a section under §63.760(f) to address the compliance date for production field facilities that later increase their emissions to major source levels is not necessary. The proposed language in §63.760(f)(9) references production field facilities that are impacted by the change in criteria specific to storage vessels and the resulting major source determinations. We expect that existing area sources under subpart HH will perform a major source determination based on the revised criteria. Those facilities that remain area sources after applying the revised criteria, and other area sources not impacted by the revised criteria, will use the criteria of §63.760(f)(1) and (2) as well as, §63.6(c)(5) to determine whether they comply with the new or existing source standards for major sources. This requirement remains unchanged with the amendments. We have not made any changes in response to these comments.

**Comment:** Commenter (4246) suggests several revisions to §63.760(f) to maintain consistency with NSPS Subpart OOOO and for internal consistency.

**Response:** We have reviewed the suggested changes and do not believe they are necessary. We remind the commenter that while consistency between the NSPS and NESHAP is desirable, the rules have different objectives that will at times necessitate differences.

**Comment:** One commenter (4266) notes that the EPA has made allowances for new compliance dates for specific types of equipment that have new or revised compliance requirements because of the proposed revisions (§63.760(f)(7)-(10)). However, the commenter contends that other proposed revisions do not appear to have new compliance dates associated. The commenter asserts that this practice may have the unintended consequence that the new text may be interpreted as having retroactive compliance requirements.

**Response:** We have reviewed the compliance date provisions in the final rule and have found them to be clear in that no retroactive compliance requirements are created.

#### *3.5.5.1 Calculating Potential to Emit*

**Comment:** One commenter (4263) suggests that in §63.760 (a)(1)(i)(B), the EPA should delete "prior to 1999" and provide for potential to emit determinations. The commenter explains that production facilities that have experienced a decline in production after the period allowed by §63.760(a)(1)(i) should be able to determine maximum "potential" production rates based on a "5-year lookback" approach, which has been adopted by some state agencies. For the same reason, the commenter recommends that the EPA should also update the outdated language in §63.1270(a)(2), referenced by the amended paragraph (a) of §63.1270, to provide for potential to emit determinations based on historical throughput levels. The commenter adds that the EPA should delete reference to the use of throughput "prior to June 17, 1999" for major source

determinations to accommodate newer facilities that may nevertheless experience declining throughput levels.

**Response:** The provisions to which the commenter recommended revision were not reopened for notice and comment in our proposed rule. The requested revision is therefore outside the scope of this rulemaking.

**Comment:** One commenter (4039) states that GRI-GlyCalc™ model inputs should use the best available values rather than prescribed values. The commenter notes that the proposal seeks to change the circulation rate input to use a default of the design maximum. The commenter states they have extensive experience using this model and have found that the most significant input variables to the model are (ranked from most sensitive to least sensitive): (1) wet gas analysis, (2) lean glycol recirculation rate, (3) contactor temperature and pressure, (4) dry gas moisture content, and (5) lean glycol water content. To arbitrarily set the circulation rate at the design maximum is not warranted, according to the commenter, and will lead to falsely high emission results. The commenter states that if other, more representative values are available they should be used in preference to the design maximum. The commenter explains that more representative values would include the actual circulation rate and the optimal glycol recirculation rate based on the water content of the stream.

One commenter (4191) states that they have found emissions of HAP from glycol dehydrators are impacted by changing gas composition. However, the commenter also states that the effect of the glycol circulation rate on HAP and VOC emissions is much stronger. The commenter states that they do not have specific data that a changing gas composition could lead to increasing HAP emissions, even as the gas throughput decreases. However, according to the commenter, HAP emissions are likely to increase as the glycol circulation rate increases, even as gas throughput decreases. To account for changing gas composition, the commenter requires an annual extended wet gas analysis be completed for input into emissions estimating software such as GRI-GLYCalc™, HYSYS or ProMax.

Two commenters (4192, 4246) support using the maximum rate of the glycol circulation pump for PTE calculations.

**Response:** As stated in the proposal (76 FR 52788), the change is being made to clarify, rather than change, what is required in a major source determination under §63.2 of the General Provisions.

### *3.5.5.2 Revisions to Definition of Facility and Applicability Criteria*



**Comment:** Two commenters (4056, 4266) believe that the apparent expansion of the source category for the Oil & Gas NESHAP creates an overlap with other regulations, such as the Organic Liquid Distribution (OLD) NESHAP (40 CFR part 63, subpart EEEE), subpart HHH, and NSPS subpart Kb. The commenter believes that this apparent expansion is unnecessary and will create regulatory confusion. One commenter (4266) adds that, under the proposal, it would seem some sources currently regulated under subparts HHH and EEEE might no longer be subject to those rules and instead would be subject to subpart HH on the basis that only one NESHAP applies to any individual source. One commenter (4056) requests that the EPA retain the current language in §§63.760 and 63.761 regarding the point of custody transfer for liquids to clearly show demarcation between the end and beginning of the source categories. According to the commenter, equally important is that there will be no impact on the environment if the EPA maintains the status quo since the crude oil transportation sources beyond the traditional oil and gas production sector are already “affected sources” under an existing NESHAP. One commenter (4056) describes sections in the proposal preamble and rule that contribute to this confusion.

**Response:** We do not believe we have expanded the source category as the commenter contends. The source category has remained the same, while the final rules apply to additional emission sources within the source category. We disagree that there are apparent overlaps with the rules cited by the commenter, but remind the commenter that the original rule provided guidance at §63.760(g) for overlap with other equipment leak regulations.

**Comment:** Two commenters (4192, 4246) recommend revising the applicability provision in §63.760(e)(2) to state: “A major source facility, [DELETE prior to the point of custody transfer], with a facility-wide actual annual average natural gas throughput less than 18.4 thousand standard cubic meters per day [ADD (i.e., 650,000 SCFD)] and a facility-wide actual annual average hydrocarbon liquid throughput less than 39,700 liters per day [ADD (i.e., 10,500 gallons/day)].”

**Response:** The section cited by the commenter was not part of the proposed changes and cannot be revised at this time. In addition, the requested deletion of the custody transfer reference would not be appropriate since the criteria specified in this section is intended to apply to production field facilities only and not all sources subject to subpart HH.

**Comment:** One commenter (4266) notes that, although oil and natural gas are measured at and pass several “accounting transfers” (such as lease accounting for royalty purposes, and gathering and gas plant balance for product loss and shrinkage purposes), products often are not transferred from the production operator until the product is loaded onto trucks or into a pipeline to leave the field. Additionally, the commenter notes that using the last point before the oil or natural gas leaves the production field allows the NSPS and NESHAP regulations to use the same regulatory

demarcation between the production and transportation sectors, as specified in CAA section 112(c). The commenter believes this rulemaking should clearly define which point of custody transfer is intended for this dividing point. The commenter recommends that this dividing point be the last point of custody transfer before the crude oil or condensate leaves the production field and enters the transportation industry. According to the commenter, this would most closely match the original intent of the custody transfer definition in the final NSPS subpart K and the common practice of the oil and natural gas industry.

The commenter (4266) adds that there is unnecessary ambiguity in the applicability of the proposed rules with respect to storage vessels. The commenter believes the rules need to clearly specify the boundaries of the source category, identify the affected facilities within that source category, and specify which of the affected facilities are subject to the control requirements. The commenter states that part 60 subpart Kb and part 63 subparts HH, HHH, and EEEE each describe the boundary between the oil and natural gas production sector and the transportation sector as being where oil or natural gas is transferred from production or producing operations to “pipelines or any other forms of transportation.” The commenter points out that the original version of subpart HH specifies that applicability is limited to storage vessels located prior to the point of custody transfer to pipelines or other forms of transportation. The commenter contends that the proposed revisions to §63.760(a)(2), however, would remove that point of demarcation, and instead specify that the rule applies to facilities “prior to the point where hydrocarbon liquids enter either the Organic Liquids Distribution (Nongasoline) or Petroleum Refineries source categories.” The commenter believes this wording has the apparent intent of preserving the boundary between the production field and the liquids distribution system, but the reference becomes circular in that the OLD MACT rule (subpart EEEE) specifies that it excludes facilities subject to part 63 subpart HH (see §63.2334(c)(1)).

The commenter (4266) also notes that the revisions to subpart HH would result in each rule excluding the affected facilities of the other, but neither rule defining the boundary between the source categories. In order to preserve a specified boundary, the commenter recommends that the wording of §63.760(a)(2) should continue to specify the point of custody transfer as the demarcation between the production field and transportation sectors. Further clarity would be achieved, according to the commenter, by replacing the former definition of “custody transfer” with the following suggestion: §63.761 [ADD TEXT: Custody transfer means the last point of custody transfer of crude oil, condensate, or natural gas before it leaves the production field or basin and enters pipelines or any other forms of transportation. Typical custody transfer points include truck loading facilities or pipeline metering stations for crude oil or condensate, and the tail gate of natural gas processing plants or pipeline metering stations for natural gas.]

**Response:** We recognize the commenter's concerns regarding references that do not clearly identify the applicability between different subparts. To avoid concerns/confusion about where

OLD MACT and MACT HH apply, we are removing the references to the OLD MACT and refinery source categories proposed under §63.760(a)(2). The reference to the point of custody transfer however, will not be added back to §63.760(a)(2) as suggested by the commenter since we believe that reference is only needed in the definition of facility in §63.761.

Therefore, we are reinstating the references to custody transfer in the definition of facility in §63.761 so that facility boundary within the oil and natural gas production source category is clearly defined. We believe that these changes, along with the exemption contained in the OLD MACT under §63.2334(c)(1), for oil and natural gas operations, ensure that the OLD MACT does not apply at facilities subject to subpart HH and eliminates any circular references.

**Comment:** Two commenters (4192, 4246) offer a slightly different version of a “custody transfer” definition: Custody transfer means the transfer of hydrocarbon liquids or natural gas: after processing and/or treatment in the producing operations, or from storage vessels or automatic transfer facilities or other such equipment, including product loading racks, to pipelines or any other forms of transportation. For the purposes of this subpart, the point at which such liquids or natural gas [delete: enters] [add: exits] a natural gas processing plant is a point of custody transfer.

**Response:** The custody transfer definition, along with the references to certain custody transfer points in subpart HH, are intended to serve several purposes: 1) the custody transfer point where natural gas enters the natural gas processing plant marks the point where the emission aggregation limitations at production field facilities no longer applies; 2) the custody transfer point where natural gas exits the natural gas processing plant serves to identify where subpart HH no longer applies (i.e., subpart HHH applies downstream of that point). Along with the definition of facility, the EPA believes these terms are sufficient and no changes have been made in response to these comments.

**Comment:** One commenter (4217) believes the EPA must withdraw the proposed change to the major source definition under §63.760. The commenter believes that such a significant change requires an adequate opportunity for review and comment of MACT subpart DDDDD. If the EPA revises the definition of a major source in MACT subpart HH to include all storage vessels, then the commenter contends that this also impacts major source determinations made under at least NESHAP subpart DDDDD for owner and operators of an industrial, commercial, or institutional boiler or process heater that is located at a major source. For ONG facilities, the commenter points out that the major source definition in subpart DDDDD references the definition in subpart HH. The commenter states that the potential revision of a major source definition in subpart HH is both a procedural and practical problem for owners and operators of ONG production facilities that are currently minor sources according to the subpart HH major source definition.

**Response:** It is not uncommon for one rule to cross reference a requirement in another rule. The EPA is not required to consider all potential impacts to other rules that cross reference a provision in a rule before revising such provision. As the commenter correctly notes, any such potential impact may be evaluated through review of the subpart that provides the cross reference. In this case, the commenter may petition the EPA to re-evaluate whether the cross reference in subpart DDDDD remains appropriate in light of this final rule.

### *3.5.5.3 Other Clarification Changes*

**Comment:** Two commenters (4192, 4246) state that the current subpart HH provides that a major source retains that status permanently, even if it reduces its emissions below the major source threshold. The commenters state that this policy of “once-in-always-in” discourages sources from undertaking major HAP emission reductions, and should be eliminated for MACT subpart HH — as EPA proposed in Docket No. EPA-HQ-OAR-2004-0094 (see National Emission Standards for Hazardous Air Pollutants, General Provisions, 72 FR 69 (Jan. 3, 2007)). This change in policy would, according to the commenter, present a tremendous incentive for owners and operators to reduce their emissions to less than 1 tpy benzene and maintain those emissions at a low level.

Another commenter (4104) describes the history of this policy and notes that as more major source NESHAPs are amended to add emission standards for smaller units, the incentive to avoid the part 63 administrative burden by achieving area source status becomes more pronounced. However, the commenter notes that the OIAI policy precludes pursuing such an approach, so facilities will remain major source emitters. The commenter agrees that the EPA should adopt a new policy that would also provide additional motivation to pursue innovative technologies or processes that reduce emissions. According to the commenter, the OIAI policy limits the benefit to operators that would like to pursue emission reductions and stifles innovation.

**Response:** The commenter seeks revision to the Agency’s OIAI policy. The OIAI policy was is a subject of this rulemaking and was not mentioned in the proposed rule. Accordingly, the EPA is not addressing this comment in the final rule.

### **3.5.6 Other Comments**

**Comment:** One commenter (4178) states that they have a General Permit program for small sources in certain categories such as Oil & Gas. According to the commenter, many facilities are currently permitted under General Permits for Oil and Gas Facilities or General Permits for Area Source NESHAP Facilities. The commenter states that some of these sources will become major according to subpart HH or HHH. The commenter contends that they will be required to review

whether the general permits can be revised or if the facilities will be required to have new synthetic minor or title V permits.

**Response:** We appreciate the commenter's insight. We recognize that changing the definition of associated equipment to exclude all storage vessels as opposed to only storage vessels with the potential for flash emissions, may cause some facilities that were area sources to become major sources. These facilities may have additional permitting requirements at the state level, which may increase the burden on state regulatory agencies. In the ICR for the final rule (available in the docket along with the Supporting Statement), we took into account the additional burden on state agencies for area sources that subsequently become major sources.

**Comment:** Two commenters (4192, 4246) suggest revising the definition of "produced water" by deleting the words, "...after extraction" to eliminate confusion between extraction from the well from extraction from a cryogenic unit.

**Response:** The provision to which the commenter recommended revision was not reopened for notice and comment in our proposed rule. The requested revision is therefore outside the scope of this rulemaking.

**Comment:** Two commenters (4246, 4263) state that the EPA should clarify that the definition of BTEX includes isomers of xylene because total xylene is represented by three isomers referred to as meta- (m-xylene) para- (p-xylene) and ortho- (o-xylene) xylene.

**Response:** We direct the commenters' attention to Table 1 of the existing rule which lists these isomers of xylene.

**Comment:** One commenter (4266) maintains that the following changes are needed to clarify terminology related to glycol dehydrators. In the NESHAP boiler definition, the commenter recommends that the rule must clarify that glycol reboilers are not boilers. Also, the commenter and one other commenter (4263) recommend that the rule should clarify that condensers which are part of a glycol system prior to a control device should not be considered control devices. According to the commenters, the EPA uses the term "condenser" multiple times in the rule when describing control devices and requirements. The commenters note that it is not uncommon for a condenser on a dehydrator vent stream to precede a flare or other combustion device. The commenters explain that a key purpose of this condenser is to remove water vapor. Since the 95 percent HAP emission reduction is met by the flare or combustion device, the commenter states that it is not reasonable to consider the condenser as a control device in this situation and require all the associated monitoring, recordkeeping, and reporting requirements. The commenter requests that only condensers that are the final control device, or condensers used to help achieve the 95 percent control efficiency, be classified as control devices.

**Response:** While we appreciate the commenters' insight, this issue was not raised during proposal and represents more than an administrative change, so we are unable to address it in this action.

**Comment:** One commenter (4246) states that many of the revisions to the control device requirements of §63.771 apply to equipment that is currently required. The commenter contends that the proposed revisions fail to specify when these requirements are to be applied. The commenter recommends that the EPA should revise the proposed rule to indicate new performance testing requirements only apply to control equipment installed following the effective date of this rule.

**Response:** We have revised §§63.772(e)(3)(vi)(A) and 63.1282(d)(3)(vi)(A) to specify that a control device installed prior to August 23, 2011 has until 3 years after the publication date of the final rule in the *Federal Register* to either conduct a performance test on the control device or replace it with a manufacturer tested unit.

**Comment:** Commenter (4263) states that in the nomenclature for Equation 1 in §63.765, the units for the BTEX emission limit are not properly defined. The commenter recommends changing equal sign (=) to hyphen (-).

**Response:** We appreciate the commenter's thorough review and have made appropriate corrections in the final rule.

**Comment:** One commenter (4266) notes that the EPA makes no provision in either subpart HH or subpart HHH to limit applicability to either one or the other of the rules. The commenter claims that many of the provisions in the two subparts overlap with one another; therefore the EPA must clarify applicability to reduce confusion, duplicative requirements and reporting.

**Response:** Subpart HH applies to sources in the oil and natural gas production sector, and subpart HHH applies to sources in the natural gas transmission and storage sector. The point of custody transfer where natural gas exits the natural gas processing plant defines the point at which subpart HH provisions no longer apply, and the provisions of subpart HHH apply. We believe that the final rule provides sufficient clarification as to which rule applies to each emission source.

### **3.6 Miscellaneous Comments on NESHAP Amendments**

**Comment:** One commenter (4174) states that the EPA should not impose the proposed 40 CFR 63 subparts HH and HHH provisions for facilities located over water bodies and/or located in the

wetland areas of Louisiana as there is no "public" to be exposed in these remote areas. The commenter states that emission reductions have already occurred, if the facility was subject, due to the existing rules. The commenter further states that additional requirements and costs to add facilities to often "space-limited" platforms are not justified.

**Response:** We have no authority under the CAA to make such an exemption.

**Comment:** One commenter (4320) states that §63.772(e)(1) implies that control devices are exempt from testing for all affected sources except small dehydrators, which puts the largest burden and focus on the smallest sources. The commenter states that it does not appear that condensers that are part of glycol systems qualify as emission control devices.

**Response:** We disagree with the commenter's conclusions. Section 63.772(e) (i) – (e)(vi) lists specific parameters under which control devices are exempt from the requirements to conduct performance tests and design analyses. The commenter provides no rationale for the comment regarding condensers as part of glycol systems qualifying as emission control devices.

**Comment:** One commenter (4320) states that they spent the short duration of the comment period evaluating the manpower required to comply with the proposed NSPS and NESHAP rules and created an organized and accurate prediction of the first year and ongoing labor burden created by the rule proposals. According to the commenter, the first year effort to comply with the rules, as proposed, is believed to require at least 3 man-years. Ongoing effort, according to the commenter, after the first year, is expected to exceed 1 man-years per year. The commenter expressed hope that the EPA will consider making the changes proposed in this letter and in other comments.

The commenter (4320) states that they already have much of the capital emission reduction technology already built into its ongoing operations. The commenter states that the compliance resource demand is where the commenter will experience the greatest impact from this rulemaking. Aside from the labor burden cost, the commenter states that they will also be required to install parameter monitoring instrumentation and software and conduct a significant amount of emission testing if the rules are not changed.

According to the commenter (4320), new instrumentation and software costs are expected to exceed \$650,000 the first year and will likely exceed \$200,000/year for successive years. Likewise, the commenter estimates that testing in the first year will approach \$850,000 the first year and will be approximately \$250,000/year for successive years.

The commenter (4320) claims that they already conducts the majority of the emission reduction measures required by the proposed rules. According to the commenter, the costs described above

are created by activities that are required to "prove" compliance. The commenter states that they believe there are much more efficient ways to adequately demonstrate compliance, as detailed throughout their comments.

**Response:** We believe that the final rule requires the minimum amount of compliance resources that are necessary to demonstrate compliance. We direct the commenter to the discussion of the cost impacts of the final rule in section XI of the final rule preamble.

**Comment:** One commenter (4191) recommends that a 500 parts per million leak rate be added to the section regarding closed-vent system requirements, as is used in existing closed vent system requirements for glycol dehydrators subject to subpart HH.

**Response:** The commenter is referring to the requirement in §63.771(c)(2) that closed-vent systems must be designed and operated with no detectable emissions. This paragraph was not part of the changes in the August 23, 2011 proposal; therefore, no substantive changes have been made to this paragraph in the final rule.



## 4.0 Cost, Environmental, Energy and Economic Impacts

### 4.1 Economic Impacts

**Comment:** Several commenters (2245, 3528, 3350, 4160, 4168, 4209, 4215, 4231, 4245, 4254, 4255, 4267) believe that the proposed rules are too burdensome and would harm the fragile U.S. economy by diverting resources into compliance and away from production. The commenters often indicate that this will suppress domestic production and increase reliance on foreign sources of energy. In contrast, one commenter (4240) counters that industry growth and rigorous clean air regulations can go hand in hand.

Two commenters (4231, 4254) state that a Small Business Administration report shows that regulations cost American businesses \$1.75 trillion annually, about \$280 billion from environmental regulations. The commenters believe that at a time of slow economic growth and high unemployment, much of those regulatory resources would be better spent invested in a productive capacity to grow jobs and the economy rather than compliance with low-benefit regulations. One of the commenters (4254) adds that small businesses play an especially important role in the oil and gas industry, where they take the risks and lead on innovative methods.

One commenter (2245) states that for the foreseeable future, the cornerstone of an effective U.S. climate change policy and energy policy will be natural gas. The commenter asserts that given the precarious state of the national economy, it is unjustifiable to increase the cost of delivering natural gas. Another commenter (4215) states that the ONG sector is a major source of domestic jobs, and that the sector is depended upon by the manufacturing sector, home heating and electric utilities, the merchant power sector and, ultimately, America's consumers.

Five commenters (3528, 4168, 4255, 4267, 4269) believe that the proposed rules will cause some wells to become uneconomic, with negative economic impacts and little environmental benefit. One commenter (3528) believes that placing additional administrative regulations on marginally economic oil and gas wells may cause some wells to be shut-in, reducing energy production and eliminating jobs, with little to no environmental benefit. The commenter adds that the cost of energy production will rise as a result of complying with these new regulations. One commenter (4267) notes that the State of New Mexico receives \$2.9 billion in taxes annually from oil and gas, and states that every well that is not drilled and every marginal well that is shut in as a result of this regulation is an immediate loss to the state.

One commenter (4168) states that implementation of the proposed rules will likely render many oil and gas exploration, production and development projects uneconomic, which will diminish oil and gas revenues received by the State of Texas and have a negative impact on funding for

lower (grades K through 12) and higher (University of Texas and Texas A&M University Systems) education in Texas. The commenter believes that given the current economic conditions, every effort should be made to enhance revenue sources for public education in a fiscally and environmentally reasonable manner.

One commenter (3350) indicates that because the NSPS applies only to new natural gas wells, the rule may cause operators to undertake fewer projects. The commenter adds that the rule creates an inadvertent economic incentive for sources to continue using outdated, less-efficient equipment rather than incurring new costs and regulations to change.

In a dissenting view, one commenter (4240) states that the experience in Wyoming and Colorado shows that the ONG sector has grown in the presence of strong standards. The commenter indicates that his organization has examined several metrics illustrating trends in the oil and natural gas sectors which show that both Colorado and Wyoming have experienced growth in those industries while meeting state air regulations, and in some cases, higher growth than both the U.S. overall and other states without such regulations. The commenter adds that while this analysis does not quantify the impact of the regulations, (since it is not known what sort of growth these states might have seen in their absence), it does provide evidence that industry can thrive in the presence of these regulations. Based on the analysis, the commenter concludes that the EPA's proposed rules are not likely to impair the industry's growth; they will, instead, reduce the environmental impacts of that growth.

**Response:** The EPA does not believe that the final rules are overly burdensome or will harm the U.S. economy. We agree with the comment indicating that the experience in Wyoming and Colorado illustrates that the ONG sector can thrive in the presence of environmental regulations.

For the final rule, we carefully considered the comments received on all aspects of the proposed rules. While our approach and methodology for establishing the final standards remained the same, we made several changes to make the final rules more flexible and cost-effective, address concerns with equipment availability, streamline recordkeeping and reporting requirements, and improve clarity, while fully preserving or improving the public health and environmental protection required by the CAA. These changes are discussed in more detail in the preamble to the final rule and in the other sections of this document. The final NSPS establishes several performance standards that give regulated entities flexibility in determining how to best comply with the regulation. In an industry that is geographically and economically heterogeneous, this flexibility is an important factor in reducing regulatory burden.

We used the National Energy Modeling System (NEMS) to estimate the impacts of the final NSPS on the U.S. energy system. The NEMS is a publically available model of the U.S. energy economy developed and maintained by the Energy Information Administration of the U.S. DOE

and is used to produce the Annual Energy Outlook, a reference publication that provides detailed forecasts of the United States energy economy.

We disagree with the commenters' belief that the rules will "suppress domestic production and increase reliance on foreign sources of energy" or will cause operators to drill fewer wells. Using NEMS, EPA estimates that the number of successful gas wells drilled in 2015 will increase by 66 (0.35 percent) and the number of successful oil wells will be unchanged under the NSPS when compared to the baseline. Additionally, domestic natural gas production and domestic oil production will remain unchanged in 2015, when compared to the baseline. Net imports of natural gas and oil will remain unchanged in 2015, when compared to the baseline.

We agree with the commenter who states that the oil and natural gas sector "is depended on by the manufacturing sector, home heating and electric utilities, the merchant power sector, and ultimately, America's consumers." We note that using NEMS, EPA estimates that delivered natural gas prices are expected to remain unchanged in the residential, electric power, and transportation sectors in 2015, when compared to the baseline. The EPA estimates small increases of 0.12 percent and 0.20 percent in the commercial and industrial sectors in 2015, respectively, when compared to the baseline.

Emission controls required by the final rules capture VOC emissions that otherwise would be vented to the atmosphere. Since methane is co-emitted with VOC, a large proportion of the averted methane emissions can be directed into natural gas production streams and sold. One pollution control requirement of the final NSPS (i.e., storage vessel controls) also captures saleable condensates. The revenues from additional natural gas and condensate recovery are expected to offset the costs of implementing the final rules. The revenue from additional natural gas product recovery will also lead to increased revenues from taxes and royalties.

After considering the economic impact of the final rules on small entities for both the NESHAP and NSPS, EPA's analysis indicates that these rules will not have a significant economic impact on a substantial number of small entities (or "SISNOSE"). The number of significantly impacted small businesses is unlikely to be sufficiently large to declare a SISNOSE. Our judgment in this determination is informed by the fact that many affected firms are expected to receive revenues from the additional natural gas and condensate recovery engendered by the implementation of the controls evaluated in this RIA. As much of the additional natural gas recovery is estimated to arise from completion-related activities, we expect the impact on well-related compliance costs to be significantly mitigated.

For more information on the estimated economic, small entity, and energy effects, please refer to the economic impact analysis for the final rules. The analysis is available in the RIA, which is in

the public docket for the rulemaking. The RIA describes in detail the empirical basis for the EPA's assumptions and characterizes the various sources of uncertainties affecting the estimates.

**Comment:** One commenter (2245) states that the administrative costs of the proposed rules cannot be justified by the projected VOC reductions from interstate pipelines and storage facilities. According to the commenter, the threatened capital and operating costs of the proposed standards are substantial for this sector, but the threatened administrative costs — monitoring, accumulating monitored data, preparing reports, maintaining archives and facilitating internal or external audits — are even more daunting and unnecessary. The commenter contends that interstate natural gas pipeline and storage companies already have powerful commercial incentives to avoid losses in transit, and they have long been addressing the very issues covered in the proposed operating standards through current practices.

**Response:** The EPA believes that the final rules for the transmission and storage segment of the ONG sector appropriately balance the costs imposed with the benefits achieved. We note that the final NSPS makes clear that this segment is not subject to the standards for compressors or pneumatic controllers, so the final rule will impose no control or administrative costs for such equipment at facilities in the transmission and storage segment. The final NSPS does apply to storage vessels in this segment, but the final rule bases applicability of the control requirements on VOC emissions at a level equal to or greater than 6 tpy which we have found to be cost effective. In addition, the final rule has streamlined the MIRR requirements for storage vessels to reduce the associated burden for sources. See the related sections of this document for more on the changes that have been made for the final rules.

**Comment:** Four commenters (2245, 3350, 4209, 4236) question whether the EPA has properly addressed the requirements of the RFA, Executive Order 12866 and/or Executive Order 13563.

One commenter (2245) believes that imposing the proposed rule on natural gas transmission and storage contravenes Executive Order 13563, which directs Federal agencies to propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs, and to tailor their regulations to impose the least burden on society (including, to the extent practicable, the costs of cumulative regulations). The commenter contends that contrary to Executive Order 13563, imposing the proposed regulations on interstate natural gas pipeline and storage companies would reduce VOCs emissions by a minimal amount while imposing huge costs.

One commenter (4209) believes that the proposed rule will have negative impacts on all oil and gas operators, especially small operators/businesses that operate crude oil and natural gas marginal wells, and that the proposed rule is fundamentally inconsistent with efforts to protect and enhance national security and increase domestic energy production. The commenter does not

believe that the EPA has accurately and thoroughly addressed the RFA or Executive Orders 12866 and 13211.

One commenter (3350) contends that the EPA has presented no evidence that it evaluated the costs and benefits of regulatory alternatives, such as positive incentives to achieve the desired result, as it is obligated to do so under Executive Order 12866. The commenter states that Executive Order 12866 directs that “each agency shall identify and assess available alternatives to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public.”

One commenter (4236) states that EPA’s RFA certification “that the rule will not have a significant economic impact on a substantial number of small businesses, small organizations, and small governmental jurisdictions” is based on inaccurate or unsupported cost estimates (as discussed in this section and elsewhere in this document). On this basis, the commenter asserts that the EPA should reevaluate its compliance with the RFA using accurate estimates.

Without mentioning the RFA, two other commenters (4356, 4472) state that the EPA has underestimated the potential impact on small businesses and has failed to fully consider the impacts on stripper oil wells or marginal gas wells in the State of Texas, where more than 75 percent of all oil wells fall in the stripper well category. One of the commenters (4356) believes that the costs for controls and reporting and recordkeeping will disproportionately impact small businesses in Texas and across the nation.

The other commenter (4472) asserts that by lumping them in with all types of small businesses, the proposal RIA’s economic impact analysis failed to adequately demonstrate the full impact on the category of small businesses whose sole business is the operation of stripper oil wells and marginal gas wells, in Texas and many other states with a high percentage of stripper and marginal wells and a high percent of small businesses. The commenter disagrees with the results of the EPA’s analysis of energy impacts for the proposal, and asserts that imposition of the costs of additional regulation on small businesses and stripper/marginal well facilities, without fully analyzing the potential impacts to this group (which produces 30 percent of Texas' crude oil) and considering the increased costs and delays likely to result because of the scarcity of equipment and personnel for hydraulic fracturing treatment of natural gas wells, is likely to result in a decrease in domestic oil and gas production.

**Response:** The EPA believes that it has properly addressed the requirements of the RFA, Executive Order 12866 and Executive Order 13563. Our analyses are detailed in the revised RIA for the final rule, including an analysis of impacts on small businesses, which is available in the public docket for the rulemaking. The RIA describes in detail the empirical basis for the EPA’s

assumptions and characterizes the various sources of uncertainties affecting the estimates. The RIA shows the results of the cost and benefits analysis for these final rules carried out under Executive Order 12866 and Executive Order 13563.

Executive Order 12866 indicated that agencies should consider alternatives to direct regulation “to the extent permitted by law and where applicable.” In the proposal for this rule, EPA did consider three regulatory alternatives with varying standards. Additionally, EPA views the proposed rules as complementary to existing voluntary programs, such as the Natural Gas STAR program.

For the final rule, the EPA revised its cost estimates based on the comments received and carried out a new analysis of the impacts on small businesses. Based on our analysis of impacts on small businesses, the EPA certifies that the rule will not have a significant economic impact on a substantial number of small entities. For the final NSPS, we performed an analysis for impacts on a sample of expected affected small entities by comparing compliance costs to entity revenues. Based upon the analysis in the RIA, when revenue from additional natural gas product recovered is not included, we estimate that 123 of the 127 small firms analyzed (97 percent) are likely to have impacts less than 1 percent in terms of the ratio of annualized compliance costs to revenues. Meanwhile, four firms (3 percent) are likely to have impacts greater than 1 percent. Three of these four firms are likely to have impacts greater than 3 percent. However, when revenue from additional natural gas product recovery is included, we estimate that none of the analyzed firms will have an impact greater than 1 percent.

For the final NESHAP Amendments, we estimate that 11 of the 35 firms (31 percent) that own potentially affected facilities are small entities. The EPA performed an analysis for impacts on all expected affected small entities by comparing compliance costs to entity revenues. Among the small firms, none are likely to have impacts of greater than 1 percent in terms of the ratio of annualized compliance costs to revenues.

The EPA performed an additional analysis in order to certify the rule in its entirety. This analysis compared compliance costs to entity revenues for the total of all the entities affected by the NESHAP amendments and the sample of entities analyzed for the NSPS. When revenues from additional natural gas product sales are not included, 132 of the 136 small firms (97 percent) in the sample are likely to have impacts of less than 1 percent in terms of the ratio of annualized compliance costs to revenues. Meanwhile, four firms (3 percent) are likely to have impacts greater than 1 percent. Three of these four firms are likely to have impacts greater than 3 percent. When revenues from additional natural gas product sales are included, 136 small firms (100 percent) in the sample are likely to have impacts of less than 1 percent.

As discussed previously, our analyses show that domestic production of crude oil and natural gas is not expected to change by 2015 under the final rules. As noted in the previous response, we have revised the final NSPS to clearly indicate which standards in the rule do and do not apply to sources in the transmission and storage segment and to streamline the MIRR requirements for those affected facilities in this segment.

Given a large fraction of domestic oil and natural gas production is produced from older and generally low productivity wells, the EPA examined whether the requirements might present impediments to owners and operators of older equipment. The NSPS is a standard that applies to new or modified sources. While the requirements may apply to modifications of existing facilities, it is important to discuss well completion-related requirements aside from other requirements in the rules.

Excluding well completion requirements from the cost estimates, the non-completion NSPS and NESHAP requirements (related to equipment leaks at processing plants, reciprocating and centrifugal compressors, pneumatic controllers, glycol dehydrators, and storage vessels) are estimated to require about \$14 million in annualized engineering costs. The EPA also estimates that the annualized costs of these requirements will be partly by revenues expected from natural gas recovery. The EPA does not expect these requirements to disproportionately affect producers with older equipment.

Meanwhile, the REC and emissions combustion requirements in the final NSPS relate to well completion activities at new hydraulically fractured natural gas wells and existing wells which are recompleted after being fractured or re-fractured. These requirements constitute the bulk of the expected engineering compliance expenditures (about \$160 million in annualized costs) and expected revenues from natural gas product recovery (about \$160 million in revenues, annually). While age of the well and equipment may be an important factor for small and large producers in determining whether it is economical to fracture or re-fracture an existing well, this equipment is unlikely to be subject to the NSPS.

**Comment:** Five commenters (3350, 3529, 3350, 4231, 4254) state the EPA assumes that only a small percentage of facilities currently capture gas and takes credit for the full economic benefit of something that many companies are already doing where the operational conditions allow. The commenters state it would make no sense for companies to ignore technology that allows them to earn higher profits through efficiency. Two commenters (4228, 4254) state that the EPA assumes that industry does not flare or control methane emissions unless required by law. The commenters assert that their company is already flaring most of its methane emissions. The commenters state that, based on the methane capture incentives from programs such as the Mandatory GHG Reporting rule and other incentive programs such as the EPA Natural Gas STAR program, capturing methane is much more common and even profitable than recognized

by the EPA. The commenters further claim that companies have adopted best practices and developed internal procedures to improve their application. Thus, according to the commenters, incremental natural gas VOC emission reductions beyond current practices will be very small, and will be limited to the least cost-effective situations not already being implemented by industry for economic reasons. Three commenters (4228, 4241, 4251) state that the EPA emission reduction analysis for production sector pneumatic controllers does not consider the current industry practice of installing low bleed devices whenever possible and consequently overestimates the VOC content of emissions from pneumatic controllers in the processing segment by an order of magnitude. Three other commenters (4215, 4231, 4254) state that the EPA is claiming a net savings of \$29 million based on exaggerated estimates of methane emissions, taking credit for things that companies are already doing, and not taking account of the sizeable costs of compliance. Other commenters (4160, 4245, 4269) state that the EPA incorrectly calculates emission reductions as if the industry is unregulated, but State permitting programs and SIPs already regulate most of these activities.

**Response:** The baseline emissions estimates in the RIA for natural gas well completions and other emissions sources takes into account emissions reductions conducted pursuant to State regulations covering these operations. Based on public comments and reports to the EPA's Natural Gas STAR program, the EPA recognizes that some producers conduct well completions using REC techniques voluntarily for economic and/or environmental objectives as a normal part of business. To account for emissions reductions and costs arising from voluntary implementation of pollution controls the EPA used information on total emission reductions reported to the EPA by partners of the EPA Natural Gas STAR. This estimate of this voluntary REC activity in the absence of regulation is also included in the baseline. More detailed discussion on the derivation of the baseline is presented in a technical memorandum in the docket, as well as in the RIA.

**Comment:** One commenter (4160) states that the EPA has not quantified the jobs impacts of these regulations. The commenter asserts that the majority of industry players are small businesses with little flexibility to react to regulatory costs except by reducing the labor force.

**Response:** In the RIA, the EPA presented estimates of labor requirements related to the compliance actions of the affected entities within the affected sector, but were unable to estimate any potential changes in labor outside of the oil and natural gas sector. The RIA analysis estimates the employment impacts due to the installation, operation, and maintenance of control equipment, as well as employment associated with new reporting and recordkeeping requirements. No estimates of the labor used to manufacture or assemble pollution control equipment or to supply the materials for manufacture or assembly are included because the EPA does not currently have this information. The likelihood of additional natural gas recovery is an important component of the market response to the rule, as it is expected that this additional



natural gas recovery will reduce the price of natural gas. Because of the estimated fall in prices in the natural gas sector due to the final NSPS, prices in other sectors that consume natural gas are likely drop slightly due to the decrease in energy prices. This small production increase and price decrease may have a slight stimulative effect on employment in industries that consume natural gas.

**Comment:** According to commenter (4240), the natural gas price that the EPA uses to calculate the direct financial benefits of the proposed rule are far lower than all other projections. The commenter states the EPA must use a realistic gas price in its analysis to accurately value the savings that the standards will achieve.

**Response:** The EPA appreciates that the commenter compiled and shared natural gas price forecasts from multiple sources. Our \$4/Mcf lower 48 state wellhead natural gas price assumption is drawn from the commonly referenced Annual Energy Outlook 2011 forecast. As the EPA using the US EIA NEMS modeling system in its impacts analysis, we chose to retain the \$4/Mcf wellhead price to remain internally consistent as well as to rely upon a commonly referenced, publically available modeling source.

**Comment:** One commenter (4240) states that industry's failure to voluntarily adopt all of the EPA's proposed controls does not indicate that the cost of control is not reasonable, or that the control in question is not correctly included as BSER. The commenter adds that reasons for non-adoption may include that environmental projects do not meet internal hurdle rates to compete with core business projects for available capital. Thus, the commenter states, companies may forego even profitable projects in favor of, for instance, new well construction, in the absence of federal regulation requiring them to take action. The commenter adds that market failures such as firms with structure that does not incentivize managers to undertake measures; managers may be risk averse or resistant to new technologies, or lack of information on cost-effective measures. The commenter states that a large number of natural gas companies, especially small to midsize ones, have yet to update their outmoded practices and embrace a culture of efficiency and corporate responsibility. The commenter asserts that companies taking part in the Natural Gas STAR program represents less than 10 percent of the companies in the sector.

**Response:** The EPA agrees with the commenter that these may be reasons that industry does not voluntarily adopt cost-effective environmental controls.

**Comment:** One commenter (3350) notes that the outcome of the cost/benefit analysis for the rule is highly dependent on the cost assumed for natural gas, which is difficult to estimate accurately because historically it has fluctuated significantly. Although some have argued that the current abundant supplies will mitigate such price swings, the commenter asserts that it is improper to regulate based on the assumption that producers will maintain a constant state of

natural gas production. The commenter states that many of the resources for the natural gas and oil production sectors are exchangeable (equipment and labor), and at current pricing levels a shift away from natural gas toward oil is already underway with more companies drilling for oil than natural gas for the first time since 1995. The commenter contends that more stringent regulations on the natural gas industry could have an unintended consequence of raising residential energy costs from natural gas by driving up the production of oil, while allowing demand for natural gas to catch up with supply. The commenter adds that this also could affect other EPA regulations, such as the Boiler MACT, noting that a switch to natural gas may be the only option for plants faced with adding expensive control technologies, fuel switching or closure.

**Response:** The EPA agrees with the commenter that the outcome of the cost/benefit analysis is highly dependent on the cost assumed for natural gas. For purposes of our analyses, we assume a price of \$4/Mcf at the wellhead.

Because the price assumption is very influential on estimated annualized engineering costs, we performed a simple sensitivity analysis of the influence of the assumed wellhead price paid to natural gas producers on the overall engineering annualized costs estimate of the final NSPS. At \$4.22/Mcf, the price forecast reported in the 2011 Annual Energy Outlook in 2008 dollars, the annualized costs are estimated at about -\$24 million, which would approximately double the estimate of net cost savings of the final NSPS. As indicated by this difference, the EPA has chosen a relatively conservative assumption (leading to an estimate of few savings and higher net costs) for the engineering costs analysis. The natural gas price at which the final NSPS breaks-even from an estimated engineering costs perspective is around \$3.79/Mcf. A \$1/Mcf change in the wellhead natural gas price leads to a \$43 million change in the annualized engineering costs of the final NSPS. Consequently, annualized engineering costs estimates would increase to about \$29 million under a \$3/Mcf price or decrease to about -\$58 million under a \$5/Mcf price. For further details on this sensitivity analysis, please refer the RIA for this rulemaking located in the docket.

As discussed previously, we used NEMS to estimate the impacts of the final NSPS on the U.S. energy system. The analysis did not predict the kinds of price impacts suggested by the commenter. Rather, the analysis shows that domestic natural gas production and natural gas wellhead prices are expected to remain unchanged in 2015, the year of analysis. Additionally, we estimate that delivered natural gas prices will remain unchanged in 2015 in the residential, electric power, and transportation sectors, when compared to the baseline. We estimate small increases of 0.12 percent and 0.20 percent for the commercial and industrial sectors in 2015, respectively, when compared to the baseline. Domestic crude oil production is not estimated to change, while crude oil prices are estimated to decrease slightly (\$0.01/barrel or less than about

0.01 percent at the wellhead for producers in the lower 48 states) in 2015, the year of analysis. All prices are in 2008 dollars.

**Comment:** One commenter (4270) believes that the EPA lacks sufficient data to regulate the ONG sector at this time. The commenter contends that the emission factors used for compressors and pneumatic controllers are not valid, and that it is necessary to first enhance the accuracy of emission factors for these sources before proposing emission control strategies with unknown consequences. The commenter believes that the cost/benefit analysis is not valid because it is based on faulty assumptions. In addition, the commenter notes that the EPA clearly states that it lacks the data to provide credible health benefit estimates.

**Response:** The EPA disagrees that it lacks sufficient data to regulate the ONG sector at this time. We acknowledge that some commenters raised valid issues with some of the assumptions that we used at proposal. Accordingly, we carefully considered the comments on costs and emissions, reexamined our cost and emissions assumptions, revised them as appropriate and conducted new cost effectiveness and cost/benefit analyses for the final rules. The regulatory costs and emissions for the segments of the ONG sector are discussed, as relevant, in other sections of this document. The analyses carried out for the final rule are detailed in the RIA, which is available in the public docket for the rulemaking.

While the EPA is not able to quantify health benefits associated with the NSPS and NESHAP amendments, this does not imply that there are no health benefits of the rules. We expect that the avoided emissions will result in improvements in air quality and reduce health effects associated with exposure to HAP, ozone, and fine particulate matter (PM<sub>2.5</sub>).

**Comment:** Six commenters (3529, 4209, 4228, 4231, 4281, 4358) believe that the EPA's analysis of costs and benefits did not adequately address the highly variable conditions in the industry, which can dictate different technical approaches and have varied economic consequences from basin to basin, and even between reservoirs within a basin. One commenter (3529) states that the RIA is flawed because it assumed that the industry is monolithic and one set of economic circumstances apply to the entire industry. Another commenter (4228) indicates that the cost-effectiveness analysis for production should be segregated for different produced gas streams, and that average compositions should not be applied industry-wide.

One commenter (4209) contends that oil and natural gas facilities vary significantly across the country, with drastic differences in the characteristics of the hydrocarbon liquids and gases produced, the volumes initially produced, the production volume drop-off rates, the formation pressures, the type and age of equipment at each facility, the economics of each well, the locations of wells (most are typically located in remote areas), the availability of infrastructure, the availability of consultants and equipment to support compliance efforts, and other like issues.

The commenter implies that the EPA has not accounted for these variations in its risk and cost/benefit analysis.

Another commenter (4281) contends that the EPA did not consider the unique nature of the ONG industry in its analyses, pointing out that this industry is different from most other industries in that most industries can design and construct a process unit in advance, and have significant control over all aspects of its operation, while an ONG operator does not have any control over the properties of the petroleum produced from the reservoir, such as composition, temperature, pressure and volume.

Because of the wide variation in the characteristics of each operation, the commenter (4281) does not believe that the EPA's model facility approach adequately described the industry. As an example, the commenter notes that the EPA documented that the VOC content in natural gas ranges from 0.0 to 52.72 percent by weight, selected a single average natural gas composition with VOC content of 18.28 percent by weight as the "average natural gas stream" and used this average natural gas stream to calculate cost-effectiveness and justify the selection of control options as BSER. The commenter contends that using this method causes the cost of control on gas containing low or no VOCs to approach an infinite cost per ton of VOC, which could never be considered to be cost-effective. The commenter recommends that the EPA set a de minimis VOC content level to exempt low-VOC gas streams to ensure that the control option selected as the NSPS would meet the cost-effectiveness criterion of BSER.

**Response:** The EPA understands that there is variability of gas composition from basin to basin, as well as within a single basin. We considered how a VOC threshold for wells would be implemented, and what kind of information owners and operators would need in advance of the completion operation. It is our understanding that the operators cannot know with certainty the composition of the well prior to completion. As a result, we believe a VOC threshold would be impossible to implement effectively and consistently and have not included such a provision in the final rule. However, we have improved the final rule by including a subcategory of "low pressure" wells that will remove over 85 percent of the coalbed methane wells (which may be relatively low in VOC content) that would be required to perform RECs.

**Comment:** One commenter (0604) states that it is the EPA's duty to impose the Best Available Technology regardless of costs to the industry.

**Response:** The EPA does not agree with the commenter's characterization of the requirements of the CAA. The CAA specifies how the EPA is to determine the required level of control under NSPS and NESHAP programs, and neither is based on "Best Available Technology." In addition, in some cases costs must be considered.

Section 111 of the CAA governs the NSPS program. In setting or revising a NSPS, CAA section 111 (a)(1) provides that performance standards are to “reflect the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any non-air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.” We refer to this level of control as the BSER. Note that under this regime, costs are clearly to be considered.

Section 112 of the CAA governs the NESHAP program. This is a two-stage program. In the first step, the required control level is referred to as the “maximum achievable control technology” or MACT. The MACT “floor” is the minimum control level allowed for MACT standards promulgated under CAA section 112(d)(3) and may not be based on cost considerations. For new sources, the MACT floor cannot be less stringent than the emission control that is achieved in practice by the best-controlled similar source. The MACT floors for existing sources can be less stringent than floors for new sources but cannot be less stringent than the average emission limitation achieved by the best-performing 12 percent of existing sources in the category or subcategory (or the best-performing 5 sources for categories or subcategories with fewer than 30 sources). In developing MACT standards, we must also consider control options that are more stringent than the floor. We may establish standards more stringent than the floor based on the consideration of the cost of achieving the emissions reductions, any non-air quality health and environmental impacts and energy requirements. Thus, NESHAP standards set at the MACT floor cannot consider costs to the industry, but costs are to be considered when evaluating standards more stringent than the MACT floor. The MACT standards are to be revisited at least every 8 years to see if technology has advanced such that they should be made more stringent.

The second stage of the NESHAP program focuses on reducing any remaining “residual” risk according to CAA section 112(f). CAA section 112(f)(2) requires us to determine for source categories subject to MACT standards, whether the emissions standards provide an ample margin of safety to protect public health. The first step in this process is the determination of acceptable risk. The second step provides for an ample margin of safety to protect public health, which is the level at which the standards must be set (unless a more stringent standard is required to prevent an adverse environmental effect, taking into consideration costs, energy, safety, and other relevant factors). Thus, the Act does not allow the consideration of costs in setting the level of control that represents an ample margin of safety, but it requires consideration of costs to set a more stringent standard.

**Comment:** One commenter (4222) indicates that the EPA's proposed economic model does not accurately reflect conditions in Alaska for return on investment. The commenter notes that most Alaskan natural gas sources north of the Brooks Range are stranded gas wells with no access to transportation, and there is not yet a traditional commercial market for natural gas on the Alaskan

North Slope. The commenter adds that there may be additional costs that must be incurred in Alaska to develop the emissions capture and processing facilities, not to mention the necessary transport pipeline systems to make sale of the emissions to distant markets feasible and cost effective, if possible at all. The commenter also states that the volume of emissions recovery from hydraulically-fractured shale oil wells, which are the current prospects for Alaska, is expected to be less than in natural gas wells, and the payback for the capital improvements required by this proposed rule may never occur in Alaska as predicted in the RIA.

**Response:** Although some wells drilled in crude oil formations may produce associated gas along with the oil, without a gas infrastructure present, the EPA does not have sufficient data on VOC emissions during completion of hydraulically fractured oil wells to set standards for these operations at this time. In the proposed rule, we briefly assessed well completions of hydraulically fractured oil wells and did not believe that either REC or a completion combustion device is cost-effective for reducing VOC emissions from such operations. We note, however, that this brief assessment of oil wells in the proposed rule was based on limited information at the time and that more information is needed for us to fully evaluate the VOC emissions and control options for these operations. As a result, the final rule will not affect drilling of oil wells, and we believe the final rule will satisfactorily address the commenter's concerns about cost effectiveness of oil wells that may have been raised by uncertainty of treatment of oil wells in the proposed rule.

**Comment:** One commenter (4240) states that the EPA's standard-setting duties and authority are derived under section 111 of the CAA, and its decision must be made within the confines of that authority – although the EPA must consider the costs of control, it may not base its standard-setting on a broad-ranging cost/benefit analysis. Thus, according to the commenter, the RIA prepared by the EPA under Executive Order 12866 may inform the standard-setting process, but cannot provide the direct basis for the standards and does not “create any right or benefit, substantive or procedural, enforceable at law or equity by a party against the United States....” (Executive Order 12866, section 10).

**Response:** The EPA agrees with the commenter. The commenter's description of the statutory requirements for the standard-setting process under the NSPS program governed by CAA section 111, and the relationship of the RIA prepared pursuant to Executive Order 12866 to that process, is correct.

## 4.2 Estimated Benefits

### 4.2.1 Estimated Health Benefits

**Comment:** Two commenters (4231, 4254) take note of the EPA’s statement in the preamble that it did not have time to do air quality monitoring to support the rule. One of the commenters (4231) asserts that lack of time does not mean proper procedures can be dismissed; it means the rule must be commensurate with the science available at the time of the rulemaking.

One commenter (4254) asserts that a consent decree cannot foreclose procedural requirements an agency is required to take, and that air quality monitoring is necessary to properly justify and inform the rule. The commenter states that because it does not have the necessary data to support the rule without such monitoring, the EPA should work to produce such data for future rulemaking. The commenter believes that the artificial time-frame imposed by the consent decree does not mean that the EPA can impose NSPS that have not been adequately demonstrated; the EPA must follow the proper procedure and meet statutory requirements to justify and support the rule with the best available data.

**Response:** Both the NSPS and NESHAP are being promulgated based on the technology-related requirements of the Act, not the health-related requirements. Thus, the decisions made by the EPA for this rulemaking are not dependent on the health benefits that will be achieved, and it is not necessary to quantify those benefits to proceed. Nevertheless, we have evaluated the costs and benefits of the final rules as required by Executive Orders 12866 and 13563 as best we can given time and budget constraints.

As discussed in greater detail in the preamble to the final rule, the NSPS actions that the EPA is taking are pursuant to sections 111(b)(1)(B) and 111(a)(1) of the CAA. Section 111(b)(1)(B) of the CAA requires the EPA to “at least every 8 years review and, if appropriate, revise” existing NSPS. There are existing NSPS for the ONG sector at 40 CFR subparts KKK and LLL, and this NSPS rulemaking is the culmination of the review of these NSPS pursuant to CAA section 111(b)(1)(B) and a consent decree resulting from litigation to force such a review.

In setting or revising a performance standard, CAA section 111(a)(1) provides that performance standards are to “reflect the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any non-air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated,” which we refer to as the “best system of emissions reduction” or BSER. Notably, the statute requires that these standards be based on the level of control that can be achieved in a cost-effective manner, taking certain other specified considerations into account. The health benefits of the reduction in air pollution are not

among the considerations prescribed by the statute. Thus, the health benefits are not determinative of the standards, and we do not believe that we are required to quantify the health benefits that will be achieved before we can promulgate the final NSPS.

Similarly, as also discussed in greater detail in the preamble to the final rule, the NESHAP actions that the EPA is taking are pursuant to the technology-based standard-setting requirements of section 112(d) of the Act, not the health-related requirements of section 112(f). Under CAA section 112, the NESHAP program is a two-stage program. In the first stage, the required control level is referred to as the “maximum achievable control technology” or MACT. The MACT “floor” is the minimum control level allowed for MACT standards promulgated under CAA section 112(d)(3). For new sources, the MACT floor cannot be less stringent than the emission control that is achieved in practice by the best-controlled similar source. The MACT floors for existing sources can be less stringent than floors for new sources but cannot be less stringent than the average emission limitation achieved by the best-performing 12 percent of existing sources in the category or subcategory (or the best-performing 5 sources for categories or subcategories with fewer than 30 sources). Section 112(d)(6) of the Act requires us to review existing technology-based standards and to revise them “as necessary (taking into account developments in practices, processes, and control technologies)” no less frequently than every 8 years.

The second stage of the NESHAP program focuses on reducing any remaining “residual” risk according to CAA section 112(f). CAA section 112(f)(2) requires us to determine for source categories subject to MACT standards, whether the emissions standards provide an ample margin of safety to protect public health. The first step in this process is the determination of acceptable risk. The second step provides for an ample margin of safety to protect public health, which is the minimum level at which the standards must be set. This NESHAP rulemaking is the culmination of the review of existing MACT standards for the ONG sector at 40 CFR subpart HH and subpart HHH pursuant to CAA sections 112(d)(6) and 112(f) and a consent decree resulting from litigation to force such a review.

As a result of our review under section 112(d)(6), we have revised the leak detection and repair requirements. In addition, pursuant to section 112(d)(2) and (3), we have established MACT standards for “small” glycol dehydrators and storage vessels that were not controlled under the initial NESHAP. Our review under section 112(f)(2) did not result in revision to the standards because we determined through dispersion modeling that the MACT standards provide an ample margin of safety to protect public health. Thus, the final NESHAP were set as prescribed by the CAA, and it is not necessary to quantify the health benefits of the final rules to do so.

The EPA disagrees that an inability to quantify the benefits of a rule implies a flaw in the rulemaking process. These rules are expected to achieve important HAP and criteria pollutant benefits, but monetization of these benefits is limited by currently available data and methods.



For example, monetization of the HAP benefits of reductions in cancer incidences requires several important inputs, including central estimates of cancer risks, estimates of exposure to carcinogenic HAP, and estimates of the value of an avoided case of cancer (fatal and non-fatal). It is likely that the commenter confused monitoring data with modeling data. The EPA acknowledges that modeling data to support the quantification of ozone benefits was unavailable for this sector. However, it was the lack of data on the location of new well completions, not timing, that was the main barrier to modeling. Instead, we provide a qualitative analysis of the health effects associated with the HAP and criteria pollutants anticipated to be reduced by these rules. Our limited ability to monetize these benefits does not indicate that they are non-existent or less important.

The RIA may inform the standard-setting process, but it does not replace the statutorily prescribed requirements for setting standards in the NSPS and NESHAP programs. Under Executive Order 12866, agencies are required, to the extent permitted by law, “to assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.”

**Comment:** Five commenters (3350, 4231, 4246, 4251, 4254) contend that it is inappropriate that the analysis carried out by the EPA is based on captured emissions of methane, which is not covered by the regulations. According to one commenter (4254), although the regulations are for the purported purpose of controlling VOCs and HAPs, the EPA does not articulate the benefits of controlling either VOCs or HAPs, but only claims benefits from methane capture.

One commenter (3350) states that the EPA claims that the reductions in methane will yield about \$1.6 billion in public health and environmental benefits; however, because methane is not a VOC or air toxic—the two types of emissions targeted by the proposed revisions—the decision to cite it as a co-benefit is questionable. Even if the co-benefits of methane reductions are cited, the commenter believes that the EPA’s analysis is flawed because no sense of proportion or the scope of its impact is provided. The commenter contends that the EPA should determine the impacts of methane reductions by modeling the temperature impact that the rule would have, and that the failure to do so is arbitrary and capricious. The commenter asserts that by reducing U.S. GHG emissions by 1 percent, the rule would have a negligible impact on climate.

**Response:** The EPA disagrees that co-benefits should be excluded from consideration of the benefits anticipated by this rule. Accounting for ancillary benefits is standard practice in benefit-cost assessment since these benefits are a consequence of the rule, regardless of the rule’s intended purpose. As such, the EPA estimates all of the anticipated costs and benefits associated with a regulatory action, to the extent feasible, for the purpose of determining the likely impacts, not to justify an action. This rule is expected to achieve substantial emission reductions, and

these co-benefits are thus an important category to consider. Our treatment of quantified benefits and co-benefits follows guidance set by OMB Circular A-4 and EPA's *Guidelines for Preparing Economic Analyses* (2010).

**Comment:** One commenter (3350) claims that the EPA's claims of positive health benefits lack supporting data, noting that the EPA admits that it is not able to provide credible health benefit estimates for the reduction in exposure to HAP, ozone and PM<sub>2.5</sub> with the available data. The commenter states that supportive data prior to proposing new regulations should be prerequisite, and the mere assertion that there will be health benefits is insufficient proof. The commenter quotes Executive Order 12866, which states that "each agency shall base its decisions on the best reasonably obtainable scientific, technical, economic, and other information concerning the need for, and consequences of, the intended regulation," while Executive Order 13563 states that the regulatory system must be based on the "best available science." The commenter asserts that the EPA's claim of health improvements without credible health benefit estimates violates the spirit of Executive Orders 12866 and 13563. The commenter concludes that because the EPA does not quantitatively assess the health effects, it is prima facie evidence that these regulations will not create positive health benefits.

**Response:** The EPA disagrees with the commenter's interpretation of these executive orders. In fact, both these executive orders clearly direct agencies to consider benefits that are difficult to quantify. Specifically, EO 12866 states that "[c]osts and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider." EO 13563 states that "[w]here appropriate and permitted by law, each agency may consider (and discuss qualitatively) values that are difficult or impossible to quantify, including equity, human dignity, fairness, and distributive impacts." If the EPA were able to fully quantify all of the benefits of this rule, the net benefits would be even higher than we have estimated. The EPA also disagrees that an inability to quantify the health effects implies that there are no positive health benefits. The commenter provides no evidence that the emissions reduced by these rules do not contribute to health and ecosystem effects. The categories of benefits described in the Regulatory Impact Analysis are supported by numerous peer-reviewed scientific studies.

As discussed previously, the cost/benefit analysis included in the RIA may inform the standard-setting process, but it does not replace the statutorily prescribed requirements for setting standards in the NSPS and NESHAP programs. The final rules were developed based on the criteria required under the CAA, which do not require quantified health benefits nor allow their direct consideration. Executive Order 12866 requires a cost/benefit analysis and "a reasoned determination that the benefits of the intended regulation justify its costs" to the extent permitted by law. In the case of these rules, the cost/benefit analysis projects that the rules will be

essentially cost neutral, allowing for such a “reasoned determination” even without quantified health benefits. In addition, given resource and time constraints under the court-ordered schedule for the rulemaking, we believe that we have based our decisions on the “best reasonably obtainable scientific, technical, economic, and other information” as required by Executive Order 12866 and the “best available science” as required by Executive Order 13563.

**Comment:** One commenter (4240) states that the EPA must consider non-climate related health and public welfare benefits of methane reductions. According to the commenter, while methane is not regulated as a precursor to ozone on a regional level, anthropogenic methane contributes significantly to background levels of ground-level ozone around the world. The commenter notes that ground-level ozone has significant negative impacts on public health and significantly reduces the yield of a wide variety of crops.

**Response:** The EPA agrees with the commenter that reducing VOC and methane emissions would reduce ozone concentrations and ozone-related effects on health and welfare. In the Regulatory Impact Analysis accompanying the final rule, we have expanded the qualitative assessment of ozone benefits associated with these emission reductions.

**Comment:** One commenter (3350) states that from a policy standpoint, over-regulation of the natural gas industry can have adverse effects on the effort to curb CO<sub>2</sub> emissions through conversion from traditional fossil fuels to cleaner-burning natural gas, which is the most practical option in the near term.

**Response:** While we agree with the commenter that conversion from traditional fossil fuels to cleaner-burning natural gas is a practical option for CO<sub>2</sub> reductions in the near term, we do not agree with the implication that the final rules represent over-regulation of the natural gas industry. As discussed in section 4.5 of this document and the RIA for the rulemaking, our analysis of the impacts of the final rules on the U.S. energy system shows that domestic natural gas production and prices are estimated to remain unchanged in 2015, the year of analysis.

**Comment:** One commenter (4274) recommends that the EPA move forward with all proposals that effectively protect the population from benzene and formaldehyde emissions in the rural Marcellus Shale areas, where presently there is no ambient air monitoring system.

**Response:** The EPA believes that the final NESHAP rules provide effective protection to the population from HAP emissions from the ONG industry, consistent with the requirements of the CAA. Combustion emissions from compressor engines are not covered by these final rules, so formaldehyde emissions from these engines are not within the scope of the analyses conducted for these rules. Rules that address combustion emissions from compressor engines include one NESHAP (subpart ZZZZ covering reciprocating internal combustion engines, commonly called

the RICE NESHAP) and two NSPS (subpart IIII, the NSPS for compression ignition engines or the CI NSPS, and subpart JJJJ, the NSPS for spark ignition engines or the SI NSPS).

**Comment:** One commenter (4275) supports the proposed rule based on the belief that the rule will lead to greater transparency from the industry in the form of accounting for the numerous sources of emissions that are currently “invisible” due to the lack of regulation, will provide health benefits to those who live close to the thousands of gas facilities covered by this rule and will provide an economic benefit to this industry, through the capture of additional product that can be sold in the marketplace. The commenter is confident that this innovative industry will be able to find a way to comply with this rule while remaining highly profitable.

**Response:** The EPA thanks the commenter for his or her support and agrees that the benefits listed by the commenter will result from the final rules. Our analysis show that the controls required by the final rules are cost-effective, and that across the entire sector the value of products recovered by the controls will likely pay for the costs of compliance.

**Comment:** One commenter (4375) supports all efforts by the EPA to require companies to perform reduced emission completions (RECs) of wells. However, the commenter believes that in the economic impact assessment the EPA should not stop with an estimate on the change in profitability that any company doing the REC would undergo, but should also consider health impacts and the broader cost to society that not requiring RECs would cause. The commenter states that increased VOC emissions would have a significant, measurable set of impacts on public health, from increased hospital visits to premature death.

**Response:** The EPA has considered, to the extent possible given available data and analysis techniques, the full range of benefits that will flow from the final NSPS REC requirements. We were unable to develop credible quantitative estimates of the health benefits, although our analysis includes a qualitative discussion of these benefits. The RIA for the rulemaking details our economic analysis and cost/benefit analysis for the final rulemaking.

**Comment:** One commenter (4275) provided reports supporting the claim that RECs on coalbed methane completions can help prevent release of hydrogen sulfide and also help global and regional air quality.

**Response:** The EPA agrees with the commenter that these rules could reduce emissions of hydrogen sulfide. While hydrogen sulfide has not been listed as a HAP, the Regulatory Impact Analysis describes how these rules would affect emissions of this pollutant and directs the reader to the EPA’s IRIS database for more detailed information on the health effects, available on the Internet at [http:// www.epa.gov/iris](http://www.epa.gov/iris).

#### 4.2.2 Estimated Climate Co-benefits

**Comment:** Although four commenters (3350, 4192, 4246, 4267) disagree with the use of the social cost of carbon, a letter authored by 13 organizations (4240) strongly encourages the EPA to value methane reduction, specifying that the EPA must account for the methane co-benefits in the comparison of the rulemaking's costs and benefits. The commenters further state that EO 12866 "calls upon the agency to include 'quantifiable measures (to the fullest extent that these can be usefully estimated),' and that EO 13563 "likewise directs EPA to use the 'best available techniques to quantify anticipated present and future benefits and costs as accurately as possible.'" Commenters also reference the Ninth Circuit Court of Appeals decision in *Center for Biological Diversity v. NHTSA* to support its conclusion that the EPA is "obligated to consider" methane co-benefits in the rulemaking.

In addition, the commenters recommend that the EPA expand the presentation of information about SCC and methane co-benefits as follows:

- Provide the 99<sup>th</sup> percentile estimates of the social cost of carbon;
- Provide a list of the impacts that are included in the monetized estimates and the impacts that are not included; and
- Provide a clear, tabular demonstration of how it calculated the methane co-benefits.

On the other hand, five commenters (3350, 4231, 4246, 4251, 4254) contend that it is inappropriate that the analysis carried out by the EPA is based on captured emissions of methane, which is not covered by the regulations. The commenters disagree with use of SCC and recommended that the EPA remove all language about it. One commenter (3350) states that the EPA claims that the reductions in methane will yield about \$1.6 billion in public health and environmental benefits; however, because methane is not a VOC or air toxic—the two types of emissions targeted by the proposed revisions—the decision to cite it as a co-benefit is questionable. Even if the co-benefits of methane reductions are cited, the commenter believes that the EPA's analysis is flawed because no sense of proportion or the scope of its impact is provided. The commenter contends that the EPA should determine the impacts of methane reductions by modeling the temperature impact that the rule would have, and that the failure to do so is arbitrary and capricious. The commenter asserts that by reducing U.S. GHG emissions by 1 percent, the rule would have a negligible impact on climate. The commenter (3350) concluded that "there is no evidence that [SCC] values are real" and viewed the name "social cost of carbon" as a misnomer because "not all greenhouse gases contain the element of carbon." Another commenter (4192) asserts that "there is no widely accepted or official regulatory method for determining benefits from GHG reductions." Finally, a third commenter (4267) disagrees with the use of "assumptions, estimates and models" to inform the benefits discussion in this rulemaking. The commenter also state that the EPA used the four estimates of the social cost of methane "to compensate for difficulties in modeling," but did not identify or discuss

specific concerns about the assumptions, estimates, or models.

**Response:** The EPA considered both the comments recommending inclusion of methane co-benefits in the comparison of the rule’s costs and benefits and the comments that opposed any use of the social cost of carbon, and by implication, the social cost of methane. The EPA disagrees that co-benefits should be excluded from consideration of the benefits anticipated by this rule. Accounting for ancillary benefits is standard practice in benefit-cost assessment since these benefits are a consequence of the rule, regardless of the rule’s intended purpose. As such, the EPA estimates all of the anticipated costs and benefits associated with a regulatory action, to the extent feasible, for the purpose of determining the likely impacts, not to justify an action. The VOC reduction requirements in this rule are expected to also result in substantial methane emission reductions, and such co-benefits are an important category to consider for the benefits analysis. Our treatment of quantified benefits and co-benefits follows guidance set by OMB Circular A-4 and the EPA’s *Guidelines for Preparing Economic Analyses* (2010).

Regarding the environmental impact of methane emissions, the EPA appropriately addressed the proportion and scope of the expected impacts by matching a qualitative discussion of the kinds of impacts that result from increased concentrations of greenhouse gases with a quantitative monetization of the total value of the climate changes avoided by the reductions (that latter quantitative monetization being the more important). The argument by the commenter that a reduction of one thousandth of a degree global temperature change “will not have climate impacts” is fallacious. The impacts of that mitigation of a thousandth of a degree of warming on sea level rise, on the temperature of a heat wave, on air quality, would all be small, but for each of those outcomes, there would be an impact of that mitigation, and it would be in the direction of ameliorating that change. Using the reasoning of the commenter, there would be no quantity of temperature change that could have an impact, because any temperature reduction can be expressed as the sum of a set of individual smaller reductions. Any individual action in and of itself is not expected to solve the whole climate change problem: but solving one thousandth of the problem is still valuable, and the social cost of carbon methodology was developed precisely for the task of monetizing that value.

The EPA estimated the methane co-benefits in the final rule using the GWP approach because directly modeled interagency estimates are not available.<sup>42</sup> (Details about methodologies to value methane co-benefits are discussed in the next comment/response section). The EPA continues to recognize the uncertainties with the “GWP approach” estimates.

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<sup>42</sup> As explained in the RIA, the interagency group did not directly estimate the social cost of non-CO<sub>2</sub> GHGs using the three models in 2009-2010 and instead set a goal to develop methods to value non-CO<sub>2</sub> GHGs. Until then, EPA will use the GWP approach, i.e., convert methane to CO<sub>2</sub> equivalents using the GWP of methane, then multiply these CO<sub>2</sub>-equivalent emission reductions by the social cost of carbon developed by the Interagency Social Cost of Carbon Work Group.

As discussed in the RIA, the GWP is an aggregate measure that approximates the additional energy trapped in the atmosphere over a given timeframe from a perturbation of a non-CO<sub>2</sub> gas relative to CO<sub>2</sub>. The time horizon most commonly used is 100 years. One potential problem with utilizing temporally aggregated statistics, such as the GWPs, is that the additional radiative forcing from the GHG perturbation is not constant over time and any differences in temporal dynamics between gases will be lost. This is a potentially confounding issue given that the social cost of GHGs is based on a discounted stream of damages that are non-linear in temperature. For example, methane has an expected adjusted atmospheric lifetime of about 12 years and associated GWP of 21 (IPCC Second Assessment Report (SAR) 100-year GWP estimate). Gases with a relatively shorter lifetime, such as methane, have impacts that occur primarily in the near term and thus are not discounted as heavily as those caused by longer-lived gases such as CO<sub>2</sub>, while the GWP treats additional forcing the same independent of when it occurs in time. The GWP also relies on an explicit time horizon and constant concentration scenario, which is inconsistent with the assumptions used by the SCC interagency workgroup. Finally, impacts other than temperature change also vary across gases in ways that are not captured by GWP. For instance, CO<sub>2</sub> emissions, unlike methane will result in CO<sub>2</sub> passive fertilization to plants.

Recognizing that this rulemaking will achieve non-zero co-benefits through methane reductions, the EPA chose to apply the GWP approach and present estimates of the social cost of methane. The EPA presented these estimates for illustrative purposes and did not compare them to the costs of the rule because of the GWP approach limitations. The EPA has determined that this approach is consistent with EO 12866, EO 13563, and the Ninth Circuit decision referenced by commenters. The EPA has provided a non-zero estimate of the co-benefits of this rulemaking's reduction in methane emissions and has also presented qualitative information about the rulemaking benefits that could not be monetized. As discussed above and in the RIA, the EPA presented the best available estimates.

Furthermore, the EPA disagrees with one commenter's statement that the EPA should not use assumptions, estimates, and models in the analysis. First, Executive Order 12866 requires agencies "to assess both the costs and the benefits of the intended regulation." Recognizing the need to create consistency in how Federal agencies incorporate the benefits of carbon dioxide reductions into rulemakings, the Council of Economic Advisers and the Office of Management and Budget convened an interagency work group in 2009-2010 to develop a range of SCC values using a defensible set of input assumptions that are grounded in the existing literature. In this way, key uncertainties and model differences more transparently and consistently inform the range of SCC estimates used in the rulemaking process. The SCC Interagency Work Group included active participation and regular input from many agencies and departments, including: the Council on Environmental Quality, National Economic Council, Office of Energy and Climate Change, Office of Science and Technology Policy, the Departments of Agriculture,

Commerce, Energy, Transportation, and Treasury, and the EPA. The work group examined the technical literature in relevant fields, discussed key inputs and assumptions for SCC, and conducted a modeling exercise that produced SCC estimates. The Agencies were directed to use these estimates to incorporate the social benefits of reducing carbon dioxide (CO<sub>2</sub>) emissions into cost-benefit analyses of regulatory actions that have small, or “marginal,” impacts on cumulative global emissions.

Second, the EPA disagrees with the statement that there is no evidence that SCC values are real. The social cost of carbon estimates presented in the RIA were developed from three integrated assessment models that synthesize available scientific and economic research and have been used in the IPCC assessment. Integrated assessment models are particularly well suited to the estimation of SCC because they combine climate processes and economic growth into a single modeling framework. See the Social Cost of Carbon TSD for a complete discussion about the 3 models used to develop the estimates. In addition, the EPA notes that the estimates do not include all significant climate changes damages and are therefore underestimates. As a result, the EPA has supplemented the quantified benefit estimates with a qualitative discussion about benefits.

Regarding presentation of the methane co-benefits, the EPA agrees that a clear, tabular summary would be useful to the reader and has therefore added a table to the regulatory impact analysis (RIA) for illustrative purposes. The RIA for the final rule continues to present a detailed explanation about how the EPA calculated the methane co-benefits as well as references to the TSD for the social cost of carbon.

Regarding the recommendation to provide the 99<sup>th</sup> percentile estimates of the social cost of carbon, the EPA notes that these estimates are presented in the SCC TSD, “Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 SCC TSD,” (SCC TSD), which is referenced in both the preamble and RIA.<sup>43</sup> The SCC provides extensive information about the SCC estimates and the underlying parameters, which serve as the basis for the estimates of methane co-benefits. For example, the SCC TSD shows how SCC values for 2010 vary across model, scenario, and discount rate; it also presents the distribution of SCC estimates, including benefit estimates at the 95th and 99th percentiles for each model. The EPA has determined that it is more appropriate to place such detailed technical information in the rulemaking’s technical supporting documents, i.e., the SCC TSD, rather than the co-benefits section of the RIA, which gives an overview of the calculation as well as a detailed table with the methane co-benefit estimates. The RIA also provides references to the SCC TSD for those seeking further information about the distribution.

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<sup>43</sup> For SCC TSD, see <http://www.epa.gov/otaq/climate/regulations/scc-tds.pdf>



The EPA disagrees with the commenter’s statement that the EPA has not responded to repeated requests for more information about how the models treat climate change impacts (i.e., which impacts are therefore included or excluded from the monetized estimates). Specifically, the EPA has published written responses to this same comment in other rulemakings—see *Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, EPA Response to Comments Document for Joint Rulemaking*<sup>44</sup> *Greenhouse Gas Emission Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles, and EPA Response to Comments Document for Joint Rulemaking*<sup>45</sup>. In short, it is not possible at this time to provide a precise list of each model’s treatment (i.e., included, excluded) of climate impacts. Instead, the SCC TSD presents a robust discussion of this key analytical issue, e.g., how each model estimates climate impacts, the known parameters and assumptions underlying those models, and the implications of incomplete treatment of impacts (catastrophic and non-catastrophic) for the SCC estimates. Moreover, the discussion in the SCC TSD underscores the difficulty in accurately distilling the models’ treatment of impacts in table-form. Most notably, the use of aggregate damage functions—which consolidate information about impacts from multiple studies—in two of the models poses a challenge in listing included impacts. For example, within the broad agricultural impacts category, some of the sub-grouped impacts are not explicitly modeled but are highly correlated to other subcategories that are explicitly modeled. Therefore, it may be misleading to identify these kinds of impacts as either “included” or “omitted” from the model. Along those lines, impacts may be included in models but not directly; the Dynamic Integrated Climate and Economy (DICE) model represents adaptation implicitly through the choice of studies used to calibrate the aggregate damage function, and the Climate Framework for Uncertainty, Negotiation, and Distribution (FUND) model includes adaptation both implicitly and explicitly (see the SCC TSD for details).

The EPA has recognized the need for a thorough review of damage functions—in particular, how the models incorporate adaptation, technological change, and catastrophic damages. The EPA regards the SCC TSD as a starting point in the inquiry into the models’ treatment of impacts and to motivate new research. Accordingly, the EPA partnered with DOE and hosted a series of workshops in 2010-2011 to explore the treatment of impacts in integrated assessment models. The first workshop focused on conceptual and methodological issues related to integrated assessment modeling and valuing climate change impacts, along with methods of incorporating these estimates into policy analysis.<sup>46</sup> The second workshop reviewed research on estimating impacts and valuing damages on a sectoral basis.<sup>47</sup>

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<sup>44</sup> Docket EPA-HQ-OAR-2009-0472 or see <http://www.epa.gov/otaq/climate/regulations/420r10012a.pdf>, page 4-57.

<sup>45</sup> Docket EPA-HQ-OAR-2010-0162 or see <http://www.epa.gov/otaq/climate/documents/420r11004.pdf>, page 11-17.

<sup>46</sup> See <http://yosemite.epa.gov/ee/epa/erm.nsf/vwRepNumLookup/EE-0564?OpenDocument>

<sup>47</sup> See <http://yosemite.epa.gov/ee/epa/erm.nsf/vwRepNumLookup/EE-0566?OpenDocument>

Finally, the EPA is aware that not all greenhouse gases contain the element carbon and therefore uses nomenclature appropriately in the rulemaking documents. As in the proposed rule, the RIA for the final rule uses “SCC” to refer to the social cost of carbon dioxide, which is in turn used to estimate the social cost of methane. The EPA did not apply the “SCC” label to methane co-benefits; the EPA provided detailed references supporting the estimates.

**Comment:** A letter authored by 13 organizations (4240) states that the EPA must value methane reductions “accurately” and provides recommendations for two methods—(1) direct model estimates of the social cost of methane and (2) the GWP approach—to estimate the rule’s methane co-benefits. Specifically, commenters recommended the following for each methodology:

*Direct model estimates of the social cost of methane:* The commenter describes Marten and Newbold (2011), which used DICE2010 to directly model the social cost of methane, as a “valid and analytically supportable method,” and encourages the EPA to include figures calculated using their approach.

*GWP approach:* The commenter states that if the EPA could not use directly modeled estimates of the social cost of methane, it should apply the GWP approach. Furthermore, the commenter recommends using a GWP of 25, which is the most recent Intergovernmental Panel on Climate Change (IPCC) GWP value for methane (Fourth Assessment Report), rather than the 21 estimate from the Second Assessment Report. The comment states that the EPA’s justification for using the 21 GWP (consistency with the United Nations Framework Convention on Climate Change protocol for GHG inventory) is irrelevant. In addition, commenter recommends that the EPA do a sensitivity analysis using an alternative 100-year GWP, Shindell et al’s recently published estimate of 33.<sup>48</sup> The commenter states that Shindell et al’s estimate “improves upon the IPCC’s by taking into account positive feedback loops (e.g. methane causing warming which then causes permafrost to melt, releasing yet more methane).”<sup>49</sup>

In addition, one commenter (4104) states that any analysis of methane reductions that considers CO<sub>2</sub> equivalent emissions should use 21 as the methane global warming potential.

**Response:** The EPA has determined that before it can directly model methane in a manner consistent with the 2009-2010 interagency modeling exercise, it must first address key modeling issues. The most important issue that would require careful consideration as a pre-requisite for using direct model estimates is how to represent non-CO<sub>2</sub> cycles in DICE. A challenging issue in

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<sup>48</sup> D.T. Shindell, G. Faluvegi, D.M. Koch, G.A. Schmidt, N. Unger, S.E. Bauer (2009) "Improved Attribution of Climate Forcing to Emissions," *Science* 326 716 718,

<sup>49</sup> See attachment to letter EPA-HQ-OAR-2010-0505-4240, page 8.

estimating the social cost of non-CO<sub>2</sub> GHGs is that the integrated assessment models vary in how they represent the atmospheric chemistry for these gases. DICE in particular poses a challenge because it does not directly model the atmospheric gas cycle for any GHG other than CO<sub>2</sub>. Instead, it jointly represents all non-CO<sub>2</sub> GHGs through a single net radiative forcing vector. The other integrated assessment models, PAGE and FUND, directly represent the atmospheric chemistry for several non-CO<sub>2</sub> GHGs (noting that for PAGE not all gas cycles, such as methane, were used in the analysis).

There are options to incorporate a defensible cycle for methane in the DICE model, such as supplementing DICE with changes in radiative forcing estimates from MAGICC, a climate model that incorporates important interactions between various gases in the atmosphere.<sup>50</sup> This modification, however, would differ from the methodology established by the 2009-2010 Interagency Work Group.

As stated above, the EPA applied the GWP approach to the final rule and used the value of 21 for the GWP. The EPA disagrees that maintaining consistency with GHG inventory reporting is irrelevant to the Agency's assessment of this rule's methane co-benefits. The EPA is obligated to comply with the international reporting standards under the UNFCCC when submitting, on behalf of the US government, the national GHG inventory to the UNFCCC each year. In light of this international obligation, the EPA chose to use GWPs published in the Intergovernmental Panel on Climate Change Second Assessment Report (IPCC SAR) (based on a 100-year time horizon) in the US Greenhouse Gas Reporting Program (USGHGRP) because they allow comparability of data collected under this program to the national GHG inventory. Given that oil and gas industry stakeholders are required to report to the EPA under the US GHGRP, we believe it is appropriate to present this rule's methane co-benefits in a way that is consistent with how methane emissions are currently reported and presented to the public under the US GHGRP.

In addition, the EPA has reviewed the comments recommending use of alternative GWPs, in particular Shindell et al's recent estimate of 33 for a 100-year GWP of methane. First, the EPA notes that the positive feedback loop cited by the commenters is not methane specific, and is therefore not included in Shindell et al's GWP for methane. Rather, the novel element of Shindell et al's work is the treatment of methane impacts on sulfate formation: methane emissions consume the hydroxyl radical, which reduces the amount of hydroxyl radical that is available to oxidize sulfur dioxide into sulfate, resulting in less cooling, and therefore greater warming from methane. Second, as noted above, the EPA uses the 100-year GWP approach recommended by the IPCC, consistent with the UNFCCC reporting requirements. The EPA believes it would be

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<sup>50</sup> For example, see a working paper by Marten and Newbold (2011) at <http://yosemite.epa.gov/EE/epa/eed.nsf/WPNumber/2011-01?OpenDocument>.

inappropriate to use alternative GWP estimates in the analyses, even in sensitivity analyses, that have received relatively less scrutiny than those cited in the IPCC reports.

**Comment:** An attachment to the letter authored by 13 organizations (4240) identifies recommendations to improve the social cost of carbon estimates. The commenter makes recommendations to the EPA regarding use of integrated assessment models and discount rate selection. In addition, this commenter requests that the EPA present 12 longer-term recommendations for SCC to the interagency group.

*Recommendations to the EPA:* Regarding models, the commenter recommends that the EPA use updated versions of DICE, FUND, and PAGE, which have become available since the 2009-2010 interagency exercise. The commenter also recommends that the EPA modify the structure of the FUND, specifically, “reduce CO<sub>2</sub> fertilization benefits in the FUND model in proportion to methane’s decomposition into CO<sub>2</sub> before being re-run. If it is not possible to structurally adjust the fertilization levels within the time frame of the ruling, the EPA should either a) estimate the CO<sub>2</sub> fertilization effect separately, and subtract its value accordingly from the SCC or b) exclude FUND from the SCC estimates used to calculate methane reduction benefits.”

Regarding discount rates, the commenter recommends that the EPA use a lower rate, specifically 0.7 percent. The commenter stated that this is the long run average yield on 6 month U.S. Treasury Notes and “a better measure of a risk-free asset than the long term yield on U.S. Treasury Bonds used by the Working Group, because it carries much less inflation risk.” The commenter also noted that OMB Circular A-4 has recommended a lower bound sensitivity value for intergenerational discounting of 1 percent and suggested that the EPA include this rate in its analysis. The commenter states that if the EPA does not use a 0.7 percent rate, the Agency should “use a set of discount rates that take into account long run uncertainty in interest rates. The commenter states the range should include Weitzman, and the UK Greenbook (zero time preference), declining discount rate schedules...in addition to the Newell-Pizer estimate.”

*Recommendations for the Interagency Group:* The commenter presents the following recommendations for the interagency group to consider in exploring and updating the social cost of carbon estimates:

1. *Risk aversion:* Incorporate risk aversion into the next revision of the SCC.
2. *Catastrophic impacts:* To better capture high and potentially catastrophic damages, adopt Weitzman’s (2009) suggestion of “extending the grid” in the Monte Carlo simulations (i.e. increase the number of, and value for, low probability catastrophic damages).
3. *Catastrophic impacts:* For catastrophic outcomes that affect the entire globe, use a damage value implied by Weitzman’s (2009) analysis: the value of a statistical life (VSL) multiplied by the global population.

4. *Model changes*: Following the PAGE model, integrate a general “adaptation” function into all models that can vary by level, speed, and cost; inform lower bounds by a review of adaptation measures (or lack thereof) being taken for climate damages that have already begun.
5. *Model changes*: To the extent that different sectors of the economy are modeled in the IAMs, modify the “damage functions” to allow for cross-sectoral impacts.
6. *Model selection*: Ensure that the Working Group’s models, especially FUND, more accurately capture agricultural impacts; to the extent that this is not possible, CO<sub>2</sub> fertilization benefits should be reduced to reflect what net impacts would be if it were possible to account for all effects.
7. *Equity weight*: Equity weight within generations, using the different established methodologies available (i.e., do a sensitivity analysis using different methods).
8. *Equity weight*: Use one global value for the value of a statistical life (VSL), i.e., do not vary the value by income or the expected number of life years remaining (as is currently done in some models).
9. *Non-use values*: Develop a multiplication factor(s) for non-use values, and apply them to appropriate use values included in the integrated assessment models.
10. *Monitor science and economic developments*: Dedicate full-time Working Group staff to collecting, reviewing, and assimilating new climate science and economic modeling findings on an ongoing basis, so that revisions to the SCC can be accomplished more quickly.
11. *Monitor science and economic developments*: Establish an EPA web page posting these new findings, and provide links to relevant research papers.
12. *Scenarios*: Review current research on worse-case emissions growth scenarios and make sure the research is consistent with the scenarios used by the Working Group.

**Response:** The EPA appreciates the commenter’s recommendations to modify the methodology underlying the SCC estimates and has considered each one in the context of this rulemaking. However, the EPA has determined that these recommendations—including those made to the EPA specifically—require additional research, review, and public comment before it can apply them to a rulemaking context. The EPA has therefore presented the SCC estimates developed through the 2009-2010 interagency process in this rulemaking. The EPA will continue to consider these comments and will share the recommendations with the interagency group when the current SCC estimates are updated. The remainder of this section provides more detailed responses to the recommendations made to the EPA specifically.

Regarding model vintage, the EPA has begun to explore the updated versions of DICE, FUND, and PAGE. Additional analysis of the model updates is required before the EPA can incorporate them in rulemakings. Furthermore, other federal agencies use the SCC estimates to analyze

benefits of rulemakings and it is important to ensure consistency in the SCC estimates used across the government analyses.

The EPA considered the comments regarding CO<sub>2</sub> fertilization benefits in FUND and has determined that additional research would be required to implement these recommendations. The EPA has recognized the need for a thorough review of damage functions in all three models that the interagency group used to estimate SCC. Accordingly, the EPA partnered with DOE and hosted a series of workshops in 2010-2011 to explore the treatment of impacts in the models. The first workshop focused on conceptual and methodological issues related to integrated assessment modeling and valuing climate change impacts, along with methods of incorporating these estimates into policy analysis.<sup>51</sup> The second workshop reviewed research on estimating impacts and valuing damages on a sectoral basis.<sup>52</sup> These workshops revealed that integrated assessment models used for estimating SCC lag the latest research on impacts and damages in some sectors. Since then, the EPA has initiated a review of the literature in agriculture and other sectors to help researchers more easily improve representation of damages. Consistent with the commenter's recommendation, the EPA is particularly interested in examining recent publications about the role of assumptions regarding carbon fertilization. The EPA appreciates the reference provided by the commenter and will continue to analyze the components of agricultural impacts.

In the meantime, the EPA determined that modifying the FUND structure would be counterproductive, given that the latest version incorporates changes in the estimation of agricultural impacts. These changes are undergoing peer review and the EPA looks forward to exploring these changes.

Furthermore, introducing changes beyond those implemented by the model authors would conflict with the methodology established by the interagency working group. A key objective of the interagency process was to enable a consistent exploration of the three models while respecting the different approaches to quantifying damages taken by the key modelers in the field. After conducting an extensive literature review, the interagency group selected three sets of input parameters (climate sensitivity, socio-economic and emissions trajectories, and discount rates) to use consistently in each model. All other model features were left unchanged, relying on the model developers' best estimates and judgments.

Regarding the recommendations for discount rate selection, the EPA finds it to be defensible and transparent given its consistency with the standard contemporary theoretical foundations of benefit-cost analysis. The basis for the current discounting approach is discussed in detail in the

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<sup>51</sup> See <http://yosemite.epa.gov/ee/epa/erm.nsf/vwRepNumLookup/EE-0564?OpenDocument>

<sup>52</sup> See <http://yosemite.epa.gov/ee/epa/erm.nsf/vwRepNumLookup/EE-0566?OpenDocument>

SCC TSD. In sum, the interagency group applied three constant certainty-equivalent discount rates (2.5, 3, and 5 percent) to the SCC estimates to account for various perspectives about risk and uncertainty. The upper value of 5 percent accounts for the view that there may be a high correlation between climate damages and market returns while the rest of the SCC analysis centers on a discount rate consistent with concerns about risk aversion. The SCC TSD also summarizes the consideration of the literature about handling uncertainty in discounting (e.g., Newell and Pizer (2003), Weitzman (2001), and the UK's "Green Book" for regulatory analysis) and concludes that the proper way to model discount rate uncertainty remains an active area of research.<sup>53</sup>

In addition, the EPA finds this approach to be consistent with OMB Circular A-4. Circular A-4 discusses the analytical challenges for discounting in an intergenerational context and concludes that agencies "might consider a further sensitivity analysis using a lower but positive discount rate in addition to calculating net benefits using discount rates of 3 and 7 percent." Specifically, Circular A-4 states that "estimates of the appropriate discount rate" in an intergenerational context ranged from 1 to 3 percent."<sup>54</sup> Two of the three discount rates used in the interagency exercise fall within this range.

However, the EPA recognizes the limitations of the discounting approach used in the interagency modeling exercise. Accordingly, the EPA funded a small workshop on discounting in September 2011 at which world-recognized experts discussed how the benefits and costs of regulations should be discounted for projects with long horizons. In particular, it explored what principles should be used to determine the rates at which to discount the costs and benefits of regulatory programs when costs and benefits extend over very long horizons. The charge questions that were the subject of the workshops discussion focused on three main areas: (1) whether and in what context it is appropriate to apply a Ramsey discounting framework in an intergenerational setting; (2) whether and how to directly estimate discount rates over long time horizons; and (3) how to apply discounting in a regulation where some costs and benefits accrue intra-generationally while others accrue inter-generationally. See <http://rff.org/Events/Pages/Intergenerational-Discounting-Workshop.aspx> for a summary of the main discussion points. The EPA is in the process of evaluating next steps with regard to possible methodological improvements in intergenerational discounting.

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<sup>53</sup> See EPA-HQ-OAR-2009-0472-11581 for further discussion about key questions about potential time inconsistencies that arise with differential discounting approaches.

<sup>54</sup> OMB Circular A-4, September 17, 2003, [http://www.whitehouse.gov/omb/circulars\\_a004\\_a-4/#main-content](http://www.whitehouse.gov/omb/circulars_a004_a-4/#main-content). Circular A-4 uses the following citation for the 1-3 percent range: Portney PR and Weyant JP, eds. (1999), *Discounting and Intergenerational Equity*, Resources for the Future, Washington, DC.

### 4.3 Other Comments

**Comment:** One commenter (0331) asserts that the proposed rules reduce gas field air pollution by about 30 percent, but current best available technology can reduce air pollution by 90 to 95 percent, cost effectively because captured VOCs are salable and have market value.

**Response:** The EPA has promulgated final rules that will reduce emissions from the ONG sector to the maximum extent authorized under the CAA. For the NSPS, we have identified the emission points that can be cost-effectively controlled and have required BSER controls for new, modified and reconstructed affected facilities. In many cases, the final rule requires at least 95 percent control of VOC emissions from subject affected facilities, but the CAA does not authorize control of existing facilities under NSPS. In addition, the rule includes some exceptions and cutoffs where emissions cannot be controlled for technical reasons or cannot be controlled cost effectively. For example, the rule requires 95 percent control of emissions from storage vessels with emissions equal to or greater than 6 tpy because we found controls to be cost effective at this level of emissions, but does not require controls for vessels with emission below this level because such control is not cost effective. For the NESHAP, we have required MACT controls for existing and new affected sources as authorized under the CAA.

**Comment:** Three commenters (1365, 1369, 1382) state that reducing oil and gas pollution will protect our communities, create jobs, and will often pay for itself. The commenters contend that oil and gas pollution is not only a threat to our health, it is also disrupting our climate because the industry is one of the largest sources of global warming pollution in the country. The commenter believes that the EPA needs to control all of these threats in these comprehensive rules.

**Response:** The EPA agrees with the commenters that regulation of the ONG sector under the final NSPS and NESHAP will have many health and welfare benefits.

**Comment:** One commenter (3470) believes that with the unprecedented rate of growth in oil and natural gas exploration and production over the last decade, residents living near oil and natural gas sites may be exposed to highly toxic chemicals on a regular basis, with their health at risk. The commenter states that a community-based pilot environmental monitoring program in northwest New Mexico, southwest Colorado and western Colorado detected 22 toxic chemicals in nine air samples, including four known carcinogens, toxins known to damage the nervous system, and respiratory irritants, with levels detected in many cases significantly higher than what is considered safe by state and federal agencies. The commenter made several recommendations for the final rule.

**Response:** The final NSPS and NESHAP promulgated by the EPA control emissions from the ONG sector to the maximum extent authorized under the CAA. These rules expand the



comprehensiveness of the standards by making additional sources of emissions subject to control requirements. The rules include provisions to assure compliance and enforceability, and the EPA monitors the enforcement programs of the state and local agencies to ensure that all CAA regulations are enforced and associated penalties follow the established guidelines. Where warranted, the EPA takes the lead on enforcement. Regarding the siting requirements for ONG facilities and universal monitoring of ONG facilities, the EPA is not authorized under the CAA to compel the actions suggested by the commenter. The EPA agrees with the commenter that it would be beneficial for the ONG industry to adopt voluntary measures to reduce emissions, and has established such programs as the Natural Gas STAR program encourage such actions.

**Comment:** One commenter (3528) notes that the Natural Gas STAR program estimates that a large reduction in fugitive gas emissions has already occurred over the past few years without the rule, and continues as a result of a collaborative working relationship between the EPA and the industry. The commenter opines that continuing to build upon the gas savings and emission reduction efforts already achieved through the Natural Gas STAR program may be a better approach than a new ruling, much of which is covered in various state air quality regulations and oil and gas commissions.

**Response:** While we agree that the Natural Gas STAR program has been beneficial, the EPA is not free to abandon rulemaking under the CAA. We are required periodically to review the source categories listed pursuant to the NSPS and NESHAP programs, and we are required to regulate emissions from those source categories as prescribed by the CAA. Based on public comments and reports to the EPA's Natural Gas STAR program, the EPA recognizes that some producers conduct well completions using REC techniques voluntarily for economic and/or environmental objectives as a normal part of business. To account for emissions reductions and costs arising from voluntary implementation of pollution controls the EPA used information on total emission reductions reported to the EPA by partners of the EPA Natural Gas STAR. This estimate of this voluntary REC activity in the absence of regulation is also included in the baseline. More detailed discussion on the derivation of the baseline is presented in a technical memorandum in the docket, as well as in the RIA.

Additionally, in the RIA, we provide summary-level estimates of emissions reductions and engineering compliance costs for a case where no voluntary RECs are assumed to occur. This alternative case is presented in order to show impacts if conditions were such that RECs were no longer performed on a voluntary basis, but rather were compelled by the regulation, and serves in part to capture the inherent uncertainty in projecting voluntary activity into the future. As such, this alternative case establishes the full universe of emissions reductions that are guaranteed by this NSPS (those that are *required* to occur under the rule, including those that would likely occur voluntarily). While the primary baseline may better represent actual costs (and emissions reductions) beyond those already expected under business as usual, the alternative case better

captures the full amount of emissions reductions where the NSPS acts as a backstop to ensure that emission reduction practices occur (practices covered by this rule).

**Comment:** One commenter (4168) requests that the EPA base new regulation on common sense and sound science, balancing our clean air and environment with sustaining the oil and natural gas industry which is essential to our local and national economies. The commenter asserts that any new regulations should be reasonable and proven necessary through sound science.

**Response:** The EPA agrees with the commenter. We believe that the final rules achieve the goals laid out by the commenter.

**Comment:** While commending the EPA for considering environmental justice issues, one commenter (4208) questions the Agency's determination that the rule will not result in disproportionately high adverse health effects on environmental justice communities. The commenter believes that improvements are needed in the proposal to address environmental justice and encourages the EPA to continue to consider these factors in developing the final rule and subsequent regulations. The commenter recommends an analysis at the 5-kilometer distance be conducted to assess facility impacts to nearby environmental justice communities, and also that the rule writers work with the EPA Office of Environmental Justice to develop criteria and specific guidance on how to interpret and apply the outcome of these types of analyses in the rulemaking process.

Another commenter (4254) states that a significant environmental justice issue is the potential that increased energy costs will result in lost jobs; in addition, reduced access to affordable energy for home heating, electricity generation, and transportation will disproportionately affect the most vulnerable segments of society. The commenter also believes that domestic energy production will decline, with a corresponding loss of income to farmers, ranchers and other royalty owners as well as royalties and severance taxes to states and the federal government, as the costs for control technologies, administration, and re-training will alter the cost-benefit balance of domestic oil and gas production, resulting in fewer wells being economically productive.

**Response:** The EPA has determined that this final rule will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it increases the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority, low-income, or indigenous populations.

To examine the potential for any environmental justice issues that might be associated with each source category, we evaluated the percentages of various social, demographic and economic

groups within the at-risk population living near the facilities where these source categories are located and compared them to national averages. The development of demographic analyses to inform the consideration of environmental justice issues in the EPA rulemakings is an evolving science.

The EPA conducted a demographic analysis, focusing on populations within 50 km of any facility in each of the source categories that are estimated to have HAP exposures which result in cancer risks of 1-in-1 million or greater or non-cancer hazard indices of 1 or greater based on estimates of current HAP emissions. The results of this analysis are documented in the technical report: *Risk and Technology Review – Analysis of Socio-economic Factors for Populations Living Near Oil & Natural Gas Production Facilities* located in the docket for this rulemaking.

Our risk assessments demonstrate that the regulations for the oil and natural gas production and natural gas transmission and storage source categories are associated with an acceptable level of risk, and that the proposed additional requirements will provide an ample margin of safety to protect public health. Our analyses also show that, for these source categories, there is no potential for an adverse environmental effect or human health multi-pathway effects, and that acute and chronic noncancer health impacts are unlikely. The EPA has determined that, although there may be an existing disparity in HAP risks from these sources between some demographic groups, no demographic group is exposed to an unacceptable level of risk.

To promote meaningful involvement, the EPA conducted three public hearings on the proposal. The hearings were held in Pittsburgh, PA on September 27, 2011, Denver, CO on September 28, 2011 and Arlington, TX on September 29, 2011. A total of 261 people spoke at the three hearings and 735 people attended the hearings. The attendees at the hearings included private citizens, community-based and environmental organizations, industry representatives, associations representing industry and local and state government officials.

Regarding the recommendations of the first commenter, we thank the commenter for the suggestions and will consider them in future environmental justice analyses.

We do not agree with the comments of the second commenter. Our analysis of the impacts on the U.S. energy system using the U.S. DOE NEMS did not predict the kinds of impacts suggested by the commenter. Rather, the analysis shows that domestic natural gas production and prices are estimated to remain unchanged in 2015, the year of analysis. Domestic crude oil production is not estimated to change, while crude oil prices are estimated to decrease slightly (\$0.01/barrel or less than about 0.01 percent at the wellhead for producers in the lower 48 states) in 2015, the year of analysis.

**Comment:** One commenter (4215) states that the rules need to align the regulatory burdens with the significance of human health impacts. According to the commenter, VOC emissions from the ONG sector are only 2.3 percent of U.S. emissions, so the reductions resulting from this rule are inconsequential. The commenter also states that the residual risk review found cancer risks from the sector to be within the range that the EPA considers acceptable. The commenter contends that the point of a residual risk assessment is to determine what risks remain and whether more protective standards are necessary to protect public health and that, given the outcomes of the EPA's assessments, it is hard to understand why further regulatory action is needed in this case to protect human health.

**Response:** The EPA does not agree with the commenter. The final rules are consistent with the rule-making considerations prescribed by the CAA. In the case of the NSPS, the CAA requires that the EPA promulgate technology-based standards for the listed source categories that represent BSER, taking into account costs and other listed impacts. The NSPS program is based on protecting human health and welfare, and it addresses these through the combination of the listing and regulation processes. While 2.3 percent of U.S. VOC emissions sounds small, it nevertheless represents a large mass of emissions. To adequately address the total impact of VOC emissions nationwide, we must address source categories that individually represent a small percentage of total emissions but collectively contribute significantly to the unhealthful concentrations of ozone and PM<sub>2.5</sub> that our nation continues to experience. In addition, VOC contributes to ozone formation close to the source, so emissions that may seem insignificant on a national level may be very significant locally.

In the case of the NESHAP, the final rules are technology-based MACT standards under section 112(d) of the CAA. The EPA is required to review existing MACT standards at least every 8 years, and we must promulgate MACT standards according to the criteria prescribed by the CAA. The commenter is correct that our residual risk assessment found that the MACT standards adequately protect human health with an adequate margin of safety, but that does not negate the requirement for MACT standards under the CAA.

**Comment:** One commenter (4257) states that robust compliance and enforcement mechanisms are necessary in order to ensure that the public reaps the clean air benefits envisioned by the proposal, including publicly-available data documenting compliance and enforcement, as well as periods of non-compliance. The commenter asserts that penalties for non-compliance with the standards, including failure to submit annual reports or knowingly false material statements in such reports, must be met with stringent penalties including criminal liability; repeated failure to comply with the proposed standards should result in temporary or permanent restrictions on production operations.

**Response:** The EPA agrees that the benefits of the final rules will only be achieved if industry complies with them. For this reason, we have included appropriate compliance and monitoring, recordkeeping and reporting provisions in the final rules that will assure compliance without imposing unnecessary costs on sources. State and local agencies generally are the first line of enforcement for NSPS and NESHAP, although the EPA retains enforcement authority as well. There is a well-developed system of shared responsibility for enforcement and the EPA oversight of state and local programs. The penalties for noncompliance are set out in the statutes law and imposed consistently through established guidelines.

**Comment:** One commenter (4274) is concerned with the increasing formaldehyde emissions created by compressor engine air quality control devices aimed at reducing NO<sub>x</sub> emissions. The commenter notes that the Marcellus Shale will have an increasing number of compressor engines installed as both the gas flowing from the field increases, and on well sites as the gas is depleted. The commenter believes that we need to know not only the cancer risk of formaldehyde to the public living nearby these facilities, but we also need to know how the increasing formaldehyde emissions will affect nearby Shale community dwellers who are affected by asthma, chronic bronchitis and COPD. The commenter contends that it is necessary to establish a NAAQS for formaldehyde, which needs to be reliable relative to health standards for both chronic respiratory and cancer considerations.

**Response:** Combustion emissions from compressor engines are not covered by these final rules, so formaldehyde emissions from these engines are not within the scope of the analyses conducted for these rules. Rules that address combustion emissions from compressor engines include one NESHAP (subpart ZZZZ covering reciprocating internal combustion engines, commonly called the RICE NESHAP) and two NSPS (subpart IIII, the NSPS for compression ignition engines or the CI NSPS, and subpart JJJJ, the NSPS for spark ignition engines or the SI NSPS).

The commenter is correct that formaldehyde emissions can increase as a result of NO<sub>x</sub> controls on engines. The inverse is also true – formaldehyde controls can increase NO<sub>x</sub> emissions. These issues are addressed in the supporting documents developed for the engine standards.

The establishment of a NAAQS for formaldehyde is outside the scope of this action; therefore, we are not addressing that comment in this document.

## 5.0 Miscellaneous Comments

**Comment:** Two commenters (4191, 4240) believe there are several emission sources that should be included in the final rule. One commenter (4191) believes these emission sources should include amine units, pneumatic pumps, and produced and flowback water facilities. One commenter (4240) believes these emission sources should include offshore sources, heater-treaters, and field engines and turbines.

One commenter (4191) recommends that the EPA review emissions data from amine units for inclusion in this rule. If amine units are not addressed in the final rule, the commenter requests that the EPA provide justification in the preamble of the final rule. The commenter disagrees with the EPA's determination that amine units do not warrant regulation under subpart OOOO and that amine units should be considered associated equipment under subparts HH and HHH. The commenter states that they have found that VOC and HAP emissions from amine units are significant enough to warrant control to avoid the requirements of the title V Operating Permit Program, Prevention of Significant Deterioration (PSD) review, or Nonattainment New Source Review (NANSR).

The commenter (4191) requests that the EPA consider including pneumatic pumps in the rule. The commenter notes that the EPA provides a definition for pneumatic pump in subpart OOOO, but does not use this terminology in any other location within the proposed rule. The commenter has found that individually, pneumatic pumps can be significant emission sources, and they have issued construction permits for multiple pneumatic pumps with the potential to emit between 10 and 20 tons of VOC per year.

The commenter (4191) recommends that the EPA review cleanout and inspection activities using pipeline inspection gauges (commonly referred to as "pigging") as an additional source of air emissions. The commenter reports that, in oil operations, the emissions from pigging can exceed 50 tons of VOC per year. Additionally, the commenter reports that natural gas pigging operations may result in much lower potential emissions, in the range of 1 to 2 tons of VOC per year.

One commenter (4240) states that the EPA has the authority and the obligation to regulate the emissions of portions of the offshore oil and gas production sector that it has not proposed to regulate. The commenter asserts that the Outer Continental Shelf Lands Act ("OCSLA") explicitly extended the "laws and civil and political jurisdiction of the United States" to the Outer Continental Shelf, cementing the relevance of domestic environmental law to that region. According to the commenter, in doing so, Congress recognized that the shelf is "a vital national resource reserve held by the Federal Government for the public," and which is "subject to environmental safeguards." In fact, the commenter asserts that Congress even ordered the

Secretary of the Interior, who oversees leasing programs in the region, to “cooperate with the relevant departments and agencies of the Federal Government” to enforce “environmental laws.”

One commenter (4240) states that the CAA provides that following the passage of the 1990 Amendments, the EPA:

[s]hall establish requirements to control air pollution from Outer Continental Shelf sources located offshore of the States along the Pacific, Arctic, and Atlantic Coasts, and along the United States Gulf Coast off the State of Florida eastward of longitude 87 degrees and 30 minutes (“OCS sources”) to attain and maintain Federal and State ambient air quality standards and to comply with the provisions of [the Prevention of Significant Deterioration Program]. 42 U.S.C. 7627(a)(1).

The commenter (4240) states that the CAA goes on to specify that, for OCS sources “located within 25 miles of the seaward boundary of such states” such requirements shall be the same as would be applicable if the source were located in the corresponding onshore area, and shall include, but not be limited to, State and local requirements for emission controls, emissions limitations, offsets, permitting, monitoring, testing, and reporting. 42 U.S.C. 7627(a)(1).

According to the commenter (4240), the NSPS clearly fits within this inclusive collection of requirements, even though they are Federal requirements, as they are, again, regulations designed that support attainment and maintenance of air quality standards. Additionally, the commenter opines that the use of “shall” in the directive from Congress to establish regulations aimed at attaining and maintaining the NAAQS and comply with the PSD program indicates that the EPA must extend the NSPS in Outer Continental Shelf sources.

The commenter (4240) reports although individual heater-treaters are relatively small sources of NO<sub>x</sub> and CO, thousands of them are used in the production process. According to the commenter, these emissions are readily subject to control and have been controlled, for years, by California regulators. The commenter states that, because each individual heater-treater’s emissions will be relatively minor, heater-treaters are unlikely to be directly regulated in many states, or under Federal major source permitting programs. The commenter asserts that section 111 regulation is necessary to ensure that this cumulatively major emissions source is properly controlled. The commenter recommends that the EPA set standards no less stringent than those employed in the California air districts.

The commenter (4240) believes that the EPA must address NO<sub>x</sub> emissions (and emissions of other pollutants) from field engines, turbines, and drilling rig engines, or demonstrate that they are sufficiently addressed by other CAA standards.

Two commenters (4092, 4166) believe that the proposed rule should include nonroad rules for the oil/gas sector, since many of the engines used in the oil/gas sector that emit NO<sub>x</sub> and other pollutants are classified as nonroad, not point sources. The commenters assert that, since these engines are moved from state to state, the EPA is much better equipped to regulate these engines than are the States. The commenters also believe that the proposed rule should include NO<sub>x</sub> regulations for stationary engines, compressor engines, heaters and boilers and other point sources used in the oil/gas sector, to encompass a complete sector-based approach that includes all NO<sub>x</sub> emissions sources in the oil and gas sector.

Two commenters (4170, 4208) believe that NO<sub>x</sub> emissions from reciprocating engines and combustion turbines should be addressed in a subsequent rulemaking for the oil and gas sector, or at a minimum, the EPA should reassess the NO<sub>x</sub> emission standards included in NSPS subparts JJJJ and KKKK.

**Response:** Some of the commenters ask the EPA to address under section 112 certain emission points that emit HAP or have the potential to emit HAP (e.g., amine treaters, produced and flowback water facilities). The Agency does not, however, have sufficient information to establish MACT standards under section 112(d)(2) and (d)(3) for such sources at this time, even assuming that such sources emit HAP and are located at a major source oil and natural gas production facility. See 112(n)(4) (aggregation).

As explained in the preamble in the response to comments section, we do not agree with those commenters that assert that section 112(d)(6) mandates that the EPA correct any deficiency in an underlying MACT standard when it conducts the “technology review” under that section. As explained in the preamble, we believe that section 112 does not expressly address this issue, and the EPA has discretion in determining how to address a purported flaw in a promulgated standard, such a situation where the underlying MACT standard does not include a standard for a particular HAP emission point. Section 112(d)(6) provides that the Agency must review and revise “as necessary.” The “as necessary” language must be read in the context of the provision, which focuses on the review of developments that have occurred since the time of the original promulgation of the MACT standard and thus should not be read as a mandate to correct flaws that existed at the time of the original promulgation.

In several recent rulemakings, we have chosen to fix underlying defects in existing MACT standards under sections 112(d)(2) and (3), the provisions that directly govern the initial promulgation of MACT standards. We believe that our approach is reasonable because using those provisions ensures that the process and considerations are those associated with initially establishing a MACT standard, and it is reasonable to make corrections following the process that would have been followed if we had not made an error at the time of the original promulgation. In this rule, we are finalizing MACT standards under section 112(d)(2) and (d)(3)



for small glycol dehydration units, as we have sufficient information to set such standards at this time. We are not, however, finalizing MACT standards for the subcategory of storage vessels without the PFE, which were unregulated in the 1999 rule, because after evaluating the available data and comments received, we believe that we need additional data in order to set an emission standard for these vessels. To the extent the commenter has sufficient information to demonstrate that a HAP emission point within the oil and natural gas production major source category is unregulated under section 112(d), it can petition the Agency to revise the 1999 MACT standards to address such point.

Finally, one commenter asks the EPA to consider amine treaters to be associated equipment under subparts HH and HHH. The Agency did not propose that change. Rather, we proposed to amend the definition of associated equipment to exclude all storage vessels, and not just those vessels with PFE. In that case, however, we explained at proposal that we have information demonstrating that storage vessels with PFE and those without PFE have comparable emissions and that those emissions are significant. While we appreciate the data provided by the commenter concerning the amine treaters, that data is from a small subset of facilities in one State. We believe we would benefit from obtaining additional data on emissions from amine treaters from other facilities in the oil and natural gas production source category before we propose any further amendments to the definition of associated equipment. See also section X.C of the final rule preamble.

In addition to the above discussion, section IX.A of the final rule preamble also addresses treatment of other pollutants under the NSPS. Further, with regard to the specific emission points raised by these commenters, we note that engines, turbines, and heaters are also addressed in section IX.A of the final rule preamble. No standards were proposed for pneumatic pumps and cleanout and inspection activities, nor did we ask for any comment on them. Therefore, we believe that there is no logical outgrowth from the proposal to base any changes to the final rule and we are making no changes as a result of these comments. Concerning offshore sources, we note that offshore sources within U.S. territorial waters are affected sources under NESHAP subparts HH and HHH. For NSPS subpart OOOO, we have insufficient information concerning the technical feasibility of controlling emissions from affected facilities located offshore, particularly whether the controls specified in the final rule are applicable to offshore facilities, whether sufficient space is available on offshore rigs for control equipment, and whether the types of control equipment evaluated for the final rule (e.g., to estimate cost effectiveness) would be allowed under the specific and unique safety requirements applicable to offshore rigs.

**Comment:** One commenter (4266) states that the consent decree does not require promulgation of rules for new affected sources and believes that the EPA's proposal goes well beyond the scope even contemplated by the settlement agreement. The commenter notes that with respect to Section 112, the settlement agreement provides that the EPA was to propose and take final action

under sections 112(d)(6) and 112(f)(2). The commenter further notes that, with respect to section 111, the settlement agreement provides that EPA shall sign one or a combination of the following for the NSPS subparts KKK and LLL:

- (a) a proposed rule containing revisions to the NSPS (in whole or in part) under CAA section 111(b)(1)(B); and/or
- (b) a proposed determination not to revise the NSPS (in whole or in part) under CAA section 111(b)(1)(B); and/or
- (c) a proposed or final determination not to review the NSPS (in whole or in part) under CAA section 111(b)(1)(B).

According to the commenter (4266), for final action, the settlement agreement commits the EPA to “sign one or a combination of the following for NSPS subparts KKK and LLL:

- (a) a final rule containing revisions to the NSPS (in whole or in part) under CAA section 111(b)(1)(B); and/or
- (b) a final determination not to revise the NSPS (in whole or in part) under CAA section 111(b)(1)(B); and/or
- (c) a final determination not to review the NSPS (in whole or in part) under CAA section 111(b)(1)(B).”

The commenter (4266) recommends that the EPA separate the portions of the rule required by the consent decree from the voluntary additions to the rulemaking, so appropriate consideration can be given to these unique provisions.

**Response:** As explained in the preamble, when conducting a review of an existing performance standard under section 111(b), the EPA has authority to revise that standard to add emission limits for pollutants or emission sources not currently regulated for that source category. EPA has appropriately included in this rule performance standards for a number of new affected facilities after careful evaluation and through notice and comment. EPA therefore sees no need to issue a separate rule to cover the standards for these new affected facilities or postponing issuing such standards.

**Comment:** The commenter (4191) recommends that the EPA consider providing for alternative delegation options, including the possibility of splitting the responsibility for administration of the oil and gas sector NSPS between multiple state agencies. The commenter requests that the EPA consider the implications of a split delegation, such as funding, enforcement, and oversight issues. The commenter believes that without a split delegation option, or some other alternative delegation option, many States will be unable to implement these rules holistically without changing the long standing roles of their regulatory agencies. According to the commenter, this

is not an insignificant task, particularly in an era of limited State resources, and will be a significant challenge within the applicability timeframes envisioned by the EPA's proposed rule.

Two commenters (4266, 4358) believe that consultation with the "appropriate representatives of the Governors and of State air pollution control agencies" of oil and natural gas producing states, as required by 42 USC 7411(f), is particularly important. The commenter (4266) believes that the experience of these agencies is necessary to insure that only the notification and report information that is most beneficial to the agency is required to be submitted.

One commenter (4191) states that, in the event that State regulatory agencies undertake new and expanded roles, there will be associated resource and timing burdens, and it will be very challenging for States to effectively and timely oversee activities covered by the rule, when oil and gas development is occurring on a large scale and rapid pace, statewide.

**Response:** The Statute does not provide for the multi-state split delegation suggested by the commenter. Section 111(c) of the CAA authorizes EPA to delegate to individual States the implementation of the NSPS, including this rule. States are not required to take delegation. However, we believe that the requirements in the final rule would help ease the State's burden by including cost effective measures that are already being widely implemented in this sector and compliance requirements that can be easily tracked by delegated states.

We agree with the commenters that State consultation with the "appropriate representatives of the Governors and of State air pollution control agencies" of oil and natural gas producing States is important.<sup>55</sup> In addition, the EPA realizes that States and other enforcement entities are confronting limited resources and that visiting sites is not always practical. For that reason, the EPA believes the notifications and reporting requirements are vital to ensure compliance with our regulations. Therefore, as discussed elsewhere in this document, the EPA has evaluated all of the notification, recordkeeping, and reporting requirements in an effort to streamline the requirements and reduce burden on both industry and enforcement and has removed duplicate and unnecessary reports throughout the affected subparts. For example, we have provided in the final NSPS that advance notifications of well completions that are submitted by owners and operators in compliance with State notification requirements will satisfy the requirement in the final NSPS for notification no later than 2 days before the beginning of an impending well completion. These changes will streamline the reporting process and reduce both compliance and enforcement burdens.

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<sup>55</sup> As explained in the preamble to the final rule, because we have concluded that the the currently listed oil and natural gas category covers at least those operations in this industry for which we are finalizing standards, we need not address the comment claiming that section 111(f) requires that the EPA consult with State Governors before amending section 111(b) listing.

**Comment:** One commenter (4221) urges the EPA to recognize the June 23, 2011 Memorandum of Understanding (MOU) between the EPA, the Bureau of Land Management, and the Forest Service in the preamble to the final rule and to make commitments for attempting to ensure full implementation of the MOU in the final rule. The commenter believes that the final rule for this oil and gas sector rulemaking should facilitate putting the implementation plan in place, and make commitments to ensure that implementation of the MOU is fully realized.

**Response:** The EPA recognizes the Memorandum of Understanding (MOU), where the U.S. Department of Agriculture (USDA), the U.S. Department of the Interior (DOI), and the EPA (Signatories) commit to a clearly defined, efficient approach to compliance with the National Environmental Policy Act (NEPA) regarding air quality and air quality related values (AQRVs), such as visibility, in connection with oil and gas development on Federal lands (<http://www.epa.gov/compliance/resources/policies/nepa/air-quality-analyses-mou-2011.pdf>). We believe that the promulgation of these regulations for the oil and natural gas sector will further the goal of improving air quality and AQRVs, and therefore meets, in part, the EPA's commitment under the MOU.

**Comment:** Six commenters (4159, 4177, 4219, 4220, 4234, 4273) state that the EPA's attempt to use natural gas as a “surrogate” for VOC in this rulemaking also implies that the EPA is regulating natural gas directly. The commenters assert that this raises a concern that the EPA may now consider natural gas to be a “pollutant” regulated under the NSPS and therefore eligible under 40 CFR §52.21 to be a “regulated NSR pollutant.” According to the commenters, while methane is currently considered a regulated NSR pollutant, other organic compounds in natural gas, such as ethane, are not NSR pollutants. In this case, the commenters report that the NSR pollutant being regulated is VOC, not natural gas. Four commenters (4159, 4177, 4220, 4273) believe that the EPA should clarify that natural gas is not a “regulated NSR pollutant” merely because it is being used a surrogate for VOC in this rulemaking.

One commenter (4219) recommends that the EPA revise the definition for “field gas” to provide that “field gas” is “gas with more than 10 percent VOC content by weight.” The commenter believes this would keep the rules' focus where it belongs: on VOC emissions, rather than methane or other GHG emissions, and would also prevent overlap or potential inconsistency between the proposed new NSPS and the subpart W leak monitoring requirements.

Two commenters (4234, 4246) believe that it is imperative that the NSPS not imply that natural gas is a pollutant and for the EPA to revise the definition of “modification” if the change increases the unit's “natural gas” emissions.

**Response:** The EPA is using natural gas as a surrogate for VOC because natural gas emission rates are more readily available to the industry and are a reasonable indicator of VOC emission

rate. For example, we consider natural gas to be an appropriate surrogate for VOC for well completion activities because our analyses of data on composition of natural gas at the wellhead indicated that emissions of natural gas during well completions contain various chemical species that are VOC. Additionally, we believe it would be overly burdensome to owners and operators and regulatory agencies to determine the VOC content of the gas emitted during well completion operations, particularly in cases where the VOC content may vary considerably over time. Similarly, natural gas is being used as a surrogate for VOC for pneumatic controllers because of the proportional relationship between them. When a natural gas stream is emitted to the atmosphere, VOC in the gas also reaches the atmosphere since it is a component of the natural gas stream. The natural gas emissions occur without any physical separation, chemical separation or chemical reaction process of the chemical species within the natural gas; therefore, the proportion of VOC in natural gas is not altered during the course of being emitted to the atmosphere, and natural gas is an appropriate surrogate for VOC.

As for the comments that express concern that the EPA may consider natural gas as a “regulated NSR pollutant,” the EPA clarifies that PSD permitting requirements apply when “actual control” of the pollutant is required based on a regulatory requirement. (75 FR 17004-17023; April 2, 2010). Natural gas, under the final rule, is not the regulated pollutant but is the measured surrogate that is used to determine applicability for purposes of controlling VOC, which is the regulated pollutant. Therefore, to clarify, natural gas will not be considered a “regulated NSR pollutant” as a result of it being used as a surrogate for VOC for determining applicability under this rulemaking.

Based on the above response, we do not believe there is a need to further revise the definition of “modification.”<sup>56</sup>

## 5.1 Request for Extension of the Compliance Date

**Comment:** Four commenters (4213, 4214, 4215, 4218) believe that the compliance date for the final rule should be extended. According to the commenters, as proposed, affected facilities would have to be in compliance as of the date of publication of the final rule. The commenters believe that compliance as of the date of publication would not allow affected facilities sufficient time to plan or prepare for compliance.

Two commenters (4214, 4218) state that in order for many of the affected sources to be in compliance as of the publication date of the final rule, these sources would need to be replaced now, prior to the issuance of a final rule. One commenter (4214) requests that the EPA

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<sup>56</sup> However, as explained in section IX.A.1 of the preamble, EPA has specifically defined in subpart OOOO the term “modification” as it applies well completions conducted on gas wells that are refractured.

reconsider and allow at least 90 days from the publication date of the final rule for facilities to comply with the rule. Another commenter (4218) recommends that the compliance deadline for affected sources be extended to 180 days after publication of the final rule.

One commenter (4240) strongly opposes any delay to the implementation of the NSPS. The commenter notes that delaying of the implementation of the requirements are contrary to the statute, which requires new sources on which construction is commenced after the date on which new standards are proposed to meet the standards once they begin operations.

**Response:** The NSPS standards apply to affected facilities that commenced construction, modification or reconstruction after August 23, 2011. The subpart OOOO standards being promulgated in this action are effective 60 days after the date of publication in the *Federal Register*, which is the effective date of the final rule. This provides affected facilities with an additional 60 days from the publication date of the final rule for facilities to comply with the rule.

Additionally, in the final rule, because of uncertainties in the supply of REC equipment and labor over the near-term we are now requiring RECs for completion operations begun at non-exploratory and non-delineation wells on or after January 1, 2015. Until this date, flowback emissions must either be controlled using REC or routed to a completion combustion device unless it is technically infeasible or unsafe to do so. Owners and operators are encouraged to use REC before January 1, 2015 if possible. Completion operations at wildcat and delineation wells and non-wildcat and non-delineation low pressure wells are required to control flowback emissions with a completion combustion device unless it is technically infeasible or unsafe to do so. Rationale for this change is presented in section IX.B of the preamble to the final rule.

Also, in the final rule, the standards for certain pneumatic controllers and for storage vessels apply to new and modified affected facilities after an adjustment period to allow build up of equipment or control devices needed to meet the standards. Rationale for these changes is presented in section IX.C and Eof the preamble to the final rule.

We believe that these changes in the final rule address the commenters' concern about needing additional time to meet the standards without sacrificing the desired air quality benefits of the rule or impede production of oil or natural gas.

## **5.2 Rules are an Attempt to Regulate Methane and Other Greenhouse Gases**

**Comment:** Nine commenters (0824, 2803, 3492, 4162, 4189, 4208, 4237, 4240, 4355) state that the EPA must regulate methane emissions from the oil and gas industry. The commenters continue by saying that methane is a potent greenhouse gas and poses a significant threat to

public health and welfare. Two commenters (4189, 4240) believe that the EPA's failure to address methane pollution violates section 111 of the CAA and the EPA's own longstanding practice for determining whether to regulate dangerous air pollutants. The commenters note that there are many other cost-effective control measures available to reduce these methane emissions and create substantial financial and public health benefits. Two commenters (3492, 4240) note that the EPA is legally obligated to regulate greenhouse gases based on the U.S. Supreme Court's ruling in *Massachusetts v. EPA*. One commenter (4208) states that controlling methane emissions from this sector is also consistent with the recommendations recently issued by the Secretary of Energy Advisory Board's Shale Gas Production Subcommittee.

One commenter (4159) supports the EPA's decision not to regulate methane as part of this rule. The commenter believes that the regulation of GHG from oil and gas operations should be considered in a separate proposed rulemaking. The commenter urges the EPA to take into account the requirements and co-benefit reductions under the final version of this rulemaking before moving forward with any greenhouse gas regulation.

Six commenters (2245, 4164, 4174, 4177, 4178, 4192) believe that the actual aim of the proposed standards is to regulate GHG, notably methane. Four of the commenters (2245, 4164, 4174, 4178) state that the regulations prescribe operating standards and practices that, for natural gas transmission and storage, aim almost exclusively at preventing methane from escaping these facilities.

One commenter (2245) states that the preamble acknowledges that the proposed regulations would achieve a significant reduction of methane emissions, but discounts these reductions as an incident, a co-benefit, of the proposed requirements for VOC control. According to the commenter, the EPA's own analysis suggests otherwise. The commenter states that, according to the preamble, the proposed regulations will reduce VOC emissions by 540,000 tons and will reduce methane emissions by 3.4 million tons, six times more than the purportedly targeted pollutant.

According to the commenter (2245), using VOC regulations as a foil for regulating GHG is premature as a matter of policy, unfounded as a matter of law, inconsistent with prevailing regulatory policy and contrary to the country's immediate energy and environmental interests. As a matter of policy, the commenter believes that it is simply too soon to begin regulating GHG, particularly methane escaping from natural gas transmission and storage systems. The commenter provides that the EPA promulgated its greenhouse gas reporting rule precisely to develop a database that would inform decisions about whether and how to regulate greenhouse gas emissions, including the establishment of NSPS. The commenter reports that the first set of reports from oil and natural gas systems on fugitive and vented greenhouse gas emissions (per subpart W of the greenhouse gas reporting rule) have not yet been submitted. The commenter

opines that, today, there is simply not an adequate empirical basis for regulating greenhouse gases from natural gas transmission and storage systems.

The commenter (2245) also asserts that regulating greenhouse gases through these VOC requirements is also unnecessary as a matter of law. According to the commenter, the EPA issued the proposed rules to fulfill its obligations under a consent decree addressing the regulation of VOC and sulfur dioxide emissions from the “oil and natural gas production” source category. The commenter asserts that the EPA’s legal obligations extended solely to those pollutants and sources. The commenter argues that the expansive scope of the proposed rule, both as to pollutants (bringing in methane) and as to sources (bringing in transmission and storage) is not warranted by the litigation giving rise to these rules.

Two commenters (4192, 4246) believe that the EPA should state clearly in the preamble that the proposed subpart OOOO is not considering or regulating methane as a covered pollutant.

Five commenters (4164, 4218, 4229, 4273, 4281) state that the EPA should not regulate “natural gas.” One commenter (4281) adds that there are many facilities where natural gas streams contain very low or no VOCs, for example, CBM. The commenter states that an increase in natural gas emissions does not necessarily increase the emission of VOCs or any other regulated pollutant under the Proposed Rule.

One commenter (4265) argues that the EPA’s justification for regulating emissions of VOCs from the natural gas industry under the proposed NSPS is unsupported. The commenter asserts that because the VOC content of natural gas is very low, the current attainment status in Michigan (and elsewhere) suggests that current levels of control of VOCs and other ozone precursors are adequately protecting public health. The commenter believes that the EPA is expanding the rule to address emissions of methane (a GHG) and other natural gas “pollutants” from all sources within the oil and natural gas industry.

One commenter (4229) suggests there is a misapprehension that the EPA is deeming natural gas or its primary constituent – methane – to be a VOC or a pollutant regulated by the rule. The commenter states this misunderstanding could also arise from the proposed definition of “modification” in §60.5430. The commenter gives examples showing the EPA’s intent is not to regulate GHGs (methane) and that the EPA recognizes that methane and natural gas are not VOCs as such for purposes of the NSPS, although the EPA is also welcoming an opportunity to achieve the co-benefit of reducing GHG emissions. The commenter believes it is imperative that the NSPS not imply that natural gas is a pollutant.

Two commenters (4266, 4273) state that there are insufficient conditions in the proposed rule to limit the applicability to streams that have a significant quantity of VOC, resulting in a NSPS



regulation that can be interpreted to apply to streams with no VOCs. The commenter states that in this proposed rule, the term “natural gas” is used in the titles of the category, plants and equipment descriptions, as well as a surrogate for VOCs. The commenter states that many natural gas streams are mainly methane and have little or no VOC content when it is produced from the reservoir (thus the terms “dry gas” and “coal bed methane” that are common in the industry). The commenter states that though the EPA has previously stated that it does not intend to regulate GHGs within this rule, without some minimum applicability threshold for VOCs, the EPA is essentially regulating GHGs.

Two commenters (4218, 4225) believe using natural gas as a VOC surrogate in the proposed rule becomes the equivalent to the EPA regulating GHGs for low to no VOC gas streams though GHG regulation is something the EPA purports not to do in this proposal. One commenter (4218) adds that, to the extent the EPA is attempting to regulate GHGs under subpart OOOO, the EPA has failed to make the necessary findings to do so. The commenter states that section 111 of the CAA provides that the EPA may promulgate NSPS only for categories of sources that “cause, or contribute significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare.” The commenter concludes that because the EPA has not made an endangerment finding specific to GHG emissions and does not purport to do so in connection with this rulemaking, the EPA cannot regulate GHG emissions under subpart OOOO.

**Response:** The NSPS regulates VOC emissions and not methane. For the reasons explained in section IX.A.2 of the final rule preamble, we are not taking final action in this rule with respect to regulation of methane. Rather, we intend to continue to evaluate the appropriateness of regulating methane with an eye toward taking additional steps if appropriate.

Because the EPA is not regulating methane in this rule, the EPA needs not address the claims that regulation of methane is not warranted by the litigation or that the EPA fails to make the necessary findings to regulate GHG (methane). With respect to the rule’s coverage of the transmission and storage segment of this sector, as explained in section IX.A.2 of the final rule preamble, the EPA has concluded that the listed oil and gas source category covers the operations for which we have established performance standards in the final rule.

### **5.3 Regulation of NO<sub>x</sub> and other Pollutants**

**Comment:** Two commenters (3492, 4189) state that the EPA has failed to regulate hydrogen sulfide (H<sub>2</sub>S) from the oil and gas industry. The commenters explain that hydrogen sulfide is a highly toxic gas that smells like rotten eggs and can lead to neurological impairment or death at relatively low concentrations. One commenter (4189) states there are numerous control technologies available for controlling hydrogen sulfide emissions from the oil and gas industry. The commenter asserts that the EPA must take action under section 111.

One commenter (4189) states that the EPA must regulate particulate matter emissions from the oil and gas industry. The commenter asserts that particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) has been linked to respiratory and cardiovascular problems, including aggravated asthma attacks, chronic bronchitis, decreased lung function, heart attacks, and premature death. The commenter reports that sensitive populations, including the elderly, children, and people with existing heart or lung problems, are most at risk from particulate matter pollution. The commenter notes that particulate matter emissions occur during road and well-pad construction, heavy equipment moving dirt and leveling the ground and vehicles traveling back and forth on access roads. The commenter believes that there are numerous methods for controlling these emissions, such as using water for dust suppression, reduced speed limits, and planning to minimize road networks.

One commenter (3492) states that the final rules must target nitrogen oxide (NO<sub>x</sub>) and sulfur dioxide (SO<sub>2</sub>) emissions from natural gas processing plants since Pennsylvania and the Allegheny National Forest are in the Northeast Ozone Transport Zone.

Five commenters (4092, 4166, 4170, 4208, 4240) request that the proposed rule be expanded to address NO<sub>x</sub> emissions from the oil/gas sector.

**Response:** Please see section IX.A.2 of the final rule preamble.

**Appendix A. List of Commenters Cited in this RTC Document Submitting Comments To EPA Air and Radiation Docket Number EPA-HQ-OAR-2010-0505 Regarding the Oil and Natural Gas NSPS and NESHAP Reviews Proposed August 23, 2011**

*EPA-HQ-OAR-2010-0505*

<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation</i>
0400	September 9, 2011	Lisa Epifani Gas Processors Association (GPA)
0412	September 9, 2011	Mari Ruckel Texas Oil & Gas Association (TxOAG)
0422	September 8, 2011	Ken Zeserson Planning Board Town of Ulysses Tompkins County, NY
0978	September 15, 2011	Jim Littlefield Surfers' Environmental Alliance (SEA)
0985	September 19, 2011	Patrick J. Nugent Texas Pipeline Association (TPA)
1069	September 22, 2011	Mike and Judy Campsey Buffalo Creek Watershed Association
1090	September 16, 2011	Kate Williams Alaska Oil and Gas Association (AOGA)
1187	September 28, 2011	Vorys, Sater, Seymour and Pease LLP Ohio Oil and Gas Association (OOGA)
1296	September 29, 2011	Ken Mathews Aeon Process Equipment and Controls
1350	September 29, 2011	David J. Ellenberger National Wildlife Federation
1527	October 4, 2011	Deb Thomas Powder River Basin Resource Council Clark Resource Council Pavillion Area Concerned Citizens
1644	October 4, 2011	Christian Alvarado Railroad Commission of Texas
1657	October 5, 2011	Sara Arkle Idaho Conservation League (ICL)

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**EPA-HQ-OAR-2010-0505**

<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation</i>
2245	October 11, 2011	Lisa S. Beal Interstate Natural Gas Association of America (INGAA)
2718	October 11, 2011	Chris Daum Oasis Montana Inc.
2750	September 14, 2011	Peter D. Robertson America's Natural Gas Alliance (ANGA)
2803	October 12, 2011	Shaun Porter Arkansas Water Protection Alliance
3350	October 20, 2011	Adam Peshek Reason Foundation
3351	October 20, 2011	David Aguirre Montana Dept. of Environmental Quality
3399	October 20, 2011	Chelsa Wagner Pennsylvania House of Representatives
3408	October 24, 2011	Christine Griffin Smithfield Township
3409	October 24, 2011	Vera Scroggins Citizens For Clean Water
3447	October 24, 2011	Brad Richards Illinois Oil & Gas Association
3456	October 21, 2011	Patrick Dowd City of Pittsburgh, Pennsylvania
3459	October 20, 2011	Lon Burnam House District 90 Texas House of Representatives
3460	October 24, 2011	Phyllis Mundy Pennsylvania House of Representatives
3466	October 21, 2011	Camille "Bud" George Commonwealth of Pennsylvania House of Representatives
3467	October 24, 2011	John K. Baillie Citizens for Pennsylvania's Future

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**EPA-HQ-OAR-2010-0505**

<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation</i>
3468	October 24, 2011	Frank L. Lindsey Indiana Oil and Gas Association (INOGA)
3469	October 24, 2011	Randall R. LaBauve NextEra Energy, Inc.
3470	October 24, 2011	Denny Larson Global Community Monitor (GCM)
3473	October 25, 2011	Ann Campbell House of Representatives Commonwealth of Pennsylvania, Harrisburg
3474	October 24, 2011	Natalie Joubert Consumer Energy Alliance (CEA)
3475	October 24, 2011	Christian Alvarado Railroad Commission of Texas
3476	October 24, 2011	Frank I. Lindsey CountryMark Energy Resources, LLC
3477	October 25, 2011	Alby Modiano US Oil & Gas Association
3478	October 24, 2011	Pennsylvania House of Representatives
3492	October 24, 2011	Cathy Pedler Allegheny Defense Project (ADP)
3495	October 24, 2011	Charles E. Smith Countrymark Cooperative Holding Corp.
3527	October 24, 2011	Veronica Nasser REM Technology Inc.
3528	October 24, 2011	Steven G. Folk Red Willow Production Company, LLC
3529	October 25, 2011	Scott C. Blauvelt East Management Services, LP (EMS)
3551	October 27, 2011	Cathy Purves Trout Unlimited
3552	October 22, 2011	Michelle Naccarati-Chapkis Women for a Healthy Environment

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***EPA-HQ-OAR-2010-0505***

<b><i>Document ID</i></b>	<b><i>Date Submitted</i></b>	<b><i>Name and Affiliation</i></b>
3560	October 31, 2011	Steve Henke New Mexico Oil and Gas Association
3562	October 20, 2011	John S. Lyons Division for Air Quality Commonwealth of Kentucky
3583	November 1, 2011	James Ferlo Senate of Pennsylvania
3618	November 3, 2011	Chris Klaus North Central Texas Clean Air Steering Committee
3619	November 3, 2011	Mark Burroughs and Jungus Jordan North Texas Clean Air Steering Committee
3638	November 7, 2011	Eugene Depasquale Pennsylvania House of Representatives
3639	November 9, 2011	John S. Lyons Kentucky Dept. for Environmental Protection
3928	November 17, 2011	Thoma Y. Au Clean Air Board of Central Pennsylvania
4039	November 18, 2011	Roberta J. Jackson Dominion Resources Services, Inc.
4041	November 18, 2011	Lori Payne City of South Lake, Texas
4042	November 21, 2011	John A. Paul Regional Air Pollution Control Agency Dayton, Ohio
4056	November 21, 2011	Sabrina N. Wilkin Marathon Petroleum Company LP
4092	November 21, 2011	Alex Ryan-Bond Ozone Transport Commission (OTC)
4104	November 22, 2011	Lisa S. Beal Interstate Natural Gas Association of America (INGAA)
4135	November 25, 2011	John V. Corra Wyoming Dept. of Environmental Quality

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***EPA-HQ-OAR-2010-0505***

<b><i>Document ID</i></b>	<b><i>Date Submitted</i></b>	<b><i>Name and Affiliation</i></b>
4137	November 23, 2011	Mike Brownell Chesapeake Energy Corporation
4158	November 28, 2011	Trinh M. Tran El Paso Corporation
4159	November 28, 2011	J. Kelly Robbins Arkansas Independent Producers and Royalty Owners Association (AIPRO)
4160	November 28, 2011	Susan Combs Texas Comptroller of Public Accounts
4161	November 28, 2011	Timothy Andrus Utah Division of Air Quality
4162	November 29, 2011	Jon A. Mueller Chesapeake Bay Foundation, Inc. (CBF)
4163	November 29, 2011	Grant Maki Ohio Environmental Council (OEC)
4164	November 29, 2011	Leslie Witherspoon Solar Turbines Incorporated
4165	November 29, 2011	Adam Berig Colorado Oil & Gas Association (COGA)
4166	November 28, 2011	Ronald A. Amirikian Delaware Dept. of Natural Resources
4167	November 29, 2011	Teddy Carter Texas Independent Producers and Royalty Owners Association (TIPRO)
4168	November 29, 2011	C. Louis Renaud Texas General Land Office
4170	November 29, 2011	Michael L. Krancer Pennsylvania Dept. of Environmental Protection
4174	November 30, 2011	Richard Metcalf LA Mid-Continent Oil and Gas Assn.
4175	November 30, 2011	John Dutton Gas Compressor Association

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**EPA-HQ-OAR-2010-0505**

<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation</i>
4176	November 28, 2011	Dave Aguirre Montana Dept. of Environmental Quality
4177	November 30, 2011	Mari Ruckel Texas Oil and Gas Association
4178	November 28, 2011	Laura J. Finley Oklahoma Dept. of Environmental Quality
4184	November 30, 2011	J. Jared Snyder New York State Dept. of Environmental Conservation Division of Air Resources
4185	November 30, 2011	Thomas Bach Kinder Morgan Energy Partners, LP
4189	November 30, 2011	Earthjustice Berks Gas Truth, et al.
4191	November 30, 2011	William C. Allison V Colorado Dept. of Public Health and Environment
4192	November 30, 2011	Jeff Applekamp Gas Processors Association (GPA)
4193	November 30, 2011	Eric J. Barndt Black Hills Exploration And Production and Midstream LLCs
4208	November 30, 2011	S. William Becker National Association of Clean Air Agencies (NACAA)
4209	November 30, 2011	Angie Burckhalter Oklahoma Independent Petroleum Association (OIPA)
4210	November 30, 2011	Veronica Nasser REM Technology, Inc.
4212	November 30, 2011	Veronica Nasser REM Technology, Inc.
4213	November 30, 2011	Lisa Yoho BG Americas & Global LNG (BGA)
4214	November 30, 2011	Anne Blankenship West Virginia Oil and Natural Gas Association (WVONGA)



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***EPA-HQ-OAR-2010-0505***

<b><i>Document ID</i></b>	<b><i>Date Submitted</i></b>	<b><i>Name and Affiliation</i></b>
4215	November 30, 2011	Holly Propst Western Business Roundtable
4216	November 30, 2011	Lee Fuller Independent Petroleum Association of America (IPAA)
4217	November 30, 2011	Dan F. Hunter ConocoPhillips Company
4218	November 30, 2011	Jessica L. Keiser Targa Resources Corp.
4219	November 30, 2011	Patrick J. Nugent Texas Pipeline Association (TPA)
4220	November 30, 2011	John Robitaille Petroleum Association of Wyoming (PAW)
4221	November 30, 2011	Bruce Pendery Wyoming Outdoor Council Environmental Defense Fund
4222	November 30, 2011	Rebecca Smith State of Alaska Dept. of Natural Resources Dept. of Environmental Conservation
4225	November 30, 2011	Stan Dempsey, Jr. Colorado Petroleum Association (CPA)
4226	November 29, 2011	Carrie Crumpton CONSOL Energy Inc.
4227	November 30, 2011	Rebecca Rentz Exterran
4228	November 30, 2011	Lee Hinman Noble Energy Inc.
4229	November 30, 2011	Amy D. Kapuga Consumers Energy
4230	November 30, 2011	Renu M. Chakrabarty West Virginia Dept. of Environmental Protection Division of Air Quality

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**EPA-HQ-OAR-2010-0505**

<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation</i>
4231	November 29, 2011	Kathleen M. Sgamma Western Energy Alliance Montana Petroleum Association (MPA) North Dakota Petroleum Council (NDPC)
4233	November 30, 2011	Joe Leonard Devon Corporation
4234	November 30, 2011	Pamela A. Lacey American Gas Association (AGA)
4235	November 30, 2011	Stan Dempsey, Jr. Colorado Petroleum Association (CPA)
4236	November 30, 2011	Charlie Burd Independent Oil and Gas Association of West Virginia (IOGAWV)
4237	November 30, 2011	Theodore Robinson Citizen Power
4238	November 30, 2011	Cathy S. Woollums MidAmerican Energy Holdings Company
4239	November 30, 2011	Daniel S. Sullivan State of Alaska Dept. of Natural Resources Dept. of Environmental Conservation
4240	November 30, 2011	Craig Holt Segall Sierra Club et al.
4241	November 30, 2011	Amy Farrell and Bruce Thompson America's Natural Gas Alliance (ANGA) American Exploration and Petroleum Council (AXPC)
4242	November 30, 2011	Sparsh Khandeshi Environmental Integrity Project (EIP)
4243	November 30, 2011	Katten Muchin Rosenman LLP Air Permitting Forum
4244	December 1, 2011	Michael Pontiff Newfield Exploration Company
4245	November 30, 2011	Jimmy D. Carlile

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**EPA-HQ-OAR-2010-0505**

<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation</i>
		Permian Basin Petroleum Association
4246	November 30, 2011	Carolann Montoya Marcellus Shale Coalition (MSC)
4247	November 30, 2011	Kate Williams Alaska Oil and Gas Association (AOGA)
4248	November 30, 2011	Laura A. Brust American Chemistry Council (ACC)
4249	November 30, 2011	Gregory L. Ryan DTE Energy
4250	November 30, 2011	Joe Osborne Group Against Smog and Pollution (GASP)
4251	November 30, 2011	Gretchen C. Kern Pioneer Natural Resources USA, Inc.
4252	November 30, 2011	Bill Grygar Anadarko Petroleum Corporation
4253	November 30, 2011	Janice E. Nolen American Lung Association et al.
4254	November 30, 2011	Stuart M. Kowalski Slawson Exploration Company, Inc.
4255	November 30, 2011	Anthony J. Giuliani Ohio Oil and Gas Association
4256	November 30, 2011	David A. Galt Montana Petroleum Association
4257	November 30, 2011	Elizabeth deLone Paranhos EDF and Wyoming Outdoor Council
4258	November 30, 2011	Steve P. Henke New Mexico Oil & Gas Association (NMOGA)
4259	November 30, 2011	Christi Zeller La Plata County Energy Council
4260	November 30, 2011	Ritu Talwar Spectra Energy Corp

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***EPA-HQ-OAR-2010-0505***

<b><i>Document ID</i></b>	<b><i>Date Submitted</i></b>	<b><i>Name and Affiliation</i></b>
4261	November 30, 2011	Bryan D. Johnston Louisiana Dept. of Environmental Quality
4262	November 30, 2011	John C. Bosch J. Bosch Ltd.
4263	November 30, 2011	Kenneth A. Malmquist AECOM
4264	November 30, 2011	Clay Freeberg Chevron Corporation
4265	November 30, 2011	Gregory L. Ryan DTE Energy
4266	November 30, 2011	Matthew Todd American Petroleum Institute (API)
4267	November 30, 2011	Dan Girand Mack Energy Corp.
4268	November 30, 2011	John Dutton Gas Compressor Association (GCA)
4269	November 30, 2011	Tommy Taylor Texas Alliance of Energy Producers
4270	November 30, 2011	George Williams Sempra Energy
4273	November 30, 2011	Shannon S. Broome, et al. Air Permitting Forum
4274	November 29, 2011	Emily Krafjack Wyoming County, Pennsylvania
4275	November 30, 2011	Bruce Baizel Earthworks' Oil & Gas Accountability Project (OGAP)
4276	November 30, 2011	Elizabeth deLone Paranhos Argyle-Bartonville Community Alliance, et al.
4281	November 30, 2011	R. Douglas Rogers Marathon Oil Company
4282	November 30, 2011	Scott Crump Quantum Resources Management, LLC

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***EPA-HQ-OAR-2010-0505***

<b><i>Document ID</i></b>	<b><i>Date Submitted</i></b>	<b><i>Name and Affiliation</i></b>
4296	November 30, 2011	Ralph Kisberg, et al. Responsible Drilling Alliance
4316	November 30, 2011	Charles A. Whitehead Linear Motion Technologies LP
4317	December 1, 2011	Carla L. Suszkowski Range Resources-Appalachia, LLC
4320	November 30, 2011	Todd L. Normane Talisman Energy USA, Inc.
4354	November 30, 2011	Matthew Todd The Residual Risk Coalition (R2C)
4355	November 5, 2011	Nancy Wiggins Yellowstone Valley Audubon Society
4356	November 30, 2011	Tangela Niemann Texas Commission on Environmental Quality (TCEQ)
4357	November 30, 2011	John Bosch Picarro
4358	December 5, 2011	Catherine H. Reheis-Boyd Western States Petroleum Association
4375	November 30, 2011	David Presley Clean Air Council (CAC)
4425	December 12, 2011	Katten Muchin Rosenman LLP Air Permitting Forum
4456	December 13, 2011	Lisa Willis Pennsylvania Independent Oil and Gas Association (PIOGA)
4457	November 30, 2011	Devorah Ancel Sierra Club et al.
4458	November 30, 2011	Devorah Ancel Sierra Club et al.
4459	November 30, 2011	Devorah Ancel Sierra Club et al.

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*EPA-HQ-OAR-2010-0505*

<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation</i>
4460	November 30, 2011	Devorah Ancel Sierra Club et al.
4461	November 30, 2011	Devorah Ancel Sierra Club et al.
4462	November 30, 2011	Devorah Ancel Sierra Club et al.
4463	November 30, 2011	Devorah Ancel Sierra Club et al.
4472	October 25, 2011	Elizabeth Ames Jones Railroad Commission of Texas

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**Appendix B. Complete List of Commenters that Submitted Comments to EPA Air and Radiation Docket  
Number EPA-HQ-OAR-2010-0505 Regarding the Oil and Natural Gas NSPS and NESHAP Reviews  
Proposed August 23, 2011**

<i>EPA-HQ-OAR-2010-0505</i>		
<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
0082	August 3, 2011	Mass Comment Campaign sponsoring organization unknown (12)
0083	August 8, 2011	League of Conservation Voters mass comment campaign (1,000)
0087	July 29, 2011	G. P. Sharpe Private Citizen
0089	August 1, 2011	M. J. Kramer, Jr. Private Citizen
0090	July 29, 2011	J. Lobdill Private Citizen
0091	August 12, 2011	L. Theophilus Private Citizen
0092	August 14, 2011	M. Chupa Private Citizen
0093	August 14, 2011	J. Carter Private Citizen
0094	August 15, 2011	J. Petrulionis Private Citizen
0095	August 15, 2011	L. Goodwin Private Citizen
0096	August 15, 2011	I. Putzer Private Citizen
0097	August 16, 2011	J. Sergovic Private Citizen
0098	August 4, 2011	T. Badal Private Citizen
0099	August 9, 2011	R. Desy Private Citizen
0100	August 9, 2011	D. Karney Private Citizen
0101	August 9, 2011	H. Pedersen Private Citizen
0102	August 9, 2011	M. Ward Private Citizen
0103	August 9, 2011	S. Babuka Private Citizen
0104	August 9, 2011	L. Smith Private Citizen
0105	August 9, 2011	C. Whiting Private Citizen
0106	August 10, 2011	T. Supowitz Private Citizen



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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0107	August 10, 2011	C. Lee Private Citizen
0108	August 10, 2011	J. Higbie Private Citizen
0109	August 10, 2011	G. & J. Preston Private Citizens
0110	August 10, 2011	Brian CH Private Citizen
0111	August 10, 2011	P. Groff Private Citizen
0112	August 9, 2011	J. C. Djelal Private Citizen
0113	August 9, 2011	C. Cicale Private Citizen
0114	August 9, 2011	J. Wozniak Private Citizen
0115	August 9, 2011	P. Hinline Private Citizen
0116	August 9, 2011	T. Lamborn Private Citizen
0117	August 9, 2011	M. Tommelleo Private Citizen
0118	August 9, 2011	B. Paci Private Citizen
0119	August 9, 2011	S. Duskin Private Citizen
0120	August 9, 2011	K. Moore Private Citizen
0121	August 9, 2011	T. Ronan Private Citizen
0122	August 9, 2011	L. Pavlo Private Citizen
0123	August 9, 2011	M. Carrella Private Citizen
0124	August 9, 2011	A. Young Private Citizen
0125	August 9, 2011	D. and S. Katz Private Citizens
0126	August 9, 2011	L. Birch Private Citizen
0127	August 9, 2011	F. Pierce Private Citizen
0128	August 9, 2011	J. Marshall Private Citizen
0129	August 9, 2011	M. Marchetti Private Citizen

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*EPA-HQ-OAR-2010-0505*

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<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
0130	August 9, 2011	B. Silverstein Private Citizen
0131	August 9, 2011	L. Gross Private Citizen
0132	August 9, 2011	R. Rupert Private Citizen
0133	August 9, 2011	T. Mannello Private Citizen
0134	August 9, 2011	R. Edwards Private Citizen
0135	August 9, 2011	A. Conklin-Wood Private Citizen
0136	August 9, 2011	B. and D. Klaptut Private Citizens
0137	August 9, 2011	T. Reiff Private Citizen
0138	August 9, 2011	M. Leitch Private Citizen
0139	August 9, 2011	K. Swam Private Citizen
0140	August 9, 2011	S. Heisey Private Citizen
0141	August 9, 2011	C. Steinberg Private Citizen
0142	August 9, 2011	T. Knapp Private Citizen
0143	August 9, 2011	J. Brown Private Citizen
0144	August 9, 2011	S. Seese Private Citizen
0145	August 9, 2011	J. Branigan Private Citizen
0146	August 9, 2011	J. and B. Freund Private Citizens
0147	August 9, 2011	G. Palmer Private Citizen
0149	August 25, 2011	J. Wenderoth Private Citizen
0150	August 25, 2011	L. Fleisher Private Citizen
0151	August 28, 2011	K. Petronko Private Citizen
0152	August 30, 2011	J. Bennett Private Citizen
0153	September 1, 2011	B. Brister Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0154	September 1, 2011	D. Fuentes Private Citizen
0155	September 1, 2011	M. Wood Private Citizen
0156	September 1, 2011	F. Groot Private Citizen
0157	September 1, 2011	P. Landua Private Citizen
0158	September 1, 2011	G. Crouse Private Citizen
0159	September 1, 2011	K. Berglund Private Citizen
0160	September 2, 2011	S. Schmidt Private Citizen
0161	September 2, 2011	S. Parker Private Citizen
0162	September 2, 2011	B. Flowers Private Citizen
0163	September 3, 2011	W. Sharfman Private Citizen
0164	September 3, 2011	R. Sdano Private Citizen
0165	September 4, 2011	V. Burris Private Citizen
0166	August 31, 2011	WildEarth Guardians mass comment campaign (1,667)
0167	September 7, 2011	W. Arons Private Citizen
0168	September 7, 2011	A. Leonard Private Citizen
0169	September 7, 2011	M. Leitch Private Citizen
0170	September 7, 2011	J. Waldron Private Citizen
0171	September 7, 2011	D. M. Kelley Private Citizen
0172	September 7, 2011	M. DeStefano Private Citizen
0173	September 7, 2011	Dr. P. Mathieson Private Citizen
0174	September 7, 2011	D. Shapiro Private Citizen
0175	September 7, 2011	A. Eynon Private Citizen
0176	September 7, 2011	H. Kropf Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0177	September 7, 2011	S. Kirby Private Citizen
0178	September 7, 2011	T. Stevens Private Citizen
0179	September 7, 2011	J. Bruce Private Citizen
0180	September 7, 2011	B. Mathers Private Citizen
0181	September 6, 2011	S. Squier Private Citizen
0182	September 6, 2011	R. Sauder Private Citizen
0183	September 6, 2011	S. Finman Private Citizen
0184	September 6, 2011	D. Lavender Private Citizen
0185	September 6, 2011	V. Yasek Private Citizen
0186	September 7, 2011	L. Davis Private Citizen
0187	September 7, 2011	G. Price Private Citizen
0188	September 7, 2011	L. Desimone Private Citizen
0189	September 7, 2011	J. C. Djelal Private Citizen
0190	September 7, 2011	B. Koenig Private Citizen
0191	September 7, 2011	J. Frederick Private Citizen
0192	September 7, 2011	S. Hammerman Private Citizen
0193	September 7, 2011	B. Brigham Private Citizen
0194	September 7, 2011	Dr. L. Burky Private Citizen
0195	September 7, 2011	D. Craig Private Citizen
0196	September 7, 2011	S. Corson-Finnerty Private Citizen
0197	September 7, 2011	J. Forsberg Private Citizen
0198	September 7, 2011	M. Garvin Private Citizen
0199	August 23, 2011	League of Conservation Voters mass comment campaign (27)

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0200	August 30, 2011	Penn Environment mass comment campaign (1,763)
0201	September 6, 2011	M. Oviedo Private Citizen
0202	September 6, 2011	K. and L. Smith Private Citizens
0203	September 6, 2011	L. Hollister Private Citizen
0204	September 6, 2011	C. Hollister Private Citizen
0205	September 6, 2011	N. Liebert Private Citizen
0206	September 7, 2011	K. Davidson Private Citizen
0207	September 7, 2011	S. Foehl Private Citizen
0208	September 7, 2011	K. Dabney Private Citizen
0209	September 7, 2011	J. Dayl Private Citizen
0210	September 7, 2011	T. Flynn III Private Citizen
0211	September 7, 2011	J. Meade Private Citizen
0212	September 7, 2011	J. Allison Private Citizen
0213	September 7, 2011	E. Bell Private Citizen
0214	September 7, 2011	Dr. A. Shah-Yukich Private Citizen
0215	September 7, 2011	M. Kirby Private Citizen
0216	September 7, 2011	C. Kishinchaand Private Citizen
0217	September 7, 2011	C. Morrow Private Citizen
0218	September 7, 2011	A. Tolins Private Citizen
0219	September 7, 2011	M. S. Haines Private Citizen
0220	September 7, 2011	S. Kolbowski Private Citizen
0221	September 7, 2011	J. Nelson Private Citizen
0222	September 6, 2011	M. Stanton Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0223	September 6, 2011	J. and N. Payne Private Citizen
0224	September 6, 2011	R. and E. Garrison Private Citizens
0225	September 6, 2011	L. Garfinkel Private Citizen
0226	September 6, 2011	T. Jiunta Private Citizen
0227	September 6, 2011	K. Gosliner Private Citizen
0228	September 6, 2011	A. Bevan Private Citizen
0229	September 6, 2011	M. Hunt Private Citizen
0230	September 6, 2011	E. Smyser Private Citizen
0231	September 6, 2011	M. Escobar Private Citizen
0232	September 7, 2011	N. Corcoran Private Citizen
0233	September 6, 2011	E. Falconi Private Citizen
0234	September 6, 2011	L. Wenneker Private Citizen
0235	September 6, 2011	C. Matthews Private Citizen
0236	September 6, 2011	L. Davidson Private Citizen
0237	September 6, 2011	M. Fallon Private Citizen
0238	September 6, 2011	Anonymous public comment
0239	September 6, 2011	K. Gering Private Citizen
0240	September 6, 2011	M. Bertini Private Citizen
0241	September 7, 2011	R. DuPlessis Private Citizen
0242	September 7, 2011	R. Liebert Private Citizen
0243	September 7, 2011	P. Coleman Private Citizen
0244	September 7, 2011	S. Petrie Private Citizen
0245	September 7, 2011	J. Walsh Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0246	September 7, 2011	E. Perchonock Private Citizen
0247	September 7, 2011	V. Ross Private Citizen
0248	September 7, 2011	L. Torrieri Private Citizen
0249	September 7, 2011	A. Tryba Private Citizen
0250	September 7, 2011	S. Kunz Private Citizen
0251	September 7, 2011	A. McFadden Private Citizen
0252	September 7, 2011	D. Hartz Private Citizen
0253	September 7, 2011	M. Miller Private Citizen
0254	September 7, 2011	M. Stewart Private Citizen
0255	September 7, 2011	Dr. M. M. Kyde Private Citizen
0256	September 8, 2011	D. Robinson Private Citizen
0257	September 8, 2011	M. Polansky Private Citizen
0258	September 8, 2011	J. Edgar Private Citizen
0259	September 8, 2011	E. Hart Private Citizen
0260	September 8, 2011	J. Wiener Private Citizen
0261	September 8, 2011	R. Doyle Private Citizen
0262	September 8, 2011	K. White Private Citizen
0263	September 8, 2011	M. Potts Private Citizen
0264	September 7, 2011	J. McCartney Private Citizen
0265	September 7, 2011	J. Bogle Private Citizen
0266	September 7, 2011	A. Rice Private Citizen
0267	September 7, 2011	R. Bruenn Private Citizen
0268	September 7, 2011	L. Roese Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0269	September 7, 2011	R. and C. Magarigal Private Citizen
0270	September 7, 2011	B. Raley Private Citizen
0271	September 8, 2011	A. Brennan Private Citizen
0272	September 8, 2011	D. Martinez Private Citizen
0273	September 8, 2011	Dr. S. Lochner Private Citizen
0274	September 7, 2011	F. Powell Private Citizen
0275	September 7, 2011	J. Elliott Private Citizen
0276	September 7, 2011	R. Cava Private Citizen
0277	September 7, 2011	R. Davey Private Citizen
0278	September 7, 2011	J. Kunzelman Private Citizen
0279	September 7, 2011	J. Sadicario Private Citizen
0280	September 7, 2011	J. Barker Private Citizen
0281	September 7, 2011	C. Kell Private Citizen
0282	September 7, 2011	J. Polak Private Citizen
0283	September 7, 2011	V. Brown Private Citizen
0284	September 7, 2011	R. Cope Private Citizen
0285	September 7, 2011	A. Suhrie Private Citizen
0286	September 7, 2011	J. Davidson Private Citizen
0287	September 7, 2011	K. Armbruster Private Citizen
0288	September 7, 2011	B. O'Connor Private Citizen
0289	September 7, 2011	K. Eldridge Private Citizen
0290	September 7, 2011	J. Walter Private Citizen
0291	September 7, 2011	Dr. V. Nachmias Private Citizen



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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0292	September 7, 2011	A. Ciampa Private Citizen
0293	September 7, 2011	Dr. G. Hackenberg Private Citizen
0294	September 7, 2011	C. Hunt Private Citizen
0295	September 7, 2011	Dr. S. Adelman Private Citizen
0296	September 7, 2011	R. Obeski Private Citizen
0297	September 7, 2011	R. Buchanan Private Citizen
0298	September 7, 2011	J. Lenke Private Citizen
0299	September 7, 2011	N. West Private Citizen
0300	September 7, 2011	R. Schmetzer Private Citizen
0301	September 7, 2011	M. Williams Private Citizen
0302	September 7, 2011	P. Reutemann Private Citizen
0303	September 7, 2011	Dr. P. Eaken Private Citizen
0304	September 7, 2011	W. MacLuckie Private Citizen
0305	September 7, 2011	P. Turk Private Citizen
0306	September 7, 2011	D. Urban Private Citizen
0307	September 7, 2011	S. Nicklin Private Citizen
0308	September 7, 2011	R. Brunner Private Citizen
0309	September 7, 2011	R. Slabe Private Citizen
0310	September 7, 2011	E. Friel Private Citizen
0311	September 7, 2011	B. Nye Private Citizen
0312	September 7, 2011	J. Mayher Private Citizen
0313	September 7, 2011	S. Bumbaugh Private Citizen
0314	September 7, 2011	H. M. Bracken Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0315	September 7, 2011	L. Babbey Private Citizen
0316	September 7, 2011	D. Heagy Private Citizen
0317	September 7, 2011	L. Jeub Private Citizen
0318	September 7, 2011	J. Inskeep Private Citizen
0319	September 7, 2011	R. Harper Private Citizen
0320	September 7, 2011	Dr. L. Sell Private Citizen
0321	September 7, 2011	R. Abrams Private Citizen
0322	September 8, 2011	C. Alberici Private Citizen
0323	September 7, 2011	S. Newbury Private Citizen
0324	September 8, 2011	P. Donohue Private Citizen
0325	September 8, 2011	B. Riggs Private Citizen
0326	September 8, 2011	B. Schmitt Private Citizen
0327	September 8, 2011	K. Good Private Citizen
0328	September 7, 2011	S. Burg Private Citizen
0329	September 7, 2011	K. James Private Citizen
0330	September 7, 2011	A. Difiore Private Citizen
0331	September 7, 2011	D. Simons Private Citizen
0332	September 7, 2011	T. Lee Private Citizen
0333	September 7, 2011	T. Lucas Private Citizen
0334	September 8, 2011	B. Campbell Private Citizen
0335	September 7, 2011	W. Hollenbach Private Citizen
0336	September 7, 2011	Dr. H. Bitaxis Private Citizen
0337	September 7, 2011	V. Woolridge Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0338	September 7, 2011	L. Daly Private Citizen
0339	September 7, 2011	T. Dignazio Private Citizen
0340	September 7, 2011	M. Dawley Private Citizen
0341	September 7, 2011	A. Kurpaska Private Citizen
0342	September 7, 2011	R. Loverdi Private Citizen
0343	September 7, 2011	Dr. J. Confer Private Citizen
0344	September 7, 2011	A. McGee Private Citizen
0345	September 7, 2011	D. Fellenberg Private Citizen
0346	September 7, 2011	L. Michaels Private Citizen
0347	September 7, 2011	S. Sanders Private Citizen
0348	September 7, 2011	Dr. S. Kirk Private Citizen
0349	September 7, 2011	B. Handler Private Citizen
0350	September 7, 2011	D. MacInnes Private Citizen
0351	September 7, 2011	M. Leitch Private Citizen
0352	September 7, 2011	W. Witzak Private Citizen
0353	September 7, 2011	M. Keegan Private Citizen
0354	September 8, 2011	J. Pennington Private Citizen
0355	September 8, 2011	L. Theophanis Private Citizen
0356	September 8, 2011	Dr. J. V. Murphy Private Citizen
0357	September 7, 2011	A. Young Private Citizen
0358	September 7, 2011	K. Black Private Citizen
0359	September 7, 2011	M. Van Kirk Private Citizen
0360	September 7, 2011	S. Comfort Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0361	September 7, 2011	T. Walker Private Citizen
0362	September 7, 2011	M. Hufford Private Citizen
0363	September 7, 2011	O. Brubaker Private Citizen
0364	September 8, 2011	K. Bates Private Citizen
0365	September 8, 2011	A. Arendas Private Citizen
0366	September 7, 2011	D. Plank Private Citizen
0367	September 7, 2011	T. Kerr Private Citizen
0368	September 7, 2011	A. Will Private Citizen
0369	September 7, 2011	M. Clark Private Citizen
0370	September 7, 2011	M. Hamilton Private Citizen
0371	September 7, 2011	J. Tjiattas Private Citizen
0372	September 7, 2011	M. Schueltz Private Citizen
0373	September 7, 2011	C. Root Private Citizen
0374	September 7, 2011	S. Cundiff Private Citizen
0375	September 7, 2011	J. Gaadt Private Citizen
0376	September 7, 2011	G. Strandlien Private Citizen
0377	September 7, 2011	C. Crocker Private Citizen
0378	September 7, 2011	E. Rattan Private Citizen
0379	September 7, 2011	B. Drummey Private Citizen
0380	September 7, 2011	L. Bean Private Citizen
0381	September 7, 2011	K. Maloney Private Citizen
0382	September 7, 2011	D. Kobus Private Citizen
0383	September 7, 2011	D. Coyle Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0384	September 7, 2011	G. Thomson Private Citizen
0385	September 7, 2011	F. Gilmore Private Citizen
0386	September 7, 2011	M. C. Knobil Private Citizen
0387	September 7, 2011	B. Hammarstrom Private Citizen
0388	September 7, 2011	F. Harkings Private Citizen
0389	September 7, 2011	E. Barnes Private Citizen
0390	September 7, 2011	L. Lalena Private Citizen
0391	September 8, 2011	S. Bender Private Citizen
0392	September 8, 2011	Dr. M. Sarfaty Private Citizen
0393	September 8, 2011	R. Dumm Private Citizen
0394	September 8, 2011	K. Hrabovsky Private Citizen
0395	September 8, 2011	N. Bella Private Citizen
0396	September 8, 2011	M. Huegel Private Citizen
0397	September 8, 2011	T. Kearney Private Citizen
0398	September 8, 2011	B. Rooney Private Citizen
0399	September 8, 2011	T. Bissinger Private Citizen
0400	September 9, 2011	Jeff Applekamp Gas Processors Association
0401	September 8, 2011	Dr. M. Donlin Private Citizen
0402	September 7, 2011	K. Fidorra Private Citizen
0403	September 7, 2011	D. Dixon Private Citizen
0404	September 7, 2011	Y. Schwartz Private Citizen
0405	September 7, 2011	M. Bowser Private Citizen
0406	September 7, 2011	S. Landenwitsch Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0407	September 7, 2011	D. Becker Private Citizen
0408	September 7, 2011	S. Robinson Private Citizen
0409	September 7, 2011	H. Turner Private Citizen
0410	September 7, 2011	D. Rollfinke Private Citizen
0411	September 7, 2011	P. Greene Private Citizen
0412	September 9, 2011	Deb Hastings Texas Oil and Gas Association
0413	September 8, 2011	M. Mostello Private Citizen
0414	September 8, 2011	P. Paulsen Private Citizen
0415	September 8, 2011	J. Stomato Private Citizen
0416	September 8, 2011	D. Dudrick Private Citizen
0417	September 8, 2011	J. Zeserson Private Citizen
0418	September 8, 2011	M. Bertonaschi Private Citizen
0419	September 9, 2011	A. Walker Private Citizen
0420	September 9, 2011	M. Castillo Private Citizen
0421	September 9, 2011	S. Breitenbeck Private Citizen
0422	September 8, 2011	Ken Zeserson Planning Board Town of Ulysses, Tompkins County, NY
0423	September 9, 2011	A. Bevan Private Citizen
0424	September 9, 2011	J. Feldman Private Citizen
0425	September 9, 2011	A. Mento Private Citizen
0426	September 9, 2011	C. Mathews Private Citizen
0427	September 9, 2011	M. Beuth Private Citizen
0428	September 9, 2011	R. Schaeff Private Citizen

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*EPA-HQ-OAR-2010-0505*

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<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
0429	September 9, 2011	G. Henze Private Citizen
0430	September 9, 2011	M. McMackin Private Citizen
0431	September 9, 2011	D. Maurer Private Citizen
0432	September 9, 2011	E. McDade Private Citizen
0433	September 9, 2011	D. McManus Private Citizen
0434	September 9, 2011	J. Kesich Private Citizen
0435	September 19, 2011	S. Wojnaroski Private Citizen
0436	September 10, 2011	B. Brendel Private Citizen
0437	September 12, 2011	J. Carricato Private Citizen
0438	September 10, 2011	L. Altfest Private Citizen
0439	September 10, 2011	R. Robitaille Private Citizen
0440	September 10, 2011	H. Klussman Private Citizen
0441	September 10, 2011	T. Mac Krell Private Citizen
0442	September 10, 2011	J. Mitchell Private Citizen
0443	September 10, 2011	C. Spina Private Citizen
0444	September 10, 2011	M. Miller Private Citizen
0445	September 10, 2011	T. Verts Private Citizen
0446	September 10, 2011	K. Van Dame Private Citizen
0447	September 10, 2011	I. Miller Private Citizen
0448	September 10, 2011	K. Krimmel Private Citizen
0449	September 11, 2011	R. Hynosky Private Citizen
0450	September 11, 2011	J. Gratz Private Citizen
0451	September 11, 2011	C. Swan Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0452	September 11, 2011	C. Moses Private Citizen
0453	September 11, 2011	T. Sefcik Private Citizen
0454	September 11, 2011	J. Mason Private Citizen
0455	September 11, 2011	D. Wright Private Citizen
0456	September 11, 2011	T. Curran Private Citizen
0457	September 12, 2011	K. Kirlew Private Citizen
0458	September 12, 2011	K. McDonough Private Citizen
0459	September 14, 2011	Dr. D. Bassett Private Citizen
0460	September 14, 2011	J. Waldron Private Citizen
0461	September 14, 2011	E. Christy Private Citizen
0462	September 14, 2011	J. Marsh Private Citizen
0463	September 14, 2011	U. Reed Private Citizen
0464	September 14, 2011	P. McGrath Private Citizen
0465	September 14, 2011	M. Leitch Private Citizen
0466	September 14, 2011	P. Greene Private Citizen
0467	September 14, 2011	K. Jansa Private Citizen
0468	September 14, 2011	H. Kropf Private Citizen
0469	September 14, 2011	D. Kelly Private Citizen
0470	September 14, 2011	C. A. Parowski Private Citizen
0471	September 14, 2011	F. Trimarchi Private Citizen
0472	September 14, 2011	E. Deluca Private Citizen
0473	September 14, 2011	R. Ludlow Private Citizen
0474	September 14, 2011	M. Hennemann Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0475	September 14, 2011	V. Prince Private Citizen
0476	September 14, 2011	J. Roden Private Citizen
0477	September 14, 2011	J. Kurilla Private Citizen
0478	September 14, 2011	C. Corbelli Private Citizen
0479	September 14, 2011	C. OLick Private Citizen
0480	September 14, 2011	A. Zangrilli Private Citizen
0481	September 14, 2011	K. Slagle Private Citizen
0482	September 14, 2011	K. W. Reed Private Citizen
0483	September 14, 2011	Heather Stewart Private Citizen
0484	September 14, 2011	C. and R. Donahey Private Citizens
0485	September 14, 2011	Dr. A. Dahm Private Citizen
0486	September 14, 2011	D. Lavender Private Citizen
0487	September 14, 2011	J. Walter Private Citizen
0488	September 14, 2011	J. Bogle Private Citizen
0489	September 13, 2011	C. Snyder Private Citizen
0490	September 15, 2011	Anonymous public comment
0491	September 15, 2011	J. Rego Private Citizen
0492	September 15, 2011	Anonymous public comment
0493	September 14, 2011	C. A. Kell Private Citizen
0494	September 14, 2011	Dr. K. Smith Private Citizen
0495	September 14, 2011	K. Keefe Private Citizen
0496	September 14, 2011	Dr. B. Monahan Private Citizen
0497	September 14, 2011	J. Bradley Private Citizen
0498	September 14, 2011	B. Campbell Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0499	September 14, 2011	M. Skinner Private Citizen
0500	September 14, 2011	P. di Francesco Private Citizen
0501	September 14, 2011	N. Monroe Private Citizen
0502	September 14, 2011	R. Williams Private Citizen
0503	September 14, 2011	J. Barker Private Citizen
0504	September 14, 2011	B. Bernhardt Private Citizen
0505	September 14, 2011	T. Gordon Private Citizen
0506	September 12, 2011	M. A. Bentz Private Citizen
0507	September 14, 2011	B. Abraham Private Citizen
0508	September 14, 2011	N. Bella Private Citizen
0509	September 14, 2011	T. Hallidy Private Citizen
0510	September 14, 2011	K. Ellis Private Citizen
0511	September 14, 2011	M. L. Myers Private Citizen
0512	September 14, 2011	R. Schmetzer Private Citizen
0513	September 14, 2011	J. Levins-Rivera Private Citizen
0514	September 14, 2011	Dr. J. Dinger Private Citizen
0515	September 14, 2011	L. Gustafson Private Citizen
0516	September 14, 2011	D. Greenspan Private Citizen
0517	September 14, 2011	J. and N. Lutz Private Citizens
0518	September 14, 2011	L. Whelden Private Citizen
0519	September 14, 2011	D. Fazio Private Citizen
0520	September 12, 2011	H. Elkins Private Citizen
0521	September 14, 2011	V. Watson Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0522	September 14, 2011	S. V. Wert Private Citizen
0523	September 14, 2011	R. Robinson Private Citizen
0524	September 14, 2011	M. Collins Private Citizen
0525	September 14, 2011	J. Pawlak Private Citizen
0526	September 14, 2011	L. Griffin Private Citizen
0527	September 14, 2011	C. Getty Private Citizen
0528	September 14, 2011	L. Lane Private Citizen
0529	September 14, 2011	E. Krawiec Private Citizen
0530	September 14, 2011	J. Schnakenberg Private Citizen
0531	September 14, 2011	Dr. T. Apple Private Citizen
0532	September 14, 2011	T. Brink Private Citizen
0533	September 14, 2011	Grace A. Private Citizen
0534	September 14, 2011	S. Goldsmith Private Citizen
0535	September 14, 2011	P. Crownfield Private Citizen
0536	September 14, 2011	M. Duda Private Citizen
0537	September 14, 2011	G. Trudeau Private Citizen
0538	September 14, 2011	Dr. J. Anderson Private Citizen
0539	September 14, 2011	J. Gantz Private Citizen
0540	September 14, 2011	Dr. A. Klinger Private Citizen
0541	September 12, 2011	N. McDonald Private Citizen
0542	September 14, 2011	S. Foehl Private Citizen
0543	September 14, 2011	Dr. A. Ranere Private Citizen
0544	September 12, 2011	Dr. G. Gallo Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0545	September 14, 2011	E. Spiegel Private Citizen
0546	September 14, 2011	N. Bickham Private Citizen
0547	September 14, 2011	G. B. Uhler Private Citizen
0548	September 14, 2011	T. and A. McLaughlin Private Citizens
0549	September 14, 2011	J. and C. Harter Private Citizen
0550	September 14, 2011	J. Fava Private Citizen
0551	September 14, 2011	J. Miller Private Citizen
0552	September 15, 2011	C. Kishinchand Private Citizen
0553	September 15, 2011	Dr. D. Hamilton Private Citizen
0554	September 14, 2011	D. Read Private Citizen
0555	September 14, 2011	J. Wuenschel Private Citizen
0556	September 14, 2011	M. Filoromo Private Citizen
0557	September 14, 2011	S. Novick Private Citizen
0558	September 14, 2011	D. Weinkauf Private Citizen
0559	September 14, 2011	N. Dupree Private Citizen
0560	September 14, 2011	T. Armstrong Private Citizen
0561	September 15, 2011	M. Daniels Private Citizen
0562	September 15, 2011	M. Wessant Private Citizen
0563	September 14, 2011	D. Morse Private Citizen
0564	September 14, 2011	Dr. J. Dresser Private Citizen
0565	September 14, 2011	J. Ammon Private Citizen
0566	September 14, 2011	S. Dahne Private Citizen
0567	September 14, 2011	D. Hartz Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0568	September 14, 2011	Dr. D. Ahl Private Citizen
0569	September 14, 2011	B. Doxtater Private Citizen
0570	September 12, 2011	M. Waltman Private Citizen
0571	September 14, 2011	J. Greenwald Private Citizen
0572	September 15, 2011	J. Hoover Private Citizen
0573	September 15, 2011	B. Birchard Private Citizen
0574	September 15, 2011	T. Seay Private Citizen
0575	September 14, 2011	S. Lach Private Citizen
0576	September 14, 2011	H. Gogins Private Citizen
0577	September 15, 2011	M. Sokol Private Citizen
0578	September 14, 2011	J. Fishman Private Citizen
0579	September 14, 2011	L. Simmons Private Citizen
0580	September 14, 2011	J. McMullen Private Citizen
0581	September 14, 2011	Dr. A. Norman Private Citizen
0582	September 14, 2011	J. Petrisek Private Citizen
0583	September 14, 2011	V. Hays Private Citizen
0584	September 14, 2011	C. Boyle Private Citizen
0585	September 14, 2011	J. Martini Private Citizen
0586	September 15, 2011	Dr. W. Davis Private Citizen
0587	September 15, 2011	W. Montgomery Private Citizen
0588	September 15, 2011	M. Warren Private Citizen
0589	September 15, 2011	E. Vaughn Private Citizen
0590	September 15, 2011	C. Schmalz Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0591	September 14, 2011	V. Woorlidge Private Citizen Private Citizen
0592	September 14, 2011	P. Herlong Private Citizen
0593	September 13, 2011	D. Rosenberger Private Citizen
0594	September 14, 2011	Dr. S. Loughlin Private Citizen
0595	September 14, 2011	A. Marx Private Citizen
0596	September 14, 2011	T. Dignazio Private Citizen
0597	September 14, 2011	A. Hernandez Private Citizen
0598	September 14, 2011	M. Pavlovich Private Citizen
0599	September 14, 2011	A. Hernandez Private Citizen
0600	September 14, 2011	Dr. E. Hulsey Private Citizen
0601	September 14, 2011	C. Wolfe Private Citizen
0602	September 14, 2011	A. Kurland Private Citizen
0603	September 14, 2011	S. Weikart Private Citizen
0604	September 14, 2011	J. Minor Private Citizen
0605	September 14, 2011	Dr. M. Cole Private Citizen
0606	September 14, 2011	P. Scheirer Private Citizen
0607	September 14, 2011	E. Racoosin Private Citizen
0608	September 14, 2011	M. Genin Private Citizen
0609	September 14, 2011	T. Crawford Private Citizen
0610	September 14, 2011	M. Hadcock Private Citizen
0611	September 14, 2011	D. A. Pedtke, Sr. Private Citizen
0612	September 14, 2011	M. A. Lajoie-Sandroff Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0613	September 15, 2011	P. Dritt Private Citizen
0614	September 15, 2011	C. Bechtle Private Citizen
0615	September 15, 2011	S. Blair Private Citizen
0616	September 15, 2011	S. Babbitt Private Citizen
0617	September 15, 2011	P. Cohen
0618	September 14, 2011	Earthjustice mass comment campaign (58,723)
0619	September 13, 2011	M. O. Moyer Private Citizen
0620	September 14, 2011	S. Finman Private Citizen
0621	September 14, 2011	R. Klaput Private Citizen
0622	September 14, 2011	M. Heilman Private Citizen
0623	September 14, 2011	W. Hardenberg Private Citizen
0624	September 14, 2011	E. Binder Private Citizen
0625	September 14, 2011	R. Lernberg Private Citizen
0626	September 14, 2011	M. Welke Private Citizen
0627	September 14, 2011	P. and P. French Private Citizen
0628	September 14, 2011	K. Wicce Private Citizen
0629	September 14, 2011	S. Barbier Private Citizen
0630	September 14, 2011	S. Robeson Private Citizen
0631	September 14, 2011	J. Cunningham Private Citizen
0632	September 14, 2011	J. Conrardy Private Citizen
0633	September 14, 2011	S. Tomkiel Private Citizen
0634	September 14, 2011	Dr. T. Kauffman Private Citizen
0635	September 14, 2011	M. Cleaves Private Citizen
0636	September 14, 2011	R. E. Carlson Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0637	September 14, 2011	J. A. Mungai Private Citizen
0638	September 14, 2011	L. Abbe Private Citizen
0639	September 14, 2011	R. Grimm Private Citizen
0640	September 14, 2011	Dr. D. Harrison Private Citizen
0641	September 15, 2011	P. Hanson Private Citizen
0642	September 15, 2011	D. Selvaggio Private Citizen
0643	September 15, 2011	K. Jones Private Citizen
0644	September 15, 2011	B. M. Bean Private Citizen
0645	September 15, 2011	J. Glover Private Citizen
0646	September 15, 2011	S. Silk Private Citizen
0647	September 15, 2011	P. Daniello Private Citizen
0648	September 15, 2011	Dr. M. Bookbinder Private Citizen
0649	September 15, 2011	T. Mac Krell Private Citizen
0650	September 15, 2011	L. Koelle Private Citizen
0651	September 15, 2011	Dr. G. Crouse Private Citizen
0652	September 14, 2011	R. Moore Private Citizen
0653	September 14, 2011	A. Lowe Private Citizen
0654	September 14, 2011	R. Sheresh Private Citizen
0655	September 14, 2011	P. Megowan Private Citizen
0656	September 14, 2011	Dr. J. Brauner Private Citizen
0657	September 14, 2011	K. Eysenbach Private Citizen
0658	September 15, 2011	L. Stock Private Citizen
0659	September 15, 2011	V. Murti Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0660	September 15, 2011	J. and W. MacDonald Private Citizens
0661	September 15, 2011	S. Alex Private Citizen
0662	September 15, 2011	Dr. C. Leman Private Citizen
0663	September 15, 2011	L. Sharp Private Citizen
0664	September 15, 2011	J. Masi Private Citizen
0665	September 15, 2011	Dr. P. A. Anasasio Private Citizen
0666	September 15, 2011	C. Lisowski Private Citizen
0667	September 15, 2011	B. Peiffer Private Citizen
0668	September 14, 2011	A. Phillipson Private Citizen
0669	September 14, 2011	P. Lambert Private Citizen
0670	September 14, 2011	B. Bennett Private Citizen
0671	September 15, 2011	G. James Private Citizen
0672	September 15, 2011	D. V. Goodman Private Citizen
0673	September 14, 2011	D. Pino Private Citizen
0674	September 15, 2011	K. Gresham Private Citizen
0675	September 15, 2011	P. Shabazian Private Citizen
0676	September 14, 2011	Dr. L. Santer Private Citizen
0677	September 14, 2011	J. Neely Private Citizen
0678	September 14, 2011	S. Sears Private Citizen
0679	September 15, 2011	V. Cardellini Private Citizen
0680	September 15, 2011	A. Ulrich Private Citizen
0681	September 15, 2011	G. Sengstake Private Citizen
0682	September 15, 2011	C. E. Krause Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0683	September 14, 2011	L. Trautman Private Citizen
0684	September 14, 2011	E. Flower Private Citizen
0685	September 14, 2011	P. Battisti Private Citizen
0686	September 14, 2011	A. Cohen Private Citizen
0687	September 14, 2011	T. McHugh Private Citizen
0688	September 15, 2011	J. DiSalle Private Citizen
0689	September 14, 2011	A. Mudd Private Citizen
0690	September 14, 2011	L. Lawrence Private Citizen
0691	September 14, 2011	L. Greco Private Citizen
0692	September 14, 2011	Dr. K. Cross Private Citizen
0693	September 14, 2011	E. Barlow Private Citizen
0694	September 14, 2011	Dr. B. Prairie Private Citizen
0695	September 15, 2011	J. Hohl Private Citizen
0696	September 15, 2011	S. Blake Private Citizen
0697	September 15, 2011	Dr. M. McGuire Private Citizen
0698	September 15, 2011	A. Cornford Private Citizen
0699	September 15, 2011	J. Gerske Private Citizen
0700	September 15, 2011	M. Greer Private Citizen
0701	September 15, 2011	D. Burgess Private Citizen
0702	September 15, 2011	J. Seekins Private Citizen
0703	September 15, 2011	C. Clements Private Citizen
0704	September 15, 2011	Dr. D. Mintz Private Citizen
0705	September 15, 2011	A. Ambler Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0706	September 15, 2011	Dr. J. Harmon Private Citizen
0707	September 15, 2011	C. Petty Private Citizen
0708	September 15, 2011	M. Britton Private Citizen
0709	September 15, 2011	P. Jones Private Citizen
0710	September 15, 2011	M. Maroon Private Citizen
0711	September 14, 2011	Dr. J. Nemeth Private Citizen
0712	September 14, 2011	S. Eckrich Private Citizen
0713	September 14, 2011	B. Riggs Private Citizen
0714	September 14, 2011	M. Clark Private Citizen
0715	September 14, 2011	N. Powell Private Citizen
0716	September 15, 2011	J. Steitz Private Citizen
0717	September 15, 2011	M. Vanderhill Private Citizen
0718	September 15, 2011	B. Flowers Private Citizen
0719	September 15, 2011	E. Isaacs Private Citizen
0720	September 15, 2011	M. Ralphe Private Citizen
0721	September 15, 2011	J. Nichols Private Citizen
0722	September 15, 2011	Dr. E. Valinsky Private Citizen
0723	September 15, 2011	B. Jones Private Citizen
0724	September 14, 2011	J. Miller Private Citizen
0725	September 14, 2011	C. Kishinchand Private Citizen
0726	September 14, 2011	Dr. D. Hamilton Private Citizen
0727	September 14, 2011	M. Daniels Private Citizen
0728	September 14, 2011	M. Wessant Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0729	September 14, 2011	J. Hoover Private Citizen
0730	September 14, 2011	B. Birchard Private Citizen
0731	September 14, 2011	J. Nemeth Private Citizen
0732	September 14, 2011	S. Eckrich Private Citizen
0733	September 14, 2011	B. Riggs Private Citizen
0734	September 14, 2011	M. Clark Private Citizen
0735	September 14, 2011	N. Powell Private Citizen
0736	September 14, 2011	I. Soloway Private Citizen
0737	September 14, 2011	J. McMullen Private Citizen
0738	September 14, 2011	A. Norman Private Citizen
0739	September 14, 2011	J. Petrisek Private Citizen
0740	September 14, 2011	V. Hays Private Citizen
0741	September 14, 2011	C. Boyle Private Citizen
0742	September 14, 2011	J. Martini Private Citizen
0743	September 15, 2011	C. Wolfe Private Citizen
0744	September 14, 2011	A. Kurland Private Citizen
0745	September 14, 2011	S. Weikart Private Citizen
0746	September 14, 2011	S. Weikart Private Citizen
0747	September 14, 2011	M. Cole Private Citizen
0748	September 14, 2011	P. Scheirer Private Citizen
0749	September 14, 2011	E. Racoosin Private Citizen
0750	September 14, 2011	J. A. Mungai Private Citizen Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0751	September 14, 2011	P. Megowan Private Citizen
0752	September 14, 2011	Dr. J. Brauner Private Citizen
0753	September 15, 2011	G. James Private Citizen
0754	September 15, 2011	D. V. Goodman Private Citizen
0755	September 15, 2011	K. Gresham Private Citizen
0756	September 15, 2011	P. Shabazian Private Citizen
0757	September 15, 2011	J. Glover Private Citizen
0758	September 15, 2011	S. Sik Private Citizen
0759	September 15, 2011	P. Daniello Private Citizen
0760	September 15, 2011	Dr. M. Bookbinder Private Citizen
0761	September 15, 2011	T. MacKrell Private Citizen
0762	September 15, 2011	L. Koelle Private Citizen
0763	September 15, 2011	Dr. G. Crouse Private Citizen
0764	September 15, 2011	L. Sharp Private Citizen
0765	September 15, 2011	J. Masi Private Citizen
0766	September 15, 2011	Dr. P. A. Anasasio Private Citizen
0767	September 15, 2011	C. Lisowski Private Citizen
0768	September 15, 2011	B. Peiffer Private Citizen
0769	September 15, 2011	Dr. C. S. Russell Private Citizen
0770	September 15, 2011	V. Harding Private Citizen
0771	September 15, 2011	A. R. Syvan Private Citizen
0772	September 14, 2011	T. Seay Private Citizen
0773	September 14, 2011	S. Lach Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0774	September 14, 2011	H. Gogins Private Citizen
0775	September 14, 2011	M. Sokol Private Citizen
0776	September 14, 2011	P. Lambert Private Citizen
0777	September 14, 2011	J. Fishman Private Citizen
0778	September 14, 2011	L. Simmons Private Citizen
0779	September 14, 2011	T. Dignazio Private Citizen
0780	September 14, 2011	S. Sears Private Citizen
0781	September 14, 2011	L. Trautman Private Citizen
0782	September 14, 2011	E. Flower Private Citizen
0783	September 14, 2011	A. Mudd Private Citizen
0784	September 14, 2011	P. Battisti Private Citizen
0785	September 14, 2011	A. Cohen Private Citizen
0786	September 14, 2011	T. McHugh Private Citizen
0787	September 14, 2011	L. Lawrence Private Citizen
0788	September 14, 2011	L. Greco Private Citizen
0789	September 14, 2011	Dr. K. Cross Private Citizen
0790	September 14, 2011	E. Barlow Private Citizen
0791	September 14, 2011	Dr. B. Prairie Private Citizen
0792	September 14, 2011	E. Binder Private Citizen
0793	September 14, 2011	R. Lernberg Private Citizen
0794	September 14, 2011	M. Welke Private Citizen
0795	September 14, 2011	P. and P. French Private Citizens
0796	September 14, 2011	K. Wicce Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0797	September 14, 2011	D. Read Private Citizen
0798	September 14, 2011	D. Morse Private Citizen
0799	September 14, 2011	J. Dresser Private Citizen
0800	September 14, 2011	M. Genin Private Citizen
0801	September 14, 2011	T. Crawford Private Citizen
0802	September 14, 2011	M. Hadcock Private Citizen
0803	September 14, 2011	D. A. Pedtke, Sr. Private Citizen
0804	September 14, 2011	M. A. Lajoie-Sandroff Private Citizen
0805	September 15, 2011	S. Barbier Private Citizen
0806	September 14, 2011	S. Robeson Private Citizen
0807	September 14, 2011	J. Cunningham Private Citizen
0808	September 14, 2011	J. Conrardy Private Citizen
0809	September 14, 2011	S. Tomkiel Private Citizen
0810	September 14, 2011	T. Kauffman Private Citizen
0811	September 14, 2011	M. Cleaves Private Citizen
0812	September 14, 2011	E. Carlson Private Citizen
0813	September 15, 2011	V. Cardellini Private Citizen
0814	September 15, 2011	A. Ulrich Private Citizen
0815	September 15, 2011	B. Flowers Private Citizen
0816	September 15, 2011	M. Ralphe Private Citizen
0817	September 15, 2011	Dr. E. Valinsky Private Citizen
0818	September 15, 2011	G. Sengstake Private Citizen
0819	September 15, 2011	C. E. Krause Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0820	September 15, 2011	J. DiSalle Private Citizen
0821	September 15, 2011	J. Hohl Private Citizen
0822	September 15, 2011	V. Murti Private Citizen
0823	September 15, 2011	J. and W. MacDonald Private Citizens
0824	September 15, 2011	S. Alex Private Citizen
0825	September 15, 2011	Dr. C. Leman Private Citizen
0826	September 15, 2011	Dr. W. Davis Private Citizen
0827	September 15, 2011	W. Montgomery Private Citizen
0828	September 15, 2011	M. Warren Private Citizen
0829	September 15, 2011	E. Vaughn Private Citizen
0830	September 15, 2011	C. Schmalz Private Citizen
0831	September 15, 2011	J. Cummings Private Citizen
0832	September 15, 2011	Dr. T. Pretlow Private Citizen
0833	September 15, 2011	Dr. C. and P. Lechner Private Citizens
0834	September 15, 2011	Dr. J. Tullis Private Citizen
0835	September 15, 2011	R. Desalle Private Citizen
0836	September 15, 2011	C. Schaaf Private Citizen
0837	September 15, 2011	Dr. R. Segal Private Citizen
0838	September 15, 2011	W. Wellman Private Citizen
0839	September 15, 2011	S. Hathaway Private Citizen
0840	September 15, 2011	P. Schultze Private Citizen
0841	September 15, 2011	J. Kreiss Private Citizen
0842	September 15, 2011	Dr. R. Tanner Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0843	September 15, 2011	R. Robitaille Private Citizen
0844	September 15, 2011	N. Van Dyke Private Citizen
0845	September 15, 2011	B. and H.R. Malpass Private Citizens
0846	September 15, 2011	D. Potter Private Citizen
0847	September 15, 2011	D. Stanko Private Citizen
0848	September 15, 2011	E. Luisada Private Citizen
0849	September 15, 2011	J. Lewandowski Private Citizen
0850	September 15, 2011	K. Shaw Private Citizen
0851	September 15, 2011	C. O. Dietrich Private Citizen
0852	September 14, 2011	A. Hernandez Private Citizen
0853	September 14, 2011	M. Pavlovich Private Citizen
0854	September 14, 2011	A. Hernandez Private Citizen
0855	September 14, 2011	Dr. E. Hulsey Private Citizen
0856	September 15, 2011	B. Jones Private Citizen
0857	September 15, 2011	L. Abbe Private Citizen
0858	September 15, 2011	R. Grimm Private Citizen
0859	September 15, 2011	Dr. D. Harrison Private Citizen
0860	September 15, 2011	P. Hanson Private Citizen
0861	September 15, 2011	K. Eysenbach Private Citizen
0862	September 15, 2011	L. Stock Private Citizen
0863	September 15, 2011	P. Dritt Private Citizen
0864	September 15, 2011	C. Bechtle Private Citizen
0865	September 15, 2011	J. Maryanski Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0866	September 15, 2011	V. Garcia Private Citizen
0867	September 15, 2011	J. Vardzel Private Citizen
0868	September 15, 2011	E. Mayer Private Citizen
0869	September 15, 2011	A. Hasz Private Citizen
0870	September 15, 2011	S. Blair Private Citizen
0871	September 15, 2011	C. Nelson Private Citizen
0872	September 15, 2011	R. Duncan Private Citizen
0873	September 15, 2011	C. Woodcock Private Citizen
0874	September 15, 2011	S. Babbitt Private Citizen
0875	September 15, 2011	M. D. Williamson Private Citizen
0876	September 15, 2011	A. Leonard Private Citizen
0877	September 15, 2011	R. Davey Private Citizen
0878	September 15, 2011	M. Flanagan Private Citizen
0879	September 15, 2011	P. Howard Private Citizen
0880	September 15, 2011	H. Curtler III Private Citizen
0881	September 14, 2011	I. Soloway Private Citizen
0882	September 15, 2011	P. Cohen Private Citizen
0883	September 15, 2011	D. Selvaggio Private Citizen
0884	September 15, 2011	K. Jones Private Citizen
0885	September 15, 2011	B. M. Bean Private Citizen
0886	September 15, 2011	J. Schuchert Private Citizen
0887	September 15, 2011	Dr. L. Eiseman Private Citizen
0888	September 15, 2011	A. Nuse Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0889	September 15, 2011	M. Wellington Private Citizen
0890	September 15, 2011	J. Corrigan Private Citizen
0891	September 15, 2011	L. Bagley Private Citizen
0892	September 15, 2011	Dr. J. Leith Private Citizen
0893	September 15, 2011	K. Shair Private Citizen
0894	September 15, 2011	V. Mosca-Clark Private Citizen
0895	September 15, 2011	K. Rousseau Private Citizen
0896	September 15, 2011	E. Kudlesky II Private Citizen
0897	September 15, 2011	F. Merker Private Citizen
0898	September 15, 2011	J. Dorwart Private Citizen
0899	September 15, 2011	M. Nelson Private Citizen
0900	September 15, 2011	T. D'Angelo Private Citizen
0901	September 15, 2011	S. Legler Private Citizen
0902	September 15, 2011	Dr. L. Thompson Private Citizen
0903	September 15, 2011	A. Badami Private Citizen
0904	September 15, 2011	J. Sheridan Private Citizen
0905	September 15, 2011	S. Shoss Private Citizen
0906	September 16, 2011	Dr. L. Bazan Private Citizen
0907	September 15, 2011	J. Hodie Private Citizen
0908	September 16, 2011	J. Falcon Private Citizen
0909	September 16, 2011	J. Charvat Private Citizen
0910	September 16, 2011	A. Grove Private Citizen
0911	September 16, 2011	D. G. Neel Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0912	September 16, 2011	T. Dukes Private Citizen
0913	September 15, 2011	T. Cannon Private Citizen
0914	September 15, 2011	R. Platt Private Citizen
0915	September 16, 2011	C. Lane Private Citizen
0916	September 16, 2011	H. Aikens Private Citizen
0917	September 16, 2011	A. Reczek Private Citizen
0918	September 15, 2011	L. Elkind Private Citizen
0919	September 15, 2011	L. Lambeth Private Citizen
0920	September 15, 2011	O. Tegland Private Citizen
0921	September 15, 2011	G. Hinde Private Citizen
0922	September 15, 2011	D. Burg Private Citizen
0923	September 16, 2011	B. Brigham Private Citizen
0924	September 16, 2011	H. A. Aho Private Citizen
0925	September 16, 2011	P. B. Furnas Private Citizen
0926	September 15, 2011	Dr. K. Allen Private Citizen
0927	September 15, 2011	D. Tobin Private Citizen
0928	September 15, 2011	T. Imajo Private Citizen
0929	September 15, 2011	A. Behrman Private Citizen
0930	September 15, 2011	L. Fraser Private Citizen
0931	September 15, 2011	T. Matlin Private Citizen
0932	September 15, 2011	J. Capozzelli Private Citizen
0933	September 15, 2011	P. Conley Private Citizen
0934	September 15, 2011	F. Sordelet Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0935	September 15, 2011	B. Kantola Private Citizen
0936	September 15, 2011	M. Moderacki Private Citizen
0937	September 15, 2011	J. Ertelt Private Citizen
0938	September 16, 2011	H. Miller Private Citizen
0939	September 16, 2011	K. White Private Citizen
0940	September 16, 2011	S. Staggenborg Private Citizen
0941	September 16, 2011	A. Bender Private Citizen
0942	September 15, 2011	M. Hood Private Citizen
0943	September 15, 2011	P. Howes Private Citizen
0944	September 15, 2011	A. Brennan Private Citizen
0945	September 15, 2011	L. Fraser Private Citizen
0946	September 15, 2011	H. Berkowitz Private Citizen
0947	September 15, 2011	P. La Point Private Citizen
0948	September 15, 2011	E. White Private Citizen
0949	September 15, 2011	D. Shiring Private Citizen
0950	September 15, 2011	L. Stevens Private Citizen
0951	September 15, 2011	M. Laws Private Citizen
0952	September 15, 2011	C. McPeak Private Citizen
0953	September 15, 2011	C. Cross Private Citizen
0954	September 15, 2011	S. Norman-Jones Private Citizen
0955	September 16, 2011	Mass Comment Campaign sponsoring organization unknown (483)
0956	September 15, 2011	J. Gutacker Private Citizen
0957	September 15, 2011	A. Shaner Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0958	September 15, 2011	P. Karie Private Citizen
0959	September 15, 2011	P. Keating-Butler Private Citizen
0960	September 16, 2011	M. Fitzgerald Private Citizen
0961	September 15, 2011	S. Spacel Private Citizen
0962	September 16, 2011	M. Kennedy Private Citizen
0963	September 16, 2011	S. Moss Private Citizen
0964	September 15, 2011	K. Newton Private Citizen
0965	September 15, 2011	P. Leven Private Citizen
0966	September 14, 2011	R. Moore Private Citizen
0967	September 14, 2011	A. Lowe Private Citizen
0968	September 15, 2011	D. Matsis Private Citizen
0969	September 15, 2011	P. Clark Private Citizen
0970	September 14, 2011	R. Sheres Private Citizen
0971	September 14, 2011	A. Phillipson Private Citizen
0972	September 14, 2011	B. Bennett Private Citizen
0973	September 15, 2011	N. Vanderborgh Private Citizen
0974	September 15, 2011	B. Backman Private Citizen
0975	September 15, 2011	M. McGlashan Private Citizen
0976	September 15, 2011	M. Elder Private Citizen
0977	September 15, 2011	D. Pino Private Citizen
0978	September 15, 2011	Jim Littlefield Surfers' Environmental Alliance
0979	September 15, 2011	J. Steitz Private Citizen
0980	September 15, 2011	M. Vanderhill Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
0981	September 15, 2011	E. Isaacs Private Citizen
0982	September 16, 2011	L. Hill Private Citizen
0983	September 16, 2011	Dr. I. Lillien Private Citizen
0984	September 16, 2011	Dr. H. Gwiazda Private Citizen
0985	September 19, 2011	Patrick J. Nugent Texas Pipeline Association
0986	September 15, 2011	L. Jobe Private Citizen
0987	September 15, 2011	R. Meyers Private Citizen
0988	September 15, 2011	K. Leaman Private Citizen
0989	September 15, 2011	J. Krow Private Citizen
0990	September 15, 2011	G. Clark Private Citizen
0991	September 15, 2011	S. Bensel Private Citizen
0992	September 15, 2011	R. Vosburg Private Citizen
0993	September 15, 2011	E. Drake Private Citizen
0994	September 15, 2011	D. Wouters Private Citizen
0995	September 15, 2011	A. Grundstrom Private Citizen
0996	September 15, 2011	D. Esters Private Citizen
0997	September 15, 2011	M. Matzek Private Citizen
0998	September 15, 2011	J. Sorrells Private Citizen
0999	September 15, 2011	T. Holt Private Citizen
1000	September 15, 2011	N. N. Neau Private Citizen
1001	September 16, 2011	R. Siegfried Private Citizen
1002	September 16, 2011	J. Burger Private Citizen
1003	September 16, 2011	D. Marino Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1004	September 15, 2011	Dr A. Holloway Private Citizen
1005	September 16, 2011	J. Donlen Private Citizen
1006	September 15, 2011	S. Dowling Private Citizen
1007	September 15, 2011	S. Peters Private Citizen
1008	September 16, 2011	W. Grady Private Citizen
1009	September 16, 2011	J. Peterson Private Citizen
1010	September 16, 2011	C. Moore Private Citizen
1011	September 16, 2011	A. Franklin Private Citizen
1012	September 16, 2011	J. Elliott Private Citizen
1013	September 16, 2011	K. Scott Private Citizen
1014	September 16, 2011	C. Kuhinka Private Citizen
1015	September 16, 2011	J. Chamberlin Private Citizen
1016	September 17, 2011	E. Talbot Private Citizen
1017	September 17, 2011	M. Strawn Private Citizen
1018	September 17, 2011	S. Weinberg Private Citizen
1019	September 17, 2011	M. Hosey Private Citizen
1020	September 17, 2011	M. Haines Private Citizen
1021	September 17, 2011	M. Pickens Private Citizen
1022	September 17, 2011	F. Schilling Private Citizen
1023	September 17, 2011	T. Rieve Private Citizen
1024	September 17, 2011	M. Bitz Private Citizen
1025	September 17, 2011	J. Boone Private Citizen
1026	September 17, 2011	D. Green Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1027	September 17, 2011	T. Hazelleaf Private Citizen
1028	September 17, 2011	P. and M. Leven Private Citizens
1029	September 17, 2011	C. Ring Private Citizen
1030	September 17, 2011	C. Teodori Private Citizen
1031	September 17, 2011	M. Waltman Private Citizen
1032	September 17, 2011	T. Curran Private Citizen
1033	September 17, 2011	N. Nicol Private Citizen
1034	September 17, 2011	H. Bitaxis Private Citizen
1035	September 18, 2011	J. Teuschl Private Citizen
1036	September 18, 2011	C. Coyne Private Citizen
1037	September 18, 2011	E. Williams Private Citizen
1038	September 18, 2011	L. Grossberg Private Citizen
1039	September 18, 2011	P. Wenner Private Citizen
1040	September 18, 2011	L. Zdrofcoff Private Citizen
1041	September 18, 2011	B. Trinkley Private Citizen
1042	September 18, 2011	J. Pentzien Private Citizen
1043	September 18, 2011	J. Foster Private Citizen
1044	September 19, 2011	G. Anderson Private Citizen
1045	September 19, 2011	K. Lund Private Citizen
1046	September 19, 2011	M. Polansky Private Citizen
1047	September 19, 2011	J. Cutler Private Citizen
1048	September 19, 2011	J. Lyles Private Citizen
1049	September 19, 2011	E. Hulsey Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1050	September 20, 2011	E. Mac Ken Private Citizen
1051	September 19, 2011	S. Anderson Private Citizen
1052	September 19, 2011	J. Bridy Private Citizen
1053	September 19, 2011	L. Penrose Private Citizen
1054	September 19, 2011	R. Sdano Private Citizen
1055	September 19, 2011	F. Krohn Private Citizen
1056	September 19, 2011	R. Haworth Private Citizen
1057	September 19, 2011	R. van West Private Citizen
1058	September 20, 2011	B. Roon Private Citizen
1059	September 20, 2011	T. Seto Private Citizen
1060	September 20, 2011	K. Scott Private Citizen
1061	September 20, 2011	D. Hunting Private Citizen
1062	September 20, 2011	L. Foster Private Citizen
1063	September 20, 2011	R. Bennett Private Citizen
1064	September 20, 2011	Ms. Truschel Private Citizen
1065	September 20, 2011	A. Weidman Private Citizen
1066	September 20, 2011	S. Zlotnick Private Citizen
1067	September 20, 2011	T. Paul Private Citizen
1068	September 20, 2011	Anonymous Public Comment
1069	September 22, 2011	Buffalo Creek Watershed Association
1070	September 21, 2011	P. Matejcek Private Citizen
1071	September 21, 2011	M. Mitsch Private Citizen
1072	September 21, 2011	R. Desalle Private Citizen
1073	September 21, 2011	L. Lambeth Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1074	September 21, 2011	S. Ibarra Private Citizen
1075	September 21, 2011	L. Mershon Private Citizen
1076	September 21, 2011	S. Schmidt Private Citizen
1077	September 21, 2011	K. Burroughs Private Citizen
1078	September 21, 2011	H. Makar Private Citizen
1079	September 20, 2011	C. Duclos Private Citizen
1080	September 20, 2011	J. Kurpaska Private Citizen
1081	September 20, 2011	R. and J. Ferry Private Citizens
1082	September 20, 2011	R. Yttri Private Citizen
1083	September 20, 2011	W. Bernard Private Citizen
1084	September 20, 2011	E. Leone Private Citizen
1085	September 21, 2011	A. Brewer Private Citizen
1086	September 20, 2011	S. Davis Private Citizen
1087	September 21, 2011	M. Pellegrini Private Citizen
1088	September 21, 2011	K. Linn Private Citizen
1089	September 21, 2011	A. Adams Private Citizen
1090	September 16, 2011	Kate Willams Alaska Oil and Gas Association
1091	September 21, 2011	G. Crouse Private Citizen
1092	September 21, 2011	L. Berd Private Citizen
1093	September 21, 2011	C. Fremaux Private Citizen
1094	September 21, 2011	M. Szydlowski Private Citizen
1095	September 21, 2011	C. Guthrie Private Citizen
1096	September 21, 2011	W. Adams Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1097	September 21, 2011	M. Farrell Private Citizen
1098	September 21, 2011	K. Petri Private Citizen
1099	September 22, 2011	C. Keys Private Citizen
1100	September 21, 2011	O. Lim Private Citizen
1101	September 22, 2011	T. Wine Private Citizen
1102	September 22, 2011	D. Johnson Private Citizen
1103	September 22, 2011	G. Bannon Private Citizen
1104	September 22, 2011	R. Decker Private Citizen
1105	September 23, 2011	Benita Phillips RN BSN Western Colorado Congress Mesa County
1106	September 22, 2011	A. Pastore Private Citizen
1107	September 22, 2011	J. Glick Private Citizen
1108	September 22, 2011	D. Held Private Citizen
1109	September 22, 2011	C. Sanders Private Citizen
1110	September 23, 2011	A. Feulner Private Citizen
1111	September 23, 2011	D. Thornton Private Citizen
1112	September 23, 2011	R. Sanderson Private Citizen
1113	September 23, 2011	M. Katzenbach Private Citizen
1114	September 23, 2011	R. Nielsen Private Citizen
1115	September 23, 2011	L. Hayhurst Private Citizen
1116	September 23, 2011	J. Medina Private Citizen
1117	September 23, 2011	B. Dengler-Germain Private Citizen
1118	September 23, 2011	C. Corbelli Private Citizen

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*EPA-HQ-OAR-2010-0505*

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<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
1119	September 23, 2011	G. Tiver Private Citizen
1120	September 23, 2011	T. La Point Private Citizen
1121	September 23, 2011	M. Ditmyer Private Citizen
1122	September 23, 2011	R. Van Aken Private Citizen
1123	September 23, 2011	M. Havey Private Citizen
1124	September 23, 2011	L. Hanratty Private Citizen
1125	September 23, 2011	S. Mccoy-Collinger Private Citizen
1126	September 23, 2011	D. Burnham Private Citizen
1127	September 23, 2011	K. Bates Private Citizen
1128	September 23, 2011	M. Reser Private Citizen
1129	September 24, 2011	A. Harville Private Citizen
1130	September 24, 2011	D. Greene Private Citizen
1131	September 24, 2011	J. Ehrlich Private Citizen
1132	September 24, 2011	J. Wolfenden Private Citizen
1133	September 24, 2011	K. Rowlett Private Citizen
1134	September 25, 2011	I. Casillas Private Citizen
1135	September 25, 2011	A. Lillstrom Private Citizen
1136	September 25, 2011	A. Bellacosa Private Citizen
1137	September 25, 2011	M. Pezzati Private Citizen
1138	September 25, 2011	T. Henize Private Citizen
1139	September 25, 2011	C. Fremaux Private Citizen
1140	September 26, 2011	M. Golembeski Private Citizen
1141	September 25, 2011	D. Armani Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1142	September 25, 2011	M. Sarratt Private Citizen
1143	September 25, 2011	T. Giesy Private Citizen
1144	September 25, 2011	V. Nguyen Private Citizen
1145	September 25, 2011	C. Buchanan Private Citizen
1146	September 26, 2011	D. Dreyer-Ross Private Citizen
1147	September 25, 2011	S. Intilli Private Citizen
1148	September 25, 2011	E. Kirby Private Citizen
1149	September 25, 2011	W. Scott Private Citizen
1150	September 25, 2011	J. Schultz Private Citizen
1151	September 25, 2011	M. Harmon Private Citizen
1152	September 25, 2011	T. Carlson Private Citizen
1153	September 25, 2011	C. Iberg Private Citizen
1154	September 25, 2011	J. Duffin Private Citizen
1155	September 25, 2011	E. Perchonock Private Citizen
1156	September 25, 2011	S. Badawy Private Citizen
1157	September 27, 2011	Anonymous public comment
1158	September 25, 2011	M. Carter Private Citizen
1159	September 25, 2011	L. Carroll Private Citizen
1160	September 25, 2011	S. Gruenler Private Citizen
1161	September 25, 2011	P. Kugler Private Citizen
1162	September 25, 2011	D. Goubert Private Citizen
1163	September 25, 2011	K. Alyanakian Private Citizen
1164	September 25, 2011	E. McRae Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1165	September 25, 2011	F. O'Brien Private Citizen
1166	September 25, 2011	A. McNeil Private Citizen
1167	September 25, 2011	T. Foster Private Citizen
1168	September 25, 2011	D. Brooks Private Citizen
1169	September 25, 2011	K. Armor Private Citizen
1170	September 25, 2011	T. Zangrilli Private Citizen
1171	September 25, 2011	G. Kovacovsky Private Citizen
1172	September 25, 2011	B. Blakney Private Citizen
1173	September 25, 2011	E. Craig Private Citizen
1174	September 25, 2011	L. Jaffee Private Citizen
1175	September 25, 2011	J. Crowther Private Citizen
1176	September 25, 2011	K. Vanco Private Citizen
1177	September 25, 2011	B. Dillenbeck Private Citizen
1178	September 25, 2011	T. Shawe Private Citizen
1179	September 26, 2011	C. Sayre Private Citizen
1180	September 26, 2011	C. Mariani Private Citizen
1181	September 27, 2011	M. Mirabello Private Citizen
1182	September 27, 2011	S. Daman Private Citizen
1183	September 27, 2011	S. Johnson Private Citizen
1184	September 27, 2011	M. Rawley Private Citizen
1185	September 27, 2011	Y. Stinson Private Citizen
1186	September 28, 2011	Anonymous public comment
1187	September 28, 2011	Anthony J. Giuliani, Vorys, Sater, Seymour and Pease LLP Ohio Oil and Gas Association

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1188	September 27, 2011	C. Summerhill Private Citizen
1189	September 27, 2011	M. Boyd Private Citizen
1190	September 26, 2011	J. Adams Private Citizen
1191	September 26, 2011	P. Johnson Private Citizen
1192	September 26, 2011	D. Wimberly Private Citizen
1193	September 26, 2011	D. Van Der Tak Private Citizen
1194	September 26, 2011	G. Baughan Private Citizen
1195	September 26, 2011	C. Bish Private Citizen
1196	September 26, 2011	J. Powers Private Citizen
1197	September 26, 2011	A. Jackman Private Citizen
1198	September 26, 2011	R. Himmer Private Citizen
1199	September 26, 2011	K. Frey Private Citizen
1200	September 26, 2011	D. Buccilli Private Citizen
1201	September 26, 2011	K. Maclaren Private Citizen
1202	September 27, 2011	W. Carr Private Citizen
1203	September 26, 2011	A. McHale Private Citizen
1204	September 26, 2011	J. Thompson Private Citizen
1205	September 26, 2011	L. Witzke-Baum Private Citizen
1206	September 26, 2011	S. Brownrigg Private Citizen
1207	September 26, 2011	L. Lawton Private Citizen
1208	September 23, 2011	Environmental Defense Fund mass comment campaign (41,454)
1209	September 26, 2011	D. Kisor Private Citizen
1210	September 26, 2011	R. Fletcher Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1211	September 26, 2011	M. Givler Private Citizen
1212	September 26, 2011	P. MacDonald Private Citizen
1213	September 26, 2011	A. Seethaler Private Citizen
1214	September 26, 2011	S. Edinger Private Citizen
1215	September 26, 2011	J. Lappin Private Citizen
1216	September 26, 2011	D. and S. Katz Private Citizen
1217	September 26, 2011	M. Hunt Private Citizen
1218	September 26, 2011	T. and M. Dimuzio Private Citizen
1219	September 26, 2011	R. Pearson Private Citizen
1220	September 26, 2011	M. Noonan Private Citizen
1221	September 26, 2011	A. D'Ancona Private Citizen
1222	September 26, 2011	B. Silbert Private Citizen
1223	September 14, 2011	Mass Comment Campaign sponsoring organization unknown (14)
1224	September 26, 2011	C. Gendron Private Citizen
1225	September 26, 2011	M. Felley Private Citizen
1226	September 28, 2011	D. Ziskin Private Citizen
1227	September 26, 2011	J. Erb Private Citizen
1228	September 26, 2011	J. Moore Private Citizen
1229	September 26, 2011	T. Husarik Private Citizen
1230	September 26, 2011	B. Day Private Citizen
1231	September 26, 2011	K. Painter Private Citizen
1232	September 26, 2011	C. Cook-Huffman Private Citizen
1233	September 26, 2011	R. Richardson Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1234	September 26, 2011	L. Gopalan Private Citizen
1235	September 26, 2011	R. Ellis Private Citizen
1236	September 26, 2011	Z. Price Private Citizen
1237	September 26, 2011	M. Feeman Private Citizen
1238	September 26, 2011	C. Schneider Private Citizen
1239	September 26, 2011	D. Asselin Private Citizen
1240	September 26, 2011	B. Stankay Private Citizen
1241	September 26, 2011	R. Hoesch Private Citizen
1242	September 26, 2011	T. DiCampli Private Citizen
1243	September 26, 2011	M. Kelly Private Citizen
1244	September 26, 2011	M. Ramos Private Citizen
1245	September 26, 2011	D. Denton Private Citizen
1246	September 26, 2011	E. Albright Private Citizen
1247	September 26, 2011	K. Refosco Private Citizen
1248	September 26, 2011	B. Wise Private Citizen
1249	September 26, 2011	S. Simpson Private Citizen
1250	September 26, 2011	S. McKay Private Citizen
1251	September 26, 2011	P. McBee Private Citizen
1252	September 26, 2011	F. Shankle Private Citizen
1253	September 26, 2011	E. Clark Private Citizen
1254	September 26, 2011	B. Kelly Private Citizen
1255	September 27, 2011	M. Guttman Private Citizen
1256	September 26, 2011	P. Davies Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1257	September 26, 2011	W. Dennis Private Citizen
1258	September 26, 2011	E. Colonna Private Citizen
1259	September 26, 2011	A. Hofelt Private Citizen
1260	September 26, 2011	S. Dolan Private Citizen
1261	September 26, 2011	S. Gibson Private Citizen
1262	September 26, 2011	J. Evans Private Citizen
1263	September 26, 2011	J. Butler Private Citizen
1264	September 26, 2011	M. Hansen Private Citizen
1265	September 26, 2011	A. Ascenzi Private Citizen
1266	September 26, 2011	E. Shipley Private Citizen
1267	September 26, 2011	M. Barrick Private Citizen
1268	September 26, 2011	G. Hall Private Citizen
1269	September 26, 2011	K. Krupsha Private Citizen
1270	September 26, 2011	G. Massey Private Citizen
1271	September 26, 2011	D. Larson Private Citizen
1272	September 26, 2011	E. Aversa Private Citizen
1273	September 26, 2011	C. Brady Private Citizen
1274	September 26, 2011	P. Lane Private Citizen
1275	September 26, 2011	G. Price Private Citizen
1276	September 26, 2011	C. Myers Private Citizen
1277	September 26, 2011	R. Hayes Private Citizen
1278	September 26, 2011	K. Kuehlwein Private Citizen
1279	September 26, 2011	G. Lewis Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1280	September 26, 2011	S. Siler Private Citizen
1281	September 26, 2011	J. Walker Private Citizen
1282	September 26, 2011	P. Buckland Private Citizen
1283	September 26, 2011	C. Wilson Private Citizen
1284	September 26, 2011	S. Chew Private Citizen
1285	September 26, 2011	N. Carlin Private Citizen
1286	September 26, 2011	M. Paez Private Citizen
1287	September 26, 2011	S. Willhelm Private Citizen
1288	September 26, 2011	M. Haughey Private Citizen
1289	September 26, 2011	L. Schade Private Citizen
1290	September 26, 2011	D. Sibley Private Citizen
1291	September 26, 2011	J. Mudd Private Citizen
1292	September 28, 2011	J. Wolf Private Citizen
1293	September 28, 2011	D. Barnes Private Citizen
1294	September 28, 2011	M. Bertonaschi Private Citizen
1295	September 28, 2011	N. Ternullo Private Citizen
1296	September 29, 2011	Ken Mathews Aeon Process Equipment and Controls
1297	September 28, 2011	L. Reed Private Citizen
1298	September 28, 2011	N. Downing Private Citizen
1299	September 28, 2011	M. Miller Private Citizen
1300	September 28, 2011	J. Rubbo Private Citizen
1301	September 28, 2011	Anonymous public comment
1302	September 28, 2011	E. Lloyd Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1303	September 27, 2011	D. Ternullo Private Citizen
1304	September 27, 2011	M. Miller Private Citizen
1305	September 27, 2011	P. Crownfield Private Citizen
1306	September 27, 2011	Sandy (no surname provided) Private Citizen
1307	September 27, 2011	M. Bandes Private Citizen
1308	September 27, 2011	T. Kerstetter Private Citizen
1309	September 27, 2011	N. Rapp Private Citizen
1310	September 27, 2011	J. Sellenraad Private Citizen
1311	September 27, 2011	G. Koehler Private Citizen
1312	September 29, 2011	S. Brill Private Citizen
1313	September 27, 2011	M. Marino Private Citizen
1314	September 27, 2011	D. Malcom Private Citizen
1315	September 27, 2011	C. Bade Private Citizen
1316	September 27, 2011	S. Williammee Private Citizen
1317	September 27, 2011	J. Rooney Private Citizen
1318	September 27, 2011	S. Wojnaroski Private Citizen
1319	September 27, 2011	N. Starr Private Citizen
1320	September 27, 2011	T. Kaznowski Private Citizen
1321	September 27, 2011	B. KenCairn Private Citizen
1322	September 27, 2011	E. Beeson Private Citizen
1323	September 27, 2011	M. Cedillos Private Citizen
1324	September 27, 2011	E. Hogan Private Citizen
1325	September 27, 2011	C. Lane Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1326	September 27, 2011	G. Lewis Private Citizen
1327	September 27, 2011	A. Baehr Private Citizen
1328	September 27, 2011	V. Davies Private Citizen
1329	September 28, 2011	M. Murphy Private Citizen
1330	September 28, 2011	S. Carman Private Citizen
1331	September 28, 2011	C. Jones Private Citizen
1332	September 28, 2011	K. Brown Private Citizen
1333	September 28, 2011	G. Shanks Private Citizen
1334	September 28, 2011	Anonymous public comment
1335	September 28, 2011	P. Lauver Private Citizen
1336	September 28, 2011	W. Heacock Private Citizen
1337	September 29, 2011	D. Romm Private Citizen
1338	September 29, 2011	A. Berenzy Private Citizen
1339	September 29, 2011	C. Gisselquist Private Citizen
1340	September 29, 2011	P. Campbell Private Citizen
1341	September 29, 2011	Z. Warner Private Citizen
1342	September 29, 2011	Anonymous public comment
1343	September 29, 2011	S. Besterman Private Citizen
1344	September 29, 2011	P. Crownfield Private Citizen
1345	September 29, 2011	T. Manaugh Private Citizen
1346	September 29, 2011	A. Kettering Private Citizen
1347	September 29, 2011	R. Lazarus Private Citizen
1348	September 30, 2011	T. Hassett Private Citizen
1349	September 30, 2011	V. Eibner Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1350	September 29, 2011	David J. Ellenberger National Wildlife Federation
1351	September 30, 2011	B. Weinstein Private Citizen
1352	October 3, 2011	C. Fette Private Citizen
1353	October 2, 2011	L. Thompson Private Citizen
1354	October 1, 2011	J. Cooper Private Citizen
1355	October 2, 2011	J. Stevens Private Citizen
1356	September 30, 2011	L. De Simone Private Citizen
1357	October 1, 2011	L. Alexander Private Citizen
1358	September 30, 2011	C. Mears Private Citizen
1359	October 2, 2011	K. Schrader Private Citizen
1360	October 1, 2011	C. Heywood Private Citizen
1361	October 2, 2011	K. Knerl Private Citizen
1362	October 2, 2011	S. Franzheim Private Citizen
1363	October 1, 2011	Susan Watkins and Helen Gibbins League of Women Voters of West Virginia
1364	October 2, 2011	S. Franzheim Private Citizen
1365	September 29, 2011	L. and K. Burky Private Citizens
1366	September 29, 2011	S. Bodman Private Citizen
1367	September 29, 2011	L. Braun Private Citizen
1368	September 29, 2011	G. Kenville Private Citizen
1369	September 29, 2011	J. and N. Diener Private Citizens
1370	September 29, 2011	K. Nielsen Private Citizen
1371	September 29, 2011	A. Bonus Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1372	September 29, 2011	J. Huffman Private Citizen
1373	September 29, 2011	T. Willis Private Citizen
1374	September 29, 2011	B. Schultz Private Citizen
1375	September 29, 2011	E. Barrall Private Citizen
1376	September 29, 2011	D. Keister Private Citizen
1377	September 29, 2011	J. Flicker Private Citizen
1378	September 29, 2011	S. Graef Private Citizen
1379	September 29, 2011	K. Warren Private Citizen
1380	September 29, 2011	D. Ames Private Citizen
1381	September 29, 2011	Dr. J. Brown Private Citizen
1382	September 29, 2011	Dr. G. Byrne Private Citizen
1383	September 29, 2011	E. M. Trawick Private Citizen
1384	September 29, 2011	M. Woersching Private Citizen
1385	September 29, 2011	M. McCall Private Citizen
1386	September 29, 2011	T. Lafferty Private Citizen
1387	September 29, 2011	A. Broskley Private Citizen
1388	September 29, 2011	R. Ross Private Citizen
1389	September 29, 2011	M. Smith Private Citizen
1390	September 29, 2011	C. Hasz Private Citizen
1391	September 29, 2011	D. Filion Private Citizen
1392	September 29, 2011	Dr. M. Nicholson Private Citizen
1393	September 29, 2011	P. Buckland Private Citizen
1394	September 29, 2011	S. Kibler Private Citizen



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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1395	September 29, 2011	M. Heiman Private Citizen
1396	September 29, 2011	J. Cramer Private Citizen
1397	September 29, 2011	W. White Private Citizen
1398	September 29, 2011	L. Godfrey Private Citizen
1399	September 29, 2011	Dr. C. Essenburg Private Citizen
1400	September 29, 2011	P. Smith Private Citizen
1401	September 29, 2011	L. Hickman Private Citizen
1402	September 29, 2011	E. Grieco Private Citizen
1403	September 29, 2011	J. Marish Private Citizen
1404	September 29, 2011	J. Hartigan Private Citizen
1405	September 29, 2011	J. Mitchell Private Citizen
1406	September 29, 2011	R. Linnenberger Private Citizen
1407	September 29, 2011	Dr. C. Johnson Private Citizen
1408	September 29, 2011	M. Drake Private Citizen
1409	September 29, 2011	R. Schoenecker Private Citizen
1410	September 29, 2011	A. Nolder Private Citizen
1411	September 29, 2011	S. Carpenter Private Citizen
1412	September 29, 2011	S. Saxe Private Citizen
1413	September 29, 2011	M. Schultz Private Citizen
1414	October 4, 2011	D. Woltkamp Private Citizen
1415	September 29, 2011	T. Sparkman Private Citizen
1416	September 29, 2011	C. Alsafi Private Citizen
1417	September 29, 2011	J. Mayo Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1418	September 29, 2011	K. Herb Private Citizen
1419	September 29, 2011	G. Fister Private Citizen
1420	September 29, 2011	M. Nowak Private Citizen
1421	October 4, 2011	J. Miller Private Citizen
1422	September 29, 2011	S. DiMarino Private Citizen
1423	September 29, 2011	C. Daigle Private Citizen
1424	September 29, 2011	D. Sherrick Private Citizen
1425	September 29, 2011	J. Tiebout Private Citizen
1426	September 29, 2011	A. Wagner Private Citizen
1427	September 29, 2011	N. Pepper Private Citizen
1428	September 29, 2011	J. Hablinski Private Citizen
1429	September 29, 2011	J. Verry Private Citizen
1430	September 29, 2011	S. Mattingly Private Citizen
1431	September 29, 2011	A. Conley Private Citizen
1432	September 29, 2011	H. Funk Private Citizen
1433	September 29, 2011	J. Avouris Private Citizen
1434	September 29, 2011	C. Carpenter Private Citizen
1435	September 29, 2011	Z. Tseng Private Citizen
1436	September 29, 2011	P. Perkins Private Citizen
1437	September 29, 2011	C. Bowles Private Citizen
1438	September 29, 2011	L. Reavely Private Citizen
1439	September 29, 2011	L. Lagaly Private Citizen
1440	October 4, 2011	E. Blackler Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1441	September 29, 2011	M. Whited Private Citizen
1442	September 29, 2011	S. Jensen Private Citizen
1443	September 29, 2011	J. Dolan Private Citizen
1444	October 4, 2011	J. Houser Private Citizen
1445	September 29, 2011	C. Harper Private Citizen
1446	September 29, 2011	A. Rodriguez Private Citizen
1447	October 4, 2011	D. Reber Private Citizen
1448	September 29, 2011	D. Ward Private Citizen
1449	September 29, 2011	C. Edwards Private Citizen
1450	September 29, 2011	L. Hartley Private Citizen
1451	September 29, 2011	M. Infante Private Citizen
1452	September 29, 2011	R. Burgy Private Citizen
1453	September 29, 2011	W. Strong Private Citizen
1454	September 29, 2011	D. Davis Private Citizen
1455	September 29, 2011	J. Altshuler Private Citizen
1456	September 29, 2011	N. Johnson Private Citizen
1457	September 29, 2011	R. Reimer Private Citizen
1458	September 7, 2011	J. & N. Diener Private Citizens
1459	September 29, 2011	Lyndsey Ellis Private Citizen
1460	September 25, 2011	K. Sherrod Private Citizen
1461	September 29, 2011	G. Arcand III Private Citizen
1462	October 4, 2011	P. Schutt Private Citizen
1463	September 29, 2011	D. Perry Private Citizen

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*EPA-HQ-OAR-2010-0505*

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<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
1464	September 29, 2011	C. Ladner Private Citizen
1465	September 29, 2011	Dr. W. Cutts Private Citizen
1466	September 29, 2011	C. A. Parker Private Citizen
1467	September 29, 2011	J. Bolden Private Citizen
1468	September 29, 2011	J. McGuire-Conlon Private Citizen
1469	September 29, 2011	D. Perry Private Citizen
1470	September 29, 2011	Dr. N. Fabris Private Citizen
1471	September 29, 2011	J. Lytle Private Citizen
1472	October 4, 2011	Dr. M. Melody Private Citizen
1473	October 4, 2011	A. Sunshine Private Citizen
1474	September 29, 2011	A. Edwardson Private Citizen
1475	September 29, 2011	K. Wall Private Citizen
1476	September 29, 2011	C. Buchanan Private Citizen
1477	September 29, 2011	L. Weise Private Citizen
1478	September 29, 2011	M. Brickey Private Citizen
1479	September 29, 2011	Dr. M. A. Segal Private Citizen
1480	September 29, 2011	V. Wilkinson Private Citizen
1481	September 29, 2011	B. Russell Private Citizen
1482	September 29, 2011	K. Cullins Private Citizen
1483	September 29, 2011	D. Larsen-Mills Private Citizen
1484	September 29, 2011	K. Outlaw Private Citizen
1485	September 29, 2011	B. J. Lawson Private Citizen
1486	September 29, 2011	L. Bagley Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1487	September 29, 2011	M. and G. Buinger Private Citizens
1488	September 29, 2011	D. M. Davino Private Citizen
1489	September 29, 2011	V. Freyholtz Private Citizen
1490	September 29, 2011	A. Alexander Private Citizen
1491	September 29, 2011	L. Klakring Private Citizen
1492	September 29, 2011	R. Sharpe Private Citizen
1493	September 29, 2011	R. Mayer Private Citizen
1494	September 29, 2011	D. Keller-Perry Private Citizen
1495	September 29, 2011	A. Dybas Private Citizen
1496	September 29, 2011	Dr. P. Cox Private Citizen
1497	September 29, 2011	J. Sanchez Private Citizen
1498	September 29, 2011	L. Wimberly Private Citizen
1499	September 29, 2011	J. Brenner Private Citizen
1500	September 29, 2011	E. Mallin Private Citizen
1501	September 29, 2011	M. Shareef Private Citizen
1502	September 29, 2011	L. Hill Private Citizen
1503	September 29, 2011	J. Armstrong Private Citizen
1504	September 29, 2011	D. Manley Private Citizen
1505	September 29, 2011	J. D. Singer Private Citizen
1506	September 29, 2011	F. Campbell Private Citizen
1507	September 29, 2011	G. Desrochers Private Citizen
1508	September 29, 2011	C. R. Hines Private Citizen
1509	September 29, 2011	L. Harris Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1510	September 29, 2011	M. Wentland Private Citizen
1511	September 29, 2011	C. Waring Private Citizen
1512	October 5, 2011	M. Hilliard Private Citizen
1513	September 29, 2011	B. Weaver Private Citizen
1514	October 5, 2011	T. Tuner Private Citizen
1515	September 29, 2011	J. Albertini Private Citizen
1516	September 29, 2011	S. Donaldson Private Citizen
1517	September 29, 2011	M. Smith Private Citizen
1518	September 29, 2011	L. Graham Private Citizen
1519	September 29, 2011	C. Westbrook Private Citizen
1520	September 29, 2011	P. Prince Private Citizen
1521	September 29, 2011	Dr. H. Nardone Private Citizen
1522	September 29, 2011	R. Zeisler Private Citizen
1523	September 29, 2011	D. W. Wynne Private Citizen
1524	September 29, 2011	J. Hennessee Private Citizen
1525	September 29, 2011	D. Strimer Private Citizen
1526	September 29, 2011	K. Hughes Private Citizen
1527	October 4, 2011	Deb Thomas Powder River Basin Resource Council Clark Resource Council Pavillion Area Concerned Citizens
1528	September 3, 2011	J. Oakes Private Citizen
1529	September 29, 2011	H. Billington Private Citizen
1530	September 29, 2011	H. Billington Private Citizen
1531	September 29, 2011	G. Kolesar Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1532	September 29, 2011	D. LaVerne Private Citizen
1533	September 29, 2011	K. Lowry Private Citizen
1534	September 29, 2011	A. Redig Private Citizen
1535	September 29, 2011	A. Wagoner Private Citizen
1536	September 29, 2011	W. R. Wertz Private Citizen
1537	September 29, 2011	Dr. L. Glesne Private Citizen
1538	September 29, 2011	P. Olson Private Citizen
1539	September 29, 2011	G. Aernouts Private Citizen
1540	October 5, 2011	J. Pannone Private Citizen
1541	September 29, 2011	S. Sheldon Private Citizen
1542	September 29, 2011	S. Raw Private Citizen
1543	September 29, 2011	L. Rogers Private Citizen
1544	September 29, 2011	J. Seluga Private Citizen
1545	September 29, 2011	M. Gorr Private Citizen
1546	September 29, 2011	R. Wittshirk Private Citizen
1547	September 29, 2011	M. Patton Private Citizen
1548	September 29, 2011	M. Eaton Private Citizen
1549	September 29, 2011	J. Manos Private Citizen
1550	September 29, 2011	T. Dubarr Private Citizen
1551	September 29, 2011	Dr. N. Banman Private Citizen
1552	September 29, 2011	C. Ohlson Private Citizen
1553	September 29, 2011	D. Will Private Citizen
1554	September 29, 2011	D. Strahl Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1555	September 29, 2011	S. Larson Private Citizen
1556	September 29, 2011	Dr. W. Thwaites Private Citizen
1557	September 29, 2011	S. Raymond Private Citizen
1558	September 29, 2011	J. Barker Private Citizen
1559	September 29, 2011	S. Joshua Private Citizen
1560	September 29, 2011	L. Rodriguez Private Citizen
1561	September 29, 2011	J. Hargett Private Citizen
1562	September 29, 2011	T. Chandler Private Citizen
1563	September 29, 2011	M. B. Hardy Private Citizen
1564	September 29, 2011	F. Contini Private Citizen
1565	September 29, 2011	C. Herman-Wurmfeld Private Citizen
1566	September 29, 2011	C. Nisinson Private Citizen
1567	September 29, 2011	J. Geiger Private Citizen
1568	September 29, 2011	J. Milan Private Citizen
1569	September 29, 2011	M. Herschler Private Citizen
1570	September 29, 2011	F. Harvey-Shea Private Citizen
1571	September 29, 2011	D. Hodum Private Citizen
1572	September 29, 2011	E. Renner Private Citizen
1573	September 29, 2011	B. Whipple Private Citizen
1574	September 29, 2011	E. Yesko Private Citizen
1575	September 29, 2011	G. Nichols Private Citizen
1576	September 29, 2011	M. Bradshaw Private Citizen
1577	September 29, 2011	T. and I. O. Brown Private Citizens



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1578	September 29, 2011	S. Toland Private Citizen
1579	October 4, 2011	J. Allen Private Citizen
1580	September 30, 2011	P. Boland Private Citizen
1581	September 29, 2011	E. Lippincott Private Citizen
1582	September 29, 2011	B. Wright Private Citizen
1583	September 29, 2011	C. Brown Private Citizen
1584	September 29, 2011	M. Rucinski Private Citizen
1585	October 4, 2011	V. Egan Private Citizen
1586	September 29, 2011	D. Harper Private Citizen
1587	September 29, 2011	S. Carvey Private Citizen
1588	October 4, 2011	R. Mann Private Citizen
1589	October 4, 2011	L. Halsey Private Citizen
1590	October 4, 2011	E. Wysocki Private Citizen
1591	October 4, 2011	B. McKinney Private Citizen
1592	October 4, 2011	L. Urban Private Citizen
1593	October 4, 2011	L. Urban Private Citizen
1594	October 4, 2011	K. Kristijanson-Gural Private Citizen
1595	September 29, 2011	W. Wheelock Private Citizen
1596	September 29, 2011	J. W. Mikus Private Citizen
1597	September 29, 2011	S. Ling Private Citizen
1598	October 5, 2011	K. Thomas Private Citizen
1599	September 29, 2011	G. Giesey Private Citizen
1600	September 29, 2011	S. Woodruu Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1601	September 29, 2011	D. Alman Private Citizen
1602	September 29, 2011	C. Lingeman Private Citizen
1603	September 29, 2011	A. Githler Private Citizen
1604	September 29, 2011	B. and M. R. Garon Private Citizens
1605	September 29, 2011	S. Sheon Private Citizen
1606	September 29, 2011	S. Xie Private Citizen
1607	September 29, 2011	J. Siegle Private Citizen
1608	September 29, 2011	D. Read Private Citizen
1609	October 4, 2011	L. Rodd Private Citizen
1610	September 29, 2011	A. Flaccavento Private Citizen
1611	September 29, 2011	E. Hereford Private Citizen
1612	September 29, 2011	A. Christensen Private Citizen
1613	September 29, 2011	B. F. Hamilton Private Citizen
1614	September 29, 2011	D. Deick Private Citizen
1615	September 29, 2011	M. Wood Private Citizen
1616	September 29, 2011	J. Coakley Private Citizen
1617	September 29, 2011	T. Wilson Private Citizen
1618	September 29, 2011	D. Pryor Private Citizen
1619	September 29, 2011	L. Larkin Private Citizen
1620	September 29, 2011	K. Kassem Private Citizen
1621	September 29, 2011	E. Tureck Private Citizen
1622	September 29, 2011	J. Smith Private Citizen
1623	September 29, 2011	Dr. T. Davis Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1624	September 29, 2011	K. Keathley Private Citizen
1625	September 29, 2011	S. Nokes Private Citizen
1626	September 29, 2011	J. Dowling Private Citizen
1627	September 29, 2011	S. Tuerk Private Citizen
1628	September 29, 2011	D. Mondejar Private Citizen
1629	September 29, 2011	D. Holm Private Citizen
1630	September 29, 2011	M. Blewett Private Citizen
1631	September 29, 2011	P. A. Bollman Private Citizen
1632	September 29, 2011	P. Hoeschele Private Citizen
1633	September 29, 2011	L. Bowman Private Citizen
1634	September 29, 2011	L. Filor Private Citizen
1635	September 29, 2011	R. Eiler Private Citizen
1636	September 29, 2011	S. Mehrotra Private Citizen
1637	September 29, 2011	T. Conlon Private Citizen
1638	September 29, 2011	A. Jones Private Citizen
1639	September 29, 2011	M. Strawn Private Citizen
1640	September 29, 2011	C. Browsher Private Citizen
1641	September 29, 2011	G. Ripley Private Citizen
1642	September 29, 2011	C. Kelly Private Citizen
1643	September 29, 2011	M. Johnson Private Citizen
1644	October 4, 2011	Barry T. Smitherman Railroad Commission of Texas
1645	September 29, 2011	A. Mitchell Private Citizen
1646	September 29, 2011	D. Bell Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1647	September 29, 2011	S. Langsjoen Private Citizen
1648	September 29, 2011	P. Brashear Private Citizen
1649	September 29, 2011	N. Engelfried Private Citizen
1650	September 29, 2011	M. Hertzler Private Citizen
1651	September 28, 2011	J. Moore Private Citizen
1652	September 29, 2011	J. W. Goodspeed Private Citizen
1653	September 29, 2011	R. V. Cogan Private Citizen
1654	September 29, 2011	J. Dolan Private Citizen
1655	October 4, 2011	L. Epperson Private Citizen
1656	September 29, 2011	B. Henzi Private Citizen
1657	October 5, 2011	Sara Arkle Idaho Conservation League
1658	September 29, 2011	P. Gynn Private Citizen
1659	September 29, 2011	T. Cannon Private Citizen
1660	September 29, 2011	R. Seger Private Citizen
1661	September 29, 2011	D. P. Serbanic Private Citizen
1662	September 29, 2011	J. Miner Private Citizen
1663	September 29, 2011	S. Carroll Private Citizen
1664	September 29, 2011	Daniel L. (surname not provided) Private Citizen
1665	September 29, 2011	J. Vincent Private Citizen
1666	September 29, 2011	R. Grace Private Citizen
1667	September 29, 2011	M. Smith Private Citizen
1668	September 29, 2011	S. & W. Bartovics Private Citizen
1669	September 29, 2011	T. Rieve Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1670	September 29, 2011	I. Mason Private Citizen
1671	September 29, 2011	M. A. Wild Private Citizen
1672	September 29, 2011	Dr. D. Shaw Private Citizen
1673	September 29, 2011	M. Sosebee Private Citizen
1674	October 4, 2011	A. Weaver Private Citizen
1675	September 29, 2011	J. Wiener Private Citizen
1676	September 29, 2011	W. Suydam Private Citizen
1677	September 29, 2011	D. Gaubatz Private Citizen
1678	September 29, 2011	S. Peacock Private Citizen
1679	October 4, 2011	Dr. N. Shiffler Private Citizen
1680	October 4, 2011	R. Breen Private Citizen
1681	September 29, 2011	R. Smith Private Citizen
1682	September 29, 2011	C. Warren Private Citizen
1683	September 29, 2011	J. Meyer Private Citizen
1684	September 29, 2011	Dr. E. Beshero-Bondar Private Citizen
1685	September 29, 2011	B. Knoth Private Citizen
1686	September 29, 2011	J. Knapp Private Citizen
1687	September 29, 2011	R. Ford Private Citizen
1688	September 29, 2011	J. Mellow Private Citizen
1689	September 29, 2011	S. Boniface Private Citizen
1690	September 29, 2011	S. Sanders Private Citizen
1691	September 29, 2011	K. Hanson Private Citizen
1692	September 29, 2011	S. Murren-Azad Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1693	September 29, 2011	D. Ochoa Private Citizen
1694	September 29, 2011	E. Webster Private Citizen
1695	September 29, 2011	Dr. P. Picardi Private Citizen
1696	September 29, 2011	Dr. N. Verber Private Citizen
1697	September 29, 2011	J. Stone Private Citizen
1698	September 29, 2011	R. Bradley Private Citizen
1699	September 29, 2011	V. Amare Private Citizen
1700	September 29, 2011	F. Welty Private Citizen
1701	September 29, 2011	J. Feldman Private Citizen
1702	September 29, 2011	A. R. Johnson Private Citizen
1703	September 29, 2011	B. Williams Private Citizen
1704	September 29, 2011	G. Andrews Private Citizen
1705	September 29, 2011	L. Eatenson Private Citizen
1706	September 29, 2011	Dr. H. and V. Peace Private Citizens
1707	September 29, 2011	N. Breckenridge Private Citizen
1708	September 29, 2011	S. Michael Private Citizen
1709	September 29, 2011	E. Huffmans Private Citizen
1710	September 29, 2011	T. Alvey Private Citizen
1711	September 29, 2011	M. Patton Private Citizen
1712	September 29, 2011	R. Hepler III Private Citizen
1713	September 29, 2011	M. McKennon Private Citizen
1714	September 29, 2011	P. Roden Private Citizen
1715	September 29, 2011	F. Gros Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1716	September 29, 2011	F. Krohn Private Citizen
1717	September 29, 2011	J. Wendl Private Citizen
1718	September 29, 2011	J. Gollatz Private Citizen
1719	September 29, 2011	R. Jenkinson Private Citizen
1720	September 29, 2011	K. Crane Private Citizen
1721	September 29, 2011	R. & B. Stippec Private Citizen
1722	September 29, 2011	D. Lockspeiser Private Citizen
1723	September 29, 2011	H. McCausland Private Citizen
1724	September 29, 2011	L. Scordilis Private Citizen
1725	September 29, 2011	Sierra Club mass comment campaign (1,981)
1726	September 29, 2011	C. Conlon Private Citizen
1727	September 29, 2011	N. M. Shaughnessy Private Citizen
1728	September 29, 2011	M. Marino Private Citizen
1729	September 29, 2011	M. S. Dennis Private Citizen
1730	September 29, 2011	L. Reed Private Citizen
1731	September 29, 2011	K. Popovich Private Citizen
1732	September 29, 2011	G. Betts Private Citizen
1733	September 29, 2011	D. Goodwin Private Citizen
1734	September 29, 2011	C. Beitel Private Citizen
1735	September 29, 2011	S. McDonnell Private Citizen
1736	September 29, 2011	J. Sapunarich Private Citizen
1737	September 29, 2011	J. Pearson Private Citizen
1738	September 29, 2011	Dr. R. Braslau Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1739	September 29, 2011	Dr. J. Howland Private Citizen
1740	September 29, 2011	J. Roelof Private Citizen
1741	September 29, 2011	D. Good Private Citizen
1742	September 29, 2011	M. Kolar Private Citizen
1743	September 29, 2011	A. Lannon Private Citizen
1744	September 29, 2011	M. E. Teeter Private Citizen
1745	September 29, 2011	J. Bloom Private Citizen
1746	September 29, 2011	R. Woiler Private Citizen
1747	September 29, 2011	R. Novkow Private Citizen
1748	September 29, 2011	R. Lem Private Citizen
1749	September 29, 2011	N. Nettles Private Citizen
1750	September 29, 2011	S. Sanders Private Citizen
1751	September 29, 2011	K. I. Henry Private Citizen
1752	September 29, 2011	Dr. J. Nicholson Private Citizen
1753	September 29, 2011	J. Countryman Private Citizen
1754	September 29, 2011	Dr. J. Arrowsmith Private Citizen
1755	September 29, 2011	B. League Private Citizen
1756	September 29, 2011	D. Barbee Private Citizen
1757	September 29, 2011	E. McCollum Private Citizen
1758	September 29, 2011	V. Gibbens Private Citizen
1759	September 29, 2011	Lynn (no surname provided) Private Citizen
1760	September 29, 2011	C. Bush Private Citizen
1761	September 29, 2011	J. Wallace Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1762	September 29, 2011	B. Ikler Private Citizen
1763	September 29, 2011	R. Schell Private Citizen
1764	September 29, 2011	J. McDade Private Citizen
1765	September 29, 2011	M. King Private Citizen
1766	September 29, 2011	Dr. R. Genovese Private Citizen
1767	September 29, 2011	J. Birdsong Private Citizen
1768	September 29, 2011	C. Steohens Private Citizen
1769	September 29, 2011	J. Scalone Private Citizen
1770	September 29, 2011	A. Saldana Private Citizen
1771	September 29, 2011	M. S. Kalb Private Citizen
1772	September 29, 2011	D. Shugar Private Citizen
1773	September 29, 2011	Dr. B. Howard-Pitney Private Citizen
1774	September 29, 2011	E. Coffman Private Citizen
1775	September 29, 2011	S. James Private Citizen
1776	September 29, 2011	R. Schmetzer Private Citizen
1777	September 29, 2011	E. Usadi Private Citizen
1778	September 29, 2011	H. and G. Rockwood III Private Citizens
1779	September 29, 2011	B. Dunn Private Citizen
1780	September 29, 2011	J. Beckman Private Citizen
1781	September 29, 2011	L. Donati Private Citizen
1782	September 29, 2011	J. Magnarella Private Citizen
1783	September 29, 2011	H. Kahn Private Citizen
1784	September 29, 2011	J. Thurman Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1785	September 29, 2011	J. Caldwell Private Citizen
1786	September 29, 2011	F. Gilmore Private Citizen
1787	September 29, 2011	Dr. L. Vardy Private Citizen
1788	September 29, 2011	D. and C. Shelton Private Citizens
1789	September 29, 2011	F. Dula Private Citizen
1790	September 29, 2011	M. Eberhart Private Citizen
1791	September 29, 2011	S. Nevius Private Citizen
1792	September 29, 2011	L. Sanders Private Citizen
1793	September 29, 2011	A. Pratt Private Citizen
1794	September 29, 2011	Dr. M. Atherton Private Citizen
1795	September 29, 2011	S. Blair Private Citizen
1796	September 29, 2011	L. Reis Private Citizen
1797	September 29, 2011	P. Matejcek Private Citizen
1798	September 29, 2011	L. Chandler Private Citizen
1799	September 29, 2011	M. Griego Private Citizen
1800	September 29, 2011	B. Bennett Private Citizen
1801	September 29, 2011	J. Howe Private Citizen
1802	September 29, 2011	A. Hansen Private Citizen
1803	September 29, 2011	H. Leertouwer Private Citizen
1804	September 29, 2011	G. Tice Private Citizen
1805	September 29, 2011	N. Thompson Private Citizen
1806	September 29, 2011	N. Terry Private Citizen
1807	September 29, 2011	Dr. S. Cochran Private Citizen

**EPA-HQ-OAR-2010-0505**

<b><i>Document ID</i></b>	<b><i>Date Submitted</i></b>	<b><i>Name and Affiliation (number of commenters)</i></b>
1808	September 29, 2011	K. Fletcher Private Citizen
1809	September 29, 2011	J. Jaeger Private Citizen
1810	September 29, 2011	K. Cooper Private Citizen
1811	September 29, 2011	A. Holstein Private Citizen
1812	September 29, 2011	T. Seto Private Citizen
1813	September 29, 2011	T. Merrill Private Citizen
1814	September 29, 2011	R. Greiner Private Citizen
1815	September 29, 2011	B. Strasko Private Citizen
1816	September 29, 2011	K. Loomis Private Citizen
1817	September 29, 2011	R. Robitaille Private Citizen
1818	September 29, 2011	E. Balogh Private Citizen
1819	September 29, 2011	S. Evans Private Citizen
1820	September 29, 2011	J. Steele Private Citizen
1821	September 29, 2011	J. Clark Private Citizen
1822	September 29, 2011	N. Kurtz Private Citizen
1823	September 29, 2011	M. Cunningham Private Citizen
1824	September 29, 2011	H. Thomas Private Citizen
1825	September 29, 2011	A. Shapiro Private Citizen
1826	September 29, 2011	R. Ysasi Private Citizen
1827	September 29, 2011	Dr. J. Brown Private Citizen
1828	September 29, 2011	S. Young Private Citizen
1829	September 29, 2011	S. Rubenstein Private Citizen
1830	September 29, 2011	M. Maroon Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1831	September 29, 2011	L. Flaccavento Private Citizen
1832	September 29, 2011	R. Yepsen Private Citizen
1833	September 29, 2011	M. Boyett Private Citizen
1834	September 29, 2011	A. Zito Private Citizen
1835	September 29, 2011	J. Skurray Private Citizen
1836	September 29, 2011	J. Fisher Private Citizen
1837	September 29, 2011	S. Brown Private Citizen
1838	September 29, 2011	K. Young Private Citizen
1839	September 29, 2011	S. Stantejsky Private Citizen
1840	September 29, 2011	B. Kobernuss Private Citizen
1841	September 29, 2011	R. Ribeiro Private Citizen
1842	September 29, 2011	R. Hill Private Citizen
1843	September 29, 2011	Dr. C. Thomasson Private Citizen
1844	September 29, 2011	R. Mckenzie Private Citizen
1845	September 29, 2011	S. Kearney Private Citizen
1846	September 29, 2011	J. Cutler Private Citizen
1847	September 29, 2011	M. Chan Private Citizen
1848	September 29, 2011	A. Gwartney Private Citizen
1849	September 29, 2011	L. Larson Private Citizen
1850	September 29, 2011	L. Avant Private Citizen
1851	September 29, 2011	M. Culp Private Citizen
1852	September 29, 2011	B. Loigman Private Citizen
1853	September 29, 2011	P. Mortensen Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1854	September 29, 2011	C. Keefe Private Citizen
1855	September 29, 2011	C. Millhouse Private Citizen
1856	September 29, 2011	C. Nichols Private Citizen
1857	September 29, 2011	V. Mullins Private Citizen
1858	September 29, 2011	E. Muelder Private Citizen
1859	September 29, 2011	L. Hanratty Private Citizen
1860	September 29, 2011	J. Slezak Fritz Private Citizen
1861	September 29, 2011	J. Serrano Private Citizen
1862	September 29, 2011	Dr. A. Botwin Private Citizen
1863	September 29, 2011	C. Fulcher Private Citizen
1864	September 29, 2011	C. Lippincott Private Citizen
1865	September 29, 2011	D. Wooll Private Citizen
1866	September 29, 2011	J. McGee Private Citizen
1867	September 29, 2011	D. Mark Private Citizen
1868	September 9, 2011	M. Brezin Private Citizen
1869	September 29, 2011	J. Simonson Private Citizen
1870	September 29, 2011	M. Starkey Private Citizen
1871	September 29, 2011	B. C. Dick Private Citizen
1872	September 29, 2011	J. S. Lennon Private Citizen
1873	September 29, 2011	S. Bourgeois Private Citizen
1874	September 29, 2011	J. Loring Private Citizen
1875	September 29, 2011	B. Kaiser Private Citizen
1876	September 29, 2011	Dr. K. Hurley Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1877	September 29, 2011	Dr. P. Bertoncini Private Citizen
1878	September 29, 2011	R. Miale Private Citizen
1879	September 29, 2011	R. Blotter Private Citizen
1880	September 29, 2011	D. Dutelle Private Citizen
1881	September 29, 2011	Dr. D. Glick Private Citizen
1882	September 29, 2011	J. Cohen Private Citizen
1883	September 29, 2011	L. Spelman Private Citizen
1884	September 29, 2011	Dr. D. Nord Private Citizen
1885	September 29, 2011	V. Young Private Citizen
1886	September 29, 2011	T. Davis Private Citizen
1887	September 29, 2011	R. Meredith Private Citizen
1888	September 29, 2011	R. Meredith Private Citizen
1889	September 29, 2011	T. Whitcombe Private Citizen
1890	September 29, 2011	S. Patterson Private Citizen
1891	September 29, 2011	S. Helmholtz Private Citizen
1892	September 29, 2011	S. Fouche Private Citizen
1893	September 29, 2011	C. Nix Private Citizen
1894	September 29, 2011	G. Buzzetti Private Citizen
1895	September 29, 2011	D. Soohoo Private Citizen
1896	September 29, 2011	L. Shelton Private Citizen
1897	September 29, 2011	J. McCrone-Ephraim Private Citizen
1898	September 29, 2011	Dr. N. Wooduff Private Citizen
1899	September 29, 2011	C. Dzubak Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1900	September 29, 2011	F. Sugarman Private Citizen
1901	September 29, 2011	R. Fisher Private Citizen
1902	September 29, 2011	A. Drelles Private Citizen
1903	September 29, 2011	N. Friend Private Citizen
1904	September 29, 2011	S. McDonough Private Citizen
1905	September 29, 2011	R. Ottinger Private Citizen
1906	September 29, 2011	Dr. J. McClure Private Citizen
1907	September 29, 2011	V. Mosca-Clark Private Citizen
1908	September 29, 2011	D. Soong Private Citizen
1909	September 29, 2011	J. Boots Private Citizen
1910	September 29, 2011	S. Getter Private Citizen
1911	September 29, 2011	W. Roberson Private Citizen
1912	September 29, 2011	W. Pass Private Citizen
1913	September 29, 2011	E. Bernhard Private Citizen
1914	September 29, 2011	M. Sherman Private Citizen
1915	September 29, 2011	Dr. W. Moore Private Citizen
1916	September 29, 2011	K. Michasiow-Levy Private Citizen
1917	September 29, 2011	S. Rios Private Citizen
1918	September 29, 2011	H. Brene Private Citizen
1919	September 29, 2011	B. Mulliken Private Citizen
1920	September 29, 2011	C. Strother Private Citizen
1921	September 29, 2011	R. Tomaselli Private Citizen
1922	September 29, 2011	C. Lawson Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1923	September 29, 2011	H. Ricciardi Private Citizen
1924	September 29, 2011	E. Kappos Private Citizen
1925	September 29, 2011	M. Kindelberger Private Citizen
1926	September 29, 2011	B. Smith Private Citizen
1927	September 29, 2011	J. Davis Private Citizen
1928	September 29, 2011	K. Tretten Private Citizen
1929	September 29, 2011	B. Ellingson Private Citizen
1930	September 29, 2011	G. Koury Private Citizen
1931	September 29, 2011	Dr. F. Norris Private Citizen
1932	September 29, 2011	Dr. N. Rapp Private Citizen
1933	September 29, 2011	V. Jhaveri Private Citizen
1934	September 29, 2011	K. McInyre Private Citizen
1935	September 29, 2011	J. Albers Private Citizen
1936	September 29, 2011	S. Smith Private Citizen
1937	September 29, 2011	K. Otero Private Citizen
1938	September 29, 2011	S. Lopez Private Citizen
1939	September 29, 2011	J. Paul Private Citizen
1940	September 29, 2011	C. Long Private Citizen
1941	September 29, 2011	A. Waters Private Citizen
1942	September 29, 2011	E. Greisch Private Citizen
1943	September 29, 2011	D. Peckler Private Citizen
1944	September 29, 2011	S. Hartmann Private Citizen
1945	September 29, 2011	N. Douglas Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1946	September 29, 2011	A. Phillips Kushigemachi Private Citizen
1947	September 29, 2011	R. Terrell Private Citizen
1948	September 29, 2011	R. Terrell Private Citizen
1949	September 29, 2011	P. Brockman Private Citizen
1950	September 29, 2011	D. Siegal Private Citizen
1951	September 29, 2011	B. Pontones Private Citizen
1952	September 29, 2011	Dr. S.M. & A.R. Shahed Private Citizens
1953	September 29, 2011	J. Millner Private Citizen
1954	September 29, 2011	L. Atkinson Private Citizen
1955	September 29, 2011	S. V. Dolsen Private Citizen
1956	September 29, 2011	Dr. D. Dow Private Citizen
1957	September 29, 2011	G. Nicolls Private Citizen
1958	September 29, 2011	P. Donovan Private Citizen
1959	September 29, 2011	D. Gaspard Private Citizen
1960	September 29, 2011	P. Sargent Private Citizen
1961	September 29, 2011	N. Hatalsky Private Citizen
1962	September 29, 2011	K. Gallagher Private Citizen
1963	September 29, 2011	R. and B. Stippec Private Citizens
1964	September 29, 2011	P. Cusano Private Citizen
1965	September 29, 2011	S. McNeil Private Citizen
1966	September 29, 2011	J. Riggs Private Citizen
1967	September 29, 2011	M. A. Waddel Private Citizen
1968	September 29, 2011	F. Harper Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1969	September 29, 2011	S. DeMers Private Citizen
1970	September 29, 2011	L. Vaughters Private Citizen
1971	September 29, 2011	R. Medina Private Citizen
1972	September 29, 2011	T. Thurman Private Citizen
1973	September 29, 2011	J. Riggs Private Citizen
1974	September 29, 2011	R. Knablin Private Citizen
1975	September 29, 2011	M. Briley Private Citizen
1976	September 29, 2011	J. Shaw Private Citizen
1977	September 29, 2011	V. Wingert Private Citizen
1978	September 29, 2011	R. Lazzarini Private Citizen
1979	September 29, 2011	J. Bilenky Private Citizen
1980	September 29, 2011	Dr. W. Wagner Private Citizen
1981	September 29, 2011	J. Buehler Private Citizen
1982	September 29, 2011	S. Hubbard-Reeves Private Citizen
1983	September 29, 2011	M. E. Ryall Private Citizen
1984	September 29, 2011	A. Huff Private Citizen
1985	September 29, 2011	B. Sageng Private Citizen
1986	September 29, 2011	E. Clovis Private Citizen
1987	September 29, 2011	F. Dews Private Citizen
1988	September 29, 2011	D. Slocum Private Citizen
1989	September 29, 2011	P. Keliher Private Citizen
1990	September 29, 2011	J. Goddard Private Citizen
1991	September 29, 2011	K. Herczegh Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
1992	September 29, 2011	J. Laudisio Private Citizen
1993	September 29, 2011	J. Weills Private Citizen
1994	September 29, 2011	Z. Carter Private Citizen
1995	September 29, 2011	A. Theobald Private Citizen
1996	September 29, 2011	M. Quandt Private Citizen
1997	September 29, 2011	Sierra Club Mass Comment Campaign(23,560)
1998	September 29, 2011	M. Melanson Private Citizen
1999	September 29, 2011	E. Ray Private Citizen
2000	September 29, 2011	Dr. M. Weigel Private Citizen
2001	September 29, 2011	M. Call Private Citizen
2002	September 29, 2011	G. Dailey Private Citizen
2003	September 29, 2011	C. Weaver Private Citizen
2004	September 29, 2011	S. Vance Private Citizen
2005	September 29, 2011	E. Gage Private Citizen
2006	September 29, 2011	E. Scott Private Citizen
2007	September 29, 2011	B. Nordahl Private Citizen
2008	September 29, 2011	Y. Autrey-Schell Private Citizen
2009	September 29, 2011	A. Berg Private Citizen
2010	September 29, 2011	E. Albright Private Citizen
2011	September 29, 2011	K. Kosek Private Citizen
2012	September 29, 2011	T. Cotter Private Citizen
2013	September 29, 2011	N. Zora Private Citizen
2014	September 29, 2011	R. Sargent Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2015	September 29, 2011	L. Groves Private Citizen
2016	September 29, 2011	S. Bender Private Citizen
2017	September 29, 2011	Dr. C. Nazor Private Citizen
2018	September 29, 2011	G. Clements Private Citizen
2019	September 29, 2011	J. Ailey Private Citizen
2020	September 29, 2011	R. Yohalem Private Citizen
2021	September 29, 2011	D. Mueller Private Citizen
2022	September 29, 2011	T. McClinton Private Citizen
2023	September 29, 2011	K. Sackton Private Citizen
2024	September 29, 2011	M. Reed Private Citizen
2025	September 29, 2011	M. Ritti Private Citizen
2026	September 29, 2011	Dr. R. S. Grossman Private Citizen
2027	September 29, 2011	B. Chaisson Private Citizen
2028	September 29, 2011	T. Shoemaker Private Citizen
2029	September 29, 2011	R. Bichard Private Citizen
2030	September 29, 2011	A. Swift Private Citizen
2031	September 29, 2011	R. DeLeo Private Citizen
2032	September 29, 2011	S. Cooper Private Citizen
2033	September 29, 2011	M. Kaskel Private Citizen
2034	September 29, 2011	N. Armstrong Private Citizen
2035	September 29, 2011	A. Starun Private Citizen
2036	September 29, 2011	K. Feinberg Private Citizen
2037	September 29, 2011	J. Hernandez Private Citizen

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*EPA-HQ-OAR-2010-0505*

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<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
2038	September 29, 2011	Dr. R. R. Johnson Private Citizen
2039	September 29, 2011	J. Unsinn Private Citizen
2040	September 29, 2011	T. Tereskiewicz Private Citizen
2041	October 4, 2011	A. Millbrooke Private Citizen
2042	September 29, 2011	J. Mueller Private Citizen
2043	September 29, 2011	J. Rodrick Private Citizen
2044	September 29, 2011	A. Harlib Private Citizen
2045	September 29, 2011	A. Camino Private Citizen
2046	September 29, 2011	R. Rayle Private Citizen
2047	September 29, 2011	Dr. L Wolterg Private Citizen
2048	September 29, 2011	G. Allerton Private Citizen
2049	September 29, 2011	F. Kloch Private Citizen
2050	September 29, 2011	C. Bruno Private Citizen
2051	September 29, 2011	S. Klein Private Citizen
2052	September 29, 2011	B. Boyce Private Citizen
2053	September 29, 2011	S. Lemoncelli Private Citizen
2055	September 29, 2011	D. Wallach Private Citizen
2056	September 29, 2011	Dr. M. Janes Private Citizen
2057	September 29, 2011	J. Lindeboom Private Citizen
2058	September 29, 2011	J. Dortch Private Citizen
2059	September 29, 2011	B. Stevens Private Citizen
2060	September 29, 2011	B. DeLuca Private Citizen
2061	September 29, 2011	A. Preston Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2062	September 29, 2011	J. Mealer Private Citizen
2063	September 29, 2011	C. L. Townsend Private Citizen
2064	September 29, 2011	E. Ahl Private Citizen
2065	September 29, 2011	D. Weinberg-Kinsey Private Citizen
2066	September 29, 2011	K. Gore Private Citizen
2067	September 29, 2011	P. Stangeland Private Citizen
2068	September 29, 2011	S. Betterly Private Citizen
2069	September 29, 2011	P. Lichtenwalner Private Citizen
2070	September 29, 2011	D. Gendvil Private Citizen
2071	September 29, 2011	S. Garver Private Citizen
2072	September 29, 2011	J. Marino Private Citizen
2073	October 5, 2011	R. Amp and G. Butz Private Citizen
2074	September 29, 2011	S. Nelson Private Citizen
2075	September 29, 2011	Dr. C. T. Williams Private Citizen
2076	September 29, 2011	V. Smedberg Private Citizen
2077	September 29, 2011	B. Ranharter Private Citizen
2078	September 29, 2011	R. Valdez Private Citizen
2079	September 29, 2011	O. Shaw Private Citizen
2080	September 29, 2011	M. Cole Private Citizen
2081	September 29, 2011	A. Wolf Private Citizen
2082	September 29, 2011	L. Lane Private Citizen
2083	September 29, 2011	C. Steytler Private Citizen
2084	September 29, 2011	P. Rowe Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2085	September 29, 2011	J. Fiske Private Citizen
2086	September 29, 2011	E. Blumensaadt Private Citizen
2087	September 29, 2011	T. Hamilton Private Citizen
2088	September 29, 2011	A. Gallagher Private Citizen
2089	September 29, 2011	T. Hamilton Private Citizen
2090	September 29, 2011	F. Welty Private Citizen
2091	September 29, 2011	T. Aldridge Private Citizen
2092	September 29, 2011	J. Riggs Private Citizen
2093	September 29, 2011	S. Morris Private Citizen
2094	September 29, 2011	J. Katz Private Citizen
2095	September 29, 2011	M. Underwood Private Citizen
2096	September 29, 2011	J. Ben-Ari Private Citizen
2097	September 29, 2011	J. Carlson Private Citizen
2098	September 29, 2011	C. Heller Private Citizen
2099	September 29, 2011	K. Cappa Private Citizen
2100	September 29, 2011	J. Lyles Private Citizen
2101	September 29, 2011	S. Dvorsky Private Citizen
2102	September 29, 2011	Dr. L. Vaughan Private Citizen
2103	September 29, 2011	T. Kozlowski Private Citizen
2104	September 29, 2011	G. Pace Private Citizen
2105	September 29, 2011	K. Cramer Private Citizen
2106	September 29, 2011	M. Vayssieres Private Citizen
2107	September 29, 2011	J. Glover Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2108	September 29, 2011	P. Hollenbeak Private Citizen
2109	September 29, 2011	J. Spoon Private Citizen
2110	September 29, 2011	A. Vollbrecht Private Citizen
2111	September 29, 2011	J. Holabird Private Citizen
2112	September 29, 2011	M. Grimaldo Private Citizen
2113	September 29, 2011	Dr. M. Atherton Private Citizen
2114	September 29, 2011	M. Murphy Private Citizen
2115	September 29, 2011	Dr. W. Saunders Private Citizen
2116	September 29, 2011	Dr. J. Tavener Private Citizen
2117	September 29, 2011	K. Hauck Private Citizen
2118	September 29, 2011	A. Swan Private Citizen
2119	September 29, 2011	C. Fette Private Citizen
2120	September 29, 2011	Dr. D. Drews Private Citizen
2121	September 29, 2011	E. Allen Private Citizen
2122	September 29, 2011	Dr. J. Goldman Private Citizen
2123	September 29, 2011	H. Booth Private Citizen
2124	September 29, 2011	S. and P. Furlong Private Citizens
2125	September 29, 2011	S. Chaudhary Private Citizen
2126	September 29, 2011	J. Janssen Private Citizen
2127	September 29, 2011	C. Perry Private Citizen
2128	September 29, 2011	E. Larson Private Citizen
2129	September 29, 2011	N. Sherman Private Citizen
2130	September 29, 2011	G. Coleman Private Citizen



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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2131	September 29, 2011	D. Simpson Private Citizen
2132	September 29, 2011	G. Fullerton Private Citizen
2133	September 29, 2011	K. Cappa Private Citizen
2134	September 29, 2011	M. Genin Private Citizen
2135	September 29, 2011	M. Eliades Private Citizen
2136	September 29, 2011	M. Smith Private Citizen
2137	September 29, 2011	R. Weiss Private Citizen
2138	September 29, 2011	R. Powell Private Citizen
2139	September 29, 2011	M. Hosey Private Citizen
2140	September 29, 2011	C. Grimley Private Citizen
2141	September 29, 2011	S. Melhorn Private Citizen
2142	September 29, 2011	B. and C. Riggs Private Citizens
2143	September 29, 2011	P. Petkovich Private Citizen
2144	September 29, 2011	J. Zang Private Citizen
2145	September 29, 2011	Dr. S. C. Jones Private Citizen
2146	September 29, 2011	J. Wallace Private Citizen
2147	September 29, 2011	M. Tyler Private Citizen
2148	September 29, 2011	V. Maturen Private Citizen
2149	September 29, 2011	B. Drew Private Citizen
2150	September 29, 2011	E. Burn Private Citizen
2151	September 29, 2011	C. Boughton Private Citizen
2152	September 29, 2011	D. Cush Private Citizen
2153	September 29, 2011	R. Shannon Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2154	September 29, 2011	J. Medling Private Citizen
2155	September 29, 2011	E. Webb Private Citizen
2156	September 29, 2011	D. Frey Private Citizen
2157	September 29, 2011	R. Powell Private Citizen
2158	September 29, 2011	M. Cato Private Citizen
2159	September 29, 2011	S. Williams Private Citizen
2160	September 29, 2011	C. Casey Private Citizen
2161	September 29, 2011	H. Hickok Private Citizen
2162	September 29, 2011	Dr. R. McNair Private Citizen
2163	September 29, 2011	C. Burzynski Private Citizen
2164	September 29, 2011	B. O'Brien Private Citizen
2165	September 29, 2011	Dr. M. Tretter Private Citizen
2166	September 29, 2011	Dr. E. Chute Private Citizen
2167	September 29, 2011	L. Melvin Private Citizen
2168	September 29, 2011	S. Huffmyer Private Citizen
2169	September 29, 2011	J. Marden Private Citizen
2170	September 29, 2011	J. Saylor Private Citizen
2171	September 29, 2011	Dr. K. Carney-Godley Private Citizen
2172	September 29, 2011	B. Cope Private Citizen
2173	September 29, 2011	Bruce B. Private Citizen
2174	September 29, 2011	G. Merchant Private Citizen
2175	September 29, 2011	N. Hiatt Private Citizen
2176	September 29, 2011	R. Schmetzer Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2177	September 29, 2011	A. McNeill Private Citizen
2178	September 29, 2011	R. Prosek Private Citizen
2179	September 29, 2011	M.L. Lee Private Citizen
2180	September 29, 2011	G. Merchant Private Citizen
2181	September 29, 2011	K. Saint Private Citizen
2182	September 29, 2011	C. Williams Private Citizen
2183	September 29, 2011	B. Carlson Private Citizen
2184	September 29, 2011	M. Linck Private Citizen
2185	September 29, 2011	C. Chatfield Private Citizen
2186	September 29, 2011	M. Finneran Private Citizen
2187	October 11, 2011	Anonymous Public Comment
2188	September 29, 2011	R. Buckley Private Citizen
2189	September 29, 2011	W. Hollingshead Private Citizen
2190	September 29, 2011	V. Rigdon Private Citizen
2191	September 29, 2011	K. Larsen Private Citizen
2192	September 29, 2011	S. Erickson Private Citizen
2193	September 29, 2011	R. Wells Private Citizen
2194	September 29, 2011	C. Pagano Private Citizen
2195	September 29, 2011	Sister J. P. Ridgeo Private Citizen
2196	September 29, 2011	Dr. L. Matin Private Citizen
2197	September 29, 2011	E. M. Green Private Citizen
2198	September 29, 2011	H. Shipps Private Citizen
2199	September 29, 2011	A. O'Connell Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2200	September 29, 2011	E. Firor Private Citizen
2201	September 29, 2011	B. A. White Private Citizen
2202	September 29, 2011	K. Roberts Private Citizen
2203	September 29, 2011	M. Ashelman Private Citizen
2204	September 29, 2011	C. Barnes Private Citizen
2205	September 29, 2011	R. Terry Private Citizen
2206	September 29, 2011	L. Allen Private Citizen
2207	September 29, 2011	J. Maguina Private Citizen
2208	September 29, 2011	Dr. W. Berglund Private Citizen
2209	October 7, 2011	Anonymous public comment
2210	September 29, 2011	A. Lukaszewski Private Citizen
2211	September 29, 2011	C. George Private Citizen
2212	September 29, 2011	J. Romano Private Citizen
2213	September 29, 2011	K. Owens Private Citizen
2214	September 29, 2011	Dr. C. Riseng Private Citizen
2215	September 29, 2011	M. Gloeckner Private Citizen
2216	September 29, 2011	D. D. Haines Private Citizen
2217	September 29, 2011	R. Paquin Private Citizen
2218	September 29, 2011	P. Taccetta Private Citizen
2219	September 29, 2011	D. Meaders Private Citizen
2220	September 29, 2011	D. Christenson Private Citizen
2221	September 29, 2011	C. Tice-Tomasik Private Citizen
2222	September 29, 2011	B. Anderson Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2223	September 29, 2011	V. Lowell Private Citizen
2224	September 29, 2011	Dr. M. Headrick Private Citizen
2225	September 29, 2011	M. Davidek Private Citizen
2226	September 29, 2011	M. Corvington Private Citizen
2227	September 29, 2011	F. Lienhard Private Citizen
2228	October 5, 2011	C. J. Nelson Private Citizen
2229	October 5, 2011	R. and O. Robison Private Citizen
2230	October 5, 2011	P. Simmons Private Citizen
2231	October 5, 2011	J. Barnes Private Citizen
2232	October 5, 2011	N. Wiggins Private Citizen
2233	October 6, 2011	Dr. D. Moscatello Private Citizen
2234	October 6, 2011	P. Cunningham Private Citizen
2235	October 6, 2011	E. Knight Private Citizen
2236	October 7, 2011	M. Swearingen Private Citizen
2237	October 7, 2011	S. McDougal Private Citizen
2238	October 7, 2011	M. Knapp Private Citizen
2239	October 8, 2011	K. & Mary Jo Haag Private Citizen
2240	October 9, 2011	L. Garvey Private Citizen
2241	October 10, 2011	M. Pangasa Private Citizen
2242	October 10, 2011	R. Masur Private Citizen
2243	October 11, 2011	J. and M. Stoltenberg Private Citizens
2244	September 29, 2011	K. King Private Citizen
2245	October 11, 2011	Lisa S. Beal Interstate Natural Gas Association of America

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2246	September 29, 2011	J. S. Fritz Private Citizen
2247	September 29, 2011	Dr. D. Muir Private Citizen
2248	September 29, 2011	C. K. Ross Private Citizen
2249	September 29, 2011	J. Fiske Private Citizen
2250	September 29, 2011	B. A. Leonard Private Citizen
2251	September 29, 2011	B. Sonies Private Citizen
2252	September 29, 2011	D. Stanko Private Citizen
2253	September 29, 2011	M. Shaw Private Citizen
2254	September 29, 2011	J. Kirman Private Citizen
2255	September 29, 2011	Dr. C. Walter Private Citizen
2256	September 29, 2011	Dr. M. A. Flournoy Private Citizen
2257	September 29, 2011	J. Mayo Private Citizen
2258	September 29, 2011	L. M. Padilla Private Citizen
2259	September 29, 2011	A. Rodgers Private Citizen
2260	September 29, 2011	S. Schreckengaust Private Citizen
2261	September 29, 2011	E. Boyles Private Citizen
2262	September 29, 2011	D. Bell Private Citizen
2263	September 29, 2011	J. Kelly Private Citizen
2264	September 29, 2011	P. Mitchell Private Citizen
2265	September 29, 2011	L. Mattimore Private Citizen
2266	October 3, 2011	W. Lewis Private Citizen
2267	October 3, 2011	M. Cato Private Citizen
2268	September 29, 2011	J. Fiske Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2269	September 29, 2011	S. J. Worthman Private Citizen
2270	September 29, 2011	S. Flores Private Citizen
2271	September 29, 2011	R. Stanton Private Citizen
2272	September 29, 2011	K. Greising Private Citizen
2273	September 29, 2011	C. Malcolm Private Citizen
2274	September 29, 2011	D. M. Sullivan Private Citizen
2275	September 29, 2011	M. Rosenblum Private Citizen
2276	September 29, 2011	S. Armstrong Private Citizen
2277	September 29, 2011	M. Markesteyn Private Citizen
2278	September 29, 2011	G. Cheadle Private Citizen
2279	September 29, 2011	J. Lund Private Citizen
2280	September 29, 2011	L. Gohlke Private Citizen
2281	September 29, 2011	V. Barragan Private Citizen
2282	September 29, 2011	M. Holguin Private Citizen
2283	September 29, 2011	N. Jackson Private Citizen
2284	September 29, 2011	H. Klussman Private Citizen
2285	September 29, 2011	R. Lazcano Private Citizen
2286	September 29, 2011	D. Carswell Private Citizen
2287	September 29, 2011	D. Kloe Private Citizen
2288	September 29, 2011	S. Lee Private Citizen
2289	September 29, 2011	Dr. D. T. Webb Private Citizen
2290	September 29, 2011	K. Donahue Private Citizen
2291	October 3, 2011	M. Shimizu Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2292	October 3, 2011	M. Yolles Private Citizen
2293	October 3, 2011	Anonymous public comment
2294	October 4, 2011	A. Apt Private Citizen
2295	October 4, 2011	M. Johnstad Private Citizen
2296	October 4, 2011	C. Daum Private Citizen
2297	October 4, 2011	P. House Private Citizen
2298	October 4, 2011	P. Borneman Private Citizen
2299	September 29, 2011	Dr. L. Morone Private Citizen
2300	September 29, 2011	D. Davis Private Citizen
2301	September 29, 2011	J. Madden Private Citizen
2302	September 29, 2011	S. V. Gorder Private Citizen
2303	September 29, 2011	C. Tebay Private Citizen
2304	October 4, 2011	K. Birck Private Citizen
2305	October 4, 2011	D. Conradi Private Citizen
2306	October 4, 2011	R. Pust Private Citizen
2307	September 29, 2011	S. Furber Private Citizen
2308	September 29, 2011	S. Pentrek Private Citizen
2309	September 29, 2011	S. Holzinger Private Citizen
2310	September 29, 2011	C. Vallance Private Citizen
2311	October 4, 2011	J. Zankner Private Citizen
2312	October 4, 2011	D. Miller Private Citizen
2313	September 29, 2011	M. Filman Private Citizen
2314	September 29, 2011	S. Gruenler Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2315	September 29, 2011	S. Cutler Private Citizen
2316	September 29, 2011	S. Smith
2317	September 29, 2011	I. Pribanic Private Citizen
2318	September 29, 2011	M. Steele Private Citizen
2319	September 29, 2011	R. Miller Private Citizen
2320	September 29, 2011	L. E. Durr Private Citizen
2321	September 29, 2011	Dr. S. Buesing Private Citizen
2322	September 29, 2011	F. Kelley Private Citizen
2323	September 29, 2011	P. Jones Private Citizen
2324	September 29, 2011	C. S. Siegel Private Citizen
2325	October 4, 2011	T. Crawford Private Citizen
2326	October 4, 2011	K. Armbruster Private Citizen
2327	October 4, 2011	H. Shoup Private Citizen
2328	October 4, 2011	B. Hunner Private Citizen
2329	September 29, 2011	K. Kennedy Private Citizen
2330	September 29, 2011	D. Kuyk Private Citizen
2331	September 29, 2011	M. Gargiullo Private Citizen
2332	September 29, 2011	A. Lenore Private Citizen
2333	September 29, 2011	S. Richardson Private Citizen
2334	September 29, 2011	R. Clark Private Citizen
2335	September 29, 2011	D. Berman Private Citizen
2336	September 29, 2011	D. Riall Private Citizen
2337	September 29, 2011	D. Faraci Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2338	September 29, 2011	L. Cotts Private Citizen
2339	September 29, 2011	T. Ciarmatori Private Citizen
2340	September 29, 2011	E. Gravlin Private Citizen
2341	September 29, 2011	H. Andersen Private Citizen
2342	September 29, 2011	G. Burdick Private Citizen
2343	September 29, 2011	A. Alsop Private Citizen
2344	September 29, 2011	K. Fox Private Citizen
2345	September 29, 2011	Dr. N. Jackson Private Citizen
2346	September 29, 2011	C. Iberg Private Citizen
2347	September 29, 2011	B. Hartung Private Citizen
2348	September 29, 2011	L. Davidson Private Citizen
2349	September 29, 2011	P. Cross Private Citizen
2350	September 29, 2011	T. Bloyd Private Citizen
2351	September 29, 2011	L. Larrabee Private Citizen
2352	September 29, 2011	Mrs. S. P. Private Citizen
2353	September 29, 2011	C. Fernsworth Private Citizen
2354	September 29, 2011	D. Williamson Private Citizen
2355	September 29, 2011	J. Danielson Private Citizen
2356	September 29, 2011	J. Auris Private Citizen
2357	September 29, 2011	P. Bradbury Private Citizen
2358	September 29, 2011	J. L. Sueur Private Citizen
2359	September 29, 2011	R. Roberts Private Citizen
2360	September 29, 2011	K. W. Trott Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2361	September 29, 2011	K. Nimetz Private Citizen
2362	September 29, 2011	G. Newbold Private Citizen
2363	September 29, 2011	A. Gress Private Citizen
2364	September 29, 2011	J. Draper Private Citizen
2365	September 29, 2011	S. Brodak Private Citizen
2366	September 29, 2011	K. Trebesch Private Citizen
2367	September 29, 2011	L. Teman Private Citizen
2368	September 29, 2011	W. Hanks Private Citizen
2369	September 29, 2011	L. Guignard Private Citizen
2370	September 29, 2011	M.L. Morgenstern Private Citizen
2371	September 29, 2011	A. Pierce Private Citizen
2372	September 30, 2011	Mass Comment Campaign sponsoring organization unknown (10)
2373	September 29, 2011	A. Malden Private Citizen
2374	September 29, 2011	B. Vaughn Private Citizen
2375	September 29, 2011	J. Burgen Private Citizen
2376	September 29, 2011	P. Palla Private Citizen
2377	September 29, 2011	K. Sundar Private Citizen
2378	September 29, 2011	J. Kerler Private Citizen
2379	September 29, 2011	B. Havlena Private Citizen
2380	October 4, 2011	N. and D. Jochem Private Citizens
2381	October 4, 2011	V. Jimenez Private Citizen
2382	October 4, 2011	M. Gilbert Private Citizen
2383	October 4, 2011	L. Gilleon Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2384	October 4, 2011	N. Bishop Private Citizen
2385	October 4, 2011	M. Strainer Private Citizen
2386	October 4, 2011	E. Morris Private Citizen
2387	October 4, 2011	N. Schildcrout Private Citizen
2388	October 4, 2011	J. Matthews Private Citizen
2389	October 4, 2011	Anonymous public comment
2390	October 5, 2011	C. Gustafson Private Citizen
2391	October 5, 2011	P. Earle Private Citizen
2392	October 5, 2011	D. Wainwright Private Citizen
2393	October 5, 2011	E. Denton Private Citizen
2394	October 5, 2011	D. Sobie Private Citizen
2395	September 29, 2011	R. Bogue Private Citizen
2396	September 29, 2011	C. Gelinas Private Citizen
2397	September 29, 2011	K. de Weille Private Citizen
2398	September 29, 2011	K. Hikiji Private Citizen
2399	September 29, 2011	M. Kein Private Citizen
2400	September 29, 2011	B. Downey Private Citizen
2401	September 29, 2011	B. Langan Private Citizen
2402	September 29, 2011	J. Thompson Private Citizen
2403	September 29, 2011	J. Price Private Citizen
2404	September 29, 2011	N. Rutland Private Citizen
2405	September 29, 2011	R. Epstein Private Citizen
2406	September 29, 2011	S. Shane Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2407	September 29, 2011	H. Findley Private Citizen
2408	September 29, 2011	J. Silman Private Citizen
2409	September 29, 2011	J. Berghorn Private Citizen
2410	September 29, 2011	V. Vanderau Private Citizen
2411	September 29, 2011	P. Hull Private Citizen
2412	September 29, 2011	J. Hicks Private Citizen
2413	September 29, 2011	D. Fisher Private Citizen
2414	September 29, 2011	S. Belair Private Citizen
2415	September 29, 2011	C. Chowen Private Citizen
2416	September 29, 2011	L. Nabity Private Citizen
2417	September 29, 2011	N. Walbourn Private Citizen
2418	September 29, 2011	Dr. C. Cafarelli Private Citizen
2419	September 29, 2011	N. Ruggles Private Citizen
2420	September 29, 2011	S. E. Smith Private Citizen
2421	September 29, 2011	T. Stephens Private Citizen
2422	September 29, 2011	C. Lamet Private Citizen
2423	September 29, 2011	D. Heaton Private Citizen
2424	September 29, 2011	C. King Private Citizen
2425	September 29, 2011	Dr. F. Guerrero Private Citizen
2426	September 29, 2011	M. Hunter Private Citizen
2427	September 29, 2011	K. Coventry Private Citizen
2428	September 29, 2011	R. Wright Private Citizen
2429	September 29, 2011	G. Huizenga Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2430	September 29, 2011	E. Copp-Phelan Private Citizen
2431	September 29, 2011	P. McWillimas Private Citizen
2432	September 29, 2011	F. Akers Private Citizen
2433	September 29, 2011	B. Advani Private Citizen
2434	September 29, 2011	Dr. S. Jones Private Citizen
2435	September 29, 2011	S. Avery Private Citizen
2436	September 29, 2011	S. Koch Private Citizen
2437	September 29, 2011	J. Anton Private Citizen
2438	September 29, 2011	R. Rentner Private Citizen
2439	September 29, 2011	M. Emery Private Citizen
2440	September 29, 2011	S. Woerner Private Citizen
2441	September 29, 2011	H. Gressitt Private Citizen
2442	September 29, 2011	S. Butler Private Citizen
2443	September 29, 2011	V. Free Private Citizen
2444	September 29, 2011	G. Adams Private Citizen
2445	September 29, 2011	M. J. Krul Private Citizen
2446	September 29, 2011	S. Thomas Private Citizen
2447	September 29, 2011	Dr. A. Grasso Private Citizen
2448	September 29, 2011	L. Torres Private Citizen
2449	September 29, 2011	C. Kubiak Private Citizen
2450	September 29, 2011	B. Burgess Private Citizen
2451	September 29, 2011	C. Prose Private Citizen
2452	September 29, 2011	C. Lange Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2453	September 29, 2011	R. Couture Private Citizen
2454	September 29, 2011	A. Galvez Private Citizen
2455	September 29, 2011	C. Fried Private Citizen
2456	September 29, 2011	D. Horton Private Citizen
2457	September 29, 2011	A. Loretan Private Citizen
2458	September 29, 2011	S. Omiecinski Private Citizen
2459	September 29, 2011	E. Dixon Private Citizen
2460	September 29, 2011	C. Taylor Private Citizen
2461	September 29, 2011	W. and N. Klink Private Citizen
2462	September 29, 2011	E. Virgil Private Citizen
2463	September 29, 2011	B. Wicklen Private Citizen
2464	September 29, 2011	K. Rooney Private Citizen
2465	September 29, 2011	J. Mitchell Private Citizen
2466	September 29, 2011	L. Lindsay Private Citizen
2467	September 29, 2011	R. Fischer Private Citizen
2468	September 29, 2011	G. Prusaitis Private Citizen
2469	September 29, 2011	R. Rudinger Private Citizen
2470	September 29, 2011	B. Trevvett Private Citizen
2471	September 29, 2011	R. Sdano Private Citizen
2472	September 29, 2011	K. Blair Private Citizen
2473	September 29, 2011	J. Smith Private Citizen
2474	September 29, 2011	L. Jarsocrak Private Citizen
2475	September 29, 2011	L. Dixon Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2476	September 29, 2011	B. Kern Private Citizen
2477	September 29, 2011	N. Lyman Private Citizen
2478	September 29, 2011	B. Culp Private Citizen
2479	September 29, 2011	M. Gardner Private Citizen
2480	September 29, 2011	L. Lubonty Private Citizen
2481	September 29, 2011	E. Breiling Private Citizen
2482	September 29, 2011	E. Asher Private Citizen
2483	September 29, 2011	J. Keevert Private Citizen
2484	September 29, 2011	J. Spyder Private Citizen
2485	September 29, 2011	J. Patrick Private Citizen
2486	September 29, 2011	B. Rosenblum Private Citizen
2487	September 29, 2011	E. Malina Private Citizen
2488	September 29, 2011	N. H. Bernstein Private Citizen
2489	September 29, 2011	K. Schweiss Private Citizen
2490	September 29, 2011	M. Ellington Private Citizen
2491	September 29, 2011	N. Engelfried Private Citizen
2492	September 29, 2011	G. Wray Private Citizen
2493	September 29, 2011	J. Auris Private Citizen
2494	September 29, 2011	M. Milton Private Citizen
2495	September 29, 2011	C. Orwick Private Citizen
2496	September 29, 2011	S. Clark Private Citizen
2497	September 29, 2011	B. Hurst Private Citizen
2498	September 29, 2011	Dr. R. Trimmer Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2499	September 29, 2011	Dr. P. Mathieson Private Citizen
2500	September 29, 2011	D. Richardson Private Citizen
2501	September 29, 2011	G. Neustadt Private Citizen
2502	September 29, 2011	V. Tomasson Private Citizen
2503	September 29, 2011	R. Smith Private Citizen
2504	September 29, 2011	S. Parker Private Citizen
2505	September 29, 2011	R. Peterson Private Citizen
2506	September 29, 2011	A. Carrino Private Citizen
2507	September 29, 2011	W. Silver Private Citizen
2508	September 29, 2011	J. Hargleroad Private Citizen
2509	September 29, 2011	B. Thacker Private Citizen
2510	September 29, 2011	S. Stein Private Citizen
2511	September 29, 2011	Dr. M. Piscitelli Private Citizen
2512	September 29, 2011	L. Wolf Private Citizen
2513	September 29, 2011	D. Thayer Private Citizen
2514	September 29, 2011	A. McCarthy Private Citizen
2515	September 29, 2011	J. Pequette Private Citizen
2516	September 29, 2011	E. Jimenez Private Citizen
2517	September 29, 2011	P. Lee Private Citizen
2518	September 29, 2011	M. Fullerton Private Citizen
2519	September 29, 2011	J. Forgione Private Citizen
2520	September 29, 2011	D. Graeve Private Citizen
2521	September 29, 2011	S. Marquez Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2522	September 29, 2011	P. Grady Private Citizen
2523	September 29, 2011	J. Alanis Private Citizen
2524	September 29, 2011	D. Dodd Private Citizen
2525	September 29, 2011	P. Kaiser Private Citizen
2526	September 29, 2011	P. Jarvis Private Citizen
2527	September 29, 2011	C. Talucci Private Citizen
2528	September 29, 2011	N. Brosnan Private Citizen
2529	September 29, 2011	K. Regalado Private Citizen
2530	September 29, 2011	T. Nighswonger Private Citizen
2531	September 29, 2011	Dr. Z. Moursi Private Citizen
2532	September 29, 2011	V. Stone Private Citizen
2533	September 29, 2011	M. Blair Private Citizen
2534	September 29, 2011	E. Johnson Private Citizen
2535	September 29, 2011	C. Swatek Private Citizen
2536	September 29, 2011	L. Dixon Private Citizen
2537	September 29, 2011	J. Carlin Private Citizen
2538	September 29, 2011	D. Updegraff Private Citizen
2539	September 29, 2011	J. Ames-Curtis Private Citizen
2540	September 29, 2011	P. Kaminski Private Citizen
2541	September 29, 2011	R. Webb Private Citizen
2542	September 29, 2011	D. Melino Private Citizen Private Citizen
2543	September 29, 2011	M. Beuth Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2544	September 29, 2011	E. Franklin Private Citizen
2545	September 29, 2011	K. McLellan Private Citizen
2546	September 29, 2011	R. Backlund Private Citizen
2547	September 29, 2011	W. Birdwell Private Citizen
2548	September 29, 2011	J. Vulcan Private Citizen
2549	September 29, 2011	K. Mcconnell Private Citizen
2550	September 29, 2011	C. Rappoport Private Citizen
2551	September 29, 2011	A. Kuenzel Private Citizen
2552	September 29, 2011	J. Wroe Private Citizen
2553	September 29, 2011	J. Harris Private Citizen
2554	September 29, 2011	B. Gallo Private Citizen
2555	September 29, 2011	J. Norgrove Private Citizen
2556	September 29, 2011	K. Lombardozzi Private Citizen
2557	September 29, 2011	M. Faugno Private Citizen
2558	September 29, 2011	L. Pohl Private Citizen
2559	September 29, 2011	E. Carpenter Private Citizen
2560	September 29, 2011	T. and S. Loomis Private Citizens
2561	September 29, 2011	G. Hatfield Private Citizen
2562	September 29, 2011	K. Kaczmarek Private Citizen
2563	September 29, 2011	P. Pittenger Private Citizen
2564	September 29, 2011	S. Berger Private Citizen
2565	September 29, 2011	S. Wolff Private Citizen
2566	September 29, 2011	M. Hanks Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2567	September 29, 2011	B. Barton Private Citizen
2568	September 29, 2011	C. Wyant Private Citizen
2569	September 29, 2011	R. Swiatek Private Citizen
2570	September 29, 2011	A. Nienaber Private Citizen
2571	September 29, 2011	A. Hagerty Private Citizen
2572	September 29, 2011	W. Barclay Private Citizen
2573	September 29, 2011	D. Morace Private Citizen
2574	September 29, 2011	M. Gauguet Private Citizen
2575	September 29, 2011	C. Collins Private Citizen
2576	September 29, 2011	B. Casper Private Citizen
2577	September 29, 2011	P. Canan Private Citizen
2578	September 29, 2011	K. Lehr Private Citizen
2579	September 29, 2011	M. McCleskey Private Citizen
2580	September 29, 2011	E. Bukowski Private Citizen
2581	September 29, 2011	L. Douglass Private Citizen
2582	September 29, 2011	C. Thompson Private Citizen
2583	September 29, 2011	J. Maisel Private Citizen
2584	September 29, 2011	T. Testa Private Citizen
2585	September 29, 2011	P. Robertson Private Citizen
2586	September 29, 2011	M. Beaver Private Citizen
2587	September 29, 2011	L. Baxley Private Citizen
2588	September 29, 2011	B. George Private Citizen
2589	September 29, 2011	J. Dalnoky Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2590	September 29, 2011	M. Barron Private Citizen
2591	September 29, 2011	Z. Sackstein Private Citizen
2592	September 29, 2011	D. Jacobi Private Citizen
2593	September 29, 2011	B. Birnbaum Private Citizen
2594	September 29, 2011	S. Taichert Private Citizen
2595	September 29, 2011	R. Buck Private Citizen
2596	September 29, 2011	K. Miller Private Citizen
2597	September 29, 2011	C. Bell Private Citizen
2598	September 29, 2011	S. Hamilton Private Citizen
2599	September 29, 2011	R. Friday Private Citizen
2600	September 29, 2011	R. Witbeck Private Citizen
2601	September 29, 2011	C. Manzano Private Citizen
2602	September 29, 2011	S. Crognale Private Citizen
2603	September 29, 2011	J. S. Lennon Private Citizen
2604	September 29, 2011	S. Iverson Private Citizen
2605	September 29, 2011	J. Kruger Private Citizen
2606	September 29, 2011	E. George Private Citizen
2607	September 29, 2011	M. Broad Private Citizen
2608	September 29, 2011	J. Garcia Private Citizen
2609	September 29, 2011	G. Burke Private Citizen
2610	September 29, 2011	V. Hauser Private Citizen
2611	September 29, 2011	K. Reed Private Citizen
2612	September 29, 2011	D. DiBasio Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2613	June 29, 2011	E. Hitchcock Private Citizen
2614	September 29, 2011	D. Rigolizzi Private Citizen
2615	September 29, 2011	A. Drucker Private Citizen
2616	September 29, 2011	Dr. T. Doebber Private Citizen
2617	September 29, 2011	J. Burrie Private Citizen
2618	September 29, 2011	M. Vane Private Citizen
2619	September 29, 2011	B. Mansfield Private Citizen
2620	September 29, 2011	D. Ryniec Private Citizen
2621	September 29, 2011	J. Wald Private Citizen
2622	September 29, 2011	M. Cloghessy Private Citizen
2623	September 29, 2011	G. Greer Private Citizen
2624	September 29, 2011	A. Bradley Private Citizen
2625	September 29, 2011	N. Gallagher Private Citizen
2626	September 29, 2011	T. Tercheck Private Citizen
2627	September 29, 2011	L. Zielinski Private Citizen
2628	September 29, 2011	Emily P. (no surname provided) Private Citizen
2629	September 29, 2011	D. Horton Private Citizen
2630	September 29, 2011	J. Pacal Private Citizen
2631	September 29, 2011	H. Haehlen Private Citizen
2632	September 29, 2011	M. Fusco Private Citizen
2633	September 29, 2011	H. Van Hoozer Private Citizen
2634	September 29, 2011	J. Siddons Private Citizen
2635	September 29, 2011	K. Taylor Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2636	September 29, 2011	K. Gianopoulos Private Citizen
2637	September 29, 2011	A. Blankinship Private Citizen
2638	September 29, 2011	L. Rasmussen Private Citizen
2639	September 29, 2011	F. Martens Private Citizen
2640	September 29, 2011	M. Buszek Private Citizen
2641	September 29, 2011	T. Roth Private Citizen
2642	September 29, 2011	J. Van Dinter Private Citizen
2643	September 29, 2011	L. Lynn Private Citizen
2644	September 29, 2011	D. Judge-Lord Private Citizen
2645	September 29, 2011	K. McShane Private Citizen
2646	September 29, 2011	W. Schneider Private Citizen
2647	September 29, 2011	A. Conklin Private Citizen
2648	September 29, 2011	C. Brobst Private Citizen
2649	September 29, 2011	G. Bryer Private Citizen
2650	September 29, 2011	P. Bisesi Private Citizen
2651	September 29, 2011	M. Fowler Private Citizen
2652	September 29, 2011	W. Peterson Private Citizen
2653	September 29, 2011	A. Grammatico Private Citizen
2654	September 29, 2011	B. Snapp Private Citizen
2655	September 29, 2011	L. Knight Private Citizen
2656	September 29, 2011	S. Sanders Private Citizen
2657	September 29, 2011	M. Fishel Private Citizen
2658	September 29, 2011	M. Borich Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2659	September 29, 2011	D. Hooper Private Citizen
2660	September 29, 2011	D. Lifton Private Citizen
2661	September 29, 2011	G. Creswell Private Citizen
2662	September 29, 2011	A. Vrugtman Private Citizen
2663	September 29, 2011	L. Wrixon Private Citizen
2664	September 29, 2011	D. Gribshaww Private Citizen
2665	September 29, 2011	N. Moelter Private Citizen
2666	September 29, 2011	M. Pings Private Citizen
2667	September 29, 2011	E. Hallinan Private Citizen
2668	September 29, 2011	J. Nash Private Citizen
2669	September 29, 2011	S. Eaton Private Citizen
2670	September 29, 2011	R. Pugliese Private Citizen
2671	September 29, 2011	M. Leonard Private Citizen
2672	September 29, 2011	L. Hope Private Citizen
2673	September 29, 2011	S. Carmack Private Citizen
2674	September 29, 2011	A. Furfaro Private Citizen
2675	September 29, 2011	A. Ploumis Bradley Private Citizen
2676	September 29, 2011	D. Boyle-Clapp Private Citizen
2677	September 29, 2011	J. Smythe Private Citizen
2678	September 29, 2011	D. Raven Private Citizen
2679	September 29, 2011	W. Jones Private Citizen
2680	September 29, 2011	E. Sloan Private Citizen
2681	September 29, 2011	V. Rosenstreich Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2682	September 29, 2011	L. Falls Private Citizen
2683	September 29, 2011	R. Elias Private Citizen
2684	September 29, 2011	M. Orr Private Citizen
2685	September 29, 2011	M. Henley Private Citizen
2686	September 29, 2011	D. Freeman Private Citizen
2687	September 29, 2011	H. Cohen Private Citizen
2688	September 29, 2011	P. Nadler Private Citizen
2689	September 29, 2011	M. Taylor Private Citizen
2690	September 29, 2011	C. Shattuck Private Citizen
2691	September 29, 2011	D. Stirling Private Citizen
2692	September 29, 2011	D. Hull Private Citizen
2693	September 29, 2011	C. Adams Private Citizen
2694	September 29, 2011	R. Olsen Private Citizen
2695	September 29, 2011	K. Trong Private Citizen
2696	September 29, 2011	R. Shaffer Private Citizen
2697	September 29, 2011	D. Bish Private Citizen
2698	September 29, 2011	H. Douglas Private Citizen
2699	September 29, 2011	S. James Private Citizen
2700	September 29, 2011	D. Lewis Private Citizen
2701	September 29, 2011	T. Henderson Private Citizen
2702	September 29, 2011	C. Williams Private Citizen
2703	September 29, 2011	K. LaFon Private Citizen
2704	September 29, 2011	J. Boriack Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2705	September 29, 2011	J. Pratt Private Citizen
2706	September 29, 2011	B. Lupi Private Citizen
2707	September 29, 2011	D. Sutherland Private Citizen
2708	September 29, 2011	L. Graffious Private Citizen
2709	September 29, 2011	R. Lathern-Ponneck Private Citizen
2710	September 29, 2011	T. Stephas Private Citizen
2711	September 29, 2011	M. Thomas Private Citizen
2712	September 29, 2011	M. Dalnoky Private Citizen
2713	September 29, 2011	R. Launier Private Citizen
2714	September 29, 2011	C. Sterne Private Citizen
2715	September 29, 2011	C. Andersen Private Citizen
2716	September 29, 2011	C. Hahin Private Citizen
2717	October 11, 2011	L. K. Christensen Private Citizen
2718	October 11, 2011	Chris Daum Oasis Montana Inc.
2719	September 29, 2011	P. King-Rediger Private Citizen
2720	September 29, 2011	L. Helgedalen Private Citizen
2721	September 29, 2011	P. McGee Private Citizen
2722	September 29, 2011	E. Whitmore Private Citizen
2723	September 29, 2011	K. Brill Private Citizen
2724	September 29, 2011	L. Spector Private Citizen
2725	September 29, 2011	T. Bugas Private Citizen
2726	September 29, 2011	L. Jordan Private Citizen
2727	September 29, 2011	O. Christopher Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2728	September 29, 2011	J. Hardy Private Citizen
2729	September 29, 2011	D. Schuessler Private Citizen
2730	September 29, 2011	L. Gorsuch Private Citizen
2731	September 29, 2011	M. Johnson Private Citizen
2732	September 29, 2011	M. Naimark Private Citizen
2733	September 29, 2011	A. Kiley Private Citizen
2734	September 29, 2011	S. Verow Private Citizen
2735	September 29, 2011	P. Schramm Private Citizen
2736	September 29, 2011	P. Damon Private Citizen
2737	September 29, 2011	J. Taylor Private Citizen
2738	September 29, 2011	R. Gebert Private Citizen
2739	September 29, 2011	K. Fedorov Private Citizen
2740	September 29, 2011	Dr. L. Black Private Citizen
2741	September 29, 2011	S. Bacon Private Citizen
2742	September 29, 2011	H. De Marne Private Citizen
2743	September 29, 2011	D. Utevsy Private Citizen
2744	September 29, 2011	L. Lawson Private Citizen
2745	September 29, 2011	Jill Godmilow Private Citizen
2746	September 29, 2011	M. Sinclair Private Citizen
2747	September 29, 2011	C. Baril Private Citizen
2748	September 29, 2011	M. Fitzgerald Private Citizen
2749	September 29, 2011	T. Chaudhry Private Citizen
2750	September 14, 2011	Peter D. Robertson America's Natural Gas Alliance

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2751	October 16, 2011	E. Karnowski Private Citizen
2752	September 29, 2011	K. Rockett Private Citizen
2753	September 29, 2011	J. Wagner Private Citizen
2754	September 29, 2011	L. Dameron Private Citizen
2755	September 29, 2011	M. Vogl Private Citizen
2756	September 29, 2011	N. Cianchetta Private Citizen
2757	September 29, 2011	R. Strack Private Citizen
2758	September 29, 2011	Dr. S. LaBine Private Citizen
2759	September 29, 2011	J. Pettit Private Citizen
2760	September 29, 2011	G. Boderke Private Citizen
2761	October 12, 2011	M. Pangasa Private Citizen
2762	October 12, 2011	Anonymous public comment
2763	September 29, 2011	S. Bedford Private Citizen
2764	October 12, 2011	T. Ream Private Citizen
2765	October 14, 2011	B. Brown Private Citizen
2766	October 11, 2011	N. Lusskin Private Citizen
2767	October 13, 2011	L. Liller Private Citizen
2768	October 13, 2011	M. Yoder Private Citizen
2769	September 29, 2011	M. Finley Private Citizen
2770	September 29, 2011	J. Horne Private Citizen
2771	September 29, 2011	S. Getter Private Citizen
2772	September 29, 2011	J. Felker Private Citizen
2773	September 29, 2011	K. Clifton Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2774	September 29, 2011	M. Schab Private Citizen
2775	September 29, 2011	R. Franco Private Citizen
2776	September 29, 2011	M. Schmotzer Private Citizen
2777	September 29, 2011	M. Engelman Private Citizen
2778	September 29, 2011	R. Tiedemann Private Citizen
2779	September 29, 2011	B. Ames Private Citizen
2780	September 29, 2011	R. Brown Private Citizen
2781	September 29, 2011	D. and A. Riley Private Citizen
2782	September 29, 2011	M. Savrasova Private Citizen
2783	September 29, 2011	K. Scott Private Citizen
2784	September 29, 2011	N. Coslar Private Citizen
2785	September 29, 2011	L. Frank Private Citizen
2786	September 29, 2011	S. Johnston Private Citizen
2787	September 29, 2011	Dr. F. Schwartzwald Private Citizen
2788	September 29, 2011	A. McLeod Private Citizen
2789	September 29, 2011	J. Steele Private Citizen
2790	September 29, 2011	C. Hall Private Citizen
2791	September 29, 2011	A. Encarnacao Private Citizen
2792	September 29, 2011	M. Smith Private Citizen
2793	September 29, 2011	J. Hitchcock Private Citizen
2794	September 29, 2011	T. Hash Private Citizen
2795	September 29, 2011	H. Findley Private Citizen
2796	September 29, 2011	H. Schlicker Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2797	October 17, 2011	Anonymous public comment
2798	September 29, 2011	M. Joyce Private Citizen
2799	September 29, 2011	K. Klein Private Citizen
2800	October 8, 2011	G. D. Bateman Private Citizen
2801	October 12, 2011	L. Todd Private Citizen
2802	September 29, 2011	T. Hocott Private Citizen
2803	October 12, 2011	Shaun Porter Arkansas Water Protection Alliance
2804	September 29, 2011	J. Janecki Private Citizen
2805	September 29, 2011	J. Sherman Private Citizen
2806	September 29, 2011	T. Myers Private Citizen
2807	October 14, 2011	C. A. Dimon Private Citizen
2808	September 29, 2011	P. Chow Private Citizen
2809	September 29, 2011	N. Wilkison Private Citizen
2810	September 29, 2011	C. Kuster Private Citizen
2811	September 29, 2011	B. Tague Private Citizen
2812	September 29, 2011	A. Letey Private Citizen
2813	September 29, 2011	P. Valek Private Citizen
2814	September 29, 2011	A. Young Private Citizen
2815	September 29, 2011	T. Hempel Private Citizen
2816	September 29, 2011	R. Nielsen Private Citizen
2817	September 29, 2011	S. Rekdal Private Citizen
2818	September 29, 2011	S. Rekdal Private Citizen
2819	September 29, 2011	C. Russell Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2820	September 29, 2011	M. Miller Private Citizen
2821	October 17, 2011	Anonymous public comment
2822	October 17, 2011	Anonymous public comment
2823	October 17, 2011	K. Spring Private Citizen
2824	October 17, 2011	A. Macdonald Private Citizen
2825	October 17, 2011	L. Harter Private Citizen
2826	October 17, 2011	A. Lindsey Private Citizen
2827	October 17, 2011	D. Van Buren Private Citizen
2828	October 17, 2011	C. Hoyer Private Citizen
2829	October 17, 2011	J. Phillips Private Citizen
2830	October 17, 2011	G. Gardner Private Citizen
2831	October 17, 2011	A. C. Hander Private Citizen
2832	October 17, 2011	Dr. J. Perlman Private Citizen
2833	October 17, 2011	C. Stewart Private Citizen
2834	October 17, 2011	E. Gilbertson Private Citizen
2835	October 17, 2011	G. Nuckels Private Citizen
2836	October 17, 2011	S. Moffitt Private Citizen
2837	October 17, 2011	J. Gillmar Private Citizen
2838	October 17, 2011	R. Walter Private Citizen
2839	October 17, 2011	Dr. E. Robbins Private Citizen
2840	October 17, 2011	A. Bowen Private Citizen
2841	October 17, 2011	W. Handley Private Citizen
2842	October 17, 2011	P. Jerrells Private Citizen
2843	October 17, 2011	M. Badaloni Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2844	October 17, 2011	R. Holloway Private Citizen
2845	October 17, 2011	A. Teruel Private Citizen
2846	October 17, 2011	R. Hyer II Private Citizen
2847	October 17, 2011	L. Wadley Private Citizen
2848	October 17, 2011	E. McGuire Private Citizen
2849	October 17, 2011	M. Herrera Private Citizen
2850	October 17, 2011	D. Krolick Private Citizen
2851	October 17, 2011	S. Ebershoff-Coles Private Citizen
2852	October 17, 2011	F. Portell Private Citizen
2853	October 17, 2011	P. Sladek Private Citizen
2854	October 17, 2011	N. Paterno Private Citizen
2855	October 17, 2011	D. Vogel Private Citizen
2856	October 17, 2011	R. Bennett Private Citizen
2857	October 17, 2011	A. Cone Private Citizen
2858	October 17, 2011	A. Cone Private Citizen
2859	October 17, 2011	J. Broadbent Private Citizen
2860	October 17, 2011	S. Stoudemire Private Citizen
2861	October 17, 2011	L. Patten Private Citizen
2862	October 17, 2011	C. McVie Private Citizen
2863	October 17, 2011	T. Nass Private Citizen
2864	October 17, 2011	A. Young Private Citizen
2865	October 17, 2011	L. Weinberg Private Citizen
2866	October 17, 2011	Dr. L. Riebel Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2867	October 17, 2011	P. Ayres Private Citizen
2868	October 17, 2011	L. Taylor Private Citizen
2869	October 17, 2011	E. Dehuff Private Citizen
2870	October 17, 2011	E. Waldow Private Citizen
2871	October 17, 2011	G. Ross Private Citizen
2872	October 17, 2011	S. Pomeroy Private Citizen
2873	October 17, 2011	O. Tice Private Citizen
2874	October 17, 2011	J. Schall Private Citizen
2875	October 17, 2011	M. Smither Private Citizen
2876	October 17, 2011	M. Puett Private Citizen
2877	October 17, 2011	J. Cooper Private Citizen
2878	October 17, 2011	J. Pelton Private Citizen
2879	October 17, 2011	M. Wendorf Private Citizen
2880	October 17, 2011	W. Lachman Private Citizen
2881	October 17, 2011	N. Werne Private Citizen
2882	October 17, 2011	Dr. D. Snyder Private Citizen
2883	October 17, 2011	N. Kasper Private Citizen
2884	October 17, 2011	L. Pearson Private Citizen
2885	October 17, 2011	Dr. E. Riser-Roberts Private Citizen
2886	October 17, 2011	Dr. R. Meierotto Private Citizen
2887	October 17, 2011	J. Bennett Private Citizen
2888	October 17, 2011	F. Werner Private Citizen
2889	October 17, 2011	Dr. C. Mullin Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2890	October 17, 2011	M. H. Stephens Private Citizen
2891	October 17, 2011	S. Parsons Private Citizen
2892	October 17, 2011	D. Jordan Private Citizen
2893	October 17, 2011	D. Scacciaferro Private Citizen
2894	October 17, 2011	V. Richards-Taylor Private Citizen
2895	October 17, 2011	C. Shermer Private Citizen
2896	October 17, 2011	K. Williams Private Citizen
2897	October 17, 2011	T. Follett Private Citizen
2898	October 17, 2011	W. P. Abrams Private Citizen
2899	October 17, 2011	R. Allen Private Citizen
2900	October 17, 2011	C. Seibold Private Citizen
2901	October 17, 2011	A. Botwin Private Citizen
2902	October 17, 2011	J. Shuttleworth Private Citizen
2903	October 17, 2011	L. J. Solomon Private Citizen
2904	October 17, 2011	Dr. M. Campbell Private Citizen
2905	October 17, 2011	L. Landsverk Private Citizen
2906	October 18, 2011	L. Peck Private Citizen
2907	October 17, 2011	G. Zidbeck Private Citizen
2908	October 18, 2011	A. Presler Private Citizen
2909	October 17, 2011	D. Giles Private Citizen
2910	October 17, 2011	A. Brownstein Private Citizen
2911	October 17, 2011	H. Whitfield Private Citizen
2912	October 17, 2011	Dr. L. Stein Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2913	October 18, 2011	C. McCann Private Citizen
2914	October 17, 2011	E. Omalley Private Citizen
2915	October 17, 2011	S. Lyon Private Citizen
2916	October 17, 2011	L. Overbey Private Citizen
2917	October 18, 2011	Dr. T. Ettinger Private Citizen
2918	October 17, 2011	Dr. K. Comess Private Citizen
2919	October 17, 2011	D. Wasko Private Citizen
2920	October 17, 2011	C. Weston Private Citizen
2921	October 17, 2011	R. Thompson Private Citizen
2922	October 17, 2011	R. Koos Private Citizen
2923	October 17, 2011	Dr. D. Wirth Private Citizen
2924	October 17, 2011	S. Lores Private Citizen
2925	October 17, 2011	S. Clark Private Citizen
2926	October 17, 2011	H. Schlaff Private Citizen
2927	October 17, 2011	G. Cooper Jr. Private Citizen
2928	October 17, 2011	M. A. Hawxhurst Private Citizen
2929	October 17, 2011	E. Greisch Private Citizen
2930	October 18, 2011	J. Urbanas Private Citizen
2931	October 18, 2011	R. Rodriguez Private Citizen
2932	October 18, 2011	Dr. M. Rudnick Private Citizen
2933	October 18, 2011	S. Clay Private Citizen
2934	October 18, 2011	D. Johnson Private Citizen
2935	October 18, 2011	J. Amos Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2936	October 18, 2011	Dr. G. Marsh Private Citizen
2937	October 17, 2011	A. Schneider Private Citizen
2938	October 17, 2011	T. Milligan Private Citizen
2939	October 17, 2011	E. Davidson Private Citizen
2940	October 17, 2011	N. Casale Private Citizen
2941	October 17, 2011	B. George Private Citizen
2942	October 17, 2011	Dr. G. Thomsen Private Citizen
2943	October 17, 2011	N. Zorn Private Citizen
2944	October 18, 2011	D. Magrina Private Citizen
2945	October 18, 2011	S. Stauffer Private Citizen
2946	October 18, 2011	T. Tweedale
2947	October 18, 2011	Anonymous public comment
2948	October 18, 2011	SRF (initials only provided) Private Citizen
2949	October 16, 2011	S. Logan Private Citizen
2950	October 16, 2011	P. Orthwein Private Citizen
2951	October 16, 2011	Anonymous public comment
2952	October 15, 2011	D. Komlosy Private Citizen
2953	October 16, 2011	D. West Private Citizen
2954	October 17, 2011	J. Dortch Private Citizen
2955	October 16, 2011	W. Dent Private Citizen
2956	October 16, 2011	A. Leimanis Private Citizen
2957	October 16, 2011	E. Rencher Private Citizen
2958	October 17, 2011	C. Deveny Private Citizen
2959	October 17, 2011	D. Hammang Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2960	October 17, 2011	E. Jacobson Private Citizen
2961	October 17, 2011	C. Hunt Private Citizen
2962	October 17, 2011	J. Fletcher Private Citizen
2963	October 17, 2011	T. Richman Private Citizen
2964	October 17, 2011	G. Crouse Private Citizen
2965	October 18, 2011	J. Thacker Private Citizen
2966	October 18, 2011	B. Michalski Private Citizen
2967	October 17, 2011	M. Trifon Private Citizen
2968	October 18, 2011	T. Heislen Private Citizen
2969	October 18, 2011	J. Gau Private Citizen
2970	October 18, 2011	A. Lynch Private Citizen
2971	October 18, 2011	G. Nicholson Private Citizen
2972	October 18, 2011	R. Collins Private Citizen
2973	October 18, 2011	T. Wargo Private Citizen
2974	October 18, 2011	T. Heywood Private Citizen
2975	October 18, 2011	J. Kauth Private Citizen
2976	October 18, 2011	M. Bailey Private Citizen
2977	October 18, 2011	L. Kauffman Private Citizen
2978	October 18, 2011	M. Broughton Private Citizen
2979	October 17, 2011	A. Smith Private Citizen
2980	October 17, 2011	C. Marson Private Citizen
2981	October 18, 2011	L. Cook Private Citizen
2982	October 18, 2011	K. O'Connell Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
2983	October 18, 2011	J. Reel Private Citizen
2984	October 18, 2011	C. Meeker Private Citizen
2985	October 18, 2011	Dr. W. Loftus Private Citizen
2986	October 18, 2011	L. Healy Private Citizen
2987	October 18, 2011	N. Petersen Private Citizen
2988	October 18, 2011	A. Cash Private Citizen
2989	October 18, 2011	B. Pittenger Private Citizen
2990	October 18, 2011	J. Dinkmeyer Private Citizen
2991	October 18, 2011	F. Lurz Private Citizen
2992	October 18, 2011	L. Gerard Private Citizen
2993	October 18, 2011	E. Van den Bossche Private Citizen
2994	October 18, 2011	J. Durfee Private Citizen
2995	October 18, 2011	H. Schulze Private Citizen
2996	October 18, 2011	T. O'Neill Private Citizen
2997	October 18, 2011	H. Carr Private Citizen
2998	October 18, 2011	F. Hammer Private Citizen
2999	October 18, 2011	P. Meyers Private Citizen
3000	October 18, 2011	S. Baird Private Citizen
3001	October 18, 2011	C. Schneider Private Citizen
3002	October 18, 2011	K. Noaker Private Citizen
3003	October 18, 2011	R. Schneider Private Citizen
3004	October 18, 2011	K. Johnson Private Citizen
3005	October 18, 2011	Dr. T. Giunta Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3006	October 18, 2011	J. Stephen Private Citizen
3007	October 18, 2011	T. O. Nass Private Citizen
3008	October 18, 2011	K. Armstrong Private Citizen
3009	October 18, 2011	E. Vaughn Private Citizen
3010	October 18, 2011	J. Schultes Private Citizen
3011	October 18, 2011	T. MacKenzie Private Citizen
3012	October 18, 2011	J. Young Private Citizen
3013	October 18, 2011	R. Harris Private Citizen
3014	October 18, 2011	T. Calliope Private Citizen
3015	October 18, 2011	T. Keane Private Citizen
3016	October 18, 2011	G. and F. Alderson Private Citizens
3017	October 18, 2011	J. Pearson Private Citizen
3018	October 18, 2011	L. Larason Private Citizen
3019	October 18, 2011	R. Reed Private Citizen
3020	October 18, 2011	L. Yarbrough Private Citizen
3021	October 18, 2011	R. Tonachel Private Citizen
3022	October 18, 2011	A. McNeill Private Citizen
3023	October 18, 2011	J. Matthews Private Citizen
3024	October 18, 2011	S. Alex Private Citizen
3025	October 18, 2011	W. Griffith Private Citizen
3026	October 18, 2011	F. Rao Private Citizen
3027	October 18, 2011	E. Daniels Private Citizen
3028	October 19, 2011	K. Foley Private Citizen

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*EPA-HQ-OAR-2010-0505*

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<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
3029	October 19, 2011	B. Friedman Private Citizen
3030	October 18, 2011	F. Schilling Private Citizen
3031	October 18, 2011	B. McHenry Private Citizen
3032	October 18, 2011	J. Briones Private Citizen
3033	October 18, 2011	L. A. Pizzolon Private Citizen
3034	October 18, 2011	J. Lynn Private Citizen
3035	October 19, 2011	A. Jennings Private Citizen
3036	October 19, 2011	P. Langford Private Citizen
3037	October 17, 2011	B. Dahms Private Citizen
3038	October 18, 2011	J. Hicks Private Citizen
3039	October 18, 2011	A. Savett Private Citizen
3040	October 18, 2011	S. Eastman Private Citizen
3041	October 18, 2011	J. Wilson Private Citizen
3042	October 18, 2011	S. DenBraber Private Citizen
3043	October 18, 2011	Dr. J. Witte Private Citizen
3044	October 18, 2011	R. Shorin Private Citizen
3045	October 18, 2011	J. Horkulic Private Citizen
3046	October 18, 2011	C. Fischer Private Citizen
3047	October 18, 2011	M. Martin Private Citizen
3048	October 18, 2011	L. Salter Private Citizen
3049	October 18, 2011	T. White Private Citizen
3050	October 18, 2011	B. Breckenridge Private Citizen
3051	October 18, 2011	P. Gudava Private Citizen



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*EPA-HQ-OAR-2010-0505*

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<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
3052	October 18, 2011	G. Gomez Private Citizen
3053	October 18, 2011	R. Hoover Private Citizen
3054	October 18, 2011	M. Wagner Private Citizen
3055	October 18, 2011	L. Horowitz Private Citizen
3056	October 18, 2011	L. Winslow Private Citizen
3057	October 18, 2011	D. Young Private Citizen
3058	October 18, 2011	E. Wedlock Private Citizen
3059	October 19, 2011	C. Reom Private Citizen
3060	October 19, 2011	K. R. Pence Private Citizen
3061	October 19, 2011	E. Barry Private Citizen
3062	October 19, 2011	N. Roberts Private Citizen
3063	October 18, 2011	D. Stutzenburg Private Citizen
3064	October 18, 2011	E. Polesny Private Citizen
3065	October 18, 2011	P. Schramm Private Citizen
3066	October 18, 2011	M. Freeland Private Citizen
3067	October 18, 2011	J. Flatt Private Citizen
3068	October 18, 2011	R. Sandefur Private Citizen
3069	October 18, 2011	S. Altman Private Citizen
3070	October 19, 2011	K. Newman Private Citizen
3071	October 19, 2011	L. Hollings Private Citizen
3072	October 19, 2011	Susan B. Private Citizen
3073	October 19, 2011	G. Monroe Private Citizen
3074	October 19, 2011	H. Dunn Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3075	October 18, 2011	Dr. M. Mehdy Private Citizen
3076	October 18, 2011	W. Reed Private Citizen
3077	October 18, 2011	R. Lichty Private Citizen
3078	October 18, 2011	G. and J. Richardson Private Citizen
3079	October 18, 2011	D. Jentgen Private Citizen
3080	October 18, 2011	S. Sherman Private Citizen
3081	October 18, 2011	S. Ambler Private Citizen
3082	October 18, 2011	J. Feulner Private Citizen
3083	October 18, 2011	G. Adams Private Citizen
3084	October 18, 2011	B. Hameister Private Citizen
3085	October 18, 2011	M. Magruder Private Citizen
3086	October 18, 2011	T. Anglim Private Citizen
3087	October 18, 2011	P. Helm Private Citizen
3088	October 18, 2011	B. Green Private Citizen
3089	October 18, 2011	J. Corcoran Private Citizen
3090	October 18, 2011	S. Selbin Private Citizen
3091	October 18, 2011	M. Pratt Private Citizen
3092	October 19, 2011	J. Cleghorn Private Citizen
3093	October 19, 2011	K. Yearsley Private Citizen
3094	October 19, 2011	J. K. Miller Private Citizen
3095	October 19, 2011	J. Porter Private Citizen
3096	October 18, 2011	D. Collis Private Citizen
3097	October 18, 2011	D. Hawley Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3098	October 18, 2011	J. Archuleta Private Citizen
3099	October 18, 2011	L. Jolliffe Private Citizen
3100	October 18, 2011	P. Mechow Private Citizen
3101	October 18, 2011	L. Wimberly Private Citizen
3102	October 18, 2011	G. Casey Private Citizen
3103	October 19, 2011	S. Fitzpatrick Private Citizen
3104	October 19, 2011	T. Armao Private Citizen
3105	October 19, 2011	M. Merold Private Citizen
3107	October 18, 2011	D. Williams Private Citizen
3108	October 18, 2011	T. Palmer Private Citizen
3109	October 18, 2011	W. Fast Private Citizen
3110	October 18, 2011	L. Bartell Private Citizen
3111	October 18, 2011	E. Bonzo-Savage Private Citizen
3112	October 19, 2011	S. DeRosa Private Citizen
3113	October 19, 2011	J. Roelof Private Citizen
3114	October 19, 2011	R. Downing Private Citizen
3115	October 19, 2011	C. Simon Private Citizen
3116	October 19, 2011	P. Ghenoiu Private Citizen
3117	October 19, 2011	R. Langworthy Private Citizen
3118	October 18, 2011	K. Ash Private Citizen
3119	October 18, 2011	S. Christenson Private Citizen
3120	October 18, 2011	D. Winkel Private Citizen
3121	October 18, 2011	P. Elliott Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3122	October 18, 2011	G. Holden Private Citizen
3123	October 18, 2011	B. Brinker Private Citizen
3124	October 19, 2011	N. Gannon Private Citizen
3125	October 19, 2011	A. Carissimi Private Citizen
3126	October 19, 2011	F. Schwartzwald Private Citizen
3127	October 19, 2011	S. Serafin Private Citizen
3128	October 19, 2011	W. Quinn Private Citizen
3129	October 19, 2011	H. Alto Private Citizen
3130	October 19, 2011	S. McGuire Private Citizen
3131	October 19, 2011	K. Richard Private Citizen
3132	October 19, 2011	M. Nall Private Citizen
3133	October 19, 2011	R. Mihaly Private Citizen
3134	October 19, 2011	F. Whiteside Private Citizen
3135	October 19, 2011	R. Smith Private Citizen
3136	October 18, 2011	D. Janiak Private Citizen
3137	October 18, 2011	J. Fontaine Private Citizen
3138	October 18, 2011	J. Glenn Private Citizen
3139	October 18, 2011	L. Dumey Private Citizen
3140	October 18, 2011	C. Fotia Private Citizen
3141	October 18, 2011	M. Hill Private Citizen
3142	October 18, 2011	E. Jamieson Private Citizen
3143	October 19, 2011	S. Hoskin Private Citizen
3144	October 19, 2011	M. Wellington Private Citizen

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*EPA-HQ-OAR-2010-0505*

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<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
3145	October 18, 2011	B. Speidel Private Citizen
3146	October 18, 2011	J. A. Hall Private Citizen
3147	October 18, 2011	K. Schultes Private Citizen
3148	October 18, 2011	Z. Henderson Private Citizen
3149	October 18, 2011	V. Mosca-Clark Private Citizen
3150	October 18, 2011	R. Kasan Private Citizen
3151	October 19, 2011	M. Ferrero Private Citizen
3152	October 18, 2011	H. Hanna Private Citizen
3153	October 19, 2011	M. Lindsay Private Citizen
3154	October 19, 2011	D. Addison Private Citizen
3155	October 19, 2011	D. Fitzpatrick Private Citizen
3156	October 19, 2011	J. Bogle Private Citizen
3157	October 19, 2011	N. Gyetko Private Citizen
3158	October 19, 2011	S. McNall Private Citizen
3159	October 19, 2011	M. MacDonald Private Citizen
3160	October 19, 2011	M. Metje Private Citizen
3161	October 19, 2011	T. A. Hoffman Private Citizen
3162	October 19, 2011	R. Siegfried Private Citizen
3163	October 19, 2011	M. Wood Private Citizen
3164	October 19, 2011	S. Morgan Private Citizen
3165	October 19, 2011	D. Low Private Citizen
3166	October 19, 2011	M. Cansler Private Citizen
3167	October 19, 2011	C. Rieden Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3168	October 18, 2011	J. Furlan Private Citizen
3169	October 19, 2011	L. Wally Private Citizen
3170	October 19, 2011	M. Ritter Private Citizen
3171	October 18, 2011	M. O'Brien Private Citizen
3172	October 18, 2011	T. Wilson Private Citizen
3173	October 18, 2011	D. Waldron Private Citizen
3174	October 19, 2011	R. Kingsbery Private Citizen
3175	October 19, 2011	G. Macy Private Citizen
3176	October 18, 2011	J. Furlan Private Citizen
3177	October 19, 2011	R. Bonny Private Citizen
3178	October 19, 2011	D. Artemis Private Citizen
3179	October 19, 2011	M. Jameson Private Citizen
3180	October 19, 2011	Anonymous public comment
3181	October 19, 2011	S. D'Onofrio Private Citizen
3182	October 19, 2011	N. Gyetko Private Citizen
3183	October 19, 2011	D. Luck Private Citizen
3184	October 19, 2011	J. and S. Clewell Private Citizens
3185	October 19, 2011	R. Scco Private Citizen
3186	October 19, 2011	A. Birney Private Citizen
3187	October 19, 2011	L. Towne Private Citizen
3188	October 19, 2011	N. Weil Private Citizen
3189	October 19, 2011	J. Iskowitz Private Citizen
3190	October 19, 2011	R. Nelson Private Citizen

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*EPA-HQ-OAR-2010-0505*

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<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
3191	October 19, 2011	C. Kuehnl and E. Burke Private Citizens
3192	October 19, 2011	T. Herlache Private Citizen
3193	October 19, 2011	B. Koehler Private Citizen
3194	October 19, 2011	J. Elder Private Citizen
3195	October 19, 2011	M. Lukasiewicz Private Citizen
3196	October 19, 2011	K. Vogel Private Citizen
3197	October 19, 2011	G. Deary Private Citizen
3198	October 19, 2011	W. McMullin Private Citizen
3199	October 19, 2011	J. Tache Private Citizen
3200	October 19, 2011	N. Cabbage Private Citizen
3201	October 19, 2011	K. Walsh Private Citizen
3202	October 19, 2011	S. Plowman Private Citizen
3203	October 19, 2011	P. Guthrie Private Citizen
3204	October 19, 2011	M. Duran Private Citizen
3205	October 19, 2011	J. Kinzie Private Citizen
3206	October 18, 2011	R. Seaton Private Citizen
3207	October 19, 2011	K. Gougler Private Citizen
3208	October 19, 2011	T. Gilkyson Private Citizen
3209	October 19, 2011	L. S. Gewiss Private Citizen
3210	October 19, 2011	A. Shrestha Private Citizen
3211	October 19, 2011	R. Chilcoat Private Citizen
3212	October 18, 2011	L. Johnson Private Citizen
3213	October 18, 2011	R. Sdano Private Citizen

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*EPA-HQ-OAR-2010-0505*

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<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
3214	October 19, 2011	N. Septoff Private Citizen
3215	October 19, 2011	R. Kofler Private Citizen
3216	October 19, 2011	J. Shepherd Private Citizen
3217	October 18, 2011	R. Gentry Private Citizen
3218	October 18, 2011	J. Dart Private Citizen
3219	October 18, 2011	T. Travis Private Citizen
3220	October 18, 2011	M. Dillon Private Citizen
3221	October 18, 2011	B. Newsome Private Citizen
3222	October 19, 2011	Dr. L. Murray Private Citizen
3223	October 19, 2011	J. McLane Private Citizen
3224	October 18, 2011	R. Stanley Private Citizen
3225	October 19, 2011	K. Peterson Private Citizen
3226	October 19, 2011	A. Hamilton Private Citizen
3227	October 19, 2011	C. J. Patterson Private Citizen
3228	October 18, 2011	E. von Hoffmann Private Citizen
3229	October 18, 2011	L. Ponist Private Citizen
3230	October 19, 2011	W. Roberson Private Citizen
3231	October 19, 2011	K. Bryan Private Citizen
3232	October 19, 2011	M. Fish Private Citizen
3233	October 19, 2011	L. Walsh Private Citizen
3234	October 19, 2011	R. Umstatt Private Citizen
3235	October 19, 2011	A. Michel Private Citizen
3236	October 19, 2011	K. Gholsen Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3237	October 19, 2011	A. Lewis Private Citizen
3238	October 19, 2011	M. Tolpin Private Citizen
3239	October 19, 2011	Dr. E. Cole Private Citizen
3240	October 19, 2011	S. Robinson Private Citizen
3241	October 19, 2011	A. Malkin Private Citizen
3242	October 19, 2011	N. Engelfried Private Citizen
3243	October 19, 2011	Dr. P. Silveston Private Citizen
3244	October 19, 2011	W. Daniel Private Citizen
3245	October 19, 2011	R. Zucchi Private Citizen
3246	October 19, 2011	R. Barker Private Citizen
3247	October 19, 2011	L. and J. Patrie Private Citizen
3248	October 18, 2011	J. Stevenson Private Citizen
3249	October 18, 2011	E. Franzen Private Citizen
3250	October 19, 2011	J. Trimarchi Private Citizen
3251	October 19, 2011	E. Wolf Private Citizen
3252	October 19, 2011	B. Casper Private Citizen
3253	October 19, 2011	P. Rizzo Private Citizen
3254	October 19, 2011	J. Broadbent Private Citizen
3255	October 18, 2011	J. Botsko Private Citizen
3256	October 18, 2011	S. Brady Private Citizen
3257	October 18, 2011	E. Riebschlaeger, Sr. Private Citizen
3258	October 19, 2011	A. Weber Private Citizen
3259	October 19, 2011	D. Boylan Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3260	October 19, 2011	M. Shimizu Private Citizen
3261	October 19, 2011	J. Charrier Private Citizen
3262	October 19, 2011	S. Jordan Private Citizen
3263	October 19, 2011	J. Zarate Private Citizen
3264	October 19, 2011	L. Parisi Private Citizen
3265	October 20, 2011	S. Richardson Private Citizen
3266	October 19, 2011	L. Anderson Private Citizen
3267	October 19, 2011	S. Skrivanek Private Citizen
3268	October 19, 2011	M. Birmingham Private Citizen
3269	October 19, 2011	L. Vasquez Private Citizen
3270	October 19, 2011	J. Archuleta Private Citizen
3271	October 19, 2011	G. Gray Private Citizen
3272	October 19, 2011	W. Davis Private Citizen
3273	October 19, 2011	C. Wiley Private Citizen
3274	October 19, 2011	J. Wiley Private Citizen
3275	October 19, 2011	K. Smith Private Citizen
3276	October 19, 2011	T. Nass Private Citizen
3277	October 19, 2011	A. Smith Private Citizen
3278	October 19, 2011	B. Qutizow Private Citizen
3279	October 19, 2011	M. Stock Private Citizen
3280	October 19, 2011	N. Gladfelter Private Citizen
3281	October 19, 2011	G. Uransky Private Citizen
3282	October 19, 2011	A. Douglass Private Citizen

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*EPA-HQ-OAR-2010-0505*

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<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
3283	October 19, 2011	P. Braganza Private Citizen
3284	October 19, 2011	G. Baruch Private Citizen
3285	October 19, 2011	Dr. J. Weinstein Private Citizen
3286	October 19, 2011	G. Theobald Private Citizen
3287	October 19, 2011	K. Burroughs Private Citizen
3288	October 19, 2011	K. Swistak Private Citizen
3289	October 20, 2011	P. Brown Private Citizen
3290	October 19, 2011	R. Placone Private Citizen
3291	October 19, 2011	J. Hall Private Citizen
3292	October 19, 2011	M. Pezzati Private Citizen
3293	October 19, 2011	W. Schreier Private Citizen
3294	October 19, 2011	A. Whitlock Private Citizen
3295	October 19, 2011	R. Hosek Private Citizen
3296	October 19, 2011	K. Rowlett Private Citizen
3297	October 19, 2011	N. Gladfelter Private Citizen
3298	October 20, 2011	S. Friedman Private Citizen
3299	October 20, 2011	S. Toland Private Citizen
3300	October 19, 2011	L. Villasenor Private Citizen
3301	October 20, 2011	B. Schumacher Private Citizen
3302	October 20, 2011	P. Luehrmann Private Citizen
3303	October 20, 2011	D. Devo Private Citizen
3304	October 20, 2011	K. Simoniki Private Citizen
3305	October 20, 2011	V. Watson Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3306	September 16, 2011	Mass Comment Campaign sponsoring organization unknown (12)
3307	September 16, 2011	Mass Comment Campaign sponsoring organization unknown (14)
3308	September 30, 2011	Mass Comment Campaign sponsoring organization unknown (27)
3309	October 14, 2011	National Wildlife Federation Action Fund mass comment campaign (17,787)
3310	October 18, 2011	Mass Comment Campaign sponsoring organization unknown (4,701)
3311	October 19, 2011	D. Kates Private Citizen
3312	October 19, 2011	R. Hiers Private Citizen
3313	October 19, 2011	C. Shermer Private Citizen
3314	October 19, 2011	K. Randall Private Citizen
3315	October 19, 2011	N. Benoit Private Citizen
3316	October 19, 2011	T. Burdick Private Citizen
3317	October 19, 2011	H. Kermath-Vick Private Citizen
3318	October 19, 2011	P. Vellenga Private Citizen
3319	October 19, 2011	N. Kolwey Private Citizen
3320	October 19, 2011	B. Carter Private Citizen
3321	October 19, 2011	L. Wallin Private Citizen
3322	October 19, 2011	C. Miller Private Citizen
3323	October 19, 2011	Dr. D. Shoemaker Private Citizen
3324	October 19, 2011	J. Chase Private Citizen
3325	October 19, 2011	N. Bennett Private Citizen
3326	October 19, 2011	L. Stevens Private Citizen
3327	October 19, 2011	M. Roam Private Citizen
3328	October 19, 2011	P. Gallenkamp Private Citizen

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*EPA-HQ-OAR-2010-0505*

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<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
3329	October 19, 2011	J. Capozzelli Private Citizen
3330	October 19, 2011	D. Spremulli Private Citizen
3331	October 19, 2011	J. Dinkmeyer Private Citizen
3332	October 19, 2011	K. Saunders Private Citizen
3333	October 19, 2011	A. Liberman Private Citizen
3334	October 19, 2011	D. Malone Private Citizen
3335	October 19, 2011	Dr. L. Jaffee Private Citizen
3336	October 19, 2011	S. Sparks Private Citizen
3337	October 19, 2011	D. Mynott Private Citizen
3338	October 19, 2011	C. Turner Private Citizen
3339	October 20, 2011	T. Sheridan Private Citizen
3340	October 19, 2011	G. Scott Clemson Private Citizen
3341	October 19, 2011	T. Kline Private Citizen
3342	October 19, 2011	C. Pisoni Private Citizen
3343	October 20, 2011	L. Stough Private Citizen
3344	October 20, 2011	D. and T. Herron Private Citizens
3345	October 20, 2011	C. Burritt Private Citizen
3346	October 20, 2011	J. Boylston Private Citizen
3347	October 19, 2011	P. Russell Private Citizen
3348	October 19, 2011	L. Hanratty Private Citizen
3349	October 19, 2011	E. Stark
3350	October 20, 2011	Adam Peshek Reason Foundation Robin Millican Institute for Energy Research

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*EPA-HQ-OAR-2010-0505*

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<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
3351	October 20, 2011	David L. Klemp Montana Dept. of Environmental Quality
3352	October 19, 2011	W. Elton Private Citizen
3353	October 20, 2011	R. Dreesman Private Citizen
3354	October 20, 2011	R. Couston Private Citizen
3355	October 20, 2011	S. Rice Private Citizen
3356	October 20, 2011	G. Hart Private Citizen
3357	October 20, 2011	S. Forrest Private Citizen
3358	October 20, 2011	M. Wood Private Citizen
3359	October 20, 2011	J. Gillette Private Citizen
3360	October 20, 2011	A. Septoff Private Citizen
3361	October 20, 2011	D. Ryder Private Citizen
3362	October 20, 2011	Y. Ruben Private Citizen
3363	October 20, 2011	B. Stearns Private Citizen
3364	October 20, 2011	D. Deloff Private Citizen
3365	October 20, 2011	C. Johnson Private Citizen
3366	October 20, 2011	S. Barrett Private Citizen
3367	October 20, 2011	J. Nickels Private Citizen
3368	October 20, 2011	J. Farah Private Citizen
3369	October 20, 2011	C. Westhaver Private Citizen
3370	October 20, 2011	D. Thomas Private Citizen
3371	October 20, 2011	D. Lindsay Private Citizen
3372	October 20, 2011	D. Royle Private Citizen
3373	October 20, 2011	B. Nesmith Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3374	October 20, 2011	K. Kron Private Citizen
3375	October 20, 2011	P. Johnson Private Citizen
3376	October 21, 2011	S. White Private Citizen
3377	October 21, 2011	R. Gaebe Private Citizen
3378	October 21, 2011	W. Bernard Private Citizen
3379	October 21, 2011	B. Trentlyon Private Citizen
3380	October 21, 2011	D. Goodman Private Citizen
3381	October 21, 2011	P. Stocker Private Citizen
3382	October 21, 2011	C. Tillotson Private Citizen
3383	October 21, 2011	J. Hodie Private Citizen
3384	October 21, 2011	B. Bennett Private Citizen
3385	October 20, 2011	A. Beath Private Citizen
3386	October 21, 2011	T. Giesy Private Citizen
3387	October 21, 2011	K. O'Neill Private Citizen
3388	October 21, 2011	S. Bratcher Private Citizen
3389	October 21, 2011	A. Ross Private Citizen
3390	October 21, 2011	A. Ryan Private Citizen
3391	October 21, 2011	C. Hall Private Citizen
3392	October 21, 2011	J. Leonard Private Citizen
3393	October 21, 2011	K. Coventry Private Citizen
3394	October 21, 2011	E. Walters Private Citizen
3395	October 21, 2011	M. Strawn Private Citizen
3396	October 21, 2011	D. Beckwith Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3397	October 21, 2011	M. Barr Private Citizen
3398	October 23, 2011	Anonymous public comment
3399	October 20, 2011	Chelsa Wagner, Representative 22nd District PA House of Representatives
3400	October 17, 2011	Truschel (no first name provided) Private Citizen
3401	October 23, 2011	C. Lish Private Citizen
3402	October 21, 2011	G. Amalfitano Private Citizen
3403	October 21, 2011	D. Hammes Private Citizen
3404	October 21, 2011	Z. Kerr Private Citizen
3405	October 21, 2011	E. Saunders Private Citizen
3406	October 24, 2011	J. McLaughlin Private Citizen
3407	October 24, 2011	Anonymous public comment
3408	October 24, 2011	Christine Griffin Smithfield Township
3409	October 24, 2011	Vera Scroggins Citizens For Clean Water
3410	October 24, 2011	L. T. Atkinson Private Citizen
3411	October 21, 2011	M. Osipchuk Private Citizen
3412	October 21, 2011	N. Miller Private Citizen
3413	October 21, 2011	P. Lesica Private Citizen
3414	October 21, 2011	D. Douglas Private Citizen
3415	October 21, 2011	K. Manning Private Citizen
3416	October 21, 2011	S. Kee Private Citizen
3417	October 24, 2011	D. Decker Private Citizen
3418	October 24, 2011	Anonymous public comment
3419	October 21, 2011	N. Sprecher Private Citizen
3420	October 22, 2011	R. Leibowitz Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3421	October 22, 2011	C. Hubel Private Citizen
3422	October 22, 2011	R. Ciao Private Citizen
3423	October 22, 2011	J. Forbes Private Citizen
3424	October 22, 2011	T. Miller Private Citizen
3425	October 22, 2011	M. Enk Private Citizen
3426	October 22, 2011	A. Pereau Private Citizen
3427	October 22, 2011	L. Isbell Private Citizen
3428	October 22, 2011	S. van der Voort Private Citizen
3429	October 24, 2011	E. Brown Private Citizen
3430	October 24, 2011	G. Giacomantonio Private Citizen
3431	October 24, 2011	T. Gough Private Citizen
3432	October 24, 2011	K. Feridun Private Citizen
3433	October 24, 2011	Anonymous public comment
3434	October 24, 2011	B. Shields Private Citizen
3435	October 24, 2011	D. Samardjian Private Citizen
3436	October 24, 2011	L. S. Abra Private Citizen
3437	October 22, 2011	K. Beel Private Citizen
3438	October 22, 2011	K. Sendall Private Citizen
3439	October 22, 2011	S. McNeil Private Citizen
3440	October 22, 2011	P. Williams Private Citizen
3441	October 22, 2011	J. Peascoe Private Citizen
3442	October 22, 2011	S. Hughes Private Citizen
3443	October 22, 2011	B. Schmitt Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3444	October 22, 2011	E. Bartlett Private Citizen
3445	October 23, 2011	L. Monkemeyer Private Citizen
3446	October 23, 2011	J. Goodwin Private Citizen
3447	October 24, 2011	Brad Richards Illinois Oil & Gas Association
3448	October 24, 2011	C. Gagnon Private Citizen
3449	October 24, 2011	R. Nash Private Citizen
3450	October 24, 2011	M. Torchio Private Citizen
3451	October 24, 2011	E. Brown Private Citizen
3452	October 24, 2011	L. Hasselberger Private Citizen
3453	October 24, 2011	Anonymous public comment
3454	October 24, 2011	Veronica Nasser REM Technology
3455	October 22, 2011	G. and J. Hearne Private Citizens
3456	October 21, 2011	Patrick Dowd Member of Council City of Pittsburgh, Pennsylvania
3457	October 24, 2011	Anonymous public comment
3458	October 24, 2011	Anonymous public comment
3459	October 20, 2011	Lon Burnam, State Representative House District 90 Fort Worth, Texas
3460	October 24, 2011	Phyllis Mundy Pennsylvania House of Representatives
3461	October 24, 2011	Anonymous public comment
3462	October 24, 2011	T. Farm, Jr. Private Citizen
3463	October 24, 2011	C. Cubas Private Citizen
3464	October 24, 2011	A. Lane Private Citizen
3465	October 24, 2011	E. Lane Private Citizen
3466	October 21, 2011	Camille "Bud" George State Representative Commonwealth of PA

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3467	October 24, 2011	John K. Baillie Citizens for Pennsylvania's Future
3468	October 24, 2011	Frank L. Lindsey Indiana Oil and Gas Association
3469	October 24, 2011	Randall R. LaBauve NextEra Energy, Inc.
3470	October 24, 2011	Denny Larson Global Community Monitor et al
3471	October 24, 2011	T. Korinek Private Citizen
3472	October 25, 2011	B. Coyne Private Citizen
3473	October 25, 2011	Eugene A. Depasquale State Representative, 95th Legislative District House of Representatives, PA, Harrisburg
3474	October 24, 2011	Andrew Browning Consumer Energy Alliance
3475	October 24, 2011	Barry T. Smitherman Railroad Commission of Texas
3476	October 24, 2011	Frank I. Lindsey CountryMark Energy Resources, LLC
3477	October 25, 2011	Alby Modiano US Oil & Gas Association
3478	October 24, 2011	Members of the Pennsylvania House of Representatives
3479	October 23, 2011	M. Gallagher Private Citizen
3480	October 23, 2011	S. Forde Private Citizen
3481	October 23, 2011	M. Mack Private Citizen
3482	October 23, 2011	M. Decker Private Citizen
3483	October 23, 2011	S. Barchas Private Citizen
3484	October 23, 2011	L. Carroll Private Citizen
3485	October 23, 2011	E. Miniscalco Private Citizen
3486	October 23, 2011	L. Carroll Private Citizen
3487	October 23, 2011	Anonymous public comment
3488	October 23, 2011	N. Rapp Private Citizen
3489	October 23, 2011	M. and J. Gatlin Private Citizens

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3490	October 23, 2011	J. Eisnaugle Private Citizen
3491	October 24, 2011	P. Palthe Private Citizen
3492	October 24, 2011	Bill Belitskus Allegheny Defense Project
3493	October 24, 2011	D. Emard Private Citizen
3494	October 24, 2011	N. Ross Private Citizen
3495	October 24, 2011	Charles E. Smith Countrymark Cooperative Holding Corp.
3496	October 24, 2011	John (no surname provided) Private Citizen
3497	October 24, 2011	S. P. Kearns Private Citizen
3498	October 24, 2011	B. Bean Private Citizen
3499	October 24, 2011	L. Dimin Private Citizen
3500	October 25, 2011	T. Billel Private Citizen
3501	October 26, 2011	E. McRae Private Citizen
3502	October 26, 2011	A. Hemenway Private Citizen
3503	October 24, 2011	J. Edgar Private Citizen
3504	October 24, 2011	J. Allen Private Citizen
3505	October 24, 2011	L. Atkinson Private Citizen
3506	October 24, 2011	A. Walker Private Citizen
3507	October 24, 2011	G. Sieg Private Citizen
3508	October 24, 2011	J. Pope Private Citizen
3509	October 24, 2011	P. Fellows Private Citizen
3510	October 24, 2011	C. Feinberg Private Citizen
3511	October 24, 2011	A. Sisenstein Private Citizen
3512	October 24, 2011	W. Ernsberger Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3513	October 24, 2011	G. Wiley Private Citizen
3514	October 24, 2011	W. Sieg Private Citizen
3515	October 24, 2011	J. Morgan Private Citizen
3516	October 24, 2011	T. Lam Private Citizen
3517	October 24, 2011	A. and R. Cross Private Citizens
3518	October 24, 2011	Anonymous public comment
3519	October 24, 2011	L. Thompson Private Citizen
3520	October 24, 2011	P. Hackley Private Citizen
3521	October 24, 2011	Anonymous public comment
3522	October 24, 2011	J. Wagner Private Citizen
3523	October 24, 2011	J. Edgar Private Citizen
3524	October 24, 2011	Anonymous public comment
3525	October 25, 2011	D. Moderacki Private Citizen
3526	October 25, 2011	D. Whitfield Private Citizen
3527	October 24, 2011	Veronica Nasser REM Technology
3528	October 24, 2011	Steven G. Folk Red Willow Production Company, LLC
3529	October 25, 2011	Scott C. Blauvelt East Management Services, LP
3530	October 27, 2011	Anonymous Public Comment
3531	October 19, 2011	Clear Air Council mass comment campaign (237)
3532	October 19, 2011	PennEnvironment mass comment campaign (3,879)
3534	October 27, 2011	K. Theden Private Citizen
3535	October 28, 2011	P. Roberts Private Citizen
3536	October 26, 2011	K. Murphy Private Citizen
3537	October 26, 2011	B. Fleming Private Citizen
3538	October 26, 2011	J. Mitchem Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3539	October 27, 2011	T. Robinson Private Citizen
3540	October 27, 2011	M. Scott Private Citizen
3541	October 27, 2011	S. Asmus Private Citizen
3542	October 27, 2011	J. Marvin Private Citizen
3543	October 27, 2011	A. Rutledge and D. Leverenz Private Citizens
3544	October 27, 2011	N. Monaco Private Citizen
3545	October 27, 2011	G. Pais Private Citizen
3546	October 28, 2011	M. Lauver Private Citizen
3547	October 28, 2011	D. Furry Private Citizen
3548	October 29, 2011	J. Stugrin Private Citizen
3549	October 24, 2011	A. Amonette Private Citizen
3550	October 27, 2011	G. K. Neustadt Private Citizen
3551	October 27, 2011	Cathy Purves Trout Unlimited
3552	October 22, 2011	Michelle Naccarati-Chapkis Women for a Healthy Environment
3553	October 28, 2011	P. Hodgson Private Citizen
3554	October 28, 2011	E. Francis Private Citizen
3555	October 29, 2011	D. Wiseman Private Citizen
3556	October 29, 2011	A. Steiner Private Citizen
3557	October 30, 2011	E. Scherzer Private Citizen
3558	October 30, 2011	M. Breton Private Citizen
3559	October 31, 2011	E. Hiedeman Private Citizen
3560	October 31, 2011	Steve Henke New Mexico Oil and Gas Association
3561	October 27, 2011	Mass Comment Campaign sponsoring organization unknown (420)

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3562	October 20, 2011	Johns S. Lyons Division for Air Quality, Department for Environmental Protection, Energy and Environment Cabinet, Commonwealth of Kentucky
3563	October 24, 2011	A. Gwartney Private Citizen
3564	October 24, 2011	J. Archuleta Private Citizen
3565	October 24, 2011	M. Darilek Private Citizen
3566	October 24, 2011	S. Seibert Private Citizen
3567	October 24, 2011	T. Priselac Private Citizen
3568	October 24, 2011	S. Laase Private Citizen
3569	October 24, 2011	W. Johnson Private Citizen
3570	October 24, 2011	W. Palmquist Private Citizen
3571	October 24, 2011	A. Pickering Private Citizen
3572	October 24, 2011	R. Stambaugh Private Citizen
3573	October 24, 2011	J. Humphrey Private Citizen
3574	October 24, 2011	M. Lanskey Private Citizen
3575	October 24, 2011	S. Two Bears Private Citizen
3576	October 24, 2011	K. Richter Private Citizen
3577	October 24, 2011	C. Holmgren Private Citizen
3578	October 24, 2011	P. Neola Private Citizen
3579	October 24, 2011	G. Blake Private Citizen
3580	October 24, 2011	Ty (no surname provided) Private Citizen
3581	October 24, 2011	J. Hoggard Private Citizen
3582	November 2, 2011	N. Valdez

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3583	November 1, 2011	Senator James Ferlo 38th District Senate of Pennsylvania
3584	November 24, 2011	L. Barnes Private Citizen
3585	October 24, 2011	J. Charvat Private Citizen
3586	October 24, 2011	B. Sabo Private Citizen
3587	October 24, 2011	L. Edwards Private Citizen
3588	October 24, 2011	B. Bean Private Citizen
3589	October 21, 2011	J. and T. Greenwald Private Citizens
3590	October 24, 2011	E. Bentley Private Citizen
3591	October 24, 2011	S. Zevian Private Citizen
3592	October 24, 2011	C. Louwsma Private Citizen
3593	October 31, 2011	Mass Comment Campaign sponsoring organization unknown (916)
3594	October 27, 2011	C. Franklin Private Citizen
3595	October 27, 2011	L. Cooper Private Citizen
3596	October 27, 2011	S. Sharp Private Citizen
3597	October 27, 2011	V. Schulman Private Citizen
3598	October 28, 2011	M. Houghton Private Citizen
3599	October 28, 2011	S. Teal Private Citizen
3600	October 28, 2011	A. Swanson Private Citizen
3601	November 24, 2011	C. Kramer Private Citizen
3602	October 24, 2011	T. Imajo Private Citizen
3603	October 24, 2011	S. Gale Private Citizen
3604	October 31, 2011	B. Blakney Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3605	October 31, 2011	K. McMahan Private Citizen
3606	October 24, 2011	K. Lynch Private Citizen
3607	October 25, 2011	M. Shapiro Private Citizen
3608	October 25, 2011	C. Ascher Private Citizen
3609	October 25, 2011	L. Tedder Private Citizen
3610	October 25, 2011	G. and L. Schwaller Private Citizen
3611	October 25, 2011	T. Dubarr Private Citizen
3612	October 31, 2011	S. Westervelt Private Citizen
3613	October 31, 2011	L. Sturm Private Citizen
3614	October 31, 2011	G. Richcreek Private Citizen
3615	October 27, 2011	S. Jaillet Private Citizen
3616	October 25, 2011	B. Gudac Private Citizen
3617	October 25, 2011	P. Priest Private Citizen
3618	November 3, 2011	Mark Burroughs North Texas Clean Air Steering Committee
3619	November 3, 2011	Mark Burroughs and Jungus Jordan North Texas Clean Air Steering Committee
3620	October 29, 2011	J. Stugrin and M. Troisi Private Citizens
3621	October 31, 2011	S. Roth Private Citizen
3622	October 31, 2011	L. Kain Private Citizen
3623	October 31, 2011	L. and D. Padilla Private Citizens
3624	November 1, 2011	Claire (no surname provided) Private Citizen
3625	November 2, 2011	R. Brewer Private Citizen
3626	October 31, 2011	B. McClain Private Citizen
3627	November 2, 2011	J. Josie Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3628	November 3, 2011	B. Vinson Private Citizen
3629	November 5, 2011	C. Schoen Private Citizen
3630	November 6, 2011	L. Butler Private Citizen
3631	November 8, 2011	Anonymous public comment
3632	November 8, 2011	A. Badami Private Citizen
3633	November 9, 2011	B. Mills Private Citizen
3634	November 9, 2011	H. Albaugh Private Citizen
3635	November 9, 2011	J. Bridy Private Citizen
3636	November 9, 2011	G. and J. Krow Private Citizen
3637	November 13, 2011	Anonymous public comment
3638	November 7, 2011	Eugene Depasquale PA House of Representatives
3639	November 9, 2011	John S. Lyons Kentucky Dept. for Environmental Protection
3640	November 14, 2011	N. Kasper Private Citizen
3641	November 14, 2011	M. Sickinger Private Citizen
3642	November 14, 2011	K. Crawbuck Private Citizen
3643	November 14, 2011	J. Bartley Private Citizen
3644	November 14, 2011	R. Desy Private Citizen
3645	November 14, 2011	W. J. Steinbacher Private Citizen
3646	November 14, 2011	C. McMullen Private Citizen
3647	November 14, 2011	F. Schwacke Private Citizen
3648	November 14, 2011	J. Remington Private Citizen
3649	November 14, 2011	C. Saint-Clair Private Citizen
3650	November 14, 2011	D. Eyermann Private Citizen
3651	November 14, 2011	T. Baer Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3652	November 14, 2011	L. Smith Private Citizen
3653	November 14, 2011	D. Publow Private Citizen
3654	November 14, 2011	D. Kisor Private Citizen
3655	November 14, 2011	O. Pruett Private Citizen
3656	November 14, 2011	C. Alperstein Private Citizen
3657	November 14, 2011	E. Vaughn Private Citizen
3658	November 14, 2011	F. Strawser Private Citizen
3659	November 14, 2011	D. SanMiguel Private Citizen
3660	November 14, 2011	S. Benton Private Citizen
3661	November 14, 2011	D. Craig Private Citizen
3662	November 14, 2011	M. Bailey Private Citizen
3663	November 14, 2011	D. Gordillo Private Citizen
3664	November 14, 2011	L. Yow Private Citizen
3665	November 14, 2011	H. Kahn Private Citizen
3666	November 14, 2011	R. Elias Private Citizen
3667	November 14, 2011	L. Milstead Private Citizen
3668	November 14, 2011	B. Kloos Private Citizen
3669	November 14, 2011	T. Taylor Private Citizen
3670	November 14, 2011	E. Venstra Private Citizen
3671	November 14, 2011	V. Peyer Private Citizen
3672	November 14, 2011	J. Nickels Private Citizen
3673	November 14, 2011	E. Cohen Private Citizen
3674	November 14, 2011	S. Robinson Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3675	November 14, 2011	D. Levering Private Citizen
3676	November 14, 2011	L. Ashford Private Citizen
3677	November 15, 2011	R. Zampino Private Citizen
3678	November 14, 2011	P. Menyuk Private Citizen
3679	November 14, 2011	G. Dykstra Private Citizen
3680	November 14, 2011	V. Frazzetta Private Citizen
3681	November 14, 2011	G. Dunsmith Private Citizen
3682	November 14, 2011	E. Clark Private Citizen
3683	November 14, 2011	K. Kirk Private Citizen
3684	November 14, 2011	Dr. J. Witte Private Citizen
3685	November 14, 2011	Dr. A. Ng Private Citizen
3686	November 14, 2011	J. Groshardt Private Citizen
3687	November 14, 2011	J. Irvine Private Citizen
3688	November 14, 2011	B. Hyer Private Citizen
3689	November 14, 2011	P. Allen Private Citizen
3690	November 14, 2011	Dr. D. Baker Private Citizen
3691	November 14, 2011	D. Sher Private Citizen
3692	November 14, 2011	R. Racimora Private Citizen
3693	November 14, 2011	D. Hix Private Citizen
3694	November 14, 2011	A. Pringle Private Citizen
3695	November 14, 2011	D. Oppelt Private Citizen
3696	November 14, 2011	G. Whitcomb Private Citizen
3697	November 14, 2011	Dr. H. Wendel Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3698	November 14, 2011	S. Kitzes Private Citizen
3699	November 14, 2011	J. Reardon Private Citizen
3700	November 14, 2011	Dr. B. Sowder Private Citizen
3701	November 14, 2011	E. Jones Private Citizen
3702	November 14, 2011	P. Gregg Private Citizen
3703	November 14, 2011	P. Musick Private Citizen
3704	November 14, 2011	C. Jackson Private Citizen
3705	November 14, 2011	B. Birks Private Citizen
3706	November 14, 2011	D. Stryker Private Citizen
3707	November 14, 2011	C. Tansey Private Citizen
3708	November 14, 2011	S. Lang Private Citizen
3709	November 14, 2011	G. Adams Private Citizen
3710	November 15, 2011	Dr. D. Dow Private Citizen
3711	November 14, 2011	B. V. Weg Private Citizen
3712	November 14, 2011	L. Goin Private Citizen
3713	November 14, 2011	L. Hargreaves Private Citizen
3714	November 14, 2011	P. Glasson Private Citizen
3715	November 14, 2011	C. Whiting Private Citizen
3716	November 14, 2011	Dr. J. Perlman Private Citizen
3717	November 14, 2011	S. Geurkink Private Citizen
3718	November 14, 2011	J. Lukas Private Citizen
3719	November 14, 2011	C. O'Meara Dietrich Private Citizen
3720	November 14, 2011	R. L. Davis Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3721	November 15, 2011	T. Hunt Private Citizen
3722	November 14, 2011	J. Schreiber Private Citizen
3723	November 14, 2011	F. Bassow Private Citizen
3724	November 14, 2011	M. Brenner Private Citizen
3725	November 14, 2011	J. Howard Private Citizen
3726	November 14, 2011	J. Doerr Private Citizen
3727	November 14, 2011	Dr. Rev. J. Ekman Private Citizen
3728	November 14, 2011	D. Boom Private Citizen
3729	November 14, 2011	Dr. V. Feldman Private Citizen
3730	November 14, 2011	V. Buzeta Private Citizen
3731	November 14, 2011	Elaine K. Private Citizen
3732	November 14, 2011	M. A. Dimand Private Citizen
3733	November 14, 2011	Dr. J. Jordan Private Citizen
3734	November 14, 2011	W. Montgomery Private Citizen
3735	November 14, 2011	M. Yoder Private Citizen
3736	November 14, 2011	L. Winslow Private Citizen
3737	November 14, 2011	H. Carr Private Citizen
3738	November 14, 2011	Dr. J. Smith Private Citizen
3739	November 14, 2011	N. Scott Private Citizen
3740	November 14, 2011	D. Finlayson Private Citizen
3741	November 14, 2011	T. MacKenzie Private Citizen
3742	November 14, 2011	L. Seifried Private Citizen
3743	November 14, 2011	L. Elliot Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3744	November 14, 2011	J. Andrews Private Citizen
3745	November 14, 2011	R. Hueston Private Citizen
3746	November 14, 2011	D. Carswell Private Citizen
3747	November 14, 2011	D. Neel Private Citizen
3748	November 14, 2011	Dr. S. Rodriguez Private Citizen
3749	November 14, 2011	D. Martens Private Citizen
3750	November 14, 2011	B. Meyer Private Citizen
3751	November 14, 2011	H. Russell Private Citizen
3752	November 14, 2011	Dr. C. A. Lowry Private Citizen
3753	November 14, 2011	M. Goulart Private Citizen
3754	November 14, 2011	Dr. C. Steinhart Private Citizen
3755	November 14, 2011	B. Enson Private Citizen
3756	November 14, 2011	J. Engelking Private Citizen
3757	November 14, 2011	L. Poole Private Citizen
3758	November 14, 2011	R. Springer Private Citizen
3759	November 14, 2011	R. D. Flynn-Webb Private Citizen
3760	November 14, 2011	A. Bowen Private Citizen
3761	November 14, 2011	Dr. M. Kornacker Private Citizen
3762	November 14, 2011	M. Ingalls Private Citizen
3763	November 14, 2011	D. Kosak Private Citizen
3764	November 14, 2011	L. Hunt Private Citizen
3765	November 14, 2011	A. Buffer Private Citizen
3766	November 14, 2011	M. Meek Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3767	November 14, 2011	Dr. M. Pellegrini Private Citizen
3768	November 14, 2011	M. McKennon Private Citizen
3769	November 14, 2011	T. Moore Private Citizen
3770	November 14, 2011	J. Borstelmann Private Citizen
3771	November 14, 2011	H. Fitzgerald Private Citizen
3772	November 14, 2011	J. Dunlap Private Citizen
3773	November 14, 2011	G. Saum Private Citizen
3774	November 14, 2011	D. Dimock Private Citizen
3775	November 14, 2011	Dr. W. Aller Private Citizen
3776	November 14, 2011	J. Enkoji Private Citizen
3777	November 14, 2011	Dr. L. Bowman Private Citizen
3778	November 14, 2011	G. Anderson Private Citizen
3779	November 14, 2011	C. Mellors Private Citizen
3780	November 15, 2011	R. Smith Private Citizen
3781	November 15, 2011	V. Weinblatt Private Citizen
3782	November 15, 2011	A. Ellis Private Citizen
3783	November 14, 2011	Dr. S. Stafford Private Citizen
3784	November 14, 2011	R. Chan Private Citizen
3785	November 14, 2011	Dr. J. Weinstein Private Citizen
3786	November 14, 2011	K. Feil Private Citizen
3787	November 14, 2011	R. Gedrim Private Citizen
3788	November 15, 2011	N. McNaughton Private Citizen
3789	November 15, 2011	D. Crist Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3790	November 14, 2011	L. Yow Private Citizen
3791	November 15, 2011	K. Young Private Citizen
3792	November 15, 2011	N. Hanks Private Citizen
3793	November 15, 2011	M. Morrison Private Citizen
3794	November 14, 2011	J. Maguire Private Citizen
3795	November 14, 2011	Dr. L. Levitt Private Citizen
3796	November 14, 2011	N. Tingen Private Citizen
3797	November 14, 2011	D. Davis Private Citizen
3798	November 14, 2011	T. Falconer Private Citizen
3799	November 15, 2011	B. Berger Private Citizen
3800	November 15, 2011	C. Nelson Private Citizen
3801	November 15, 2011	Y. Ruben Private Citizen
3802	November 15, 2011	J. Rosell Private Citizen
3803	November 15, 2011	M. Switzer Private Citizen
3804	November 15, 2011	D. Flores Private Citizen
3805	November 15, 2011	R. Godes Private Citizen
3806	November 14, 2011	Dr. R. Donnelly Private Citizen
3807	November 14, 2011	B. Condley Private Citizen
3808	November 14, 2011	J. Dart Private Citizen
3809	November 14, 2011	Dr. M. and A. Roberts Private Citizens
3810	November 14, 2011	D. Schneck Private Citizen
3811	November 14, 2011	D. G. Clair Private Citizen
3812	November 14, 2011	A. Wasgatt Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3813	November 14, 2011	N. Kamp Private Citizen
3814	November 14, 2011	J. Chamberlin Private Citizen
3815	November 14, 2011	S. M. Camarillo Private Citizen
3816	November 14, 2011	J. Cain Private Citizen
3817	November 14, 2011	K. Gordon Private Citizen
3818	November 14, 2011	Dr. F. O'Brien Private Citizen
3819	November 14, 2011	S. Tingen Private Citizen
3820	November 14, 2011	G. Scott Hansen Private Citizen
3821	November 14, 2011	Dr. R. Rico Private Citizen
3822	November 14, 2011	V. Jimenez Private Citizen
3823	November 14, 2011	D. R. Nelson Private Citizen
3824	November 15, 2011	D. Jitchotvisut Private Citizen
3825	November 15, 2011	G. Kennelly Private Citizen
3826	November 14, 2011	Dr. P. Richard-Amato Private Citizen
3827	November 15, 2011	D. Dean Private Citizen
3828	November 15, 2011	B. Winholtz Private Citizen
3829	November 15, 2011	J. Chafe Private Citizen
3830	November 15, 2011	Dr. H. Dentinger Private Citizen
3831	November 15, 2011	L. Hanratty Private Citizen
3832	November 15, 2011	J. A. Pierson Private Citizen
3833	November 15, 2011	A. Zima Private Citizen
3834	November 15, 2011	M. Herbold Private Citizen
3835	November 15, 2011	A. Pearce Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3836	November 15, 2011	B. Ulbrich Private Citizen
3837	November 15, 2011	J. Zaso Private Citizen
3838	November 14, 2011	C. Armerding Private Citizen
3839	November 14, 2011	S. Blakemore Private Citizen
3840	November 15, 2011	J. Gau Private Citizen
3841	November 15, 2011	Dr. S. Hnatowich Private Citizen
3842	November 15, 2011	D. Bullock Private Citizen
3843	November 15, 2011	I. Botvin Private Citizen
3844	November 15, 2011	D. Brest Private Citizen
3845	November 14, 2011	T. Twitchell Private Citizen
3846	November 14, 2011	L. Mcdevitt Private Citizen
3847	November 15, 2011	M. McDonald Private Citizen
3848	November 15, 2011	N. Poore Private Citizen
3849	November 15, 2011	C. Hunt Private Citizen
3850	November 15, 2011	D. Kelly Private Citizen
3851	November 15, 2011	G. Paquin Private Citizen
3852	November 15, 2011	G. Cook Private Citizen
3853	November 15, 2011	L. Lambeth Private Citizen
3854	November 15, 2011	M. Whitney Private Citizen
3855	November 15, 2011	A. Bill Private Citizen
3856	September 28, 2011	Judy Raab Quicksilver Resources Inc.
3857	November 14, 2011	R. Zucchi Private Citizen
3858	November 15, 2011	V. Smith Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3859	November 15, 2011	S. Mullins Private Citizen
3860	November 11, 2011	R. Thomas Private Citizen
3861	November 11, 2011	G. Carter Private Citizen
3862	November 11, 2011	A. Green Private Citizen
3863	November 11, 2011	J. Clarke Private Citizen
3864	November 14, 2011	K. Bedard Private Citizen
3865	November 14, 2011	S. Bannister Private Citizen
3866	November 15, 2011	Dr. L. R. Jaffee Private Citizen
3867	November 15, 2011	P. Sweeny Private Citizen
3868	November 15, 2011	D. Hawley Private Citizen
3869	November 15, 2011	S. White Private Citizen
3870	November 15, 2011	K. Reede Private Citizen
3871	November 15, 2011	M. Herlin Private Citizen
3872	November 15, 2011	C. Stoutamyer Private Citizen
3873	November 15, 2011	T. Rieve Private Citizen
3874	November 14, 2011	Dr. M. Hein Private Citizen
3875	November 14, 2011	B. Van Noord Private Citizen
3876	November 14, 2011	L. Wimberly Private Citizen
3877	November 14, 2011	P. Servidio Private Citizen
3878	November 14, 2011	Dr. V. Colin Private Citizen
3879	November 15, 2011	F. Schilling Private Citizen
3880	November 15, 2011	Dr. L. Young Private Citizen
3881	November 15, 2011	R. Hutchinson Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3882	November 15, 2011	J. Dietrick Private Citizen
3883	November 15, 2011	K. Smith Private Citizen
3884	November 15, 2011	A. Jolles Private Citizen
3885	November 15, 2011	C. Gholson Private Citizen
3886	November 15, 2011	M. Sukiennik Private Citizen
3887	November 15, 2011	S. Davidson Private Citizen
3888	November 15, 2011	B. Haberly Private Citizen
3889	November 15, 2011	J. Nickels Private Citizen
3890	November 15, 2011	S. Wheeler Private Citizen
3891	November 15, 2011	A. Cortese Private Citizen
3892	November 15, 2011	C. Guthrie Private Citizen
3893	November 15, 2011	E. Hansen Private Citizen
3894	November 15, 2011	L. Scharin Private Citizen
3895	November 15, 2011	J. Furlong Private Citizen
3896	November 15, 2011	C. Griggs Private Citizen
3897	November 15, 2011	D. Kellogg Private Citizen
3898	November 15, 2011	D. Schwamb Private Citizen
3899	November 15, 2011	J. Jarvis Private Citizen
3900	November 15, 2011	B. Flowers Private Citizen
3901	November 15, 2011	J. Boone Private Citizen
3902	November 15, 2011	J. Wojdak Private Citizen
3903	November 11, 2011	D. Bentley Private Citizen
3904	November 11, 2011	C. Gillham Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3905	November 11, 2011	P. Bryan Private Citizen
3906	November 11, 2011	A. Fiallos Private Citizen
3907	November 11, 2011	J. Rohrs Private Citizen
3908	November 11, 2011	S. McNall Private Citizen
3909	November 12, 2011	A. Willis Private Citizen
3910	November 12, 2011	R. Talley Private Citizen
3911	November 12, 2011	A. Lewandowski Private Citizen
3912	November 15, 2011	J. and K. Schermerhorn Private Citizens
3913	November 15, 2011	L. Pillsbury Private Citizen
3914	November 13, 2011	C. Finley Private Citizen
3915	November 13, 2011	L. Van Horn Private Citizen
3916	November 13, 2011	C. Wood Private Citizen
3917	November 13, 2011	J. Bianculli Private Citizen
3918	November 13, 2011	R. Gaebe Private Citizen
3919	November 13, 2011	R. Howard Private Citizen
3920	November 13, 2011	D. Cote Private Citizen
3921	November 15, 2011	D. Harris Private Citizen
3922	November 15, 2011	H. Ross Private Citizen
3923	November 15, 2011	K. Steele Private Citizen
3924	November 15, 2011	W. Roberson Private Citizen
3926	November 14, 2011	M. Bentz Private Citizen
3927	November 14, 2011	L. Sternberg Private Citizen
3928	November 17, 2011	Thomas Y. Au Clean Air Board of Central Pennsylvania

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3929	November 13, 2011	Z. Schirg Private Citizen
3930	November 14, 2011	I. Hughes Private Citizen
3931	November 15, 2011	R. Milburn Private Citizen
3932	November 15, 2011	D. Roth Private Citizen
3933	November 15, 2011	S. McKee Private Citizen
3934	November 15, 2011	G. Rubio Private Citizen
3935	November 15, 2011	V. Meluskey Private Citizen
3936	November 15, 2011	D. Yarger Private Citizen
3937	November 15, 2011	L. Freese Private Citizen
3938	November 15, 2011	S. Huybensz Private Citizen
3939	November 15, 2011	J. Vischulis Private Citizen
3940	November 15, 2011	M. Wood Private Citizen
3941	November 15, 2011	J. Curotto Private Citizen
3942	November 15, 2011	R. Martin Private Citizen
3943	November 15, 2011	G. Chester Private Citizen
3944	November 15, 2011	G. Sletten Private Citizen
3945	November 15, 2011	S. Saxe Private Citizen
3946	November 15, 2011	B. Hillway Private Citizen
3947	November 16, 2011	E. Hecker Private Citizen
3948	November 15, 2011	A. Banwart Private Citizen
3949	November 15, 2011	S. McNeil Private Citizen
3950	November 15, 2011	K. Schneller-McDonald Private Citizen
3951	November 15, 2011	E. Lebowitz Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3952	November 15, 2011	L. Fraley Private Citizen
3953	November 15, 2011	B. Hodgkin Private Citizen
3954	November 15, 2011	L. Ghelfi Private Citizen
3955	November 15, 2011	J. DiNardo Private Citizen
3956	November 15, 2011	J. Steitz Private Citizen
3957	November 15, 2011	H. Turner Private Citizen
3958	November 15, 2011	D. Witcher Private Citizen
3959	November 15, 2011	J. Archuleta Private Citizen
3960	November 15, 2011	M. Damero Private Citizen
3961	November 15, 2011	J. Castiano Private Citizen
3962	November 15, 2011	T. Donaghy Private Citizen
3963	November 15, 2011	J. Sharon Private Citizen
3964	November 15, 2011	K. Brush Private Citizen
3965	November 15, 2011	K. Hogg Private Citizen
3966	November 15, 2011	K. Nussbaum Private Citizen
3967	November 15, 2011	B. Olson Private Citizen
3968	November 15, 2011	G. Lee Private Citizen
3969	November 15, 2011	K. Burroughs Private Citizen
3970	November 15, 2011	G. Singer Private Citizen
3971	November 15, 2011	R. Siegfried Private Citizen
3972	November 15, 2011	T. Sparkman Private Citizen
3973	November 15, 2011	J. Maryanski Private Citizen
3974	November 15, 2011	T. Stanley Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
3975	November 15, 2011	P. Gampper Private Citizen
3976	November 15, 2011	A. Salinas Private Citizen
3977	November 15, 2011	E. Marshall Private Citizen
3978	November 15, 2011	J. Rex Private Citizen
3979	November 15, 2011	H. Allen Private Citizen
3980	November 15, 2011	S. Bhakti Private Citizen
3981	November 15, 2011	S. Bishop Private Citizen
3982	November 15, 2011	K. Prak Private Citizen
3983	November 15, 2011	J. Jones Private Citizen
3984	November 15, 2011	Dr. D. Stanford Private Citizen
3985	November 15, 2011	R. Palmatier Private Citizen
3986	November 15, 2011	I. S. Smith Private Citizen
3987	November 15, 2011	E. Mayer Private Citizen
3988	November 15, 2011	L. Radice Private Citizen
3989	November 15, 2011	R. Little Private Citizen
3990	November 15, 2011	T. Blake Private Citizen
3991	November 15, 2011	D. Shawver Private Citizen
3992	October 31, 2011	T. Cook Private Citizen
3993	October 31, 2011	T. Carter Private Citizen
3994	October 29, 2011	R. Palmeiro Private Citizen
3995	October 31, 2011	R. Pierce Private Citizen
3996	October 31, 2011	R. Medlin Private Citizen
3997	November 1, 2011	K. Smith Private Citizen

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*EPA-HQ-OAR-2010-0505*

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<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
3998	November 1, 2011	G. Miller Private Citizen
3999	November 1, 2011	J. Wylie Private Citizen
4000	November 1, 2011	L. Marshall Private Citizen
4001	November 16, 2011	S. Byrd Private Citizen
4002	November 16, 2011	S. Wallace Private Citizen
4003	November 15, 2011	J. D. Bloom Private Citizen
4004	November 16, 2011	J. Mayer Private Citizen
4005	November 16, 2011	B. Menkart Private Citizen
4006	November 16, 2011	S. Wallace Private Citizen
4007	November 16, 2011	P. Davis Private Citizen
4008	November 16, 2011	R. Longo Private Citizen
4009	November 16, 2011	L. Sendejo Private Citizen
4010	November 16, 2011	A. Mendelsohn Private Citizen
4011	November 16, 2011	H. Jones Private Citizen
4012	November 16, 2011	C. Crutcher Private Citizen
4013	November 16, 2011	T. Imajo Private Citizen
4014	November 16, 2011	M. Alexander Private Citizen
4015	November 16, 2011	E. Muir Private Citizen
4016	November 16, 2011	L. Miller Private Citizen
4017	November 16, 2011	C. Fasanella Private Citizen
4018	November 16, 2011	A. Ashcraft Private Citizen
4019	November 16, 2011	W. Ebersberger Private Citizen
4020	November 16, 2011	D. Turner Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4021	November 16, 2011	B. Riversmith Private Citizen
4022	November 16, 2011	R. Mc Nair Private Citizen
4023	November 16, 2011	M. Rhodes Private Citizen
4024	November 16, 2011	B. Chambers Private Citizen
4025	November 16, 2011	D. Gilbert Private Citizen
4026	November 16, 2011	C. Porter Private Citizen
4027	November 16, 2011	J. Harvey Private Citizen
4028	November 16, 2011	J. Capozzelli Private Citizen
4029	November 16, 2011	M. Fogg Private Citizen
4030	November 16, 2011	J. Trautman Private Citizen
4031	November 16, 2011	P. Dobrovic Private Citizen
4032	November 16, 2011	A. Botwin Private Citizen
4033	November 16, 2011	S. Wilber Private Citizen
4034	November 16, 2011	N. Rapp Private Citizen
4035	November 17, 2011	K. Coventry Private Citizen
4036	November 16, 2011	M. Coventry Private Citizen
4037	November 17, 2011	R. Marshall Private Citizen
4038	November 17, 2011	K. Hlynsky
4039	November 18, 2011	Pamela F. Faggert Dominion Resources Services, Inc.
4040	November 17, 2011	K. Davis Private Citizen
4041	November 18, 2011	Shana K. Yelverton City of Southlake, Texas
4042	November 21, 2011	John A. Paul Regional Air Pollution Control Agency, Dayton, Ohio
4043	November 17, 2011	B. Chally Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4044	November 17, 2011	M. Snyder Private Citizen
4045	November 17, 2011	J. Church Private Citizen
4046	November 17, 2011	C. Kubik Private Citizen
4047	November 17, 2011	C. Wayland Private Citizen
4048	November 17, 2011	R. Love Private Citizen
4049	November 17, 2011	L. Kissel Private Citizen
4050	November 15, 2011	P. Green Private Citizen
4051	November 15, 2011	J. Gilday Private Citizen
4052	November 17, 2011	V. and S. Vanacore Private Citizens
4053	November 18, 2011	J. Hubbard Private Citizen
4054	November 18, 2011	J. Hakam Private Citizen
4055	November 18, 2011	M. Wood Private Citizen
4056	November 21, 2011	Gregory J. Wilkins Marathon Petroleum Company
4057	November 18, 2011	L. Lowry Private Citizen
4058	November 21, 2011	B. Seymour-Linder Private Citizen
4059	November 18, 2011	J. Lukas Private Citizen
4060	November 18, 2011	S. Kay Private Citizen
4061	November 18, 2011	M. McIntosh Private Citizen
4062	November 18, 2011	R. Little Private Citizen
4063	November 18, 2011	M. Walling Private Citizen
4064	November 18, 2011	R. Gowins Private Citizen
4065	November 18, 2011	T. Crossland Private Citizen
4066	November 18, 2011	B. Duncan Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4067	November 18, 2011	R. Butler Private Citizen
4068	November 18, 2011	P. Baker Private Citizen
4069	November 18, 2011	S. Li Private Citizen
4070	November 19, 2011	R. Fanniff Private Citizen
4071	November 19, 2011	G. Spates Private Citizen
4072	November 19, 2011	T. Johnson Private Citizen
4073	November 20, 2011	J. Jarvis Private Citizen
4074	November 20, 2011	R. Talley Private Citizen
4075	November 20, 2011	S. Matheis Private Citizen
4076	November 20, 2011	P. Pynchon Private Citizen
4077	November 20, 2011	E. Cabell Private Citizen
4078	November 20, 2011	H. Curtler Private Citizen
4079	November 20, 2011	J. Drucker Private Citizen
4080	November 20, 2011	F. Harkins Private Citizen
4081	November 20, 2011	M. Oalbano Private Citizen
4082	November 20, 2011	D. Hughes Private Citizen
4083	November 20, 2011	R. Creshkoff Private Citizen
4084	November 15, 2011	M. Erickson Private Citizen
4085	November 15, 2011	W. Gawne Private Citizen
4086	November 15, 2011	C. Stonecipher Private Citizen
4087	November 15, 2011	D. Cherf Private Citizen
4088	November 16, 2011	H. McFadden Private Citizen
4089	November 16, 2011	J. Poole Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4090	November 16, 2011	M. Hecht Private Citizen
4091	November 16, 2011	S. Myers Private Citizen
4092	November 21, 2011	William L. Driscoll Ozone Transport Commission
4093	November 20, 2011	N. Haenn Private Citizen
4094	November 15, 2011	S. Babbitt Private Citizen
4095	November 15, 2011	R. Thill Private Citizen
4096	November 15, 2011	J. Moore Private Citizen
4097	November 15, 2011	L. Bracken Private Citizen
4098	November 15, 2011	P. Chase Private Citizen
4099	November 15, 2011	M. de Alba Private Citizen
4100	November 15, 2011	J. Allen Private Citizen
4101	November 15, 2011	M. Bradley Private Citizen
4102	November 15, 2011	G. Castellane Private Citizen
4103	November 15, 2011	J. Mendoza Private Citizen
4104	November 22, 2011	Lisa S. Beal Interstate Natural Gas Association of America
4105	November 17, 2011	C. Spencer Private Citizen
4106	November 17, 2011	K. Kockritz Private Citizen
4107	November 17, 2011	F. Evans Private Citizen
4108	November 17, 2011	R. Sanderson Private Citizen
4109	November 17, 2011	M. May Private Citizen
4110	November 17, 2011	J. Abrams Private Citizen
4111	November 17, 2011	C. Wooldridge Private Citizen
4112	November 17, 2011	B. Todd Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4113	November 4, 2011	R. Saretsky Private Citizen
4114	November 7, 2011	C. Pinkston Private Citizen
4115	November 7, 2011	R. Ross Private Citizen
4116	November 7, 2011	G. Anderson Private Citizen
4117	November 7, 2011	K. Hurley Private Citizen
4118	November 8, 2011	R. Talley Private Citizen
4119	November 8, 2011	E. Warner Private Citizen
4120	November 14, 2011	L. Manter Private Citizen
4121	November 8, 2011	N. Spray Private Citizen
4122	November 22, 2011	S. Jackson Private Citizen
4123	November 21, 2011	J. and R. Lyon Private Citizen
4124	November 21, 2011	D. Sprang Private Citizen
4125	November 21, 2011	R. Smith Private Citizen
4126	November 21, 2011	J. Dabrowski Private Citizen
4127	November 21, 2011	M. Judson Private Citizen
4128	November 21, 2011	J. Avett Private Citizen
4129	November 22, 2011	D. Watson Private Citizen
4130	November 22, 2011	Anonymous public comment
4131	November 22, 2011	M. Sloan Private Citizen
4132	November 22, 2011	M. Perry Private Citizen
4133	November 23, 2011	R. Williams Private Citizen
4134	November 27, 2011	A. Francisco Private Citizen
4135	November 25, 2011	John V. Corra Wyoming Dept of Environmental Quality

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4136	November 27, 2011	J. E. Rosenberg Private Citizen
4137	November 23, 2011	Mike Brownell, Chesapeake Energy Corp
4138	November 22, 2011	M. Badgett Private Citizen
4139	November 22, 2011	L. Rice Private Citizen
4140	November 22, 2011	O. Altiok Private Citizen
4141	November 22, 2011	M. Warren Private Citizen
4142	November 22, 2011	A. Brown Private Citizen
4143	November 22, 2011	M. Quinlan Private Citizen
4144	November 22, 2011	L. Barnett Private Citizen
4145	November 22, 2011	J. Schloz Private Citizen
4146	November 22, 2011	T. Stuart Private Citizen
4147	November 22, 2011	L. Zweber Private Citizen
4148	November 22, 2011	J. Schneider Private Citizen
4149	November 22, 2011	C. Burger Private Citizen
4150	November 22, 2011	P. Leighton-Burwell Private Citizen
4151	November 22, 2011	M. Lueg Private Citizen
4152	November 23, 2011	M. Ham Private Citizen
4153	November 25, 2011	B. Williams Private Citizen
4154	November 25, 2011	J. Waller-Eling Private Citizen
4155	November 26, 2011	L. Thompson Private Citizen
4156	November 27, 2011	S. Region Private Citizen
4157	November 28, 2011	G. Murphy Private Citizen
4158	November 28, 2011	Trinh M. Tran El Paso Corporation



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4159	November 28, 2011	J. Kelly Robbins Arkansas Independent Producers & Royalty Owners Assoc
4160	November 28, 2011	Susan Combs Texas Comptroller of Public Accounts
4161	November 28, 2011	Bryce C. Bird Utah Division of Air Quality
4162	November 29, 2011	Jon A. Mueller Chesapeake Bay Foundation, Inc.
4163	November 29, 2011	Grant Maki Ohio Environmental Council
4164	November 29, 2011	Leslie Witherspoon Solar Turbines Inc.
4165	November 29, 2011	Doug Flanders Colorado Oil & Gas Association
4166	November 28, 2011	Ali Mirzakhali Division of Air Quality, Delaware Dept. of Natural Resources & Environmental Control
4167	November 29, 2011	Teddy Carter Texas Independent Producers and Royalty Owners Association
4168	November 29, 2011	C. Louis Renaud Energy Resources, General Land Office, TX
4169	November 29, 2011	Anonymous public comment
4170	November 29, 2011	Michael L. Krancer PA Dept. of Environmental Protection
4171	November 29, 2011	Anonymous public comment
4172	November 29, 2011	Anonymous public comment
4173	November 30, 2011	Anonymous public comment
4174	November 30, 2011	Richard Metcalf Louisiana Mid-Continent Oil and Gas Assoc
4175	November 30, 2011	John Dutton Gas Compressor Assoc.
4176	November 28, 2011	David L. Klemp Air Resources Management Bureau, Montana Dept. of Environmental Quality
4177	November 30, 2011	Deb Hastings Texas Oil & Gas Association
4178	November 28, 2011	Laura J. Finley Oklahoma Dept. of Environmental Quality
4179	November 29, 2011	S. Polefka Private Citizen
4180	November 29, 2011	E. and M. Griffin Private Citizens
4181	November 29, 2011	Anonymous public comment

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*EPA-HQ-OAR-2010-0505*

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<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
4182	November 30, 2011	J. Wolf Private Citizen
4183	November 25, 2011	A. Hofer Private Citizen
4184	November 30, 2011	J. Jared Snyder NY State Dept. of Environmental Conservation
4185	November 30, 2011	Thomas Bach Kinder Morgan Energy Partners
4186	November 28, 2011	R. and B. Stippec Private Citizens
4187	November 28, 2011	G. Garrison Private Citizen
4188	November 28, 2011	J. Wiener Private Citizen
4189	November 30, 2011	Earthjustice on behalf of: Berks Gas Truth Biodiversity Conservation Alliance Californians for Western Wilderness Center for Biological Diversity Center for Health, Environment and Justice Clean Water Action Colorado Environmental Coalition Delaware Riverkeeper Network Drilling Mora County Earthworks EcoFlight Environmental Defense Fund National Parks Conservation Association National Wildlife Federation Natural Resources Defense Council Pennsylvania Environmental Defense Foundation Pennsylvania Forest Coalition Powder River Basin Resource Council Protecting Our Waters Riverkeeper, Inc. San Juan Citizens Alliance Sierra Club Southern Utah Wilderness Alliance Upper Green River Alliance Western Environmental Law Center Western Organization of Resource Councils Western Resource Advocates WildEarth Guardians Wilderness Workshop WV Surface Owners' Rights Organization

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4190	November 29, 2011	A. Tonsmeire Private Citizen
4191	November 30, 2011	William C. Allison V Colorado Dept. of Public Health and Environment
4192	November 30, 2011	Jeff Applekamp Gas Processors Association
4193	November 30, 2011	Fred Carl Black Hills Exploration And Production and Midstream
4194	November 28, 2011	G. Jeung Private Citizen
4195	November 28, 2011	G. Holden Private Citizen
4196	November 28, 2011	J. Bautista Private Citizen
4197	November 28, 2011	G. Salatrik Private Citizen
4198	November 30, 2011	C. Rorke and S. Batkins Private Citizens
4199	November 29, 2011	G. Callas Private Citizen
4200	November 29, 2011	E. Heyward Private Citizen
4201	November 28, 2011	G. Russi Private Citizen
4202	November 29, 2011	E. Morris Private Citizen
4203	November 29, 2011	E. Caton Private Citizen
4204	November 28, 2011	C. Millsapps Private Citizen
4205	November 28, 2011	P. Janzen Private Citizen
4206	November 28, 2011	C. Wackerbarth Private Citizen
4207	November 29, 2011	J. Real Private Citizen
4208	November 30, 2011	S. William Becker National Association of Clean Air Agencies
4209	November 30, 2011	Angie Burckhalter Oklahoma Independent Petroleum Assoc
4210	November 30, 2011	Veronica Nasser REM Technology, Inc.
4211	November 30, 2011	C. Churba Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4212	November 30, 2011	Veronica Nasser REM Technology, Inc.
4213	November 30, 2011	Lisa Yoho BG Americas & Global LNG
4214	November 30, 2011	Nicholas DeMarco West Virginia Oil and Natural Gas Association
4215	November 30, 2011	Holly Propst Western Business Roundtable
4216	November 30, 2011	Lee Fuller Independent Petroleum Association of America
4217	November 30, 2011	Dan F. Hunter ConocoPhillips Company
4218	November 30, 2011	Jessica L. Keiser Targa Resources Corp.
4219	November 30, 2011	Patrick J. Nugent Texas Pipeline Association
4220	November 30, 2011	John Robitaille Petroleum Association of Wyoming
4221	November 30, 2011	Wyoming Outdoor Council Environmental Defense Fund
4222	November 30, 2011	Daniel S. Sullivan Dept of Natural Resources Larry Hartig Dept. of Environmental Conservation, Alaska
4223	November 30, 2011	National Wildlife Federation Action Fund, mass comment campaign (17,961)
4224	November 30, 2011	M. Bamberger, et al.
4225	November 30, 2011	Stan Dempsey, Jr. Colorado Petroleum Association
4226	November 29, 2011	Vince Alaimo CONSOL Energy Inc.
4227	November 30, 2011	Mike Wasson Exterran
4228	November 30, 2011	Lee Hinman Noble Energy
4229	November 30, 2011	Amy D. Kapuga Consumers Energy
4230	November 30, 2011	John A. Benedict West Virginia Dept. of Environmental Protection
4231	November 29, 2011	Kathleen M. Sgamma Western Energy Alliance et al.
4232	November 30, 2011	Credo Action mass comment campaign (58,678)
4233	November 30, 2011	Richard Luedecke Devon Energy Corporation
4234	November 30, 2011	Pamela A. Lacey American Gas Association

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4235	November 30, 2011	Stan Dempsey, Jr. Colorado Petroleum Association
4236	November 30, 2011	Charlie Burd Independent Oil and Gas Association of West Virginia
4237	November 30, 2011	Ted Robinson Citizen Power
4238	November 30, 2011	Cathy S. Woollums MidAmerican Energy Holdings Company
4239	November 30, 2011	Daniel S. Sullivan State of Alaska Dept. of Natural Resources Department of Environmental Conservation
4240	November 30, 2011	Craig H. Segall Sierra Club
4241	November 30, 2011	Amy Farrell America's Natural Gas Alliance and Bruce Thompson American Exploration and Petroleum Council
4242	November 30, 2011	Sparsh Khandeshi Environmental Integrity Project
4243	November 30, 2011	Katten Muchin Rosenman LLP Air Permitting Forum
4244	December 1, 2011	Michael Pontiff Newfield Exploration Company
4245	November 30, 2011	Ben Shepperd Permian Basin Petroleum Association
4246	November 30, 2011	Kathryn Z. Klaber Marcellus Shale Coalition
4247	November 30, 2011	Kate Williams Alaska Oil and Gas Association
4248	November 30, 2011	Ann M. Mason American Chemistry Council
4249	November 30, 2011	Gregory L. Ryan DTE Energy
4250	November 30, 2011	Group Against Smog and Pollution (GASP)
4251	November 30, 2011	Gretchen C. Kern Pioneer Natural Resources USA, Inc.
4252	November 30, 2011	William W. (Bill) Grygar II Anadarko Petroleum Corporation
4253	November 30, 2011	Janice E. Nolen American Lung Association et al.
4254	November 30, 2011	Stuart M. Kowalski Slawson Exploration Company, Inc.
4255	November 30, 2011	Anthony J. Giuliani Ohio Oil and Gas Association

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*EPA-HQ-OAR-2010-0505*

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<i>Document ID</i>	<i>Date Submitted</i>	<i>Name and Affiliation (number of commenters)</i>
4256	November 30, 2011	David A. Galt Montana Petroleum Association
4257	November 30, 2011	Elizabeth Paranhos and Peter Zalzal Environmental Defense Fund Bruce Pendery Wyoming Outdoor Council
4258	November 30, 2011	Steve P. Henke New Mexico Oil & Gas Association
4259	November 30, 2011	Christi Zeller La Plata County Energy Council
4260	November 30, 2011	Ritu Talwar Spectra Energy Corp
4261	November 30, 2011	Sam L. Phillips Louisiana Dept. of Environmental Quality
4262	November 30, 2011	John C. Bosch J. Bosch Ltd.
4263	November 30, 2011	Kenneth A. Malmquist AECOM
4264	November 30, 2011	Lisa Barry Chevron Corporation
4265	November 30, 2011	Gregory L. Ryan DTE Energy
4266	November 30, 2011	Howard J. Feldman American Petroleum Institute
4267	November 30, 2011	Dan Girand Mack Energy Corp.
4268	November 30, 2011	John Dutton Gas Compressor Association
4269	November 30, 2011	Tommy Taylor Texas Alliance of Energy Producers
4270	November 30, 2011	George P. Williams Sempra Energy
4271	November 30, 2011	S. Gilbert Private Citizen
4272	November 30, 2011	N. and J. Miller Private Citizens
4273	November 30, 2011	Shannon S. Broome, et al. Katten Muchin Rosenman LLP Air Permitting Forum
4274	November 29, 2011	Emily Krafjack Wyoming County, Pennsylvania
4275	November 30, 2011	Bruce Baizel Earthworks' Oil & Gas Accountability Project (OGAP)
4276	November 30, 2011	Susan Knoll Argyle-Bartonville Community Alliance, et al.

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4277	November 30, 2011	I. Bloom Private Citizen
4278	November 30, 2011	E. Esch Private Citizen
4279	November 30, 2011	J. Foulk Private Citizen
4280	November 30, 2011	P. Saberi Private Citizen
4281	November 30, 2011	R. Douglas Rogers Marathon Oil Company
4282	November 30, 2011	Scott Crump Quantum Resources Management
4283	November 23, 2011	C. and M. Ham Private Citizens
4284	November 30, 2011	R. Platt Private Citizen
4285	November 30, 2011	K. Kin Private Citizen
4286	November 30, 2011	T. Devaney Private Citizen
4287	November 30, 2011	S. Pickard Private Citizen
4288	November 30, 2011	A. Pentecost-Farren Private Citizen
4289	November 30, 2011	J. Norkin Private Citizen
4290	November 30, 2011	W. Dent Private Citizen
4291	November 30, 2011	A. Payne Private Citizen
4292	November 30, 2011	S. and G. Skoloff Private Citizens
4293	November 30, 2011	P. MacDonald Private Citizen
4294	November 30, 2011	S. Strahs Private Citizen
4295	November 30, 2011	B. Hay Private Citizen
4296	November 30, 2011	Ralph Kisberg, et. al. Responsible Drilling Alliance
4297	November 30, 2011	G. Crouse Private Citizen
4298	November 30, 2011	B. Bennett Private Citizen
4299	November 30, 2011	J. Dillard Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4300	November 30, 2011	J. Prettyman Private Citizen
4301	November 30, 2011	L. Lindsey Private Citizen
4302	November 30, 2011	B. Clifford Private Citizen
4303	November 30, 2011	F. Bowers Private Citizen
4304	November 30, 2011	E. Flower Private Citizen
4305	October 12, 2011	A. Palmer Private Citizen
4306	September 29, 2011	C. Vosecky Private Citizen
4307	November 30, 2011	B. Bender Private Citizen
4308	November 30, 2011	M. Steakley Private Citizen
4309	November 30, 2011	K. Bradshaw Private Citizen
4310	November 30, 2011	H. and M. Weichel Private Citizens
4311	November 30, 2011	G. Pace Private Citizen
4312	November 15, 2011	L. Atkinson Private Citizen
4313	November 30, 2011	D. Davis Private Citizen
4314	November 30, 2011	R. Downs Private Citizen
4315	November 30, 2011	E. Berry Private Citizen
4316	November 30, 2011	Charles A. Whitehead, President Linear Motion Technologies
4317	December 1, 2011	Carla L. Suszkowski Appalachia, LLC
4318	November 30, 2011	E. Rodney
4319	November 30, 2011	D. Brown
4320	November 30, 2011	Todd L. Normane Talisman Energy USA, Inc.
4321	November 30, 2011	S. Patterson Private Citizen
4322	November 30, 2011	A. Crowe
4323	September 15, 2011	Anonymous public comment
4324	November 30, 2011	C. Ristow Private Citizen



**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4325	September 15, 2011	Anonymous public comment
4326	September 15, 2011	Anonymous public comment
4327	September 15, 2011	Anonymous public comment
4328	September 15, 2011	Anonymous public comment
4329	September 15, 2011	Anonymous public comment
4330	September 15, 2011	Anonymous public comment
4331	September 16, 2011	Anonymous public comment
4332	September 19, 2011	Anonymous public comment
4333	November 30, 2011	G. Aird Private Citizen
4334	September 25, 2011	Anonymous public comment
4335	September 25, 2011	Nancy (no last name provided)
4336	September 26, 2011	Anonymous public comment
4337	September 26, 2011	Anonymous public comment
4338	October 6, 2011	Anonymous public comment
4339	October 9, 2011	Anonymous public comment
4340	October 11, 2011	D. Newton Private Citizen
4341	October 17, 2011	Anonymous public comment
4342	October 17, 2011	H. Oriano Private Citizen
4343	October 17, 2011	Anonymous public comment
4344	October 17, 2011	T. Alcorn Private Citizen
4345	October 17, 2011	Anonymous public comment
4346	October 17, 2011	Anonymous public comment
4347	October 17, 2011	Sergei (no surname provided)
4348	October 17, 2011	Anonymous public comment
4349	October 18, 2011	Anonymous public comment
4350	November 30, 2011	T. Held Private Citizen
4351	November 30, 2011	K. Higgins Private Citizen
4352	November 30, 2011	D. Mondejar Private Citizen
4353	November 30, 2011	S. Thomason Private Citizen
4354	November 30, 2011	Matthew Todd The Residual Risk Coalition
4355	October 5, 2011	Nancy Wiggins Yellowstone Valley Audubon Society
4356	November 30, 2011	Mark R. Vickery Texas Commission on Environmental Quality
4357	November 30, 2011	Michael R. Woelk Picarro

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4358	December 5, 2011	Catherine H. Reheis-Boyd Western States Petroleum Association
4359	November 30, 2011	A. Monderewicz Private Citizen
4360	November 30, 2011	E. Echevarria Private Citizen
4361	November 30, 2011	S. Baldwin Private Citizen
4362	November 30, 2011	V. Strange Private Citizen
4363	November 30, 2011	M. Ciaccia Private Citizen
4364	November 30, 2011	R. Caputo Private Citizen
4365	November 30, 2011	B. McDonald Private Citizen
4366	November 30, 2011	D. Mondejar Private Citizen
4367	November 30, 2011	K. Michaelis Private Citizen
4368	November 30, 2011	C. Benson Private Citizen
4369	November 30, 2011	A. Monderewicz Private Citizen
4370	November 30, 2011	D. Bulla Private Citizen
4371	November 30, 2011	T. Wade Private Citizen
4372	November 30, 2011	J. Balling Private Citizen
4373	November 30, 2011	K. Rowlett Private Citizen
4374	November 30, 2011	K. Rowlett Private Citizen
4375	November 30, 2011	Joseph Otis Minott Clean Air Council
4376	December 8, 2011	A. Rourke Private Citizen
4377	November 25, 2011	R. Shroy Private Citizen
4378	November 25, 2011	R. Chomo Private Citizen
4379	November 25, 2011	M. Welchel Private Citizen
4380	November 25, 2011	J. Hensen Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4381	November 25, 2011	D. Stanko Private Citizen
4382	November 25, 2011	T. Schock Private Citizen
4383	November 25, 2011	L. Adkins Private Citizen
4384	November 25, 2011	J. Smith Private Citizen
4385	November 25, 2011	M. Spahr Private Citizen
4386	November 30, 2011	D. Guernsey Private Citizen
4387	November 29, 2011	I. Kunin Private Citizen
4388	November 29, 2011	M. Papakhian Private Citizen
4389	November 30, 2011	R. E. Rutkowski Private Citizen
4390	November 28, 2011	Dr. R. Jameson Private Citizen
4391	November 22, 2011	M. Greer Private Citizen
4392	November 23, 2011	Dr. K. W. Hess Private Citizen
4393	November 23, 2011	Dr. L. Michalove Private Citizen
4394	November 23, 2011	Dr. L. Michalove Private Citizen
4395	November 23, 2011	Dr. L. Michalove Private Citizen
4396	November 28, 2011	A. Bieliauskas Private Citizen
4397	November 23, 2011	D. Staudenmeir Private Citizen
4398	November 23, 2011	C. Friedman Private Citizen
4399	November 23, 2011	K. Mizelle Private Citizen
4400	November 23, 2011	M. Bandy-Zalatoris Private Citizen
4401	November 23, 2011	L. Dahill Private Citizen
4402	November 23, 2011	J. Stender Private Citizen
4403	November 23, 2011	A. Lundberg Private Citizen

**EPA-HQ-OAR-2010-0505**

<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4404	November 23, 2011	L. Hegstrand Private Citizen
4405	November 23, 2011	V. van Buchem Private Citizen
4406	November 23, 2011	M. Fenton Private Citizen
4407	November 23, 2011	J. Pintner Private Citizen
4408	November 28, 2011	E. Taylor Private Citizen
4409	November 25, 2011	S. Righi Private Citizen
4410	November 25, 2011	C. Hatten Private Citizen
4411	November 25, 2011	K. Allen Private Citizen
4412	November 25, 2011	K. Carolus Private Citizen
4413	November 25, 2011	U. Hopfer Private Citizen
4414	October 27, 2011	Natural Resources Defense Council mass comment campaign (10,769)
4415	November 9, 2011	Mass Comment Campaign sponsoring organization unknown (163)
4416	October 19, 2011	Mass Comment Campaign sponsoring organization unknown (1,883)
4417	October 18, 2011	Anonymous public comment
4418	October 19, 2011	Anonymous public comment
4419	October 19, 2011	Anonymous public comment
4420	October 19, 2011	Anonymous public comment
4421	October 19, 2011	Anonymous public comment
4422	October 20, 2011	Anonymous public comment
4423	November 21, 2011	Anonymous public comment
4424	November 28, 2011	M. Lewchuk Private Citizen
4425	December 12, 2011	Shannon S. Broome, et al., Katten Muchin Rosenman LLP Air Permitting Forum
4426	November 28, 2011	Sierra Club mass comment campaign (175)
4427	October 30, 2011	Anonymous public comment
4428	November 21, 2011	C. Elejoste Private Citizen
4429	November 19, 2011	S. Lynch Private Citizen

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*EPA-HQ-OAR-2010-0505*

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4430	November 21, 2011	K. Castillo Private Citizen
4431	November 21, 2011	A. Smith Private Citizen
4432	November 21, 2011	M. Leitch Private Citizen
4433	November 21, 2011	J. Kirkpatrick Private Citizen
4434	November 19, 2011	E. Paulsworth Private Citizen
4435	November 21, 2011	F. Harkins Private Citizen
4436	November 18, 2011	M. Rose Private Citizen
4437	November 18, 2011	S. Edwards Private Citizen
4438	November 19, 2011	R. Menke Private Citizen
4439	November 18, 2011	K. Gresham Private Citizen
4440	November 18, 2011	C. Lehman Private Citizen
4441	November 18, 2011	P. Jordan Private Citizen
4442	November 18, 2011	P. Yingst Private Citizen
4443	November 21, 2011	C. Mac Low Private Citizen
4444	November 18, 2011	M. Ibarra Private Citizen
4445	November 21, 2011	R. Freriks Private Citizen
4446	November 21, 2011	P. Bordenet Private Citizen
4447	November 21, 2011	C. Valdez Private Citizen
4448	November 18, 2011	J. Wilkinson Private Citizen
4449	November 21, 2011	W. Pruess Private Citizen
4450	November 21, 2011	J. Blaisdell Private Citizen
4451	November 21, 2011	C. Rutherford Private Citizen
4452	November 21, 2011	D. Campbell Private Citizen

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**EPA-HQ-OAR-2010-0505**

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<b>Document ID</b>	<b>Date Submitted</b>	<b>Name and Affiliation (number of commenters)</b>
4453	November 21, 2011	R. Hilgenberg Private Citizen
4454	November 21, 2011	E. Greding Private Citizen
4455	November 21, 2011	M. Hogan Private Citizen
4456	December 13, 2011	Lou D'Amico Pennsylvania Independent Oil and Gas Assoc
4457	November 30, 2011	Devorah Ancel Sierra Club et al. (Part 1 of 7)
4458	November 30, 2011	Devorah Ancel Sierra Club et al. (Part 2 of 7)
4459	November 30, 2011	Devorah Ancel Sierra Club et al. (Part 3 of 7)
4460	November 30, 2011	Devorah Ancel Sierra Club et al. (Part 4 of 7)
4461	November 30, 2011	Devorah Ancel Sierra Club et al. (Part 5 of 7)
4462	November 30, 2011	Devorah Ancel Sierra Club et al. (Part 6 of 7)
4463	November 30, 2011	Devorah Ancel Sierra Club et al. (Part 7 of 7)
4467	January 6, 2012	Clean Air Council mass comment campaign (33)
4468	January 30, 2012	Craig Holt Segall Sierra Club Environmental Law Program et al.
4469	February 15, 2012	William C. Allison V Colorado Department of Public Health and Environment (Supplemental comment to 4191)
4471	February 17, 2012	Craig Holt Segall Sierra Club Environmental Law Program et al.
4472	March 7, 2012	Elizabeth Ames Jones Railroad Commission of Texas
4472	October 25, 2011	Railroad Commission of Texas
4475	November 30, 2011	Sierra Club

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