EPA's New Source Rules for Oil and Gas Operations

Saving Money, Cleaning our Air, Protecting the Climate

Why Reduce Methane from Oil and Gas Operations?

- Methane is an especially potent climate pollutant; it packs more than 80 times the warming power of carbon dioxide over a 20-year timeframe[i]. One quarter of the climate disruption we're experiencing today comes from methane pollution.[ii]
- The U.S. loses almost $2 billion worth of natural gas every year through methane leaks and intentional releases throughout the oil and gas system.[iii] This is enough natural gas to meet the heating and cooking needs of over 7 million American homes.[iv]
- Methane is released along with toxic and smog-forming pollutants[v] such as volatile organic compounds, benzene, toluene, ethylbenzene, and xylene. The same technologies that reduce methane also limit these other harmful pollutants.

What is in EPA's final New Source Performance Standards?

- EPA has finalized strong nationwide standards that address methane and volatile organic compounds from new and modified sources in the oil and gas industry. The rule goes into effect 60 days after it is published in the Federal Register and certain requirements have compliance timeframes further in the future.
- These rules build on successful policies pioneered in states like Colorado,[vi] Wyoming,[vii] and Ohio.[viii]
- EPA's standards require sources to find and repair leaks, and to deploy commonsense technologies and practices to limit emission from hydraulically fractured oil wells, pneumatic controllers and pumps, and compressors.[ix]
- While this final rule only applies to new and modified oil and gas equipment (oil and gas wells, production gathering and boosting stations, gas processing plants and compressor stations), the requirements provide a strong foundation for subsequent rules to reduce methane emissions from existing oil and gas facilities.

What's new in the final rule?

- More frequent inspections. A substantial portion of methane emissions across the supply chain comes from leaks.[x] That's why a leak detection and repair (LDAR) program that requires operators to regularly look for and fix leaks is a straight-forward, cost-effective way to reduce oil and gas methane emissions. EPA's final rule requires quarterly monitoring at compressor stations and semi-annual inspections for oil and gas well sites.
- An innovation pathway. Methane detection technology is advancing rapidly, including technologies potentially capable of continuously monitoring for leaks. EPA's final rules includes a pathway allowing oil and gas operators to deploy these advanced technologies if they demonstrate that the technologies secure equal or greater emission reductions.

- Inspection and repair requirements for all significant sources. EPA originally proposed to exempt wells producing less than 15 barrels of oil equivalent from LDAR requirements—which the agency found constituted 30% of natural gas wells and 43% of oil wells. EPA's final standards include these sources, based on evidence that they can be associated with significant emissions.

- A floor, not a ceiling, for states. A number of states either have, or are developing, emissions standards for the oil and natural gas sector. Under the Clean Air Act, states have the authority to regulate air pollution from sources in their state, as long as the requirements are at least as protective as federal requirements. The final rule provides a pathway for companies to harmonize the New Source Performance Standards with any comparable state requirements they may have.

What are the benefits and costs of the rules?

- EPA's final rule is expected to reduce 510,000 short tons of methane in 2025, the 20-year climate equivalent of reducing 40 million metric tons of carbon dioxide.[xi] These emission reductions will have the same 20-year climate benefit as closing 11 coal-fired power plants[xii] or taking 8.5 million cars off the road.[xiii]

- The final rule also is expected to reduce other pollutants, including 210,000 tons of volatile organic compounds and 3,900 tons of air toxics, in 2025.[xiv]

- EPA estimates that this methane rule will deliver climate benefits of $690 million a year by 2025, and that the benefits will outweigh the costs by $170 million.

- Efforts to reduce methane waste are extremely cost-effective. A study by ICF International estimated that companies could cut methane emissions by 40 percent or more for about one quarter of one percent of the price of the gas they're selling, or about one penny per thousand cubic feet. [xv]

- Natural gas that is recovered as a result of the rule can be used as a fuel on-site or sold, using readily available cost-effective technology. This will lead to producers saving money from product that would otherwise be wasted.

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[i] IPCC AR5 p. 714 https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter08_FINAL.pdf
[ii] See explanation here: http://blogs.edf.org/energyexchange/files/2016/05/EDF-calculation-for-25-percent-stat.pdf based on IPCC AR5 WGI Chapter 8.
[iii] Methane emissions from natural gas and petroleum systems were equal to 850,094,400 mmt CO2e in 2014, according to EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks. https://www3.epa.gov/climatechange/ghgemissions/usinventoryreport.html. Using a global warming potential (GWP) of 25 (as used by EPA per reporting requirements under the United Nations Framework Convention on Climate Change), this amount is equal to 9.77 mmt of CH4. Assuming 78.8%, using 78.8% methane in natural gas, 9.77 mmt CH4 is equal to 643,821,391 mcf. At $3/Mcf this amount is worth $1,931,464,174,
[iv] US average home use 73.65 Mcf Natural Gas, as calculated by dividing total household natural gas consumption http://www.eia.gov/dnav/ng/ng_cons_sum_dcu_nus_a.htm by total residential natural gas customers http://www.eia.gov/dnav/ng/ng_cons_num_a_EPG0_VN3_Count_a.htm. Using 95% methane in pipeline quality natural gas, you get 534,032,902 Mcf of gas, which, divided by the household number is 7,250,699
[v] http://www.epa.gov/groundlevelozone/basic.html
[vi] https://www.edf.org/media/colorado-breakthrough-cleaner-air-and-safer-climate
[vii] https://www.edf.org/media/bold-new-rule-cuts-oil-and-gas-air-pollution-wyoming
[viii] http://blogs.edf.org/energyexchange/2016/04/07/ohio-gov-kasich-moves-to-reduce-environmental-impact-of-natural-gas-industry/
[ix] https://www3.epa.gov/airquality/oilandgas/actions.html
[x] https://www.edf.org/sites/default/files/content/edf_supplemental_ldar_comments_-_final.pdf
[xi] 510,000 short tons is equal to 460,000 metric tons. This uses the 20-year Global Warming Potential of fossil fuel methane of 87, which includes carbon feedback and methane oxidation. Source: IPCC AR5 Ch 8 p. 714, see chart and note b https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter08_FINAL.pdf, giving a carbon dioxide equivalent of 40,020,000
[xii] At GWP 25, 3,808,651 metric tons CO_2e/power plant from EPA https://www.epa.gov/energy/ghg-equivalencies-calculator-calculations-and-references. Using the 87 GWP of methane emissions reduced by the rule, this is 10.6 coal fired powered plants
[xiii] At GWP 25, 4.75 metric tons CO_2E /vehicle/year from EPA https://www.epa.gov/energy/ghg-equivalencies-calculator-calculations-and-references Using the 87 GWP of methane emissions reduced by the rule, this is 8,474,064 cars.
[xiv] https://www3.epa.gov/airquality/oilandgas/may2016/nsps-overview-fs.pdf
[xv] Study available at www.edf.org/methanesolutions

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