



November 25, 2019

Mr. Andrew R. Wheeler
Administrator
U.S. Environmental Protection Agency
EPA Docket Center
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Attn: Docket No. EPA-HQ-OAR-2017-0757

Re: Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Review 84 FR 50244 (September 24, 2019).

Dear Administrator Wheeler:

The Pennsylvania Department of Environmental Protection (DEP) submits the following comments in response to the notice of proposed rulemaking entitled *Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Review* published by the U.S. Environmental Protection Agency (EPA) on September 24, 2019. (84 FR 50244).

As part of its comments on the proposed rulemaking, DEP incorporates by reference the contemporaneously filed comment letter submitted by the Attorneys General of California, New York, Pennsylvania, and numerous other states to EPA for Docket No. EPA-HQ-OAR-2017-0757.

Failure to Adequately Address Climate Change

Both DEP¹ and the U.S. Global Change Research Program² have recently released confident, scientific assessments of state and regional impacts of natural and human-induced climate change. These impacts could alter the many fundamental assumptions about climate that are intrinsic to Pennsylvania's infrastructure, governments, businesses, and the stewardship of its natural resources and environment. If not properly accounted for, changes in climate could result in more frequent road washouts, higher likelihood of power outages, and shifts in economic activity, among other significant impacts.

Climate change can also affect vital determinants of health such clean air, safe drinking water, sufficient food, and secure shelter. These vital determinants are particularly affected by the

¹DEP, Pennsylvania Climate Impacts Assessment Update, May 2015, <http://www.dep.greenport.state.pa.us/elibrary/GetDocument?docId=5002&DocName=2015%20PENNSYLVANIA%20CLIMATE%20IMPACTS%20ASSESSMENT%20UPDATE.PDF%20>.

²USGCRP, 2018: Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA. doi: 10.7930/NCA4.2018. <https://nca2018.globalchange.gov/>.

Secretary

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increased extreme weather events such as heat, droughts, floods, and wildfire, in addition to decreased air quality and illnesses transmitted by food, water, and disease carriers such as mosquitos. The World Health Organization expects climate change to cause around 250,000 additional deaths globally per year between 2030-2050, with additional direct damage costs to health estimated to be around \$2-4 billion per year by 2030. If these impacts are to be avoided, greenhouse gas (GHG) emissions must be reduced very quickly.³

To decrease GHG emissions and address the impacts of climate change, Pennsylvania has taken steps to develop and implement mitigation and adaptation strategies. For example, this year, DEP released an update to the Pennsylvania Climate Action Plan that lists many different strategies and actions that all Pennsylvanians can take to combat climate change.⁴ The plan estimates that if governments fail to take further action to combat climate change, GHG emissions will increase by 2025 and even more so by 2050. This finding emphasizes the need for more ambitious and swifter climate action from all stakeholders, including the federal government.

The federal government, however, fails to adequately address GHG emissions in this proposed rule and other recent proposals. Due to this lack of effort at the federal level, states are taking more action to combat climate change. Earlier this year, Pennsylvania Governor Tom Wolf signed Executive Order 2019-01 which set a goal of achieving a 26 percent reduction of net GHG emissions statewide by 2025 from 2005 levels, and an 80 percent reduction of net GHG emissions by 2050 from 2005 levels.⁵ Additionally, DEP is currently developing a carbon dioxide (CO₂) trading program regulation that will be compatible with the Regional Greenhouse Gas Initiative in order to limit the amount of CO₂ emissions from Pennsylvania Electric Generating Units.⁶

This proposed rule, if finalized, would undermine the interests and efforts of state and local governments in protecting their citizens, economies, natural resources, and the environment from the impacts of climate change. The following are specific comments on EPA's proposal.

Rescinding the Standards Applicable to the Transmission and Storage Segment

For the first step of its primary proposal, EPA proposes to revisit the "Oil and Natural Gas Sector: New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews; Final Rule" (2012 O&G NSPS) and the "Oil and Natural Gas Sector:

³ World Health Organization, Climate change and health, Feb. 2018, <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>.

⁴ DEP, Pennsylvania Climate Action Plan, 2019

<http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=1454161&DocName=2018%20PA%20CLIMATE%20ACTION%20PLAN.PDF%20%20%20%3cspan%20style%3D%22color:blue%3b%22%3e%28NEW%29%3c/span%3e>.

⁵ Pennsylvania Executive Order 2019-01, Commonwealth Leadership in Addressing Climate Change and Promoting Energy Conservation and Sustainable Governance, Jan. 2019, <https://www.governor.pa.gov/newsroom/governor-wolf-establishes-first-statewide-goal-reduce-carbon-pollution-pennsylvania/>.

⁶ Pennsylvania Executive Order 2019-07, Commonwealth Leadership in Addressing Climate Change through Electric Sector Emissions Reductions, Oct. 2019, <https://www.governor.pa.gov/newsroom/governor-wolf-takes-executive-action-to-combat-climate-change-carbon-emissions/>.

Emission Standards for New, Reconstructed, and Modified Sources; Final Rule” (2016 O&G NSPS) and rescind the standards’ applicability to sources in the transmission and storage segment. EPA argues that the 2016 O&G NSPS extension to the transmission and storage segment was inappropriate because it is a separate source category from the production and processing segments and a significant contribution and endangerment finding are required under the Clean Air Act (CAA) section 111(b). If EPA follows this new interpretation, the 2012 O&G NSPS will also be affected for storage vessels for the same reasoning.

However, in the 2016 O&G NSPS, EPA supported the revision of the source category by making the “requisite finding under section 111(b)(1) that, in the Administrator’s judgement, this source category, *as defined above*, contributes significantly to air pollution which may reasonably be anticipated to endanger public health or welfare.” Since EPA has already made a significant contribution finding, there is no reason to remove the NSPS requirements for the transmission and storage segment.

First, as part of its argument for excluding natural gas transmission and storage from the 2012 O&G NSPS and 2016 O&G NSPS, EPA created Table 3-U.S. Methane Emissions from Natural Gas and Petroleum Systems. In that table, the 2017 total emissions of the oil and natural gas production, natural gas processing, and transmission segments are 190 million metric tons of CO₂e. Of that, 32 million metric tons are the result of natural gas transmission and storage.⁷ Similarly, Table 6-U.S. VOC and SO₂ Emissions from Natural Gas and Petroleum Systems shows that natural gas transmission and storage is responsible for 16,000 metric tons of the 3,172,000 metric tons of volatile organic compound (VOC).⁸ EPA argues that these emissions are not significant because they are lower than the upstream emissions.⁹ However, natural gas processing emissions are only 12 million metric tons of CO₂e¹⁰ and 14,000 metric tons of VOC,¹¹ which are significantly less than the transmission and storage segment emissions.

Second, EPA proposes to determine that transmission and storage sources are sufficiently distinct from production and processing sources and that EPA erred when it purported to revise the source category to include sources in the transmission and storage segment citing the 1978 “Priorities for New Source Performance Standards Under the Clean Air Act Amendments of 1977.” EPA notes that the analysis aggregated the emissions from “oil and gas production fields” and “natural gas processing” as part of the “Crude Oil and Natural Gas Production Plants” source category and listed the “Stationary Pipeline Compressor Engines” source category separately.¹² DEP contends that while the transmission and storage segment serves a different role than the production, processing, and distribution segments, it is still part of the overall oil and natural gas industry. Sources in the transmission and storage segment are largely the same as in the production and processing segment, including glycol dehydration units, internal combustion engines, stationary simple cycle combustion turbines, reciprocating and centrifugal

⁷ 84 FR at 50249-50.

⁸ 84 FR at 50250-51.

⁹ 84 FR at 50258.

¹⁰ 84 FR at 50249-50.

¹¹ 84 FR at 50250-51.

¹² 84 FR at 50255-56.

compressors, storage vessels, pneumatic controllers, and fugitive emissions components.¹³ In addition, many of the owners and operators of transmission and storage facilities also own and operate gathering and boosting stations.¹⁴ Also, gathering and boosting stations, like transmission compressor stations operate “Stationary Pipeline Compressor Engines,” further blurring the lines between the production and the transmission and storage segments. Therefore, the transmission and storage segment is not distinct from the production and processing segments in terms of sources or owners and operators of these facilities.

Third, EPA argues that because the natural gas that enters the transmission and storage segment has different composition and characteristics than the natural gas that enters the production and processing segments,¹⁵ transmission and storage is distinct from production and processing. EPA’s data shows that unprocessed natural gas consists of, by volume, between 83% and 88% methane, 4% VOC, and less than 1% HAP. EPA’s data also shows that pipeline quality gas consists of, by volume, approximately 93% methane, 1% VOC, and less than 0.01% HAP.¹⁶ DEP’s experience with the oil and natural gas industry operating in the Marcellus and Utica shales shows that unprocessed gas can range from, by volume, 75% to 98% methane and 0.1% to 10% VOC. In 14 Pennsylvania counties, the county average gas composition meets the EPA’s pipeline quality gas composition (i.e., is equal to or greater than 93% methane and less than or equal to 1% VOC; HAP data is unavailable). In 7 Pennsylvania counties, the county average gas composition does not meet the EPA’s pipeline quality gas composition; however, in 4 of those counties the gas composition of at least one well meets EPA’s pipeline quality gas composition standard.¹⁷ In fact, there are several natural gas well pads that dehydrate the produced gas on-site and transfer custody directly to an interstate pipeline. This reality further blurs the distinction between the production and the transmission and storage segments. If a well site is required to meet the requirements of the 2016 O&G NSPS, it stands to reason that a transmission compressor station accepting the same gas should be required to meet the same requirements.

Fourth, EPA states that another reason to remove the transmission and storage segment from the 2016 O&G NSPS is that, while the sources are similar, the differences in the operation and emission profiles of the different segments are significant. EPA states that after reviewing the 2016 O&G NSPS compliance reports, they found no storage vessels emitting more than 6 tons per year (tpy) of VOCs in the transmission and storage segment.¹⁸ DEP emphasizes that the 6 tpy VOC threshold is a potential to emit, and EPA should look for storage vessels that exceed 4 tpy of actual VOC emissions.

¹³ PA DEP’s Air Emissions Inventory.

¹⁴ *Id.*

¹⁵ 84 FR at 50257.

¹⁶ 84 FR at 50258.

¹⁷ PA DEP, Source data for the Technical Support Document for the General Plan Approval and/or General Operating Permit for Unconventional Natural Gas Well Site Operations and Remote Pigging Stations (BAQ-GPA/GP-5A, 2700-PM-BAQ0268) and the Revisions to the General Plan Approval and/or General Operating Permit for Natural Gas Compressor Stations, Processing Plants, and Transmission Stations (BAQ-GPA/GP-5, 2700-PM-BAQ0267), June 2018.

¹⁸ 84 FR at 50258.

The 2017 Air Emissions Inventory Report to DEP, shows that both average and median VOC emissions (0.33 tons and 0.15 tons, respectively) from storage vessels in the transmission and storage segment are below the 4 tpy actual threshold, but higher than the average and median emissions (0.21 tons and 0.01 tons, respectively) at gathering and boosting stations in the production segment. The highest VOC emission from storage vessels in the transmission and storage segment is approximately 3.2 tons and the highest VOC emission from the gathering and boosting portion of the production segment is approximately 5.6 tons.¹⁹ This implies that the emission profiles are similar, contrary to EPA's assertion that they differ significantly. The operation of the storage vessels in both segments is also more similar than different, as the storage vessels at both types of facilities are generally intended to receive the liquids removed from the gas during dehydration and the liquids removed from pipelines during pigging operations.

Compressor stations in both the transmission and storage segment and the gathering and boosting stations in the production sector, typically have fugitive emissions components such as valves, connectors, pressure relief devices, open-ended lines, flanges, covers, closed vent systems, hatches, compressors, instruments, and meters.²⁰ The average and median VOC emissions from fugitive emissions components (0.13 tons and 0.02 tons, respectively) in the transmission and storage segment are similar to those at gathering and boosting stations in the production segment (0.55 tons and 0.05 tons, respectively). The average and median methane emissions from fugitive emissions components (9.43 tons and 1.73 tons, respectively) in the transmission and storage segment when compared to the gathering and boosting stations in the production segment (15.46 tons and 2.08 tons, respectively) are not far apart. This implies that the emission profiles are similar, contrary to EPA's assertion that they differ significantly. Furthermore, the total methane emissions reported for fugitive emissions components in 2017 from the transmission and storage segment was 302 tons, which is significant in its contribution to climate change (7,550 tons CO₂e) and as an ozone precursor.²¹

Also, compressor stations in the transmission and storage segment and the gathering and boosting stations in the production sector often employ pneumatic controllers to maintain process conditions such as liquid level, pressure, delta-pressure, and temperature.²² The average and median VOC emissions from pneumatic controllers (0.08 tons and 0.01 tons, respectively) in the transmission and storage segment are comparable to those at gathering and boosting stations in the production segment (0.16 tons and 0.00 tons, respectively). The average methane emissions from pneumatic controllers in the transmission and storage segment are lower than those at gathering and boosting in the production segment (7.53 tons and 22.90 tons, respectively). However, the median methane emissions from pneumatic controllers in the transmission and storage segment are higher than the gathering and boosting stations in the production segment (0.30 tons and 0.11 tons, respectively). This implies that the emission profiles are similar, contrary to EPA's assertion that they differ significantly. Furthermore, the total methane emissions reported for pneumatic controllers in 2017 from the transmission and storage segment

¹⁹ See attached: Summary of 2017 CH₄ & VOC Emissions.

²⁰ 40 CFR § 60.5430a.

²¹ See attached: Summary of 2017 CH₄ & VOC Emissions.

²² 40 CFR § 60.5430a.

was 188 tons, which is significant in its contribution to climate change (4,700 tons CO₂e) and as an ozone precursor.²³

Rescinding the Methane Requirements

The second step of EPA's primary proposal and the alternative proposal to revise the 2016 O&G NSPS are identical in that EPA proposes to rescind the methane requirements of the NSPS applicable to all oil and natural gas source categories, claiming that the methane requirements are entirely redundant with the existing NSPS for VOCs. The proposal to rescind the methane requirements relies on EPA's previous interpretation of the requirement under CAA section 111(b)(1)(A) which requires a finding that a source category "causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare."²⁴

The legal obligation of EPA to regulate GHG emissions is affirmed by the Supreme Court's decision in *Massachusetts v. EPA*, 549 U.S. 497 (2007) and triggered by the EPA's formal finding in 2009 (Endangerment Finding)²⁵ that GHG emissions threaten public health and welfare. In the Endangerment Finding, EPA found that six well-mixed GHGs — carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride — endanger both the public health and the public welfare of current and future generations by causing or contributing to climate change.²⁶ New scientific assessments and observations strengthen the conclusions of this Endangerment Finding that GHGs endanger public health and the environment.²⁷ According to data from the Greenhouse Gas Reporting Program, oil and natural gas operations are the second largest stationary source of GHG emissions in the United States when including both methane and combustion-related GHG emissions.²⁸ As methane traps 86 times more heat in the atmosphere than carbon dioxide in the short-term and 28 times more heat in the atmosphere than carbon dioxide over a 100-year period, it is especially important to limit methane emissions due to the consequences of climate change.

Methane is also a precursor to ground level ozone, which can cause a number of harmful effects on public health and the environment.²⁹ Exposure to ozone can cause respiratory system effects such as difficulty breathing and airway inflammation.³⁰ In addition, long-term exposure to ozone is likely to result in harmful respiratory effects, including respiratory symptoms and the development of asthma.³¹ There are also independent peer-reviewed studies which indicate that shale gas development is associated with the production of secondary pollutants such as tropospheric (ground-level) ozone, formed through the interaction of methane, VOC, and

²³ See attached: Summary of 2017 CH₄ & VOC Emissions.

²⁴ 42 U.S.C.A. § 7411(b)(1)(A).

²⁵ "Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act," 74 FR 66496 (December 15, 2009).

²⁶ *Id.*

²⁷ "Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources," 81 FR at 35824 (June 3, 2016).

²⁸ *Id.*

²⁹ *Id.*

³⁰ *Id.*

³¹ *Id.*

nitrogen oxides (NO_x) in the presence of sunlight.^{32,33} Tropospheric ozone is a strong respiratory irritant associated with increased respiratory and cardiovascular morbidity and mortality.³⁴ Although toxicological data suggest that pure methane is not by itself health damaging (excluding its role as an asphyxiant and an explosive), it is a precursor to global tropospheric ozone.³⁵ As a GHG and ozone precursor, methane is, among other things, inimical or may be inimical to the public health, safety, or welfare. Additionally, in the oil and natural gas sector, methane is often accompanied by toxic air pollutants such as n-hexane, benzene, toluene, ethylbenzene, and xylene.

Oil and natural gas development has grown significantly in Pennsylvania since 2009, and DEP has spent much time working with the industry to ensure that adequate protections have been implemented according to DEP's regulations, which include the requirement to use best available technology (BAT) to control emissions to the maximum extent. In DEP's recently revised Air Quality Permit Exemptions list Category 38 and recently issued General Plan Approval and/or General Operating Permit for Natural Gas Compression Stations, Processing Plants, and Transmission Stations (GP-5) and General Plan Approval and/or General Operating Permit for Unconventional Natural Gas Well Site Operations and Remote Pigging Stations (GP-5A), DEP has implemented a comprehensive Leak Detection and Repair program for natural gas production, processing, storage and transmission facilities and also requires a methane control threshold of 200 tpy per applicable source. DEP included the methane control threshold because much of Pennsylvania's natural gas contains a low weight percentage of VOCs, which may lead to some sources, such as storage vessels and pneumatic pumps, to emit large amounts of methane without triggering the VOC control threshold. As detailed in the prior comment on rescinding the standards applicable to the transmission and storage segment, pipeline quality gas also contains a low weight percent of VOC meaning that a large amount of methane may be emitted without triggering the VOC control thresholds. Other sources affected by Pennsylvania's methane control threshold are glycol dehydration units and pigging operations.

VOC control requirements may be adequate to control methane for most sources, however, DEP recommends that EPA maintain the methane requirements in the 2016 O&G NSPS, because methane is a potent contributor to climate change and a precursor to tropospheric ozone. In addition, DEP recommends developing and implementing a methane threshold, as DEP implemented in its GP-5 and GP-5A, for units that may not be large emitters of VOC, particularly for storage vessels and pneumatic pumps.

³²Shonoff, Hays, Finkel, *Environmental Health Dimensions of Shale and Tight Gas*, Environ Health Perspect., 2014 Aug; 122(8): 787-795.

³³Jerrett M, Burnett RT, Pope CA II, Ito K, Thurston G, Krewski D, *et al.*, *Long-term ozone exposure and mortality*, N Engl J Med 360:1085-1095, 2009 and *U.S. EPA Integrated Science Assessment for Ozone and Related Photochemical Oxidants* (EPA 600/R-10/076F) Available at: <http://www.epa.gov/ncea/isa/ozone.htm>, last accessed on October 28, 2019.

³⁴Jerret *et al.*

³⁵Smith KR, Jerrett M, Anderson HR, Burnett RT, Stove V, Derwent R, *et al.*, *Public health benefits of strategies to reduce greenhouse gas emissions: health implications of short-lived greenhouse gas pollutants*. Lancet 374: 2091-2102, 2009.

Conclusion

DEP recommends that EPA continue to include the transmission and storage segment in the 2016 O&G NSPS (and for storage vessels in the transmission and storage segment in the 2012 O&G NSPS). The reasons listed above, paired with further information from other states, can provide the “reasoned explanation” to reconsider, repeal, or revise past decisions to the extent permitted by law. As EPA stated, CAA section 111(b)(1)(A) and (B) grants the Agency the ability to revise, where warranted, both the list of source categories and the standards of performance that EPA has previously promulgated.³⁶ Should EPA not include the transmission and storage segment in the revised 2016 O&G NSPS, EPA would still be obligated to create an NSPS for this source category.

DEP also recommends that EPA, at a minimum, maintain the methane requirements in the 2016 O&G NSPS. For this proposed rule and future rulemakings related to the oil and natural gas industry, EPA should follow the lead of states, such as Pennsylvania and California, that have established thresholds for the control of methane emissions, and New York and Maryland which are proposing methane-specific requirements in rules for the oil and gas industry.

Thank you for your consideration in this matter. Should you have questions or need additional information, please contact Krishnan Ramamurthy, Deputy Secretary for Waste, Air, Radiation and Remediation, by e-mail at kramamurth@pa.gov or by telephone at 717.772.2725.

Sincerely,



Patrick McDonnell
Secretary

³⁶ 84 FR at 50256.