



Actions to Reduce Methane and VOC Emissions from the Oil and Natural Gas Industry: Final Rules and Draft Information Collection Request

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Overview

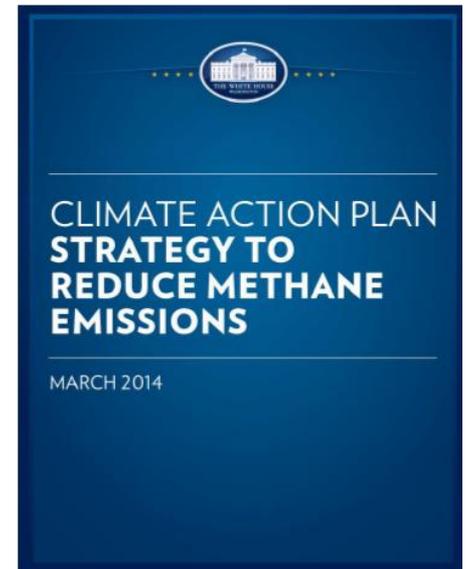
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Actions to Reduce Methane

May 12, 2016 - The U.S. Environmental Protection Agency took important steps under the President's ***Climate Action Plan: Strategy to Reduce Methane Emissions*** and the Clean Air Act to cut methane emissions from the large and complex oil and natural gas industry. The agency:

- Issued **three final rules** that will curb emissions of methane, smog-forming volatile organic compounds (VOCs), and air toxics from new, reconstructed and modified oil and gas sources, while providing greater certainty about Clean Air Act permitting requirements for the industry
- Also issued for public comment an **Information Collection Request** (ICR) to obtain extensive information instrumental for developing regulations to reduce methane emissions from *existing* oil and gas sources
- The final rules and the ICR keep the Administration on track to meet its goal of cutting methane emissions from the oil and gas sector by 40 to 45 percent below 2012 levels by 2025





May 2016 Actions At a Glance

Air Permitting Rules

2016 New Source Performance Standards (NSPS)

- Updates 2012 standards to add requirements that the industry reduce emissions of greenhouse gases
- Covers hydraulically fractured oil wells and other activities in oil and gas production, processing, transmission and storage that were not covered in the 2012 rules

Source Determination

- Clarifies when multiple pieces of equipment and activities in the oil and gas industry must be deemed a single source when determining whether major source permitting programs apply

Final Federal Implementation Plan (FIP) for Indian Country

- Implements the Minor New Source Review Program in Indian country for oil and natural gas production and natural gas processing; limits emissions of harmful air pollution while making the preconstruction permitting process more streamlined and efficient

Draft ICR

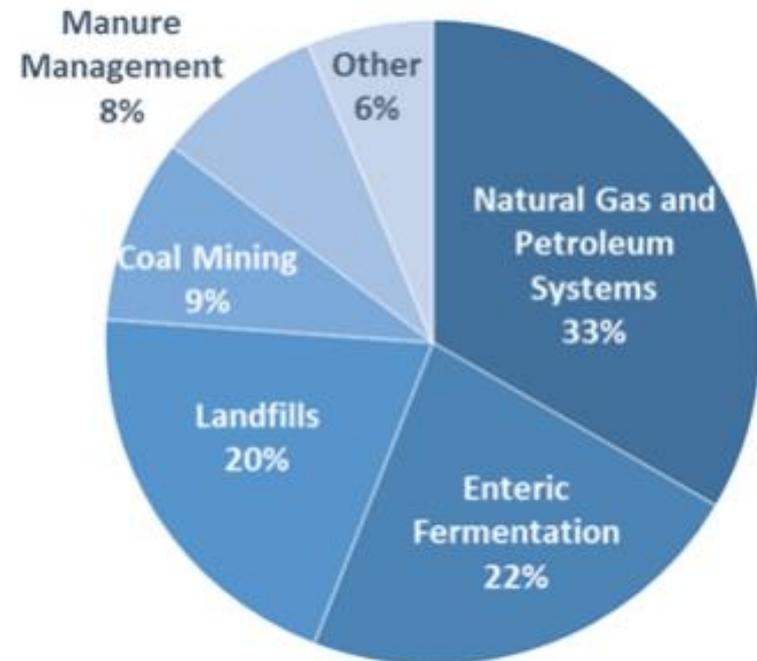
- Seeks a broad range of information on the oil and gas industry, including: how equipment and emissions controls are, or can be, configured; what installing those controls entails; and the associated costs



Methane

- A **potent greenhouse gas** with a global warming potential more than 25 times greater than carbon dioxide
- The **second most prevalent greenhouse gas emitted** from industrial activities in the United States
 - Approximately 1/3 of those emissions comes from oil production and the production, transmission and distribution of natural gas
- Comes **packaged with other pollutants**: volatile organic compounds (VOCs), which are a key ingredient in ground-level ozone (smog); and a number of pollutants known as “air toxics” – in particular, benzene, toluene, ethylbenzene and xylene

U.S. Methane Emissions, By Source



Note: All emission estimates from the *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014*.

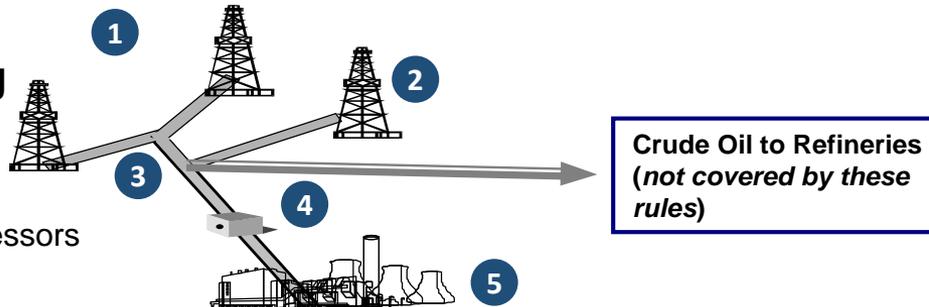


The Oil and Natural Gas Industry

Oil and natural gas systems encompass wells, gas gathering and processing facilities, storage, and transmission and distribution pipelines..

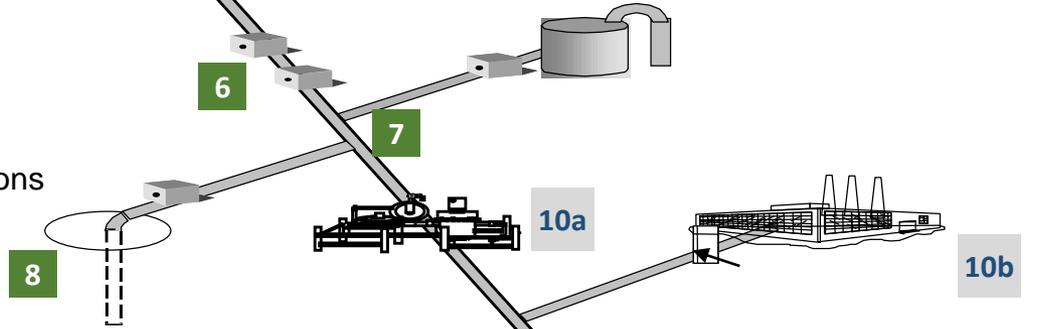
Production & Processing

1. Drilling and Well Completion
2. Producing Wells
3. Gathering Lines
4. Gathering and Boosting Compressors
5. Gas Processing Plant



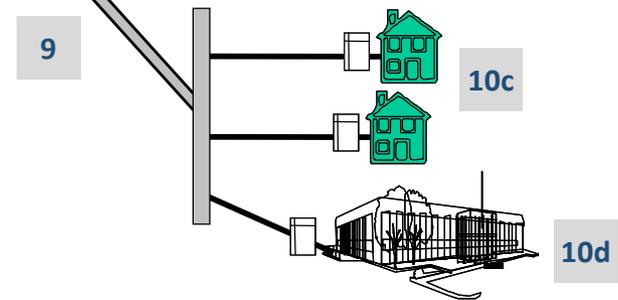
Natural Gas Transmission & Storage

6. Transmission Compressor Stations
7. Transmission Pipeline
8. Underground Storage



Distribution (not covered by these rules)

9. Distribution Mains
10. Regulators and Meters for:
 - a. City Gate
 - b. Large Volume Customers
 - c. Residential Customers
 - d. Commercial Customer





New Source Performance Standards

Updates to 2012 NSPS

2016 NSPS requires oil and gas industry to reduce greenhouse gas and VOC emissions, covers additional processes and equipment

- Sets emissions limits for methane
 - Owners/operators will be able to meet limits using technologies that are cost-effective and readily available
 - Types of sources subject to the 2012 NSPS for VOCs that now have to reduce methane will not have to install additional controls, because the same controls reduce both pollutants
- Covers additional sources:
 - Hydraulically fractured oil wells, some of which can contain a large amount of gas along with oil
 - Pneumatic pumps at well sites and gas processing plants
 - Compressors and pneumatic controllers at transmission and storage facilities
- Requires owners/operators to find and repair leaks
 - At well sites (twice a year) and gathering & boosting and transmission compressor stations (four times a year)

Leaks, also known as "fugitive emissions," can be significant sources of both methane and VOC pollution



Where the NSPS applies

Updates to 2012 NSPS

Covers new, modified and reconstructed equipment and processes used throughout the oil and natural gas production chain

- Oil well sites
 - Well completions at hydraulically fractured oil wells: owners/operators have to capture the natural gas that currently escapes into the air
 - Will be accomplished primarily through a “reduced emissions completion,” also called a “green completion”
 - Finding and repairing leaks
 - Pneumatic pumps
 - Requirements for pneumatic controllers remain the same as in the 2012 rule
- Natural Gas Well Sites
 - Finding and repairing leaks
 - Pneumatic pumps
 - Requirements for completion of hydraulically fractured natural gas wells and pneumatic controllers remain the same as in the 2012 rule
 - Green completions already required for these wells



Where the NSPS applies, cont.

Updates to 2012 NSPS

- Natural Gas Production Gathering & Boosting Stations
 - Finding and repairing leaks
 - New & modified pneumatic pumps
 - Requirements for centrifugal and reciprocating compressors, and for pneumatic controllers remain the same as in the 2012 rule
- Gas Processing Plants
 - Pneumatic pumps
 - Zero emissions limit for these pumps at gas processing plants
 - Pumps driven by electricity (widely available at processing plants) and solar-powered pumps are not subject to requirements of the rule
 - Requirements for centrifugal and reciprocating compressors, and for pneumatic controllers remain the same as in the 2012 rule



Where the NSPS applies, cont.

Updates to 2012 NSPS

- Natural Gas Transmission Compression Stations
 - Compressors
 - Centrifugal compressors
 - Reciprocating compressors
 - Pneumatic controllers
 - Finding and repairing leaks
 - 2012 requirements for storage tanks were not changed



Changes in the Final Rule

Updates to 2012 NSPS

Based on information received during the public comment period

- **Sets a fixed schedule for monitoring leaks**, rather than a schedule that varies with performance
- **Allows an alternative approach for finding leaks**
 - In addition to optical gas imaging (OGI), owners/operators may use “Method 21”
- **Offers owners/operators the opportunity to use emerging, innovative technologies to monitor leaks**
 - Outlines information owners/operators must submit in seeking technology approval
- **Phases in requirements for:**
 - Green completions at hydraulically fractured oil wells (six months from publication in the Federal Register; owners/operators must use combustion until green completion requirement takes effect)
 - Conducting initial leaks monitoring survey at well sites and compressor stations (1 year after publication - applies at all sites); and
 - Reducing emissions from pneumatic pumps (six months after publication)

EPA received more than 900,000 public comments on the proposed rule and held three public hearings



Emission Reductions, Benefits and Costs

Benefits of the final rule outweigh costs



- Expected to reduce 510,000 short tons of methane (*the equivalent of reducing 11 million metric tons of carbon dioxide*)
- EPA estimates final rule climate benefits of \$690 million; costs are estimated at \$530 million
- Net climate benefits estimated at \$170 million
- Benefits also expected from reductions in other pollutants, including 210,000 tons of VOCs and 3,900 tons of air toxics
 - EPA was not able to quantify the benefits of these reductions



Interaction with State Programs

Updates to 2012 NSPS

- EPA sought input from states, tribes, industry and environmental groups prior to proposing the rule in 2015, and continued to do so as it developed the final rule
- EPA found that state programs vary considerably
- While we could not determine that any particular state rule is equivalent to the NSPS, we did include provisions for industry to demonstrate that it has to meet requirements that are comparable to the NSPS under a state rule
 - Would allow those sources to comply with a specific NSPS requirement by complying with the state regulation
 - May include leaks monitoring requirements, or other NSPS requirements



Draft Control Techniques Guidelines

- In August 2015, **EPA issued draft Control Techniques Guidelines (CTGs) to reduce VOC emissions from existing equipment and processes in the oil and natural gas industry**
 - Guidelines currently are under interagency review
- CTGs are not regulations and do not impose legal requirements on sources
- CTGs provide recommendations for state/local air agencies to assist them in determining RACT (Reasonably Available Control Technology)
 - Under the Clean Air Act, RACT applies in ozone nonattainment areas classified as “Moderate” and above, and throughout the Ozone Transport Region
- Draft guidelines include EPA’s RACT recommendations for a number of types of equipment and processes
 - States may use different technology and approaches, subject to EPA approval
 - Other approaches must achieve required pollution reductions



Source Determination Rule

Permitting Rules

Applies to equipment and activities used for onshore oil and natural gas production, and for natural gas processing

- Clarifies when multiple pieces of equipment and activities must be deemed a single source when determining whether major source permitting programs apply
 - The programs are the Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review preconstruction permitting programs, and the Title V Operating permits program
- Defines the term “adjacent” to clarify that equipment and activities that are under common control will be considered part of the same source if they are located near each other – specifically, if they are located on the same site or on sites that share equipment and are within $\frac{1}{4}$ mile of each other
 - Does not apply to offshore operations

Applies primarily to EPA-issued permits, however state and local permitting authorities may adopt these changes



Information Collection Request

Draft ICR

Substantial amounts of new information on methane emissions from existing sources show that emissions from *existing* oil and sources are higher than previously understood

- EPA issued a draft ICR to require oil and natural gas companies to provide extensive information needed to develop regulations to reduce methane emissions from existing oil and gas sources
- Seeks a broad range of information that will help EPA determine the best approach to reducing emissions
 - Includes numerous sources, such as natural gas venting that occurs as part of existing processes or maintenance activities, such as well and pipeline blowdowns, equipment malfunctions and flashing emissions from storage tanks
- Survey comprises two parts
 1. Operator survey – all onshore oil and gas production facilities in the U.S.
 2. More detailed facility survey – representative sample of facilities
- Operator and facility surveys are concurrent
 - Industry is required to respond



The ICR Process

Draft ICR

The ICR process, governed by the Paperwork Reduction Act, provides the public two opportunities to review drafts of the ICR and supporting materials

60 days	<ul style="list-style-type: none">• Public comment period on the draft ICR: 60 days after it is published in the Federal Register• After considering public comment, the agency will revise the ICR as necessary and send it to the Office of Management and Budget
30 days	<ul style="list-style-type: none">• Public comment period on the second draft of the ICR: 30 days after it is published in the Federal Register
Final ICR	<ul style="list-style-type: none">• After additional review and input, final ICR issued to industry. Industry will have 30 days to respond to the operator survey, and 120 days to respond to the facility survey



Voluntary Request for Information

- Published July 18, 2016
- Invites all parties to provide information on innovative strategies to accurately and cost-effectively detect, measure and mitigate methane emissions
 - Seeking comments, data, and published or unpublished papers offering emerging technology or innovative strategies for emissions monitoring and leak detection from the oil and gas sector
 - Also asking for input about how these developing monitoring technologies could be used to support innovative approaches for establishing existing source standards
- Accepting information until November 15, 2016
- To submit information, visit <https://www.regulations.gov> and search for this docket number: EPA-HQ-OAR-2016-0346



Resources

For information on the **final rules and the draft Information Collection Request**: visit <http://www.epa.gov/airquality/oilandgas/actions.html>

For information on the **Natural Gas STAR Methane Challenge Program**, see: <http://www.epa.gov/gasstar/methanechallenge/index.html>

To read the **Climate Action Plan – Strategy to Reduce Methane Emissions**, visit <https://www.whitehouse.gov/blog/2014/03/28/strategy-cut-methane-emissions>



Appendix

Additional
Information



Final FIP for Indian Country

Permitting Rules

Federal Implementation Plan (FIP) to implement the Minor New Source Review Program in Indian country for oil and natural gas production and natural gas processing

- Will limit emissions of harmful air pollution while making the preconstruction permitting process more streamlined and efficient for this industry
- Will be used instead of source-specific minor New Source Review (NSR) preconstruction permits in Indian country
- Incorporates emissions limits and other requirements from eight federal air standards -- including the final NSPS -- to ensure air quality is protected
- Applies throughout Indian country except non-reservation areas, unless a tribe or EPA demonstrates jurisdiction for those areas
- Requirements apply to all new and modified true minor sources in the production segment and natural gas processing segment of the industry that are seeking minor NSR permits in areas designated as attainment or unclassifiable for a National Ambient Air Quality Standard
 - Sources locating in nonattainment areas will need to seek site-specific minor NSR permits, or comply with reservation-specific FIPs, where those exist



More Information

EPA's commitment

- The methane reductions from the final New Source Performance Standards (NSPS) will build on the agency's 2012 rules to reduce VOC emissions from new, reconstructed and modified sources.
- Reducing methane emissions is an essential part of an overall strategy to address climate change. Climate change impacts affect all Americans' lives from stronger storms and longer droughts to increased insurance premiums, food prices and allergy seasons.
 - The most vulnerable among us -- including children, older adults, people with heart or lung disease and people living in poverty – are most at risk from the impacts of climate change.
- The reductions from the final NSPS, along with methane reductions from EPA's new Natural Gas STAR: Methane Challenge Program and actions by other federal agencies, will help the country continue moving toward safe and responsible oil and natural gas development.