

MEMORANDUM IN RESPONSE TO PETITIONS REGARDING GREENHOUSE GAS AND OTHER EMISSIONS FROM MARINE VESSELS AND NONROAD ENGINES AND VEHICLES

I. Introduction

A. Relevant Statutory Provisions

Under Clean Air Act (CAA or “the Act”) section 213(a)(4), if the Environmental Protection Agency (EPA or “the Agency”) determines that emissions from nonroad engines and vehicles as a whole (other than oxide of nitrogen, volatile organic compounds, and carbon monoxide, which are addressed in section 213(a)(3)), “significantly contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, [EPA] may promulgate ... such regulations as the Administrator deems appropriate containing standards applicable to emissions from those classes or categories of new nonroad engines and new nonroad vehicles (other than locomotives and engines used in locomotives) which in the Administrator’s judgment cause or contribute to such air pollution, taking into account costs, noise, safety, and energy factors associated with the application of available technology which the Administrator determines will be available for the engines and vehicles to which the standards apply.”

Under Clean Air Act section 202(a)(3)(D), EPA was required to study the practice of rebuilding heavy duty engines and its impact on engine emissions. Based on the study and other information, EPA may prescribe requirements to control rebuilding practices for heavy duty engines.

Section 211(c) of the Clean Air Act permits EPA to control or prohibit the manufacture, introduction into commerce, offering for sale or sale of any fuel for use in a nonroad engine or nonroad vehicle, under certain specific circumstances discussed in that section.

B. Procedural History

On October 3, 2007, Friends of the Earth, Oceana, Center for Biological Diversity and Earthjustice sent a letter to EPA petitioning the Agency to do the following:

- (1) make a finding that carbon dioxide, nitrous oxide and black carbon emissions from new marine engines and vehicles substantially contribute to air pollution which may reasonably be anticipated to endanger public health and welfare;¹
- (2) Promulgate emission standards for carbon dioxide, nitrous oxide and black carbon emissions from marine engines pursuant to CAA section 213(a)(4);
- (3) Make a finding that climate change related pollutants are emission products of the fuels used in marine engines and vehicles, and that these emission products contribute to air pollution which may reasonably be anticipated to endanger public health and welfare; and

¹ The actual language of the Act is somewhat different than the language quoted from the Petitions. The remainder of this response will use the language of the statute in characterizing Petitioners’ requests.

- (4) Promulgate regulations limiting the maximum sulfur content of marine diesel fuels, and prohibit the manufacture, introduction into commerce, and offering for sale of any fuel with sulfur concentration in excess of such limits for use in any marine engine or vehicle.

On January 29, 2008, International Center for Technology Assessment, Center for Food Safety, and Friends of the Earth sent a letter to EPA petitioning the Agency to do the following:

- (1) Determine that carbon dioxide and other greenhouse gas emissions from nonroad vehicles and engines, and from rebuilt heavy-duty engines, significantly contribute to air pollution which may reasonably be anticipated to endanger public health and welfare;
- (2) Propose and adopt regulations specifying emissions standards for carbon dioxide and other greenhouse gas emissions from such vehicles and engines pursuant to CAA sections 213(a)(4) and 202(a)(3)(D), such standards to take the form either of emissions limitations or of work or operational practices;
- (3) Propose and adopt such regulations as are necessary to carry out the emissions limitations adopted pursuant to requests (1) and (2).

On July 31, 2008, Earthjustice and Western Environmental Law Center, on behalf of the petitioners in the October 3, 2007 and January 29, 2008 requests, respectively (collectively, “Petitioners”) notified EPA of their intent to file suit against EPA for unreasonable delay. On June 11, 2010, Petitioners filed a Complaint against EPA claiming that, among other things, EPA had unreasonably delayed because it had failed to answer the Petitions and because EPA had failed to determine whether emissions of greenhouse gases and black carbon from nonroad engines and marine engines cause or significantly contribute to air pollution that may reasonably be anticipated to endanger public health or welfare (“endangerment findings”).

On August 20, 2010, EPA filed a Partial Motion to Dismiss stating in pertinent part that Petitioners’ claim that EPA had unreasonably delayed in making the endangerment findings should be dismissed because EPA had no duty to make such findings. On July 5, 2011, the court agreed with EPA that section 213(a)(4) does not require EPA to make endangerment findings with respect to emissions of greenhouse gases and black carbon from nonroad engines (including marine engines). *Center for Biological Diversity, et al. v. EPA*, Doc. 10-00985 (D.D.C., July 5, 2011).

On June 27, 2011, Petitioners filed a Motion for Summary Judgment. EPA filed a Cross-Motion for Summary Judgment on July 27, 2011. In its cross-motion, EPA stated that it was prepared to respond to the petitions no later than 90 days from entry of judgment. On March 20, 2012, the court filed its order on the Motions for Summary Judgment. The court determined that Petitioners’ claim regarding delay in response to the Petitions was moot and ordered EPA to respond to the Petitions within 90 days of the order.

II. Summary of Petitions

A. Marine Engine and Vessel Petition

In the October 3, 2007 petition from Friends of the Earth, Oceana, Center for Biological Diversity and Earthjustice, Petitioners discuss their view of the threat to public health and welfare that

climate change represents and the significant contribution of marine shipping vessels to climate change pollutants, and request that EPA quickly promulgate regulations requiring that ocean-going vessels (OGVs) meet emissions standards by “operating in a fuel-efficient manner, using cleaner fuels, and/or employing technical controls, so as to reduce emissions of carbon dioxide, nitrous oxide, and black carbon”, and that EPA should also control “the manufacture and sale of fuels used in marine shipping vessels by imposing fuel standards” to reduce emissions that contribute to climate change.

Petitioners discuss four specific arguments. First, they assert that OGVs play a significant role in global climate change through four types of emissions: carbon dioxide, nitrogen oxides, nitrous oxide and black carbon (also known as soot). Petitioners cite several studies claiming that the impact of these emissions are significant today and that industry trends indicate these emissions will grow substantially in future decades. Second, Petitioners assert that EPA has authority to regulate these four emissions from OGVs which they claim contribute to climate change since they “may reasonably be anticipated to endanger public health or welfare.” Petitioners contend that *Massachusetts v. EPA*, 549 U.S. 497 (2007) must guide EPA’s actions as it decides how to regulate these emissions from OGVs. Third, Petitioners discuss a number of regulatory measures that they claim can effectively reduce these emissions from OGVs and which EPA could adopt using its regulatory authority under CAA section 213(a)(4), including requiring restrictions on vessel speed, requiring the use of cleaner fuels in ships, and other technical and operations measures Petitioners believe are relatively easy and cost-effective. Lastly, Petitioners assert that section 213 of the CAA provides EPA with clear authority to regulate these emissions from both new and remanufactured OGV engines as well as from foreign flagged vessels.

B. Nonroad Engine and Vehicle Petition

In the January 29, 2008 petition from the International Center for Technology Assessment, Center for Food Safety, and Friends of the Earth, Petitioners request that EPA exercise its authority under CAA section 213(a) (4) and undertake timely rulemaking procedures to adopt emissions standards to control and limit greenhouse gas emissions from new nonroad engines excluding aircraft and OGVs. Petitioners seek EPA regulatory action on a wide range of nonroad engines and equipment, including outdoor power equipment, recreational vehicles, farm and construction machinery, lawn and garden equipment, logging equipment and marine vessels, that Petitioners believe contribute substantially to greenhouse gas emissions. Petitioners also request that EPA use its CAA section 202(a)(3)(D) authority to regulate greenhouse gas emissions from rebuilt heavy-duty engines.

Petitioners discuss three arguments in their petition. First, Petitioners argue that climate change is occurring and serious public health and environmental consequences are projected for this century, unless effective and timely action is taken to mitigate these changes. Petitioners further contend that greenhouse gas emissions from nonroad engines and vehicles are responsible for a significant and growing amount of climate change-related emissions and they highlight three nonroad sectors responsible for a large portion of these greenhouse gas emissions – construction, mining, and agriculture. Petitioners’ second argument is that there is a legal basis for EPA regulatory action, requiring timely action by EPA to regulate greenhouse gas emissions from nonroad engines and vehicles. Petitioners contend that once EPA renders a positive determination of endangerment under CAA section 202 for motor vehicles and engines, this finding should also satisfy the endangerment determination required under CAA section

213(a)(4) for nonroad engines. EPA's discretion under CAA section 213 (a)(4) is limited, Petitioners assert, by the relevant statutory considerations, as discussed in Massachusetts v. EPA, so that the Agency, "can decline to regulate nonroad engine and vehicle emissions only if EPA determines reasonably that such emissions do not endanger public health or welfare, or else, taking into account factors such as cost, noise, safety and energy, no such regulations would be appropriate." Petitioners state that because the Clean Air Act restricts states' ability to regulate pollution from new construction or farm vehicles and engines under 175 horsepower, Congress "implicitly invested EPA with unique responsibility to act in the states' stead so as to prevent such harmful emissions." Therefore, Petitioners assert, EPA must respond to this petition affirmatively. Petitioners also argue that the National Environment Policy Act (NEPA) Section 101 (b) compels EPA action to fulfill its duty "as a trustee of the environment for succeeding generations."

The third argument raised by Petitioners is that a wide range of technology is currently available to reduce greenhouse gas emissions from nonroad engines and vehicles and that, in addition, the Act was intended to be a technology-forcing statute so that EPA "can and should" establish regulations that "substantially limit GHG emissions.... even where those regulations force the development of new technology." Regarding technology availability, Petitioners provide a list of technologies that they believe are currently available to reduce greenhouse gas emissions from nonroad vehicles and engines, including auxiliary power unit systems to avoid engine use solely to heat or cool the cab; tire inflation systems; anti-idling standards; use of hybrid or hydraulic-hybrid technology; use of low carbon fuels; and use of low viscosity lubricants.

III. Discussion and Response

As discussed in detail below, EPA does not intend at this time to initiate either an endangerment finding or a rulemaking regarding emissions of greenhouse gases and black carbon from nonroad engines and vehicles, including marine engines and vessels, under section 213(a)(4), in the near or medium term. Should we decide in the future to initiate such action, we would expect to establish the scope, schedule, and other plans for the proceeding at that time. Furthermore, as also discussed below, EPA does not intend to initiate rulemaking under section 202(a)(3)(D) regarding greenhouse gas and black carbon emissions to engine rebuilding practices. Finally, concerning Petitioners' request for action under section 211(c), EPA has already promulgated regulations limiting the maximum sulfur content of marine diesel fuels.²

We have considered Petitioners' requests and have concluded that extensive Agency resources would be needed to pursue these objectives effectively, and that so directing these resources at this time would detract from addressing more pressing environmental issues in the mobile source area, including greenhouse gas emissions from sources that represent a greater portion of the greenhouse gas inventory. Furthermore, consistent with past practice in EPA actions under section 213(a)(4), it is appropriate that an endangerment and significant contribution finding for nonroad greenhouse gas sources, if found to be in the affirmative, would coincide with or be immediately followed by the development of a regulatory program to set appropriate emissions standards for them. We are therefore exercising the discretion provided and not taking the actions requested by Petitioners at this time.

² 75 Fed. Reg. 22896 (April 30, 2010)

A. EPA's Discretionary Authority Under Clean Air Act Section 213(a)(4)

Petitioners assert that EPA has the authority to regulate emissions related to global climate change from nonroad engines and vehicles. EPA agrees that, if we make the requisite finding regarding significant contribution of nonroad engines and vehicles to air pollution that may reasonably be anticipated to endanger public health or welfare, EPA has the authority to promulgate standards applicable to such emissions from those classes or categories of new nonroad engines and vehicles that, in the Administrator's judgment, cause or contribute to such air pollution.

However, unlike the authority in section 202(a)(1) reviewed in *Massachusetts v. EPA*, the authority provided to EPA in section 213(a)(4) is clearly discretionary. *Center for Biological Diversity v. EPA*, 794 F. Supp. 2d 151, 157-58. Under sections 213(a)(2) and (3), Congress first mandated that EPA determine whether emissions of carbon monoxide, oxides of nitrogen, and volatile organic compounds from nonroad engines and vehicles contribute significantly to carbon monoxide or ozone nonattainment, and if that finding is affirmative, mandated that EPA promulgate standards for classes or categories that contribute to such nonattainment. With regard to other emissions, which would include emissions addressed by Petitioners, Congress did not mandate that EPA make a similar determination. Instead the Act states that *if* EPA makes a positive finding regarding substantial contribution by nonroad engines to such pollution, then EPA *may* promulgate standards applicable to such emissions from classes or categories that contribute to such pollution. This clearly discretionary language contrasts markedly with the language in section 202(a) and section 213(a)(2) and (3) and indicates the intention of Congress to leave decisions on whether and when to initiate rulemakings concerning regulation of emissions other than those listed in section 213(a)(2) to EPA's discretion. Thus, as the District Court determined, EPA's decision whether to undertake action at this time to address greenhouse gas and other emissions from classes or categories of nonroad engines and vehicles, to address global climate change, is discretionary.

B. Resource Concerns Relevant to Addressing Nonroad and Marine Sector Greenhouse Gases and Black Carbon

1. Recent and Current EPA Actions Regarding Greenhouse Gas Emissions From Mobile and Other Sources

The petitions discuss the effect of various pollutants on global climate change. EPA takes this issue seriously and has already begun to address greenhouse gas emissions from mobile and other sources. However, EPA does not have the resources to consider all possible sources of climate change in the near or medium term. In addition to its non-discretionary obligations, EPA considers which discretionary programs will best serve to accomplish its mission in the course of setting its priorities and assigning resources given the resource constraints faced by EPA. EPA strives to prioritize those projects having the greatest environmental and human health and welfare benefits. With regard to greenhouse gas emissions in particular, EPA has directed its efforts at categories of sources that are the largest contributors to greenhouse gas emissions in the United States.

Since issuing its Section 202(a) endangerment finding in December 2009, EPA has undertaken a number of important and complex rulemakings to address the largest sources of greenhouse gas

emissions.³ It has: (1) proposed and issued standards for emissions of greenhouse gases from cars and light-duty trucks;⁴ (2) proposed and issued standards for emissions of greenhouse gases from heavy duty trucks;⁵ (3) proposed a second round of greenhouse gas standards for passenger cars and light-duty trucks in December 2011;⁶ and (4) proposed standards for greenhouse gases from new electric generating units.⁷

These source categories represent approximately 55 percent of the total 2010 U.S. emissions of greenhouse gases. In terms of mobile source emissions, the light- and heavy-duty motor vehicles we are now addressing represent more than 73 percent of 2010 U.S. mobile source greenhouse gas emissions.⁸

By contrast, the nonroad and marine sources that are the subject of the petitions generated only 4 percent of total 2010 U.S. greenhouse gas emissions and 14 percent of 2010 U.S. mobile source greenhouse gas emissions, substantially less than the emissions from the largest source categories.⁹ Further, as discussed below, the nonroad sector is actually comprised of several very diverse segments that have been addressed in past EPA actions for non-greenhouse gases through several separate rulemakings.

EPA's concentration of its limited resources on the largest sources of greenhouse gas emissions, rather than on nonroad equipment and marine vessels, follows a decision to prioritize actions so as to obtain the greatest human health and environmental benefits in return for EPA's investment of its time and resources. Beyond finalizing and implementing the greenhouse gas standards discussed above, the Agency has committed to major follow-up actions requiring significant resources. These include a mid-term technical review for the greenhouse gas standards for model year 2022-2025 passenger cars and light-duty trucks, and a rulemaking to set a second phase of greenhouse gas standards for heavy-duty trucks beyond 2018, to include an evaluation of expanded use of vehicle compliance models and complete vehicle dynamometer testing.

In addition, regulations already in place to address particulate matter from diesel engines are expected to significantly cut black carbon emissions in the United States. According to EPA's recent Report to Congress, mobile source emissions of black carbon, the largest source in the United States, are projected to decline 86 percent by 2030 due to new engine standards already promulgated.¹⁰

2. Complexity of the Nonroad Sector

³ 74 Fed. Reg. 66496 (Dec.15, 2009)

⁴ 75 Fed. Reg. 25324 (May 7, 2010)

⁵ 76 Fed. Reg. 57106 (Sept. 15, 2011)

⁶ 76 Fed. Reg. 74854 (Dec. 1, 2011)

⁷ 77 Fed. Reg. 22392 (Apr 13, 2012)

⁸ These figures were calculated using data from Tables ES-2, 3-12 and A-111 of the EPA report, "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2010", April, 2012; see <http://www.epa.gov/climatechange/emissions/usinventoryreport.html>. They include emissions from international bunker fuels. If calculated without international bunker fuels, the contributions are 56 and 77 percent of total U.S. and mobile source greenhouse gases, respectively.

⁹ If calculated without international bunker fuels: 4 and 12 percent of total U.S. and mobile source greenhouse gases, respectively.

¹⁰ EPA (2012) Report to Congress on Black Carbon, EPA-450/R-12-001.

The 2009 endangerment and cause or contribute findings for new motor vehicles and new motor vehicle engines went through multiple rounds of internal review, generated thousands of public comments (necessitating an 800-page response document), and required the full-time efforts of a large number of EPA staff. Making a similar determination regarding emissions from nonroad engines would require a similar formal process, and would consume a significant amount of Agency resources. This could only be accomplished at this time by diverting resources from work on other projects, including the greenhouse gas-related projects discussed above.

As large an effort as the nonroad sector endangerment and significant contribution finding would be, it is dwarfed by the standard-setting effort that it would potentially initiate. The nonroad sector is actually a collection of hundreds of diverse applications varying from gasoline-powered lawn care equipment to diesel-powered ocean-going vessels. At a high level, these typically break down into the following engine categories and associated applications used by EPA to define its nonroad rulemaking activities:

- land-based diesel (such as agricultural and construction equipment),
- large spark-ignition (SI) (such as forklifts, and airport service equipment),
- small SI (such as portable electric power generators),
- recreational vehicles (such as snowmobiles and offroad motorcycles),
- recreational marine (such as power boats),
- category 1 and 2 commercial marine (such as fishing vessels and ferries),
- category 3 marine (such as container ships and passenger vessels).

Starting with the first EPA regulatory action to address emissions of oxides of nitrogen (NO_x) and other pollutants from nonroad engines and vehicles (the 1994 original determination of significant contribution of emissions from nonroad engines and final rule for large land-based nonroad diesel engines), the Agency has found it effective to establish standards for the above-described nonroad sectors separately. There are a number of important reasons for this approach: (1) the engines, fuel types, applications, and emissions control technologies differ greatly across this sector, (2) the industry stakeholders, including the user groups, are also very diverse and are comprised of thousands of individual companies, many of which are small businesses, (3) the Agency has limited resources, and could not expend the resources to address the entire nonroad sector at the same time, (4) a segmented approach allows the Agency to take advantage of the natural progression of technology application. Specifically, advanced technology developed for highway engines first migrates to nonroad engines of similar size, and then to larger and smaller land-based and marine nonroad engines, allowing time for the many challenges of technology adaptation to be resolved. The importance of this technology migration pathway is discussed further in section III.B.4.

As a result, since the original 1994 nonroad rule, the Agency has completed a number of separate major rulemakings and a number of minor regulatory actions to address emissions of pollutants such as particulate matter, oxides of nitrogen, carbon monoxide and volatile organic compounds from nonroad sector sources. Subsequent efforts to implement these programs have been and continue to be a major Agency priority, requiring significant staff resources. Based on the Agency's extensive past experience in implementing section 213(a), we believe that any potential nonroad sector greenhouse gas regulations, if also determined to be appropriate under the Clean Air Act, would, as in past rulemakings, need to carefully consider the unique issues associated with each subsector. Key among these subsector-specific issues, for discretionary regulation under section 213(a)(4), is whether or not it is appropriate to

promulgate standards regulating particular pollutants for that nonroad subsector. There may be nonroad equipment for which it is not appropriate to set greenhouse gas emissions standards, or for which such standards-setting is best deferred farther into the future, even though the equipment may already be subject to emissions standards for other pollutants.

3. Complexity of Potential Action

Any potential greenhouse gas rulemaking activity for the nonroad sector would be further complicated by numerous new questions that would result from the need to address emissions from the various nonroad sectors to address global climate change, as these emissions from this sector have never been regulated by EPA. For example, it may be appropriate to consider technologies that reduce greenhouse gases by improving the efficiency of the nonroad equipment, as well as those focused on improving engine efficiency. A similar approach was taken in EPA's recently completed heavy-duty truck greenhouse gas rule, following a recommendation by the National Academy of Sciences.¹¹ Petitioners clearly recognize the value of this type of approach—more than half of the technologies on the list of 17 measures suggested in the January 29, 2008 petition for reducing greenhouse gas emissions from nonroad vehicles and engines would require such a broader regulatory framework to have a meaningful impact.

Petitioners' requests are further complicated by their request for endangerment and contribution findings regarding the effect of black carbon emissions on climate change and the further request to set standards under section 213(a)(4) for black carbon emissions. EPA has not yet made any endangerment finding regarding the effects of atmospheric levels of black carbon on public health or welfare via climate change. Such an effort would be a substantial and complex scientific undertaking, as black carbon differs from the greenhouse gases included in the 2009 endangerment finding in key ways, and these issues would require significant technical review. Further, if EPA were to make a positive endangerment finding and then use its discretion to regulate black carbon emissions, it could raise questions of first review for the Agency. EPA has never regulated black carbon emissions separately from other particulate emissions. The first regulation of any pollutant generally has the possibility of raising issues that have never before been raised, and would almost certainly require considerable resources from the Agency. For example, the light-duty vehicle greenhouse gas emissions standards rule set first-time standards for nitrous oxide (N₂O), requiring considerable Agency resources to establish an effective N₂O measurement procedure.¹² One issue in particular that EPA would need to evaluate is whether, given its already stringent regulation of particulate matter emissions from nonroad engines and the associated reductions in black carbon that those particulate matter regulations create, there would be any substantial added benefit to regulating black carbon emissions specifically, especially considering the amount of effort such regulation would likely entail.

4. The Need for Orderly Technology Migration

A great deal of knowledge is now being gained by the diesel engine industry as it prepares to meet greenhouse gas standards for heavy duty trucks and truck engines, starting in 2014. Some of this knowledge, such as research on low-friction lubricants, may transfer directly into the nonroad sector,

¹¹ 76 Fed. Reg. 57106 (September 15, 2011)

¹² 75 Fed. Reg. 25323 (May 7, 2010).

possibly even without nonroad greenhouse gas standards, as high fuel prices are beginning to make fuel consumption an important purchase consideration for nonroad machinery.

This migration of technology from heavy-duty highway sources to nonroad diesel sources has been the hallmark of EPA's successful control program for non-greenhouse gas emissions, starting with a 5- to 6-year highway-to-nonroad lag time for the original nonroad Tier 1 standards, and most recently manifested in a 4- to 5-year lag time for the nonroad Tier 4 standards.¹³ This successful pattern has then been applied to larger and smaller diesel engines, including those used in locomotives and in Category 1 and 2 marine vessels. Overall, the historical lag period for Tier 4 technology migration from highway diesel engines to marine diesel engines amounts to 9-10 years. Similarly, control technology developed for gasoline cars and trucks has been transferred to the nonroad spark-ignition engine sector, with adequate time allotted to accomplish an orderly, cost-effective transition.

We have no reason to expect at this time that greenhouse gas reduction technology migration, if found to be appropriate under the Clean Air Act, could be accomplished on a schedule that would be greatly accelerated from these historical patterns. Attempts to do so, by forcing costly parallel technology development programs, could prove counterproductive.

C. Category 3 Marine Sector Issues and Activities

In addition to the land-based nonroad engines described above, Petitioners request that EPA set greenhouse gas and black carbon emission standards for "marine shipping vessels." Petitioners do not define this term, but because smaller gasoline and diesel marine engines are covered in our discussion of nonroad engines elsewhere in this response, and because the regulatory actions requested by Petitioners in the October 3, 2007 petition focus would apply to OGVs that use residual fuel (i.e., speed restrictions, fuel sulfur limits, and OGV design requirements), the following discussion interprets "marine shipping vessels" to mean ships with Category 3 marine diesel engines (those with per-cylinder displacement at or above 30 liters).

1. Complexity of the Marine Shipping Sector and Technology Migration

Similar to other nonroad sector categories, the marine shipping vessel category is very complex with respect to operations and vessel/engine characteristics. This variation underscores the challenges and complexity involved in developing any potential greenhouse gas reduction program. On one end of the spectrum are very large container ships, with engine power in excess of 75,000 kilowatts (kW), designed to operate at speeds up to 20 knots or more. At the other end of the spectrum are tankers with 20,000 kW or less power designed to operate at 10 to 12 knots. In between are various sizes of bulk carriers, roll-on/roll-off vessels, cruise ships, and general cargo ships. In addition, some ships are equipped to carry refrigerated cargo, resulting in variable power requirements depending on the cargo carried, while other are designed to operate in icy waters and have hull reinforcements, increasing their weight and power needs. Finally, the age of these ships vary a great deal, and the potential for equipment retrofits may be limited by space or other constraints or by the balance between power and propeller characteristics. Similar to nonroad engines discussed above, these differences mean that developing an over-arching program that will cover all of these types, sizes and vessel operations will be complicated.

¹³ 69 Fed.Reg. 38958 (June 29, 2004).

Another important feature of the marine shipping vessel category is that these ships are primarily engaged in international transportation services. The international nature of their operation has several implications for controlling their emissions. Most obviously, because these vessels operate internationally, the amount of time a particular vessel spends under the jurisdiction of the United States varies from very little to very large. In addition, unlike other nonroad engines, the majority of marine shipping vessels that operate in the United States at any given time are foreign-flagged vessels. U.S. vessels account for only about 11 percent of U.S. port calls. This means that the contribution of U.S.-flagged vessels to the inventory of U.S. greenhouse gas emissions is small.

The technological progression for applying diesel engine emission control technology to Category 3 engines and vessels is different from that for smaller marine diesel engines in that these engines and vessels are extremely large, they operate in a corrosive saltwater environment, they use heavy fuel oil that is not conducive to the application of particulate traps, and they often operate at low load that can make aftertreatment for NOx control more difficult to use. This doesn't mean these technologies can't be used; rather, it means that applying them requires additional time to resolve design challenges. Therefore, EPA expects that the technology migration approach that is relevant for smaller nonroad engines will continue to be relevant for this sector as well.

2. Regulatory Approach: Coordinated Strategy for Ships

The international nature of marine shipping in the United States led EPA to adopt a coordinated strategy to address emissions of pollutants from all ships that operate in the United States, regardless of where they are flagged.¹⁴ The coordinated strategy consists of three parts: (1) international marine diesel engine standards for engines installed on any vessel and international marine fuel sulfur limits that apply worldwide, contained in Annex VI to the International Convention for the Prevention of Pollution from Ships (MARPOL Annex VI) and implemented in the United States through the Act to Prevent Pollution from Ships (APPS); (2) more stringent international engine emission standards and fuel sulfur limits that apply to ships operating in specially designated emission control areas, designated by amendment to MARPOL Annex VI, also implemented in the United States through APPS; and (3) national CAA emission standards for new Category 3 engines installed on U.S. vessels and national sulfur limits for fuel produced, distributed, and sold in the United States, and that are consistent with the Annex VI program. The combination of this Coordinated Strategy and EPA's previously adopted standards for smaller marine diesel engines amount to a comprehensive program to reduce emission from all marine sources.¹⁵

EPA is pursuing this same coordinated approach with respect to standards for greenhouse gas emissions. Specifically, EPA, as a member of the U.S. delegation to the International Maritime Organization (IMO), is actively participating in international discussions aimed at reducing greenhouse gas emissions from ships. Several international actions taken since Oceana et al. filed their October

¹⁴ 75 FR 22896 (April 30, 2010).

¹⁵ EPA notes that Petitioners suggest regulation of vessel emissions of oxides of nitrogen (as distinguished from nitrous oxide, a greenhouse gas) as a global climate change pollutant because of its effect on tropospheric ozone. EPA has already regulated emissions of NOx under its section 213(a)(3) authority for all categories of nonroad engines, including OGVs (see 75 Fed. Reg. 22896 (April 30, 2010)). Any further ability to regulate NOx emissions under section 213(a)(4) is questionable (see *Bluewater Network v. EPA*, 370 F. 3d 1, 18-19 (D.C. Cir 2004)).

2007 petition that already address the Petitioner's recommendations. First, the 2008 amendments to Annex VI to the International Convention for the Prevention of Pollution from Ships include stringent fuel sulfur limits for ships. The long-term fuel sulfur standards consist of a 1,000 ppm limit that will apply in specially designated Emission Control Areas (ECAs) beginning 2015 and a 5,000 ppm limit that will apply to all ships worldwide beginning 2020. The United States promoted and achieved designation for two ECAs: the North American ECA (adopted by IMO resolution MEPC.190(60) on March 20, 2010) and the U.S. Caribbean Sea ECA (adopted by IMO resolution MEPC.202(62) on July 15, 2011). The Annex VI Tier III NO_x controls will also apply to ships operating in these ECAs. Both the ECA fuel sulfur and engine controls are implemented in the United States through APPS and the CAA (see 40 CFR 80 and 40 CFR 1043).

Second, the IMO recently adopted the first ever international standards for energy efficiency, which are relevant to greenhouse gas emissions from ships (Resolution MEPC.214(63), 2 March 2012). New ships built beginning in 2013 will be required to comply with Energy Efficiency Design Index (EEDI) requirements, and all ships will be required to have a Ship Energy Efficiency Management Plan (SEEMP) which can set goals and tracks progress toward better shipboard energy management. The EEDI and SEEMP requirements are implemented in the United States through APPS. Third, IMO continues to develop a program to reduce greenhouse gas emissions from existing ships through market based measures. The U.S. Government has advocated an efficiency-based approach, while other countries are advocating different types of levies or trading systems. The next meeting to discuss these measures is scheduled for October, 2012 with a targeted completion date in 2015. Finally, IMO has also begun discussions to address black carbon emissions. A correspondence group has been tasked with developing a definition of black carbon and identifying measurement methods, with recommendations due by February 2013.

Petitioners have provided arguments that marine shipping vessels flagged outside the United States can be regulated under section 213(a). However, other commenters have pressed arguments claiming that such regulation would not be permitted. This issue has been discussed by EPA in our earlier marine rulemakings (see 64 Fed. Reg. 73300 (December 29, 1999); 68 Fed. Reg. 8745, (February 2, 2003); 75 Fed. Reg. 22896 (April 30, 2010)). Because EPA is not proposing to set standards at this time, EPA is deferring additional discussion of this question. In the meantime, EPA continues to believe that it is in the best interests of the United States and the international shipping transportation sector to first pursue a strategy of pursuing international approaches to achieve climate change goals, which will not only provide concrete results in the goal of reducing greenhouse gases from ships but will simplify the Agency's task of adopting any standards under the CAA in the future, should this prove appropriate.

D. Endangerment Finding In the Context of Standards-Setting

As explained above, we do not believe it is appropriate to initiate any rulemakings to establish greenhouse gas standards for nonroad engines at this time. We also believe it would not be prudent to initiate activity related to making endangerment and significant contribution findings regarding greenhouse gas and black carbon emissions from nonroad/marine sector engines at this time. For the Agency to commit its limited resources now to conducting an endangerment and significant contribution proceeding without likewise committing resources to possible future regulations setting standards would not improve the environment. It would in fact serve only to confuse matters by focusing public attention

on a highly complex emissions sector that the Agency, constrained by limited resources, is not in a position to expeditiously address.

This is particularly true regarding Petitioners' request for an endangerment/contribution finding regarding emissions of black carbon. EPA has never made any finding, in the global climate change context, with regard to whether atmospheric levels of black carbon are reasonably anticipated to endanger public health or welfare. EPA takes seriously the potential climate change effects of black carbon but did not include black carbon, a non-greenhouse gas, in its 2009 endangerment finding, for a number of specific reasons stated therein. As Assistant Administrator Regina McCarthy noted in paragraph 11 of her Declaration supporting EPA's Motion for Summary Judgment, EPA expended a very large amount of resources over several years in its initial endangerment finding regarding greenhouse gas emissions from motor vehicles, including development and revision of a technical support document, multiple rounds of comments, including hundreds of thousands of public comments, and 800 page response to comments, intra- and inter-agency review and subsequent litigation. While EPA would hope that any proceeding with regard to black carbon would not need to expend the massive resources needed for the initial greenhouse gas finding, it would still likely result in considerable allocation of limited resources. Given that EPA does not intend to initiate rulemakings concerning standards regarding black carbon emissions at this time, such an expenditure of resources would have little environmental value and would come at the expense of other projects that could help the environment.

E. Rebuilt Engines

In the January 29, 2008 petition, Petitioners also request that the Agency make an endangerment/cause or contribute finding and adopt regulations for rebuilt heavy-duty engines, pursuant to Clean Air Act section 202(a)(3)(D). It is not clear from the petition, but given that the petition includes extensive discussion of nonroad sector emissions contributions and available control measures, and no discussion related to highway heavy-duty engines, it appears that Petitioners are interpreting section 202(a)(3)(D) to apply to nonroad engines, and suggesting that EPA should use section 202(a)(3)(D) to regulate rebuilding practices for nonroad engines. EPA has to date interpreted 202(a)(3)(D) as applying to highway engines. Section 202(b)(3) defines heavy-duty vehicle for the entire section and limits it to vehicles "manufactured primarily for use on the public streets, roads and highways." EPA has already performed the study required by that section and, based on the study findings, has chosen not to exercise its discretionary authority under section 202(a)(3)(D) to regulate rebuilt heavy-duty engines.¹⁶ We have no current plans to revisit that decision.

Regardless of whether the Petitioners intended to address highway or nonroad rebuilt engines, they provide no support for their suggestion to use section 202(a)(3)(D) to regulate rebuilding practices. Again, EPA is spending its limited resources on more pressing environmental priorities.

F. Fuel Provisions

In the October 3, 2007 petition, Petitioners suggest that EPA can and should: (1) make a finding that climate change related pollutants are emission products of the fuels used in marine engines and vessels, and that these emission products contribute to air pollution which may reasonably be anticipated

¹⁶ 60 FR 42881 (August 17, 1995).

to endanger public health and welfare; and (2) promulgate regulations limiting the maximum sulfur content of marine diesel fuels, and prohibit the manufacture, introduction into commerce offering for sale of any fuel with sulfur concentration in excess of such limits for use in any marine engine or vehicle.

EPA agrees with Petitioners that EPA has the authority under section 211(c) of the Act to control or prohibit the manufacture, introduction into commerce, offering for sale or sale of fuels for use in marine vessels. Such authority is discretionary and is dependent on certain initial findings. “The Administrator *may*, from time to time...control or prohibit...*if*, in the judgment of the Administrator, any... emission product of such fuel...causes or contributes to air pollution or water pollution...that may reasonably be anticipated to endanger the public health or welfare...” [emphasis added]

Petitioners specifically request that EPA reduce the sulfur level permitted for marine engines, claiming that there are emissions benefits, including global climate change related emissions benefits, from such an action. As discussed above, EPA has already regulated the sulfur level of marine vessels and other nonroad engines. In particular, EPA has taken the substantive action requested by Petitioners in reducing sulfur levels from Category 3 marine vessels to the levels requested by Petitioners (0.1 percent sulfur), and made the endangerment finding requested with regard to criteria pollution. See 40 CFR Part 80 Subpart I. EPA has already acted to meet the substantive request of Petitioners, and therefore we do not believe it is necessary to expend further resources regarding an endangerment finding relating specifically to global climate change.

IV. Conclusion

For the reasons discussed above, EPA is denying the requests by Petitioners detailed in section I.B above, except that the fourth request in the October 3, 2007 request is now moot, as EPA has already promulgated the regulations requested. EPA is not stating that it will never take the actions requested and EPA may take action in the future consistent with the requests. However, EPA will not do so at this time.