Air Emissions from Hydraulic Fracturing

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NACAA Fall Membership Meeting
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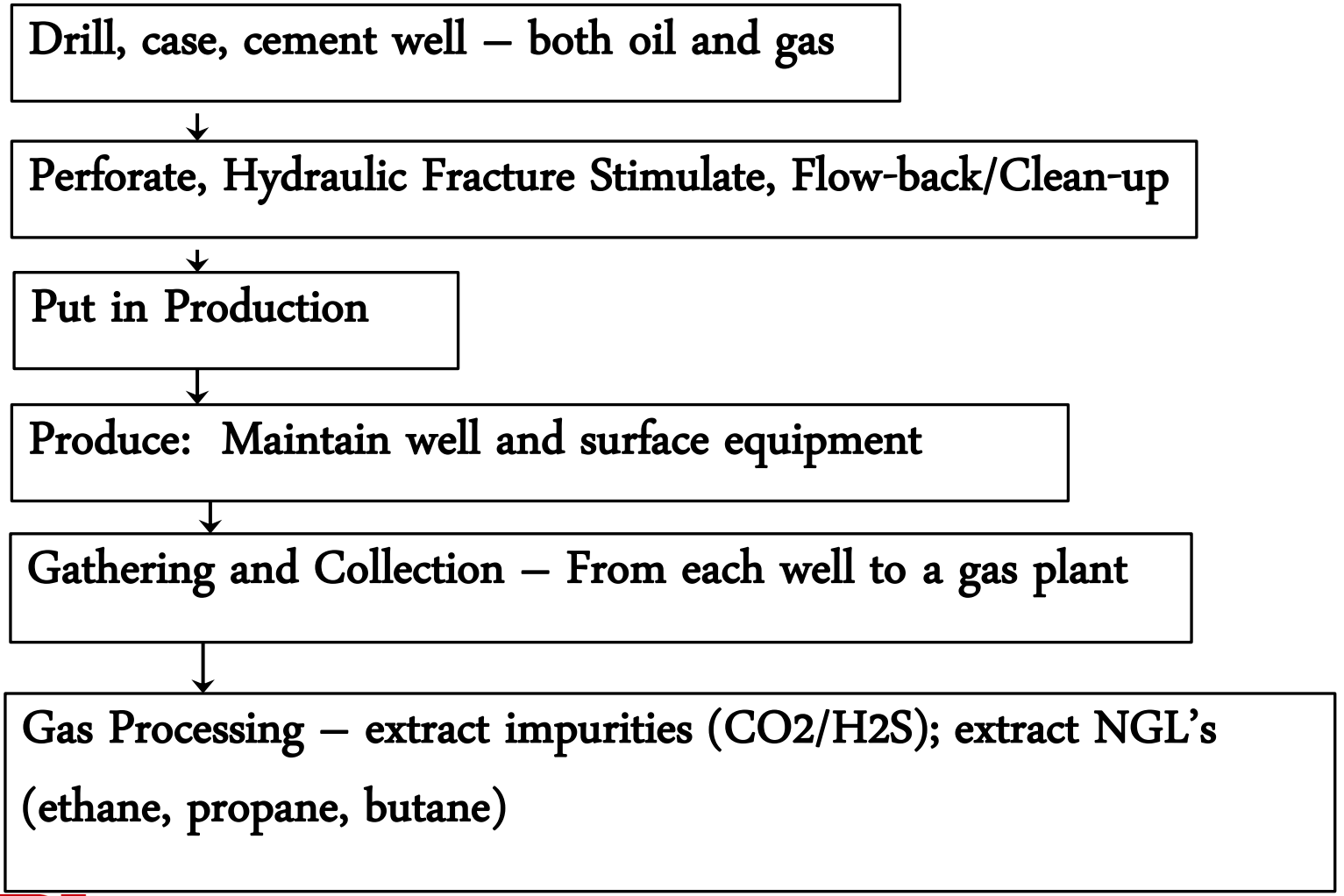
Introduction

- Background
- Regulation of Hydraulic Fracturing Emissions (NSPS OOOO)
- More Accurate Picture of Air Emissions
- Next Steps

From Drilling To Gas Processing



Hydraulic Fracturing

- www.energyfromshale.org
- Video of Hydraulic Fracturing Process
- "fracturing fluids" or "pumping fluids" consisting primarily of water and sand are injected under high pressure into the producing formation, creating fissures that allow resources to move freely from rock pores where it is trapped.
- Typically lasts a few days and then new equipment is brought in for preparation of flowback (regulated by NSPS OOOO)

Hydraulic Fracturing

NSPS OOOO

- This is a *major* expansion of the existing regulations
- Now covers multiple sources of VOC emissions across production operations
  - Storage Tanks
  - Equipment Leaks
  - Compressors
  - Pneumatics
  - Hydraulically-Fractured Gas Wells (Reduced Emission Completions)

NSPS OOOO

- Final rule published on August 12, 2012
- Petitions for reconsideration filed on final rule
- EPA plans two-tiered reconsideration
  - NSPS I
    - Storage tank requirements
    - Final rule published *September 23, 2013*
  - NSPS II for other stuff (e.g., language to allow minor venting during flowback)
    - Proposed 2013
    - Final 2014

NSPS OOOO

- Two-phased well completion requirements to allow time for manufacture the Reduced Emission Completion (REC) equipment to meet demand
- RECs route the flowback through a closed system of separators and capture gas that would otherwise be flared or vented
- By January 1, 2015, all gas well completions must conduct REC (except for few exceptions)

NSPS OOOO

§ 60.5375 What standards apply to gas well affected facilities?

If you are the owner or operator of a gas well affected facility, you must comply with paragraphs (a) through (f) of this section.(a) Except as provided in paragraph (f) of this section, for each well completion operation with hydraulic fracturing begun prior to January 1, 2015, you must comply with the requirements of paragraphs (a)(3) and (4) of this section unless a more stringent state or local emission control requirement is applicable; optionally, you may comply with the requirements of paragraphs (a)(1) through (4) of this section. For each new well completion operation with hydraulic fracturing begun on or after January 1, 2015, you must comply with the requirements in paragraphs (a)(1) through (4) of this section.

(1) 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. If this is infeasible, follow the requirements in paragraph (a)(3) of this section.

(2) All salable quality gas must be routed to the gas flow line as soon as practicable. In cases where flowback emissions cannot be directed to the flow line, you must follow the requirements in paragraph (a)(3) of this section.

(3) You must capture and direct flowback emissions 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.

(4) You have a general duty to safely maximize resource recovery and minimize releases to the atmosphere during flowback and subsequent recovery.

A More Accurate Picture

Our understanding of emissions continues to improve and evolve

- Numerous Emission Studies (New UT Study)
- GHG Reporting Data (2nd year of reporting in October)
- New EPA Emission Estimation Tool Released (comments until December 31st)

UT Study

- Direct measurement of methane emissions at 190 onshore natural gas sites
- When study results are coupled with EPA inventory for other categories, total estimated methane emissions of 2,300 Gg (0.42% of gross gas production)
- 27 well completions were measured (2/3 of which had vapor capture or control)
- Demonstrated that 99% of potential emissions were captured or controlled when implementing the NSPS OOOO requirements

Next Steps

- We will continue to learn about air emissions as new study results are released and additional GHG reporting data are submitted
- NSPS OOOO will significantly reduce air emissions in oil and gas production sector including emissions associated with hydraulically fractured wells
- Allow NSPS OOOO implementation to achieve the emission reductions (both VOC and GHG as a co-benefit) we expect
- Give OOOO a chance!!