



Boston University Institute for Sustainable Energy

EPA METHANE EMISSION CONTROLS

Response of the Environmental Protection Agency to Public Submissions:
Notice and Comment Process in Methane Emission Deregulation

July • 2021



Authors:**Patrick Agri & Robert L. Kleinberg****Boston University Institute for Sustainable Energy****Abstract****Response of the Environmental Protection Agency to Public Submissions:
Notice and Comment Process in Methane Emission Deregulation**

22 July 2021

The federal Administrative Procedure Act mandates published notice of proposed rulemaking, along with the provision that stakeholders and the public at large be given the opportunity to comment on significant proposed rules. In theory, federal rulemaking is improved by the solicitation and consideration of these comments. The airing of diverse opinions may be expected to promote healthy debate within the agency and between the agency and affected stakeholders, ranging from concerned citizens to multinational corporations. But how effective is the notice-and-comment process? This work seeks to answer that question qualitatively but systematically, by examining significant comments received by the Environmental Protection Agency in connection with the 2020 Policy Amendments to the New Source Performance Standards for the oil and natural gas sector. There is no doubt EPA invests substantial effort in responding to significant comments. Moreover, many of EPA's judgments and decisions appear to have plausible legal foundations. However, for the issues we have investigated, arising in 2019-2020, the EPA generally seems unpersuaded by reasonable arguments and resistant to reasonable suggestions, even when these are advanced by diverse commenters. Sometimes, instead of dealing with these issues forthrightly, EPA ignores or evades them. A response that appears too often is that the issues can be taken up at an unspecified time in the future. Among other concerns, these observations raise the question of whether producing the 638-page Response to Public Comments constituted the best use of limited agency resources.

All results and any errors in this report are the responsibility of the authors.

Cover image: ©filmfoto from Getty Images via Canva.com.

Table of Contents

1. Introduction4
 1.1 The Notice and Comment Process4
 1.2 Regulation of Methane Emissions5
 2. Methods.....6
 3. Major Issues.....8
 3.1 Deregulation of Methane Emissions9
 3.2 Deregulation of Transmission & Storage Segment9
 3.3 Methane and VOC Regulatory Redundancy9
 3.4 Existing Sources10
 3.5 Social Cost of Methane; Domestic vs. Global Effects of Climate Change10
 3.6 Environmental Justice11
 4. Review of Public Submissions and EPA Responses.....11
 4.1 Deregulation of Methane Emissions12
 4.2 Deregulation of Transmission & Storage Segment13
 4.3 Methane and VOC Regulatory Redundancy14
 4.4 Existing Sources15
 4.5 Social Cost of Methane; Domestic vs. Global Effects of Climate Change16
 4.6 Environmental Justice18
 5. Discussion18
 5.1 Social Cost of Carbon and Methane18
 5.2 Lack of Diligence.....19
 5.3 Failure to Consider Innovative Solutions.....20
 5.4 Regulatory Uncertainty21
 5.5 Self-Deprivation of Needed Information.....21
 5.6 Potential for the Use of Clean Air Act Section 115.....21
 5.7 Implications for Future Rulemaking22
 5.8 Opportunity Cost of Notice & Comment Process.....23
 5.9 Degradation of the Notice & Comment Process23
 6. Conclusions24
 Acknowledgments and Disclaimers25
 References26
 Selected Comments Submitted to the Environmental Protection Agency.....30

1. Introduction

1.1 The Notice and Comment Process

Federal agency rulemaking is a complex process with numerous procedural hurdles [Public Citizen, 2011]. An important step in the formulation of federal regulations is the input of citizen perspectives into agency rulemaking. The Administrative Procedure Act commands a process that has become known as notice-and-comment [5 USC 553(b)-(c)]:

General notice of proposed rule making shall be published in the Federal Register After notice required by this section, the agency shall give interested persons an opportunity to participate in the rule making through submission of written data, views, or arguments

The word “participate” has been taken to imply that the agency must respond to all significant comments, explaining its decisions and actions to commenters. In its 2012 review of the notice-and-comment process, the Government Accountability Office found [GAO, 2012]:

The benefits of public participation in notice-and-comment rulemaking have been cited by the courts and others to include: generating higher quality rules; ensuring the fair treatment of persons affected by the rules, since all parties potentially affected have a chance to participate; and promoting the political accountability of the agency by giving affected parties the ability to comment at an early stage and having a public record of the agency’s response to those comments.

The public is alive to its right to participate in federal rulemaking. Agencies emphasize that comments are not votes and that agencies respond to arguments, not mere weight of numbers. Nonetheless, the federal regulatory comment system is flooded with brief expressions of opinion. When the Federal Communications Commission considered a net neutrality rule in 2017, the FCC received more than 10 million submissions, many of them fraudulent and/or generated by computerized messaging systems [Wall Street Journal, 2017].

On the other hand, many trade associations, consumer advocates, environmental advocates, law schools, and others take the process seriously and submit deeply considered suggestions and arguments drawing on technical, legal, economic, and social science findings. In a number of cases, the comments have clearly been written to establish a legal record that can be cited in future litigation. Indeed, some comments borrow the form of a lawyer’s brief.

According to the Government Accountability Office, “Forty-nine of the 52 program offices surveyed responded that public comments submitted from 2013 through 2017 resulted in at least some substantive changes to final rules. Twenty-four of the 49 program offices responded that those substantive changes—such as revisions to the environmental impact analysis, paperwork burden estimate, or compliance requirements—were made to ‘most or all’ final rules promulgated during that period. The other 25 program offices reported material changes to ‘some’ or ‘about half’ of all final rules” [GAO, 2020].

A study of 47,000 comments submitted to the Security and Exchange Commission in connection with 358 rules used plagiarism-detection algorithms to measure the influence comments have on rulemaking. The study found that abundant data and industry-specific language marked the comments most likely to be influential. Unsurprisingly, organizations had more influence than private individuals [Rashin, 2019].

As we show in this paper, the Environmental Protection Agency, for one, invests enormous resources responding to serious arguments. The question asked here is whether the agency is fair in truly considering all points of view or whether it belittles or ignores arguments that do not fit its preconceived notions of how the regulations should develop. We find that, for the issues we studied that arose in 2019-2020, the EPA invariably fails to be persuaded by reasonable arguments or suggestions, and sometimes ignores them.

1.2 Regulation of Methane Emissions

The Environmental Protection Agency (EPA) promulgated its first comprehensive regulation on methane emissions from the oil and natural gas industry in 2016 (40 CFR 60 Subpart OOOOa) [EPA, 2016a]. This rule augmented prior regulatory actions promulgated in 1985 that focused on leaks of volatile organic compounds (VOC) from gas processing plants (40 CFR 60 Subpart KKK) [EPA, 1985], and in 2012 that more generally regulated emissions of VOC from oil and natural gas production, processing, transmission, and storage infrastructure (40 CFR 60 Subpart OOOO) [EPA, 2012].

In 2017, President Trump issued Executive Order 13783, *Promoting Energy Independence and Economic Growth* [Presidential Document, 2017], which deemphasized the government’s role in environmental protection in favor of promoting economic goals. In response to this executive order, the EPA issued two proposed rules concerning methane emissions. The first, published 15 October 2018, embodied technical amendments to the 2016 regulations [EPA, 2018] while the second, published 24 September 2019, embodied policy amendments [EPA, 2019b].

Action	OOOO	OOOOa	Technical Amendments	Policy Amendments
Proposed Rule Signed			11 Sept 2018	28 Aug 2019
Proposed Rule Federal Register	23 Aug 2011	18 Sept 2015	15 Oct 2018	24 Sept 2019
Comment Deadline	30 Nov 2011 (extended)	17 Nov 2015	17 Dec 2018	25 Nov 2019
Final Rule Announced			13 Aug 2020	13 Aug 2020
Final Rule Federal Register	16 Aug 2012	3 June 2016	15 Sept 2020	14 Sept 2020
Effective Date	15 Oct 2012	2 August 2016	16 Nov 2020	14 Sept 2020

Table 1. Timetables of actions affecting New Source Performance Standards for the oil and natural gas industry.

	Policy Amendments	Technical Amendments
Summary	[EPA, 2020a]	
Docket (www.regulations.gov)	EPA-HQ-OAR-2017-0757	EPA-HQ-OAR-2017-0483
Federal Register	85 Fed Reg 57018-57072	85 Fed Reg 57398-57460
Effective Date	14 September 2020	16 November 2020
Code of Federal Regulations	40 CFR 60 Subpart OOOO and 40 CFR 60 Subpart OOOOa [LII, 2021; National Archives, 2021]	

Table 2. EPA Policy and Technical Amendments to New Source Performance Standards, 40 CFR 60 Subpart OOOO (2012) and 40 CFR 60 Subpart OOOOa (2016).

Both sets of amendments were finalized on 13 August 2020, though they were published separately in the Federal Register [EPA, 2020a; EPA, 2020d]. Some changes to the Code of Federal Regulations are not consistent between these two versions. The Technical Amendments, which have a later effective date, are definitive where they differ from the Policy Amendments [EPA, 2020d; 40 CFR 60 Subpart OOOOa]. Timelines of regulatory actions are provided in Table 1. Legal references are provided in Table 2. A recent review of the effectiveness of EPA regulation of methane emissions is available elsewhere [Kleinberg, 2021]. A more extensive timeline of legal events [Harvard Law, 2021] and a legal commentary on the Trump administration's rescission of methane emission regulations [Harvard Law, 2020] are also available elsewhere.

Throughout these periods of regulatory activity, industry, nongovernmental organizations (NGOs), academia, and concerned citizens responded to EPA by offering insights and arguments to consider when drafting regulations. Under terms outlined in the Administrative Procedure Act [5 USC 553], it is EPA's duty when crafting regulations to consider written data, views, or arguments made by the public. This study seeks to evaluate whether EPA adequately acknowledged and responded to public comments when drafting its Final Rule, *Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Review* [EPA, 2020a].

2. Methods

In response to the EPA proposed rule deregulating emissions from the transmission and storage segment and rescinding regulations on emissions of methane throughout the oil and gas industry [EPA, 2019b], 297,253 comments were submitted to EPA [EPA, 2020b; Regulations.gov, 2021]. In the present case, the authors are not aware of fraudulent submissions.

Of the comments received, more than 99% were identified as products of mass mailing campaigns and petitions and were grouped into 23 campaigns [EPA, 2020b, Appendix B], samples of which were published [EPA, 2020b, Appendix C].

The remaining 2640 submissions, 18 of which were submitted late and therefore not considered, were docketed individually [EPA, 2020b, Appendix A]. The EPA document responding to the selected comments is 488 pages in length, including front matter. It systematically reviews the comments, identified individually and organized by subject matter [EPA, 2020b]. An additional 35-page appendix is largely devoted to responding to the Clean Air Task Force and a few other commenters [EPA, 2020b, Appendix D]. In sum, the response file totals 638 pages. Summaries of the principal arguments were published in the main Federal Register article [EPA, 2020a, 57043-57065].

Certainly, the scale of the effort the Environmental Protection Agency expended in complying with the mandate of Section 553 of the Administrative Procedure Act cannot be faulted. The purpose of our investigation is not to measure the effort but to answer a more pointed question: Was the EPA unbiased in considering the principal arguments of stakeholders?

To answer this question, we selected approximately 100 comments to review. As noted above, the notice-and-comment process is not a vote-counting exercise. Agencies put greatest weight on those comments that present legal, economic, policy, and technical arguments. Our selection of comments reflects a similar partiality. The submissions we selected were substantive, some running to dozens of pages and including supporting documents.

Environmental issues engage a wide variety of constituencies, ranging from individual concerned citizens through academic specialists, sophisticated advocacy organizations, and multinational corporations. Recognizing that the spectrum of interests is not one-dimensional, we have taken care to sample commenters representing large and small industrial interests, oil and gas producing and consuming states, and the major advocacy organizations that have been most engaged in oilfield environmental issues, including the American Petroleum Institute, the Environmental Defense Fund, the Independent Petroleum Association of America, and the Clean Air Task Force. Table 3 provides examples of our sources.

Commenters	Interests	Examples
Government Agencies and Officials	Regional and political	Kentucky Division for Air Quality supporting EPA’s decision to remove transmission and storage as source categories; California Air Resources Board opposing weaker regulations.
Large Producers	Maintain social license to operate by addressing climate issues	Shell, ExxonMobil, Total supporting methane regulation
Small Producers and Their Associations	Opposed to most forms of regulation due to economic vulnerability	Texas Independent Producers & Royalty Owners and Kansas Independent Oil & Gas Assn advocating on behalf of deregulation
Midstream Industry Associations	Support for a consistent regulatory framework in preference to a patchwork of state regulations	Interstate Natural Gas Association of America voicing support for federal legislation to reduce inconsistencies across jurisdictions.
Academia	Promoting awareness of best available science to address climate damages	Boston University explaining new methods of methane detection.
Environmental Advocacy Organizations	Opposed to deregulation.	Environmental Defense Fund refuting advocates of deregulatory policy.

Table 3: Groups of stakeholder commenters.

Our compilation of comments was compared to the digest published by the EPA in the Federal Register [EPA, 2020a, Sections VIII, IX, X] in order to understand to what extent commenters’ opinions were reflected in the Final Rule. Unfortunately, recent degradation of the functionality of the Regulations.gov website would make it difficult to duplicate this study today [Democracy Forward, 2021].

3. Major Issues

The Policy Amendments announced on 28 August 2019 had two main components [EPA, 2019a]:

- Remove from regulation all sources of volatile organic compounds (VOCs) and greenhouse gases in the transmission and storage segment of the oil and natural gas industry.
- Rescind the methane requirements that apply to sources in the production and processing segments of the industry.

These changes are summarized in Figure 1. EPA estimated that the proposed amendments would save the oil and natural gas industry \$17-\$19 million a year, an utterly insignificant sum compared to production sector revenues alone, which in the United States amount to several hundred billion dollars per year.

We have selected six topics that were debated by those for and against the proposed rules. This section briefly outlines the major issues. Details of the arguments, analyses, and conclusions are in following sections.

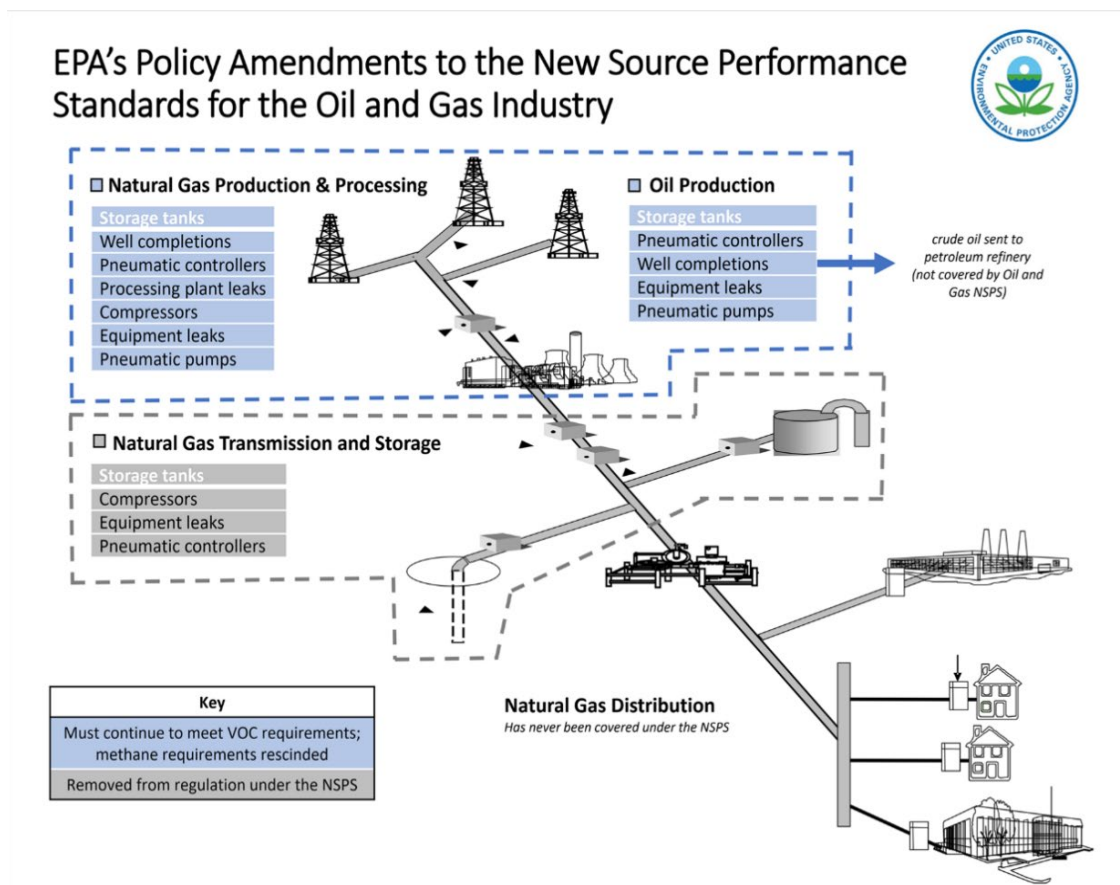


Figure 1: EPA graphic summarizing proposed 2019 Policy Amendments. Blue labels: Facilities required to meet volatile organic compound (VOC) requirements with methane requirements rescinded. Gray labels: Removed from NSPS regulation. [EPA, 2020c].

3.1 Deregulation of Methane Emissions

To promulgate a new source performance standard, the Clean Air Act (CAA) requires an endangerment finding [42 USC 85.7411]. As explained by EPA, the endangerment finding has two components [83 Fed Reg 65431]:

CAA section 111(b)(1)(A) requires the Administrator to establish a list of source categories to be regulated under CAA section 111. A category of sources is to be included on the list “if in [the Administrator's] judgment it causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health and welfare.” This determination is commonly referred to as an “endangerment finding” and that phrase encompasses both the “causes or contributes significantly” component and the “endanger public health and welfare” component of the determination.

The endangerment finding is at the core of many controversies involving the Clean Air Act. In 2016 EPA promulgated New Source Performance Standards to regulate methane emissions from oil and natural gas production, processing, transportation, and storage facilities even though methane had not been identified as an air pollutant when those source categories were defined – events which themselves have been the subject of controversy. The central question, as posed by EPA in 2019, was whether the agency was, in 2016, required to make a pollutant-specific significant contribution finding for methane before imposing new regulations. The Trump-era EPA and many industry interests contended that a pollutant-specific significant contribution finding was required, that the Obama-era EPA erred in not making that finding, and that therefore EPA methane regulations should be rendered null and void.

Commenters also debated the “rational basis standard” as a means of arriving at a significant contribution finding. The rational basis is an implied standard by which the Administrator may promulgate standards of performance for a source “if in his judgment it causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare” [42 USC 7411(b)(1)(A)]. Because there is no explicit procedure to follow nor precise definition in the Clean Air Act, its use generates controversy.

3.2 Deregulation of Transmission & Storage Segment

In its September 2019 notice of proposed rulemaking, EPA announced its intent to remove the transmission and storage segment from the 2012 New Source Performance Standard, 40 CFR 60 Subpart OOOO and the 2016 New Source Performance Standard, 40 CFR 60 Subpart OOOOa. Its reasoning was similar to its rationale for deregulating methane emissions: in 2012 and 2016 EPA had improperly included the transmission and storage segment in the regulated oil and natural gas source category when it failed to make a significant contribution finding [EPA, 2020a, 57019].

3.3 Methane and VOC Regulatory Redundancy

On substantive grounds, EPA argued in favor of methane deregulation by noting that the same methods used to mitigate VOC emissions, which remain in effect in the production and processing segments, effectively mitigate methane emissions in those segments. For vented emissions (which occur in the course of normal operations), prescriptive measures in Subpart OOOO that limit VOC emissions from sources such as compressors and storage vessels have the same effect on methane emissions, as both are

components of natural gas. For fugitive emissions (which are the result of leaks), the two EPA-approved methods for leak detection are a sniffer [40 CFR 60 Appendix A-7, Method 21], and an infrared optical gas imager [73 Federal Register 78199-78219], both of which, by code, must be sensitive both to methane and to the higher hydrocarbons defined as volatile organic compounds [40 CFR 51.100(s)]. Therefore, EPA argues, “Rescinding the methane limits will not actually change the amount of methane emission reductions for the production and processing segments.” [EPA, 2020e].

3.4 Existing Sources

Existing sources in the oil and natural gas source category are defined by 40 CFR 60 Subpart OOOOa as facilities for which construction, modification or reconstruction commenced prior to September 18, 2015 [EPA, 2016a]. The bar to promulgating regulations for existing sources, Clean Air Act 111(d), is higher than for new sources, Clean Air Act 111(b). As explained by EPA [EPA, 2020a, 54040]:

Under CAA section 111(d)(1)(A), CAA section 111(d) applies only to air pollutants (1) for which air quality criteria have not been issued, and which are not on the EPA’s list of air pollutants issued under CAA section 108(a) (commonly referred to as the “CAA 108(a) exclusion”), and (2) which are not HAP [hazardous air pollutants] emitted from a source category regulated under CAA section 112 (commonly referred to as the “CAA 112 exclusion”). See 42 USC 7411(d)(1)(A).

EPA continues, “EPA has concluded that VOC fall within the CAA 108(a) exclusion and, thus, are not the type of air pollutant that, if subjected to a standard of performance for new sources, would trigger the application of CAA section 111(d)” [EPA, 2020a, 54040]. Therefore, existing sources of VOC cannot be regulated even if new sources of VOC are regulated.

Methane does not fall within either of the excluded classes of air pollutants, so existing sources of methane can be regulated, but only if new sources of methane are regulated. Therefore the effect of the rescission of methane emission controls on 14 September 2020 was to close off the path to regulation of natural gas emissions from oil and natural gas production and processing facilities constructed prior to September 2015. This is important because while 64,378 wells producing oil and natural gas in the United States fell under New Source Performance Standards in 2019, 851,890 older wells were excluded from regulation [Winn, Comment 2669, Attachment H; Winn, Comment 2134, Appendix D].

Older facilities are typically owned by small oil and gas businesses. Associations of those businesses argue that environmental regulations are overly burdensome. Other groups in favor of federal regulatory action – including large corporations, which are presumably more capable of handling the administrative overhead [Crain, 2010] – cite the need for a consistent regulatory framework across the industry.

3.5 Social Cost of Methane; Domestic vs. Global Effects of Climate Change

Federal agencies are required to weigh the costs and benefits of environmental regulations [Sinden, 2016]. Developing an accurate assessment of the social cost of greenhouse gas emissions allows the agency to determine what level of mitigation is economically justified. Estimates of the damages caused by greenhouse gas emissions have varied dramatically from one presidential administration to the next. During the Obama administration EPA estimated that the emission of a metric ton of methane in 2025 would impose an economic cost of \$700-\$4000 [EPA, 2016b, Table 4-3], while during the Trump administration estimates ranged from \$68-\$200 [EPA, 2020f, Table 2-15].

3.6 Environmental Justice

Commenters discussed how climate-related damages disproportionately impact low-income communities. Representatives from academic and nonprofit organizations evaluated how effective the 2012 and 2016 Final Rules were, and the proposed 2019 Rule would be, in fulfilling the requirements of the Clean Air Act to protect air quality and promote public health and welfare.

4. Review of Public Submissions and EPA Responses

Section		Title	Page
VIII		Summary of Major Comments and Responses	57043
	A	Revision of the Source Category To Remove Transmission and Storage Segment	57043
		1 History of Scope of Oil and Natural Gas Source Category	57043
		2 “Sufficiently Related” Test and Whether Transmission and Storage Operations Are Distinct From Production and Processing	57046
		3 The Authority To Expand Source Categories and the EPA’s Alternative Approach	57048
		4 Significant Contribution Finding for Natural Gas Transmission and Storage	57048
	B	Rescission of the Applicability to Methane of the NSPS for Production and Processing Segments	57049
IX		Summary of Significant Comments and Responses on Significant Contribution Finding for Methane	57052
	A	Requirement for Pollutant-Specific Significant Contribution Finding	57052
		1 Promulgation of NSPS for Pollutants That the EPA Did Not Evaluate When It Listed the Source Category	57052
		2 Congressional Intent	57053
		3 Comparison With Other CAA Provisions That Generally Include a Cause or Contribute Finding on a Pollutant-Specific Basis	57054
		4 Rational Basis Approach	57055
	B	Significant Contribution Finding in 2016 Rule	57057
		1 2016 SCF for Methane Emissions From the Oil and Natural Gas Source Category	57057
		2 Identification of the Standard for Determining Significance	57057
	C	Criteria for Making a Significant Contribution Finding Under CAA Section 111	57057
X		Summary of Significant Comments and Responses Concerning Implications for Regulation of Existing Sources	57058
	A	Existing Source Regulation Under CAA Section 111(d)	57058
	B	Limited Impact of Lack of Regulation of Existing Oil and Natural Gas Sources Under CAA Section 111(d)	57060

Table 4. Summary of significant comments and responses in the Final Rule describing Policy Amendments to NSPS, Federal Register, volume 85, pages 57043-56065 [EPA, 2020a].

In response to the September 2019 notice of proposed rulemaking that commenced the notice and comment process for the New Source Performance Standards Policy Amendments [EPA, 2019b] EPA received 297,253 comments, the response to which totaled 638 pages. [EPA, 2020b]. The vast majority of comments were identified as products of mass mailing campaigns and petitions and were handled in a

cursory manner [EPA, 2020b, Appendix B, Appendix C]. The remaining 2640 submissions were docketed individually [EPA, 2020b, Appendix A]. The principal arguments were summarized in 23 pages of the Federal Register [EPA, 2020a]; see Table 4.

4.1 Deregulation of Methane Emissions

In arguing whether EPA took all necessary steps prior to regulating methane in 2016, commenters offered their interpretations of the Clean Air Act and frequently referenced past EPA decisions. Oil and natural gas companies and industry associations were the most vocal advocates for the necessity of a pollutant-specific significant contribution finding. The declaration of a pollutant-specific significant contribution finding requires the EPA to specify how a gas degrades the health or welfare of the American people. Associations representing small producers attacked past regulatory actions. The Texas Oil & Gas Association (TXOGA) based its argument on its interpretation of Clean Air Act Section 111(b)(1)(A). TXOGA wrote that this section implies the need for a pollutant-specific significant contribution finding because the definition of a source category is “a collection of sources that emits a particular pollutant” [Broome, Comment 2095]. The Independent Petroleum Association of America (IPAA) [Elliot, Comment 2077] discussed the 1979 aggregation of emissions of sulfur dioxide and hydrocarbons. Once these pollutants were defined to endanger public health and welfare, IPAA contended it was rational to define a source category around them. IPAA contended that the source category was defined prior to methane being deemed a dangerous air pollutant; hence a significant contribution finding must be made for methane as a condition to its inclusion in the source category.

This argument was supported by the North Dakota state government [Burgum, Comment 1993], the upstream industry, and the midstream industry. The latter, exemplified by the GPA Midstream Association [Hite, Comment 0667], disagreed with the 2016 Final Rule expanding the oil and natural gas source category. It claimed the rational basis standard EPA employed at the time insufficiently defined how the transmission and storage segment contributes significantly to endangerment. Ovintiv (formerly the upstream operator Encana) [Most, Comment 1129] believed that absent the requirement for a pollutant-specific significant contribution finding, EPA would have *carte blanche* authority to regulate any pollutant from any previously listed source: “applying a rational basis test, which is largely undefined, injects significant confusion into the regulatory process and conflicts with the arbitrary and capricious standard by which agency decision making is judged”

Those who disagreed with the need for a pollutant-specific significant contribution finding under Section 111 cite historical precedent. The Clean Air Task Force (CATF) [Duffy, Comment 1828] argued “EPA has long properly maintained that ‘[t]he plain language of section 111(b)(1)(A) provides that such findings are to be made for source categories, not for specific pollutants emitted by the source category.’ . . . The courts have also long recognized that the section is initially directed at source categories.” CATF also supported the rational basis standard, contending that this test does not give the administrator unlimited authority to promulgate regulations, noting that “a rational basis is an element of arbitrary and capricious review, which is *quite* well defined.”

In addition, some commenters argued EPA must accompany any proposed deregulatory action with scientific proof of health benefits brought about by such change. The director of the UCLA environmental law program wrote that the proposed rule would “contradict facts established in prior rulemaking records” [Hecht, Comment 2097]. University of Colorado students Quinto and Cain, referring to *Motor Vehicle Manufacturers Association v. State Farm Mutual Auto Insurance Company* (463 US 29 (1983)), wrote: “an agency must provide an explanation for the agency’s ‘revocation’ of a prior action that is more

thorough than the explanation necessary when it does not act in the first instance” [Quinto, Comment 2677].

In response to comments, EPA argued that, at the very least, the Administrator should have the power to reopen a significant contribution finding. EPA cited its responsibility to remedy incorrect interpretations of the Clean Air Act in past regulatory actions, writing “The 2016 Rule did not assess whether methane emissions from the production and processing segments alone cause or contribute significantly to dangerous air pollution; thus, we find that the 2016 Rule’s determination is not adequate.” [EPA, 2020a, 57038]. It further argued that the VOC rule, Subpart OOOO, is sufficient for methane mitigation. As EPA explained, “every affected source in the production and processing segments will continue to be subject to the same NSPS requirements for VOC as before, and those requirements will have the same impact in reducing the source’s methane emissions as before the removal of methane requirements” [EPA, 2020a, 57050].

EPA refuted those supporting the rational basis method by stating [EPA, 2020a, 57056]:

CAA section 111(b)(1)(A) makes clear that before the EPA may regulate any air pollutants from major new sources, it must determine that the source category whose sources emit the air pollutants cause or contribute significantly to dangerous air pollution. This is a rigorous predicate for regulation. It is not consonant with this rigorous predicate for the Agency to proceed to regulate the individual air pollutants based only on a rational basis determination.

4.2 Deregulation of Transmission & Storage Segment

Commenters responded to EPA’s primary rationale for excluding the transmission and source segment from the regulated oil and natural gas source category: that in 2012 and 2016 EPA had failed to make a significant contribution finding and that therefore this segment was improperly included in the NSPS. Texas Independent Producers and Royalty Owners (TIPRO) put forward arguments contending that nowhere in the administrative history has the transmission and storage segment been associated with the production and processing segments [Longanecker, Comment 2078]. Freedom Works, a conservative advocacy group, added its support to the Proposed Rule, citing the regulatory burden the 2016 Final Rule placed on industry, and further stating “As EPA notes in the [2019] proposal, the original decision to expand New Source Performance Standards (NSPS) to cover transmission and storage of oil and natural gas went well beyond the authority granted to them by the Clean Air Act,” [Savickas, Comment 1629].

This topic revealed common ground among parties not usually allied in the regulatory process. The Pennsylvania Department of Environmental Protection [McDonnell, Comment 2075] pointed out that while the transmission and storage segment serves different roles than the upstream industry, glycol dehydration units and combustion engines throughout the midstream and downstream segments satisfy the endangerment requirement, allowing regulation of these segments under CAA Section 111. ExxonMobil [Gjervik, Comment 1421] and Shell [Johnson, Comment 1417] wrote in support of uniform regulation across the oil and natural gas industry. The Interstate Natural Gas Association of America and the California Air Resources Board both outlined how consistent federal standards can be effective in reducing inconsistencies between states. [Snyder, Comment 1244; Corey, Comment 2113].

The American Forest and Paper Association (AFPA) argued that absent stringent leak monitoring mechanisms, the savings promised by the Proposed Rule, stemming from fewer leak checks, do not outweigh the amount of money spent on natural gas lost in the transmission and storage segment of the

industry. AFPA claimed its members pay \$50 million a year for leaked gas through a legislative flaw that allows oil and natural gas transmission companies to charge end users for gas lost from pipeline systems. This is far more than the Proposed Rule's \$19 million cost savings estimate [Schwartz, Comment 2094].

Other commenters advanced proposals for how EPA could evolve the oil and gas source category to circumvent questionable procedures. NYU Law School proposed creating a separate source category for the transmission and storage segment [Carey, Comment 1830].

In response, EPA argued at considerable length that the source category definition as defined in 1979 and 1985 included the production and processing segments only, and that the 2012 and 2016 Final Rules expanding the source category to the transmission and storage segment were improper [EPA 2020a, 57024-57030].

The agency admitted that promulgation of the 2020 rule would lead to increased emissions in some sectors of the source category. Having done this, EPA should have done its due diligence to study ways to address these increased emissions, as suggested in some comments. Instead, EPA left these responsibilities to states and voluntary programs, writing that "there is greater industry participation in voluntary methane emissions reduction programs/actions and more state regulations/permits limiting emissions from oil and natural gas operations than there were when the EPA developed the 2016 Rule" [EPA, 2020a, 57061].

EPA did concede that should an updated review of source category segments be performed an additional rule could be put in place [EPA, 2020a, 57049]:

The EPA agrees with commenters that if an appropriate assessment of the emissions from the transmission and storage segment concludes that emissions from this segment contribute significantly to the endangerment to public health or welfare, we would need to propose a separate rulemaking for the regulation of emissions from sources in this segment. However, the EPA is not, at this time, assessing whether the emissions from the transmission and storage segment contribute significantly to the endangerment to public health or welfare.

4.3 Methane and VOC Regulatory Redundancy

Numerous comments explored whether the 2016 New Source Performance Standards, 40 CFR 60 Subpart OOOOa, which regulated methane emissions for the first time, were redundant with the 2012 New Source Performance Standards, 40 CFR 60 Subpart OOOO, which regulated only VOC emissions. Some commenters believed the best system of emission reduction (BSER) for VOCs also adequately mitigated methane emissions; others disagreed.

The oil and gas industry and its allies were vocal on regulatory redundancy in the 2012 and 2016 Final Rules. Western Energy Alliance wrote that "because of the nature of VOC control technologies, and due to the ubiquitous presence of methane and VOCs together in the emissions . . . methane is captured along with VOCs" [Sgamma, Comment 2069].

Central to EPA's claim that VOC and methane emission controls are redundant is the observation that EPA-approved leak detection methods are sensitive to both gases. Indeed the only two EPA-approved natural gas leak detection methods, the Method 21 gas sniffer [40 CFR 60 Appendix A-7, Method 21] and the infrared optical gas imager [73 Federal Register 78199-78219], are sensitive to both VOCs and

methane. These handheld, short-range sensors are limited in their capability to detect the full range of fugitive emissions. Therefore, there has been a great deal of innovation in leak detection by remote sensing since 2016, but nearly all of these new methods are sensitive to methane but not to VOCs. Total, a prominent international oil producer, cited its investment in leak detection that includes utilization of methane-sensitive airborne ultra-light spectrometers for use throughout the natural gas supply chain [Badoual, Comment 1123]. Kairos Aerospace [Streams, Comment 1635], a domestic technology provider, wrote on behalf of its methane mitigation technologies that allow for surveying of up to 2000 oil and natural gas sources per day, compared to the four to six sources per day that can be inspected by the EPA-approved handheld methods.

Boston University Institute for Sustainable Energy (BU-ISE) succinctly summarized the technology landscape: for currently approved technologies as commonly implemented, the assertion that VOC and methane leak detection are redundant is valid. However, for newly developed technologies that have the potential to significantly reduce the cost of compliance for regulated entities, the assertion is invalid [Kleinberg, Comment 2195]. BU-ISE further pointed out that since 20% of U.S. marketed gas is devoid of VOC, the new cost-effective methane-only detection methods cannot distinguish between regulated and unregulated natural gas emissions.

EPA claimed its rescission of methane requirements in production and processing was warranted due to redundancy. In response to comments that methane-sensitive aircraft-borne systems are more efficient and effective than presently-employed handheld devices, EPA wrote that leak detection technologies deployed via aircraft are not allowed at this time [EPA, 2020a, 57050].

4.4 Existing Sources

So-called “existing” sources of VOC and/or methane emissions in the oil and natural gas industry, i.e. those constructed or modified prior to September 2015, have not been subject to regulation by OOOOa but could be regulated if methane emission controls were to be retained. The 2019 Proposed Ruling, which removed methane controls, thereby removing the threat of regulation of older wells, enjoyed widespread support among industry representatives and associations.

The Western Energy Alliance (WEA) stated that 80% of production occurs within the first few years of a well being drilled, after which production drops drastically. For this reason, WEA believes regulation of aging wells is unnecessary as well as being overly burdensome [Sgamma, Comment 2069].

Domestic Energy Producers Alliance (DEPA) continued this argument by urging the EPA to update its policy on existing sources. DEPA cited new horizontally drilled wells and emerging technology to prove that the EPA’s stance on existing sources is outdated. With a refreshed and comprehensive study of these sources, DEPA believes EPA can develop a more efficient way to monitor these sources while appealing to most parties involved [Kelley, Comment 2074].

Pugh Consulting proposed that if existing sources are to be subject to regulation at all, they should be defined as their own source category. Pugh expressed concern for the economic vitality of small companies and stated that regulatory action under Clean Air Act 111(d) could subject these producers to unnecessary financial pressures [Pugh, Comment 2070].

On the assumption that natural gas emissions from infrastructure are proportional to oil and gas production, the American Petroleum Institute (API) argued that the extension of emission regulations to

existing wells is unnecessary. Although the fraction of wells covered by new source performance standards only increases from 8% to 25% between 2019 and 2026, the fraction of production from those regulated wells increases from 65% to 90% over the same period, an argument that depends on the rate of turnover and obsolescence of production infrastructure [Feldman, Comment 2090].

The Environmental Defense Fund responded to API with a remarkably pointed attack [Winn, Comment 2669]:

There are a number of ways API's analysis understates emissions from existing sources in the production segment and then further seeks to minimize these emissions by using aggressive assumptions about the turnover and replacement of those existing sources with new sources. Among other deficiencies, API's analysis disregards emissions from super-emitting sites and ignores the role of shut-in wells, and further compounds these errors by assuming rapid turnover of existing sources over time. Collectively, these assumptions create the false impression that, absent standards, existing source emissions are small and declining.

For example, EDF claimed improperly plugged and abandoned wells account for between four and seven percent of methane emissions in Pennsylvania, whereas API assumed no leaks from them at all. More seriously, API excluded "extreme outliers" from its analysis; EDF calls them super-emitters, pointing out that these facilities make up 1% of sites but are responsible for 44% of methane emissions [Winn, Comment 2669].

EPA directly addressed the debate between American Petroleum Institute and the Environmental Defense Fund, devoting almost three columns (1000 words) in the Federal Register to summarizing the arguments and explaining its own positions [EPA, 2020a, 57063-57064]. In one of the most depressing passages in the 56-page Federal Register entry, EPA admits it has deprived itself of the information needed to understand the scope, benefits, and burdens of its own regulations [EPA, 2020a, 57064]:

As commenters indicate, when comparing activity counts, compliance reports, and preliminary information received in the ICR [Information Collection Request] process, the data indicates that there is incomplete information to assess turnover and obsolescence rates. The justification of the EPA's rescission of the ICR is presented in a separate rulemaking action, "Notice Regarding Withdrawal of Obligation To Submit Information" (82 FR 12817, March 7, 2017). Absent further information (which is why we solicited comment on turnover rates) and time, where compliance report information can be assessed over a longer time period, there will continue to be a high level of uncertainty with any estimates on turnover/obsolescence rates. The EPA maintains, however, as it did in the proposal, that equipment turnover and source modification are a factor (albeit difficult to quantify with any certainty) that will limit the emissions from existing sources in the oil and natural gas industry in the absence of a CAA section 111(d) EG [emission guideline].

4.5 Social Cost of Methane; Domestic vs. Global Effects of Climate Change

Since the 1980s it has been federal policy that all significant regulations are subject to cost-benefit analysis [Sinden, 2016]. This analysis is not always straightforward. The impact of methane emissions on the environment can be analyzed at national or global levels. At a national level, any effects brought on by greenhouse gases such as carbon dioxide or methane are assessed solely by their impacts in the United States. Effects of pollutants on the welfare of other nations are omitted. The global perspective recognizes the atmosphere is an indivisible system and greenhouse gases emitted in the United States impact all

nations, which in turn affects the welfare of Americans. The academic community criticized EPA's 2019 Proposed Rule for its adoption of a domestic-only calculation of the social cost of climate pollutants, which represented an important change from considering the global cost of greenhouse gas emissions used in the Regulatory Impact Analysis documents accompanying the 2012 and 2016 Final Rules.

A comment from Columbia Law School [Webb, Comment 1122] pointed out how the Proposed Rule fails to account for negative externalities associated with global costs of greenhouse gas emissions:

A domestic-only value will underestimate the cost of emissions because, as EPA itself recognized in the 2016 Rule, '[t]he impacts of climate change outside the United States . . . will also have relevant consequences on the United States and our citizens.' According to EPA, the U.S. will likely be forced to increase humanitarian aid, deal with mass migrations, and manage changing security needs (e.g., in the Arctic) as a result of overseas climate change impacts. Overseas impacts could also affect the U.S. economy, disrupting international trade and undermining financial markets.

New York University (NYU) School of Law wrote an extensive commentary on this subject, submitted to EPA by the Environmental Defense Fund [Brooks, Comment 2201]. In connection with the consideration of domestic versus global damages, NYU pointed out:

When industry challenged another EPA climate program by arguing that the Clean Air Act "was concerned about local, not global effects," the U.S. Court of Appeals for the D.C. Circuit had "little trouble disposing of Industry Petitioners' argument that the [Clean Air Act's prevention of significant deterioration] program is specifically focused solely on localized air pollution," finding instead that the statute was "meant to address a much broader range of harms," including "precisely the types of harms caused by greenhouse gases."

A second major consideration in computing the cost-benefit ratio of a regulation is the discount applied to future costs. If the harm caused by a pollutant is short-lived, a high discount rate (e.g., 7%) is justified; for enduring damage, a low discount rate (e.g., 3%) is appropriate. In considering the extent to which future damages should be discounted, NYU Law School wrote [Brooks, Comment 2201]:

In the 1970 Clean Air Act amendments, EPA's authority to regulate air pollution dangers was substantially strengthened, and Congress was motivated partly by the desire to protect future generations. For example, Senator Randolph (Chair of the Environment and Public Works Committee) spoke specifically about Section 111's new provisions on performance standards for stationary sources, stating that "[t]he implementation of the policies that are contained in this measure will test the determination in this country to achieve a livable environment, not only for ourselves but for future generations." . . . When he signed the Clean Air Act Amendments of 1970 into law, President Nixon pronounced that "1970 will be known as the year of the beginning, in which we really began to move on the problems of clean air and clean water and open spaces for the future generations of America."

In summary, the Clean Air Act's use of the phrase "may reasonably be anticipated to endanger public health or welfare" requires EPA to consider the effects of climate change to future generations. Applying a 7% discount rate to the social cost of greenhouse gases means that, after a generation or two, future climate damages are insignificant. The use of such a rate thus effectively ignores the needs of future generations. . . .

Had the agency properly accounted for the social costs of methane emissions to appropriately account for the full forgone benefits using the best available science and economics—as it did in the 2016 Rule—it would have recognized that the proposed deregulation causes far more harm than good, and is therefore not a rational exercise of the agency’s discretion.

EPA did not respond in the Federal Register to comments on the question of domestic versus global scope of damages, nor on the discount rate applied to the social cost of methane even though these topics were discussed by EPA in the mandatory Regulatory Impact Analysis (RIA) [EPA, 2020f]. In the more detailed Response to Public Comments EPA stated [EPA, 2020b, page 10-124]:

This final action is based on the EPA’s determination that its 2012 and 2016 rulemakings that interpreted or expanded the source category to include sources in [the transmission and storage] segment were improper. . . . EPA is rescinding the limits on methane emissions for the NSPS applicable to sources in the production and processing segments because those requirements are redundant with the NSPS for VOC and are, thus, unnecessary. These decisions are not based on the formal benefit-cost analysis presented in the RIA. Commenters’ discussion of RIA methods, figures, and estimates of costs and benefits provided in the record for the 2012 and 2016 rulemakings are therefore not relevant to the legal basis for repeal.

4.6 Environmental Justice

Environmental justice issues were not neglected in the 2019 comments, but they were less prominent than they would have been two years later. University of Colorado students [Vasarhelyi, Comment 2676] noted that African American individuals were 54% more likely to suffer adverse health effects due to pollutants. Individuals below the poverty line had a 35% higher risk of detrimental health impacts, and non-white individuals had a 28% higher risk of detrimental health impacts due to pollution. They continued that more than 1 million African Americans live within a half-mile radius of a natural gas facility. Commenters from UCLA Law School [Hecht, Comment 2097] noted that the 2016 Final Rule positively affected disadvantaged communities. They further noted, “Revoking a rule with positive health impacts will result in equal and opposite negative effects on those same communities.”

EPA did not directly respond to these comments. Instead, they reaffirmed their position that existing state programs and voluntary measures would help alleviate any damages brought on by their Proposed Rule.

5. Discussion

5.1 Social Cost of Carbon and Methane

The social cost of methane emission is mentioned on only a single page of the Federal Register commentary on the Policy Amendments [EPA, 2020a, 57066]. Thus one might conclude this is a minor element of the NSPS Review. However, it is the hinge on which the deregulatory agenda swings.

The proximate argument for deregulation of methane emissions is that in 2012 and 2016 EPA failed to issue a valid endangerment finding. However, time and again, in response to well-founded comments, EPA states that it chooses not to follow its own prescriptions to determine whether an endangerment finding is justified.

Based on its social cost of methane, EPA estimated that, in the absence of a methane regulation, the equivalent annualized value of the forgone domestic climate benefits is \$2.2 million per year under a 7-percent discount rate and \$7.2 million per year under a 3-percent discount rate. EPA can argue without fear of contradiction that the costs of compliance with any methane control regime would far exceed these paltry sums. Therefore, if challenged, it can argue it is justified in failing to consider circumstances that might justify the imposition of methane emission controls.

5.2 Lack of Diligence

The notice-and-comment process does not exist to make rulemaking easier. It exists to expose issues and points of view that have been neglected or unnoticed by agencies. Numerous comments should have provided EPA with the impetus to investigate issues surrounding NSPS more deeply. Often these ideas were acknowledged but their resolution left to some indefinite time in the future. These responses leave EPA vulnerable to criticism and sometimes legal challenges for failing to respond adequately to public submissions.

Substantial changes to regulations occur at intervals of years and even decades, partly because agencies such as the EPA are underfunded and understaffed compared to the past [EPA, 2020g], partly because regulated entities need stability to comply effectively; see discussion below. Therefore it is incumbent upon agencies to be thorough in their rulemaking. This imperative was ignored numerous times in the process of developing the 2020 NSPS amendments.

One prominent example of lack of agency diligence is the deregulation of the transmission and storage segment [EPA, 2020a, 57049]:

The EPA determined that the Agency's past interpretations and actions related to the inclusion of the transmission and storage segment in the Crude Oil and Natural Gas Production source category were in error. This action focuses on the correction of these past errors and interpretations.

The agency continues,

The EPA agrees with commenters that if an appropriate assessment of the emissions from the transmission and storage segment concludes that emissions from this segment contribute significantly to the endangerment to public health or welfare, we would need to propose a separate rulemaking for the regulation of emissions from sources in this segment. However, the EPA is not, at this time, assessing whether the emissions from the transmission and storage segment contribute significantly to the endangerment to public health or welfare.

EPA provides no justification for delaying an endangerment finding decision for the years (or decades) before this regulation might be revisited.

It is true that agencies cannot always respond to comments at the desired level of certainty. EPA admitted that amending the 2016 NSPS rule would increase VOC and methane emissions from the oil and natural gas sector. When commenters questioned the rationale for the proposed changes, EPA wrote that the source category had been expanded illegally, justifying deregulation, but that [EPA, 2020a, 57020]:

The EPA also expects that there will be increases in VOC and HAP [hazardous air pollutants] emissions as a result of this final rule. While the EPA expects that the forgone VOC emission reductions may also degrade air quality and adversely affect health and welfare effects associated with exposure to ozone, particulate matter with a diameter of 2.5 micrometers or less (PM_{2.5}), and HAP, we are unable to quantify these effects at this time. This omission should not imply that these forgone benefits do not exist.

Although the public has a strong interest in understanding the risks of deregulation, sometimes pertinent information simply is not available. As the Regulatory Impact Analysis that accompanied the promulgation of the 2016 NSPS regulations admitted [EPA, 2016b, Section 4.1]:

While we expect that the avoided VOC emissions will also result in improvements in air quality and reduce health and welfare effects associated with exposure to ozone, fine particulate matter (PM_{2.5}), and HAP, we have determined that quantification of the VOC-related health benefits cannot be accomplished for this rule in a defensible way. This is not to imply that these benefits do not exist; rather, it is a reflection of the difficulties in modeling the direct and indirect impacts of the reductions in emissions for this industrial sector with the data currently available.

5.3 Failure to Consider Innovative Solutions

At times, EPA appears to underutilize the creativity unleashed by the notice-and-comment process. One example is the dispute over regulation of so-called existing sources – those constructed or substantially modified before September 2015. Older wells produce smaller quantities of oil and gas as reservoirs are depleted. In recent years, this trend has been greatly accentuated by the steepened decline curves for gas wells drilled since 2005 and oil wells drilled since 2010, when massive hydraulic fracturing of shale gas and tight oil formations, respectively, came to dominate U.S. petroleum production [Kleinberg, 2018]. However, lower production does not necessarily correlate with lower natural gas emissions [Brantley, 2014; Omara, 2018].

The discussion has been to either regulate older sources under Clean Air Act Section 111(d) or not regulate them at all. Industry associations and environmental advocates are well entrenched in these opposed positions. However, EPA could look to a middle ground, based on analysis, that both sides might view as fair and reasonable.

The Independent Petroleum Association of America (IPAA) commented [Elliot, Comment 2077]:

Within the industry, low production wells are unequivocally a separate category or class of wells. The impact of Subpart OOOO and Subpart OOOOa disproportionately impacts these [low production well] companies. The disproportionate impact is not justified. The most effective and efficient means to understanding, or more accurately, preventing the disproportionate impact is to create a subcategory of wells for low production wells and conduct the analysis required under the CAA for this subcategory of wells.

This suggestion goes to the spirit and purpose of the notice-and-comment process and seems to be a worthy candidate for further investigation. However, EPA does not refer to this suggestion in its Federal Register summary of comments [EPA, 2020a] and refers to it only obliquely in the much lengthier Response to Public Comments [EPA, 2020b, 6-9].

5.4 Regulatory Uncertainty

There are a few well-publicized bad actors, but the vast majority of U.S. industrial concerns will fully comply with regulations. One of the biggest frustrations that law-abiding companies face is regulatory uncertainty. In this respect, the regulatory landscape has been a difficult one in recent years. The Interstate Natural Gas Association of America (INGAA) reviewed the roller coaster ride of methane regulation [Snyder, Comment 1244]:

On April 18, 2017, EPA granted reconsideration of various aspects of the NSPS OOOOa, including the fugitive emissions requirements, and simultaneously indicated its intent to stay the requirements for 90 days. EPA then issued a notice in the Federal Register regarding the reconsideration and 90-day stay. However, several interested parties filed a petition in the D.C. Circuit to review EPA's 90-day stay, along with an emergency motion to vacate the stay. The D.C. Circuit granted the motion to vacate the stay and simultaneously issued the mandate on July 3, 2017. In response, EPA filed a motion requesting that the court pull back the mandate. Mere days later, on July 13, the D.C. Circuit granted EPA's motion to pull back the mandate for 14 days.

The eloquence with which INGAA pleaded for regulatory certainty speaks for itself [Snyder, Comment 1244]:

Sudden and unanticipated reversals of regulatory obligations creates confusion for the regulatory community and distracts focus from ensuring compliance and conformance with regulations. Industry needs time and certainty in order to maintain reliable service of natural gas to our customers and make sound economic business decisions regarding issues such as staffing, procurement, capital investments, procedures, training, and contracts in order to comply with regulations. Regulations need to be supported by a strong administrative record that will withstand judicial scrutiny, if necessary. This need for consistency and predictability applies to both federal requirements and state requirements – in particular, for projects such as interstate natural gas pipelines that cross state boundaries and may be subject to several state requirements.

5.5 Self-Deprivation of Needed Information

EPA is depriving itself of the information it needs to assess the scope, costs, and benefits of its own regulations. The 2016 regulations only applied to new sources, i.e., those for which construction, modification, or reconstruction commenced after 18 September 2015. Therefore it is possible the effects of the regulations are muted by the relatively slow turnover of oilfield equipment. To understand the effect of this limitation, the EPA initiated an Information Collection Request (ICR) in 2016. The ICR was withdrawn on 2 March 2017, Administrator Pruitt stating the agency was assessing the need for the information (82 FR 12817, March 7, 2017). Consequently, EPA lacks the data it needs to understand why methane emissions are not decreasing [Kleinberg, 2021].

5.6 Potential for the Use of Clean Air Act Section 115

Most of the discussion around air pollution originating from the oil and natural gas sector focuses on section 111 of the Clean Air Act (42 USC 85.7411). However, section 111 may not exhaust the authorities that can be brought to bear. Section 115 (42 USC 85.7415) provides that if a pollutant emitted in the

United States endangers public health or welfare in a foreign country, and if that country has taken measures to protect the United States from its sources of pollution, then the EPA shall issue a finding that requires abatement of that pollutant in the United States.

Although this provision has never been invoked it is clearly powerful [Burger, 2020]. A panel of three judges (two of whom were appointed by President Trump) recently cited Section 115 as a “carefully balanced scheme of international cooperation on a topic of global concern” [Second Circuit, 2021; Burger, 2021]. Curiously, this section of the Clean Air Act is only mentioned in passing (in connection with global estimates of climate damages) in comments submitted to EPA.

5.7 Implications for Future Rulemaking

Debates between commenters, which can preview arguments later made in federal court, challenge agencies to take care to follow rulemaking procedures robust enough to survive close scrutiny. The question of whether a pollutant-specific significant contribution finding is required by the Clean Air Act, and the sufficiency of the rational basis standard to make such a finding, provide examples.

Commenters criticizing the rational basis standard highlighted the ambiguity associated with this standard. Industry associations crafted their arguments around the idea that the rational basis standard has the potential to give EPA “carte blanche” authority to promulgate regulations on pollutants as they see fit. Having revoked methane emission standards underpinned by the rational basis standard, EPA now has the responsibility to reevaluate methane emission control on a more robust basis.

Concerning the regulation of VOC and methane emissions from the transmission and storage segments, Shell Oil Company wrote [Johnson, Comment 1417]:

The Agency never made a formal finding that emissions from the transmission and storage segments cause or significantly contribute to air pollution that endanger public health or welfare, as required by section 111(b)(1) of the CAA. Shell has concerns that EPA’s abbreviated procedures for expanding the oil and natural gas source category may not have strictly adhered to the source-category listing requirements of CAA section 111(b)(1), as described above in the prior section. To the extent that there is an inconsistency with the relevant statutory requirements, the proper remedy should not be for the Agency to remove the transmission and storage segments from the oil and natural gas source category. Such an outcome would be counterproductive of the overall environmental and policy objective of assuring the establishment of flexible, fit-for-purpose regulatory framework for limiting methane and VOC emissions from all legitimate segments of the oil and natural gas source category. Rather, EPA should take the appropriate actions to make a defensible endangerment finding for the transmission and storage segments in order to rectify any potential deficiencies of the source category expansions adopted in the 2012 and 2016 rulemakings.

In this instance, EPA’s decision to rescind methane requirements should lay the groundwork for more durable regulatory action.

5.8 Opportunity Cost of Notice & Comment Process

EPA clearly invested significant resources in processing, reviewing, and responding to the comments it received. Yet, within the limits of our analysis, it would appear the agency derived little benefit from this exercise, despite the considerable conscientiousness with which it was performed. This raises the question of whether producing the 638-page Response to Public Comments constituted the best use of limited agency resources.

A rational response to this problem would appear to be beyond agency control. The Administrative Procedure Act itself mandates no specific action agencies must take upon receiving comments. It only states, “the agency shall give interested persons an opportunity to participate in the rule making through submission of written data, views, or arguments.” However, from the 1960s to the 1980s the courts continued to raise the barriers agencies must surmount to prevail against litigants [Phillips, 2021, Section 4.II.1] (internal quotation marks and citations omitted):

[R]egulated firms soon learned they could have rules overturned on pre-enforcement review by filing lengthy and detailed comments that criticized proposed rules they disliked If agencies failed to respond in preambles to even the most tangentially-related information, rules could be thrown out by courts—with the adequacy of responses being determined by courts after rules are finalized and with no opportunity to cure deficiencies and demonstrate that they *actually did* review and consider all comments.

A more positive point of view was expressed by an environmental attorney with experience at the EPA [R. Reibstein, personal communication]:

I was sometimes the one to read comments and respond to them. I think it is an extremely valuable process if done with sincerity. The problem is how you ensure the integrity of the agency. Sometimes the comments were very helpful, and made useful points that altered how we implemented the rule. . . . But we lack a mechanism to make sure the administration gives it proper respect. . . . If done with proper respect, it’s invaluable and to me represents a key to real democratic engagement and governance.

5.9 Degradation of the Notice & Comment Process

It is inherent in our form of government that federal regulatory agencies must answer to Congress and to the people. The curation of comments is an important way to preserve for review by the people and lawmakers the arguments presented to agencies on all sides of a question. This work is an example of retrospective review of comments. However, recent degradation of the functionality of the Regulations.gov website would make it difficult to duplicate this study today [Democracy Forward, 2021].

In order to filter the 2600 posted comments in a reasonable time, we needed easy access to basic bibliographic information about each comment, including authors' names, affiliations, and whether the comment included attachments, which is a marker of a detailed submission. Notification by e-mail of new postings is also a practical necessity. These features were incorporated in the federal government’s

comment system, Regulations.gov, until 2020. As of the date of this writing they are no longer available, as described in detail elsewhere [Democracy Forward, 2021].

6. Conclusions

This study is limited to one regulatory action taken by one administration. We do not claim it is representative of EPA's processes in the long term, or of federal agencies' processes in general. As such, it asks more questions than it answers.

There is no doubt EPA invests substantial efforts in responding to significant comments. Moreover, many of EPA's judgments and decisions appear to have plausible legal foundations. However, for the issues we have investigated, arising in 2019-2020, the EPA seems unpersuaded by reasonable arguments and resistant to reasonable suggestions, even when these are advanced by multiple commenters with generally conflicting interests. Often, instead of dealing with these issues forthrightly, EPA ignores or evades them.

In proposing its Policy Amendments to the New Source Performance Standards in 2019-2020, the Environmental Protection Agency focused narrowly on real or perceived procedural errors made by the previous administration. Some efforts were made to justify the amendments on substantive grounds. However, EPA often found it convenient to respond to critical comments with the anodyne observation that substantive reexamination might trigger new rulemaking at some unspecified date in the future. These promises ring hollow in view of headcount reductions at the agency [EPA, 2020g].

While these findings will be unsurprising to cynics, we believe EPA can do better. We offer these suggestions for improvement based on the findings in the Discussion section.

Social Cost of Carbon and Methane: Quantitative determination of the benefits of greenhouse gas control is a genuinely difficult economic, political, ecological, and even moral problem. Accounting for the harms connected with climate change is a problem of intercontinental and intergenerational equity, depending exquisitely on factors such as discount rate. Given the wide disparities in climate accounting, varying greatly from one administration to the next, the problem seems to require a complete reformulation with the goal of finding a new, more broadly accepted paradigm.

Lack of Diligence; Failure to Consider Innovative Solutions: To an agency that sincerely seeks to benefit from public input, the notice-and-comment process presents a challenge. Arriving after the agency has invested considerable effort in formulating regulations, comments evoke a natural reaction to defend one's own work. Moreover, in view of limited agency resources, additional effort devoted to one environmental problem may well imply another problem, of perhaps equal importance, is shortchanged.

In the case investigated in this work, the 2019-2020 deregulation of emissions from the oil and natural gas sector, the administration had a goal, clearly spelled out in an executive order and implemented by an EPA Administrator specifically selected for the job. Any delay that could jeopardize the overall goal would naturally be resisted. As it was, the Final Rule was promulgated sufficiently late in the administration's term of office that it fell victim to the Congressional Review Act [Public Law 117-23].

In May 2021, the EPA, under new leadership, announced that comments on revisions to NSPS would be

accepted prior to notice of proposed rulemaking [EPA, 2021]. This allows the agency to evaluate public submissions before the substantial expenditure of resources associated with the formulation of a new rule. This form of outreach to stakeholders is to be applauded.

EPA Deprives Itself of Needed Information; Degradation of the Notice and Comment Process: The benefits of retrospective review are well known [Wiener & Ribeiro, 2016]. Meaningful review requires data. An agency that proclaims it doesn't need or want the data required to evaluate its regulations, or erects barriers to external examination of its procedures, openly advertises its contempt for good government.

Opportunity Cost: The present form of administrative procedure compels agencies to expend disproportionate resources responding to all comments since any of them could form the basis of a legal attack against which a defense must be prepared in advance. As one attorney at a federal regulatory expressed it, "We (and all agencies) take comments seriously, but we spend more time demonstrating to courts that we've considered comments than actually considering the comments" [private communication]. This cruel form of judicial review limits the ability of agencies to perform their proper civic functions. It seems obvious a better balance between oversight and efficiency can be struck.

On the other hand, compelling agencies to respond to comments in some detail ensures the comments will actually be read and considered. Determining the optimal amount of effort devoted to the notice-and-comment process is an important question, but one beyond the scope of this work.

Acknowledgments and Disclaimers

We gratefully acknowledge the contributions of Jacqueline Ashmore, who reviewed the entire manuscript at several stages, improving it thereby. We thank Richard Reibstein and Todd Phillips for helpful discussions. Peter Fox-Penner encouraged the initiation of the project, and Laura Hurley supervised final production.

The authors declare no conflicts of interest. The opinions expressed herein are those of the authors alone and not necessarily those of the institutions with which they are affiliated.

References

Brantley, H.L., et al., 2014. Assessment of Methane Emissions from Oil and Gas Production Pads using Mobile Measurements, *Environmental Science & Technology*, 48, 14508–14515
<https://pubs.acs.org/doi/10.1021/es503070q>

Burger, M., 2020. *Combating Climate Change with Section 115 of the Clean Air Act*. Edward Elgar, 2020.
<https://www.e-elgar.com/shop/usd/combating-climate-change-with-section-115-of-the-clean-air-act-9781786434609.html>

Burger, M., 2021. The Second Circuit Takes on the Clean Air Act's International Air Pollution Provision and Climate Change, *Columbia University Law School*, 23 April 2021.
<http://blogs.law.columbia.edu/climatechange/2021/04/23/the-second-circuit-takes-on-the-clean-air-acts-international-air-pollution-provision-and-climate-change/>

Crain, N.V., Crain, W.M., 2010. *The Impact of Regulatory Costs on Small Firms*, Small Business Administration, September 2010. <https://www.sba.gov/advocacy/impact-regulatory-costs-small-firms>

Democracy Forward, 2021. Letter to U.S. General Services Administration from Democracy Forward, 17 May 2021.
<https://democracyforward.org/lawsuits/calling-on-gsa-to-address-trump-era-reductions-in-transparency-on-regulations-gov/attachment/letter-to-gsa-re-regulations-gov-website-5-17-21/>

EPA, 1985. Standards of Performance for New Stationary Sources; Equipment Leaks of VOC from Onshore Natural Gas Processing Plants, Final Rule. U.S. Environmental Protection Agency, 50 Federal Register 26122, 24 June 1985. <https://www.regulations.gov/document/EPA-HQ-OAR-2004-0182-0005>

EPA, 2012. Oil and Natural Gas Sector: New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants Reviews, Final Rule. U.S. Environmental Protection Agency, 77 Federal Register 49489, 16 August 2012.
<https://www.federalregister.gov/documents/2012/08/16/2012-16806/oil-and-natural-gas-sector-new-source-performance-standards-and-national-emission-standards-for>

EPA, 2016a. Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources, Final Rule. U.S. Environmental Protection Agency, 81 Federal Register 35823, 3 June 2016.
<https://www.federalregister.gov/documents/2016/06/03/2016-11971/oil-and-natural-gas-sector-emission-standards-for-new-reconstructed-and-modified-sources>

EPA, 2016b. Regulatory Impact Analysis of the Final Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources, U.S. Environmental Protection Agency, EPA-452/R-16-002, May 2016.
https://www.epa.gov/sites/production/files/2020-07/documents/oilgas_ria_nspfs_final_2016-05.pdf

EPA, 2018. Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Reconsideration, Proposed Rule. U.S. Environmental Protection Agency, 83 Federal Register 52056, 15 October 2018.

<https://www.federalregister.gov/documents/2018/10/15/2018-20961/oil-and-natural-gas-sector-emission-standards-for-new-reconstructed-and-modified-sources>

EPA, 2019a. Proposed Policy Amendments 2012 and 2016 New Source Performance Standards for the Oil and Natural Gas Industry; Fact Sheet: EPA Proposes Policy Amendments to the 2012 and 2016 New Source Performance Standards for the Oil and Natural Gas Industry. U.S. Environmental Protection Agency, 28 August 2019.

<https://www.epa.gov/controlling-air-pollution-oil-and-natural-gas-industry/proposed-policy-amendments-2012-and-2016-new>

https://www.epa.gov/sites/production/files/2019-08/documents/fact_sheet_proposed_amendments_to_nsps_for_oil_and_natural_gas_industry.8.28.19.pdf

EPA, 2019b. Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Review, Proposed Rule. U.S. Environmental Protection Agency. 84 Federal Register 50244, 24 September 2019.

<https://www.federalregister.gov/documents/2019/09/24/2019-19876/oil-and-natural-gas-sector-emission-standards-for-new-reconstructed-and-modified-sources-review>

EPA, 2020a. Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Review, Final Rule. U.S. Environmental Protection Agency. 85 Federal Register 57018. 14 September 2020.

<https://www.federalregister.gov/documents/2020/09/14/2020-18114/oil-and-natural-gas-sector-emission-standards-for-new-reconstructed-and-modified-sources-review>

EPA, 2020b. Response to Public Comments on Proposed Rule [84 FR 50244, September 24, 2019], U.S. Environmental Protection Agency. 14 September 2020.

<https://www.regulations.gov/document/EPA-HQ-OAR-2017-0757-2718>

EPA, 2020c. EPA's Policy Amendments to the New Source Performance Standards for the Oil and Gas Industry, U.S. Environmental Protection Agency, August 2020.

https://www.epa.gov/sites/production/files/2020-08/documents/epas_policy_amendments_to_the_new_source_performance_standards_for_the_oil_and_gas_industry.pdf

https://www.epa.gov/sites/production/files/2020-08/documents/epas_policy_amendments_to_the_new_source_performance_standards_for_the_oil_and_gas_industry.pdf

EPA, 2020d. Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Reconsideration, Final Rule. U.S. Environmental Protection Agency. 85 Federal Register 57398. 15 September 2020.

<https://www.federalregister.gov/documents/2020/09/15/2020-18115/oil-and-natural-gas-sector-emission-standards-for-new-reconstructed-and-modified-sources>

EPA, 2020e. EPA Issues Final Policy Amendments to the 2012 and 2016 New Source Performance Standards for the Oil and Natural Gas Industry: Fact Sheet. U.S. Environmental Protection Agency. 13 August 2020.

https://www.epa.gov/sites/production/files/2020-08/documents/og_policy_amendments.fact_sheet_final_8.13.2020.pdf

EPA, 2020f. Regulatory Impact Analysis for the Review and Reconsideration of the Oil and Natural Gas Sector Emission Standards for New, Reconstructed, and Modified Sources, U.S. Environmental Protection Agency, EPA-452/R-20-004, August 2020.

https://www.epa.gov/sites/production/files/2020-08/documents/oil_and_natural_gas_nsps_review_and_reconsideration_final_ria.pdf

EPA, 2020g. EPA's Budget and Spending, 24 June 2020. Accessed 30 May 2021.

<https://www.epa.gov/planandbudget/budget>

EPA, 2021. Memorandum authorizing the posting of EPA-HQ-OAR-2021-0295 to Regulations.gov, U.S. Environmental Protection Agency. 14 May 2021. Accessed 13 June 2021.

<https://www.regulations.gov/document/EPA-HQ-OAR-2021-0295-0001>

GAO, 2012. Agencies Could Take Additional Steps to Respond to Public Comments, U.S. Government Accountability Office, GAO-13-21, 20 December 2012.

<https://www.gao.gov/products/gao-13-21>

GAO, 2020. Federal Rulemaking: Information on Selected Agencies' Management of Public Comments, U.S. Government Accountability Office, GAO-20-383R, 16 April 2020.

<https://www.gao.gov/products/gao-20-383r>

Harvard Law, 2020. H. Vizcarra, EPA's Final Methane Emissions Rules Roll Back Standards and Statutory Authority, Harvard Environmental & Energy Law Program, 9 September 2020.

<https://eelp.law.harvard.edu/2020/09/epas-final-methane-emissions-rule-rolls-back-standards-and-statutory-authority/>

Harvard Law, 2021. EPA VOC and Methane Standards for Oil and Gas Facilities, Harvard Environmental & Energy Law Program, Accessed 19 April 2021.

<https://eelp.law.harvard.edu/2017/09/epa-voc-and-methane-standards-for-oil-and-gas-facilities/>

Kleinberg, R.L., et al., 2018. Tight oil market dynamics: Benchmarks, breakeven points, and inelasticities, Energy Economics 70 (2018) 70-83.

<https://doi.org/10.1016/j.eneco.2017.11.018>

Kleinberg, R.L., 2021. Methane Emission Controls: Toward More Effective Regulation, Social Science Research Network, 4 June 2021.

<http://ssrn.com/abstract=3860311>

LII, 2021. 40 CFR Subpart OOOOa - Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015. Cornell Law School Legal Information Institute, Electronic Code of Federal Regulations, Accessed 18 January 2021.

<https://www.law.cornell.edu/cfr/text/40/part-60/subpart-OOOOa>

National Archives, 2021. Title 40 Chapter I Subchapter C Part 60 Subpart OOOOa - Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015. National Archives, Electronic Code of Federal Regulations as of 14 January 2021.

<https://ecfr.federalregister.gov/current/title-40/chapter-I/subchapter-C/part-60#subpart-OOOOa>

Omara, M., et al., 2018. Methane Emissions from Natural Gas Production Sites in the United States: Data Synthesis and National Estimate, *Environmental Science & Technology* 52, 12915–12925
<https://pubs.acs.org/doi/10.1021/acs.est.8b03535>

Phillips, T., 2021. A Change of Policy: Promoting Agency Policymaking by Adjudication, *Administrative Law Review*, in press.

Presidential Document, 2017. Executive Order 13783, Promoting Energy Independence and Economic Growth, Executive Office of the President. 28 March 2017.
<https://www.federalregister.gov/documents/2017/03/31/2017-06576/promoting-energy-independence-and-economic-growth>

Public Citizen, 2011. Flowchart of the Federal Rulemaking Process, March 29, 2011
<https://www.citizen.org/wp-content/uploads/regulations-flowchart.pdf>

Rashin, S., 2019. Private Influence on the Regulatory Process: Evidence From Comments on Rules, 23 August 2019.
<https://wp.nyu.edu/srashin/research/>

Regulations.gov, 2021. PROPOSED RULE: Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Review – Browse Comments, Docket ID EPA-HQ-OAR-2017-0757, Posted by the Environmental Protection Agency on Sep 24, 2019. Accessed 2 May 2021
<https://www.regulations.gov/document/EPA-HQ-OAR-2017-0757-0002/comment>

Sinden, A., 2016. Cost-Benefit Analysis, Social Science Research Network, 8 October 2016
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2831832

Wall Street Journal, 2017. Millions of People Post Comments on Federal Regulations. Many Are Fake. 12 December 2017.
<https://www.wsj.com/articles/millions-of-people-post-comments-on-federal-regulations-many-are-fake-1513099188>

Wiener, J.B., Ribeiro, D.L., 2016. Environmental Regulation Going Retro: Learning Foresight From Hindsight, *Journal of Land Use & Environmental Law* 32, 1-73
<https://www.jstor.org/stable/26618627>

Selected Comments Submitted to the Environmental Protection Agency

Selected comments submitted to the Environmental Protection Agency in response to proposed Policy Amendments to New Source Performance Standards, 24 September 2019 – 25 November 2019.

- Comment 1123 submitted by Francois Badoual, President & CEO, TOTAL Washington D.C. Representative Office, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-1123>
- Comment 2201 submitted by Susanne Brooks, Director, U.S. Climate Policy and Analysis, Environmental Defense Fund (EDF) et al., Posted by the Environmental Protection Agency on Dec 5, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2201>
- Comment 2095 submitted by Shannon S. Broome, Texas Oil & Gas Association, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2095>
- Comment 1993 submitted by Doug Burgum, Chairman Governor, Wayne Stenehjem, Attorney General, Doug Goehring, Agriculture Commissioner, Industrial Commission of North Dakota, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-1993>
- Comment 2068 submitted by Thure Cannon, President, Texas Pipeline Association, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2068>
- Comment 1830 submitted by Isabel Carey, Jack Lienke, Youlia Racheva, Kevin Reilly, Institute for Policy Integrity, New York University School of Law, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-1830>
- Comment 0662 submitted by Robert P. Casey, Jr. United States Senator, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-0662>
- Comment 2113 submitted by Richard W. Corey, Executive Officer, California Air Resources Board, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2113>
- Comment 1824 submitted by Melissa K. Duff, Director, Division of Air Quality, Energy and Environment Cabinet, Frankfort, Kentucky, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-1824>

- Comment 1828 submitted by Jay Duffy, Clean Air Task Force, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-1828>
- Comment 2077 submitted by James D. Elliot, Counsel for Independent Producers, Independent Petroleum Association of America, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2077>
- Comment 1837 submitted by Joe Ellis, Vice President and Head of U.S. Government Affairs, BP America, Inc. Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-1837>
- Comment 2090 submitted by Howard J. Feldman, Senior Director, Regulatory and Scientific Affairs, American Petroleum Institute, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2090>
- Comment 1820 submitted by Emily S. Fisher, General Counsel and Corporate Security, Edison Electric Institute, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-1820>
- Comment 2678 submitted by Lee O. Fuller, Executive Vice President, Independent Petroleum Association of America, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2678>
- Comment 1421 submitted by Staale Gjervik, ExxonMobil, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-1421>
- Comment 0083 submitted by Catherine Hausman, Daniel Raimi, University of Michigan, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-0083>
- Comment 2097 submitted by Sean B. Hecht, Co-Executive Director, Emmett Institute on Climate Change and the Environment and Harjot Kaur, UCLA School of Law, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2097>
- Comment 0667 submitted by Matthew Hite, Vice President of Government Affairs, GPA Midstream Association, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-0667>
- Comment 2202 submitted by Pete Huffman, Staff Attorney, David Doniger, Senior Strategic Director, Natural Resources Defense Council, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2202>

- Comment 1417 submitted by Krista Johnson, Head, US Government Relations, Shell Oil Company, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-1417>
- Comment 2074 submitted by J Roger Kelley, Chairman-Regulatory, Domestic Energy Producers Alliance, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2074>
- Comment 1125 submitted by Gretchen C. Kern, Sr. Environmental Policy Advisor, Sustainable Development, Pioneer Natural Resources, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-1125>
- Comment 2195 submitted by Robert L. Kleinberg, Ph.D., Andrew E. Pomerantz, Ph.D., Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2195>
- Comment 2078 submitted by Ed Longanecker, President, TIPRO, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2078>
- Comment 2075 submitted by Patrick McDonnell, Secretary, Pennsylvania Department of Environmental Protection, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2075>
- Comment 1129 submitted by Matt Most, Vice President, U.S. Government Relations, Encana Oil & Gas (USA) Inc. Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-1129>
- Comment 2070 submitted by Theresa Pugh, Pugh Consulting, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2070>
- Comment 2677 submitted by Laurel Quinto, University of Colorado Law School Class of 2020, Michael Cain, University of Colorado MENV Class of 2020, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2677>
- Comment 1629 submitted by Daniel Savickas, Regulatory Policy Manager, Luke Hogg, Foundation Program Coordinator, FreedomWorks Foundation, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-1629>
- Comment 2094 submitted by Jerry Schwartz, Senior Director, Energy and Environmental Policy, AF&PA, Andrea Chambers, General Counsel, Process Gas Consumers, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2094>

- Comment 1826 submitted by Basil Seggos, Commissioner, New York Department of Environmental Conservation, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-1826>
- Comment 2069 submitted by Kathleen M. Sgamma, President, Western Energy Alliance, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2069>
- Comment 1244 submitted by Sandra Y. Snyder, Senior Regulatory Attorney, EH&S, Interstate Natural Gas Association of America, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-1244>
- Comment 1635 submitted by Ryan Streams, Regulatory Affairs Manager, Kairos Aerospace, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-1635>
- Comment 2676 submitted by L. Vasarhelyi & A. Groziak, Posted by the Environmental Protection Agency on Aug 6, 2020
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2676>
- Comment 1122 submitted by Romany Webb, Senior Fellow, Sabin Center for Climate Change Law, Columbia Law School, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-1122>
- Comment 2134 submitted by Rosalie Winn, Senior Attorney, U.S. Clean Air, Environmental Defense Fund, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2134>
- Comment 2669 submitted by Rosalie Winn, Senior Attorney, U.S. Clean Air, Environmental Defense Fund, Posted by the Environmental Protection Agency on Dec 4, 2019
<https://www.regulations.gov/comment/EPA-HQ-OAR-2017-0757-2669>



Boston University Institute for Sustainable Energy

Kleinberg, Robert. 2021. *Response of the Environmental Protection Agency to Public Submissions: Notice and Comment Process in Methane Emission Deregulation*, (Boston University Institute for Sustainable Energy, Boston, MA, USA). Available at bu.edu/ise.

© Copyright 2021

Boston University Institute for Sustainable Energy