

# EPA's Final Methane Rule—Incorporating Advanced Technologies and Emissions Data to Reduce Methane Emissions from the Oil and Natural Gas Sector

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At the UN climate conference in Dubai (COP28) on December 2, 2023, Administrator Regan announced the Environmental Protection Agency's (EPA's) [final rule regulating methane and volatile organic compounds \(VOCs\) from oil and natural gas operations under section 111 of the Clean Air Act \(CAA\)](#) ("final rule").<sup>1</sup> The final rule is the culmination of years of work by the agency,<sup>2</sup> the Biden administration, oil and natural gas operators, technology developers, scientists, legal and policy experts, and other stakeholders to develop regulations that achieve significant methane emission reductions and leverage advanced technologies that better detect and reduce methane emissions.

EPA projects that the final rule will result in approximately 58 million short tons of avoided methane emissions from 2024 to 2038 as well as 16 million tons of VOCs, and 590 thousand tons of hazardous air pollutants (HAPs).<sup>3</sup> EPA also estimates that the final rule will result in approximately 80 percent reduction in methane emissions from the oil and natural gas sector than is projected without the rule.<sup>4</sup>

There are several components of the final rule that contribute to these important emission reductions including:

- **Regulates existing sources** It regulates new sources and, for the first time, existing sources.
- **More stringent technology requirements** The final rule restores methane rules for upstream oil and natural gas industry segments, which the Trump administration had rolled back; strengthens emissions requirements for oil and natural gas production, including adding requirements to reduce routine flaring and requiring process controllers to be zero-emitting; and applies to more equipment components.
- **Enables the use of advanced technologies to detect methane emission reductions** The final rule requires owners and operators to increase their monitoring for unintended methane emission leaks with at least quarterly screening and they must fix such leaks with specific timeframes. The rule allows owners and operators to use advanced remote monitoring technologies (e.g., aerial surveys, continuous emission monitors) if such technologies meet certain specifications and can be deployed at prescribed frequencies.
- **Leverages emissions data on large emission events** It includes a new super-emitter program to address large, intermittent emissions events, which EPA notes are estimated to contribute almost 50 percent of methane emissions from the oil and natural gas sector.<sup>5</sup>

This final rule is one part of the effort by the Biden administration to address methane emissions from the oil and natural gas sector. Other rules under development include EPA's recently proposed update to the

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<sup>1</sup> [Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review](#) (Dec. 2, 2023) (hereinafter "Final Rule").

<sup>2</sup> EPA issued its first proposal for this rule on November 15, 2021 ("[2021 Proposal](#)") and its supplemental proposal on November 11, 2022 ("[Supplemental Proposal](#)").

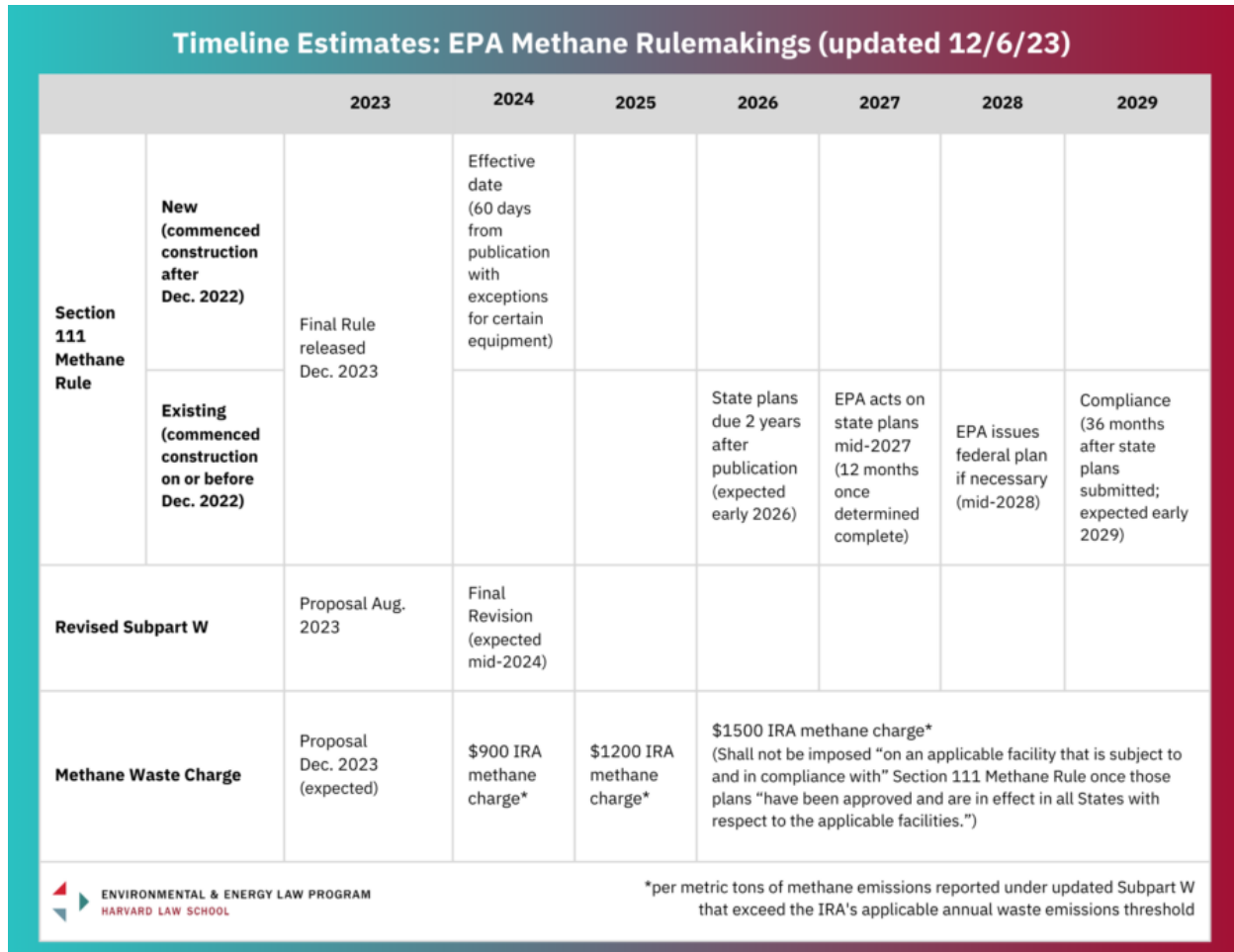
<sup>3</sup> [Final Rule Regulatory Impact Analysis](#) at 2-70 and 3-1.

<sup>4</sup> See, e.g., EPA, [Key Things to Know About EPA's Final Rule to Reduce Methane and Other Pollution from Oil and Natural Gas Operations](#).

<sup>5</sup> Final Rule at 218.

Greenhouse Gas Reporting Program (GHGRP) Subpart W inventory and the agency’s forthcoming rule implementing the Inflation Reduction Act’s (IRA’s) Methane Waste Charge. Figure 1 summarizes the expected timing for these three rules. In addition, the Bureau of Land Management (BLM) and Pipeline and Hazardous Materials Safety Administration (PHSMA) have proposed rules to limit methane emissions from other segments of the oil and natural gas sector.

**Figure 1. EPA’s Methane Rulemakings Timeline**



## EPA’s Regulatory Authority under the CAA and Congressional Review Act

In the final rule, EPA outlines its authority to finalize the rule under the CAA sections 111 and 114 as well the Congressional Review Act (CRA).

Section 111 of the CAA authorizes EPA to implement standards of performance for air pollutants from stationary sources that are listed as a source category under section 111(f). Section 111(a)(1) requires that the standards of performance reflect the “degree of emission limitation achievable through the application of the best system of emission reduction [(BSER)] which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impacts and energy requirements) the Administrator determines has been adequately demonstrated.” To develop BSER, EPA evaluated potential control measures available for sources, the emission reductions available through these measures, and evaluated the reasonableness of control costs for each option. Additionally, Section 111 of the CAA requires

EPA to regulate categories of new stationary sources that cause or contribute to endangerment from air pollution and to promulgate emission guidelines (EGs) for states to use as presumptive standards in regulating existing sources in the same source category.<sup>6</sup>

EPA grounds its authority to regulate methane emissions from the source category in its 2009 GHG endangerment finding, and EPA cites the additional recent scientific assessments to support that original finding. EPA also reinforces that the oil and natural gas industry in the US is the largest industrial emitter of methane.<sup>7</sup> EPA uses its authority under section 114 to require sources, regardless of whether such source is regulated under CAA section 111, to investigate potential sources of super-emitter events and report to EPA information regarding such emission releases.

EPA also notes the legal significance of the CRA, passed by Congress and signed by President Biden in 2021, which disapproved the 2020 Policy Rule and reinstated the Obama administration's 2016 new source regulations (i.e., OOOOa regulation of sources in the transmission and storage segment of the oil and natural gas sector. EPA explains that the CRA's legislative history makes clear that Congress rejected each of the legal interpretations that underlay that Trump administration's 2020 Policy Rule.<sup>8</sup> Thus, based on the CRA and the legislative history, EPA concludes that it has a statutory obligation to regulate methane emissions from the existing oil and natural gas sources.<sup>9</sup>

In this final rule, EPA notes that some commenters argued that even though the CRA resolution rescinded the 2020 Policy Rule, it did not change the underlying requirements of CAA section 111, and EPA is required to first list the transmission and storage segment of the industry as a source category and make a separate endangerment finding for greenhouse gas emissions from the sector.<sup>10</sup> EPA notes, however, that the CRA not only disapproved the 2020 Policy Rule, it also prohibited EPA from promulgating another rule that is "substantially the same" as the 2020 Policy Rule.<sup>11</sup> EPA therefore, rejects these commenters' arguments explaining that Congress precluded such arguments in the CRA.<sup>12</sup>

This final rule builds on the steps by the Administration and Congress and grounds its authority consistent with the CAA section 111, related rulemakings, and Congress's CRA. For additional history on this rulemaking, read our [paper discussing the Supplemental Proposal here](#) our [analysis of EPA's 2021 Proposal here](#).

## Key Provisions of Final Rule

EPA established BSER for the new source performance standard (NSPS) and EGs by considering the statutorily required factors, "best available information from recent studies", and comments on both the 2021 and 2022 proposals.<sup>13</sup> The final rule includes different standards for subcategories of the covered oil and natural gas facilities' equipment and process emission sources in the form of work practice and numerical standards. In this summary, we focus on a subset of the standards that incorporate rapidly

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<sup>6</sup> Id. at 14.

<sup>7</sup> Id. at 15.

<sup>8</sup> Id. at 116. For more information, see EELP's detailed analysis of the final Trump-era rules rescinding methane emissions standards: [EPA's Final Methane Emissions Rules Roll Back Standards and Statutory Authority](#); and a piece by Ari Sillman, JD 2021, [Weighing the Risks of Using the CRA to Restore EPA's Methane Standards](#). In the November 2021 Proposal, EPA confirmed that it agreed with the interpretations by Congress in the CRA and EPA reaffirmed its reasoning in the Supplemental Proposal. 2021 Proposal at 63,151.

<sup>9</sup> Id. at 116–17.

<sup>10</sup> Final Rule at 117.

<sup>11</sup> Id. at 142.

<sup>12</sup> Id.

<sup>13</sup> See, e.g., id. at 32 & 351.

advancing monitoring technologies and subcategories that have the highest potential for emissions reductions.

In this final rule, new sources are regulated under 0000b through New Source Performance Standards (NSPS). Existing sources are regulated under 0000c through presumptive standards called Emissions Guidelines (EGs) that states implement through state plans in accordance the requirements that EPA outlines in this rule. Table 1 lists the effective dates of these regulations. However, EPA has built into the final rule exceptions to the effective dates for certain equipment to allow for supply chain or other delays that are outside of owners and operators’ control.

**Table 1. Applicability Dates for Subparts Addressed in this Final Action<sup>14</sup>**

Source Type	Commence Construction Dates	Subpart
New, modified, or reconstructed sources	After Aug. 23, 2011 and on or before Sept. 18, 2015	40 CFR part 60, subpart 0000
	After Sept. 18, 2015 and on or before Dec. 6, 2022	40 CFR part 60, subpart 0000a
	After Dec. 6, 2022	40 CFR part 60, subpart 0000b
Existing sources	On or before Dec. 6, 2022	40 CFR part 60, subpart 0000c

## Fugitive Emissions Monitoring

The final rule requires owners and operators to monitor “fugitive emissions”—unintended methane emission leaks from oil and natural gas equipment. EPA notes that such leaks are one of the largest sources of methane from oil and natural gas operations.<sup>15</sup> Historically, companies have been required to address these emissions by using ground-based component-level monitoring such as optical gas imaging (OGI) or Method 21. While the final rule continues to base the standard on those technologies, EPA is allowing owners and operators to use advanced remote monitoring technologies if such technologies meet certain specifications and can be deployed at certain frequencies.<sup>16</sup>

The final rule includes a revised definition of “fugitive emissions components” for the NSPS and EGs. This new definition of fugitive emission components specifies which leaking components owners and operators must monitor, repair, and report under the fugitive emissions requirements versus other provisions in the rule.<sup>17</sup> The new definition includes:

any component that has the potential to emit fugitive emissions of methane or VOC at a well site, centralized production facility, or compressor station, such as valves (including separator dump valves), connectors, pressure relief devices, open-ended lines, flanges, covers and closed vent systems not subject to §60.5411b, thief hatches or other openings on a storage vessel not subject to §60.5395b, compressors, instruments, meters, and yard piping.<sup>18</sup>

The final rule includes work practice standards for monitoring and repairing fugitive emission components for four subcategories of well sites and compressor stations. Table 2 lists the BSER for fugitive emission components for each subcategory. Compared to the 2021 proposal, EPA eliminated the exemption for well

<sup>14</sup> Id. at 33.

<sup>15</sup> Id. at 192

<sup>16</sup> Id. at 193.

<sup>17</sup> EPA notes that while this list is “not exhaustive” it specifies separator dump valves “to ensure that it is operating as designed and not stuck in an open position.”<sup>17</sup> EPA also includes yard piping for clarity to ensure fugitive emissions do not go undetected. However, EPA clarifies that monitoring is only required for yard piping at or above ground due to the difficulty of monitoring buried yard piping, which “may require disturbing the surface, which could inadvertently cause emissions.” Id. at 322.

<sup>18</sup> Id. at 193.

sites emitting fewer than three tons per year (tpy) of methane.<sup>19</sup> EPA explains that monitoring must continue until the well site is permanently closed following a required well closure plan, which also requires a post-closure OGI survey of the site.<sup>20</sup>

**Table 2: Final BSER for Fugitive Emissions at Four Well Site Subcategories and Compressor Stations<sup>21</sup>**

Source Subcategories	BSER
Single wellhead only well sites	Quarterly audible, visual, and olfactory (AVO)
Small well sites	Quarterly AVO
Multi-wellhead only well sites	Quarterly AVO and Semiannual OGI (or EPA Method 21)
Well sites with major production and processing equipment and centralized production facilities <sup>22</sup>	Bimonthly AVO and Quarterly OGI (or EPA Method 21)
Compressor Stations	Monthly AVO and Quarterly OGI (or EPA Method 21)

In addition, EPA allows well sites under 0000a (built between Sept. 18, 2015 and Dec. 6, 2022) to comply with the fugitive emissions monitoring requirements under the final rule. EPA explains that 0000a requires semiannual OGI monitoring of fugitive emissions components while the final rule for 0000c would require more frequent monitoring and therefore 0000a existing well sites will only need to comply with 0000c.<sup>23</sup> As discussed more in the next section, the final rule allows owners and operators to monitor fugitive emissions using advanced technology as an alternative to AVO and OGI because it found them to be equivalent in stringency.<sup>24</sup> In order to allow early use of the advanced technologies, EPA is allowing owners and operators to monitor their 0000a well sites using advanced technology work practices finalized in 0000b in lieu of OGI monitoring.<sup>25</sup>

***Advanced Methane Detection Technology Alternative Work Practices***

As an alternative to the BSER for each well site and compressor station (listed in Table 2), the final rule allows owners and operators to monitor fugitive emissions using advanced technologies. EPA explains that it included this option in recognition of the “rapid and continued advancement” of advanced technologies and current use by owners and operators to supplement ground based surveys.<sup>26</sup> EPA notes that industry has applied technologies including aerial flyovers “that can screen hundreds of sites in a single deployment, to efficiently detect methane emissions at a variety of facilities and focus their methane mitigation efforts.”<sup>27</sup> EPA acknowledges that these technologies “have important advantages, including the ability to detect

<sup>19</sup> [EPA’s Supplemental Methane Proposal – A Comprehensive Regulatory Framework to Encourage Use of Advanced Technologies and Significantly Reduce Methane Emissions](#) at 17.

<sup>20</sup> *Id.* at 197.

<sup>21</sup> *Id.* at 194 & 200.

<sup>22</sup> “The third subcategory includes well sites and centralized production facilities that have: 1. One or more controlled storage vessels or tank batteries, 2. One or more control devices, 3. One or more natural gas-driven process controllers or pumps, or 4. Two or more pieces of major production or processing equipment not listed in items 1–3.” *Id.* at 194.

<sup>23</sup> *Id.* at 190–91.

<sup>24</sup> *Id.* at 191.

<sup>25</sup> *Id.*

<sup>26</sup> *Id.* at 202–03.

<sup>27</sup> *Id.* at 203.

fugitive emissions quickly and cost-effectively in a manner that may be less susceptible to operator error or judgment than traditional leak detection technologies.”<sup>28</sup>

EPA first solicited feedback regarding an alternative to quarterly OGI fugitive emissions monitoring by discussing a matrix option in the 2021 proposal and received additional comment on the frequency and detection thresholds proposed in the 2022 proposal. In this final rule, EPA includes a matrix approach, consistent with the Supplemental Proposal with a few key changes based on stakeholder feedback and revised modeling by EPA. The final rule includes a matrix for periodic screening and continuous monitoring technologies and a streamlined process for EPA to approve such technologies.<sup>29</sup>

### **Alternative Periodic Screening Approach**

EPA finalizes an expanded and refined matrix compared to its 2021 and 2022 proposed rules that incorporates re-evaluated equivalency modeling with “best available information from recent studies” using the Fugitive Emissions Abatement Simulation Toolkit (FEAST).<sup>30</sup> For example, based on public comments, EPA reviewed the effectiveness of an annual OGI survey in the matrix tiers. EPA found minimal effectiveness in reducing methane emissions in the lower tiers and that OGI accounted for most of the emissions reductions in the higher tiers.<sup>31</sup> For these reasons, EPA removed annual OGI from lower tiers and removed the proposed highest tier ( $\leq 30$  kg/hr) from the final matrix.<sup>32</sup>

Additionally, EPA modeled OGI with maximum probability of detection of 70, 90, and 100 percent, and notes that the modeled results suggested that “lowering the maximum probability of detection would not appreciably change either the control effectiveness of various fugitive emissions monitoring and repair programs or the conclusion regarding the cost-effective monitoring programs.”<sup>33</sup>

EPA did not include intermittent emission events in the FEAST model due to limited data and because these emission events are addressed in the super-emitter program.<sup>34</sup> EPA notes that it expects data to improve after promulgation of the rule and explains that as additional studies are conducted, EPA may update the underlying emissions rate distribution in the modeling.<sup>35</sup>

However, the final rule includes an interim periodic option, which EPA states is intended to incentivize use of advanced technology while providing “adequate time to develop data that push the detection thresholds down to the lowest levels of the proposed periodic screening matrix (at 1 to 2 kg/hr).”<sup>36</sup> For the first two years following publication of the final rule, owners and operators can use advanced technology with a minimum detection threshold of  $\leq 3$  kg/hr for quarterly monitoring.<sup>37</sup> EPA states that it expects that these technologies will be able to achieve much lower minimum detection thresholds at the end of the two-year period.<sup>38</sup>

The final rule also makes clear that owners and operators can use multiple technologies in combination, which will allow them to use the most “suitable technology based on time of year and availability of

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<sup>28</sup> Id.

<sup>29</sup> Id. at 203–04.

<sup>30</sup> Id. at 205 & 351.

<sup>31</sup> Id. at 352.

<sup>32</sup> Id. at 353–54.

<sup>33</sup> Id. at 327.

<sup>34</sup> Id. at 328.

<sup>35</sup> Id. at 352.

<sup>36</sup> Id. at 354.

<sup>37</sup> Id. at 205.

<sup>38</sup> Id. at 354–355.



technology providers,” and to replace any periodic screening survey with OGI.<sup>39</sup> EPA explains that for combinations of technologies, the “frequency will be based on the technology with the highest aggregate detection threshold” that the owner or operator plans to use.<sup>40</sup>

**Table 3. Alternative Technology Periodic Screening Frequency at Well Sites and Compressor Stations Subject to *Quarterly* OGI or Method 21<sup>41</sup>**

Minimum Screening Frequency	2021 Proposal Minimum Detection Threshold of Screening Technology <sup>42</sup>	2022 Supplemental Minimum Detection Threshold of Screening Technology <sup>43</sup>	Final Rule Minimum Detection Threshold of Screening Technology <sup>44</sup>
Quarterly + Annual OGI		≤ 1 kg/hr	
Quarterly ( <i>first 2 years only</i> ) <sup>45</sup>			≤ 3 kg/hr
Quarterly			≤ 1 kg/hr
Bimonthly	≤ 10 kg/hr	≤ 2 kg/hr	≤ 2 kg/hr
Bimonthly + Annual OGI		≤ 10 kg/hr	≤ 10 kg/hr
Monthly		≤ 4 kg/hr	≤ 5 kg/hr
Monthly + Annual OGI		≤ 30 kg/hr	≤ 15 kg/hr

**Table 4. Alternative Technology Periodic Screening Frequency at Well Sites and Compressor Stations Subject to AVO and/or *Semiannual* OGI or Method 21<sup>46</sup>**

Minimum Screening Frequency	2021 Proposal Minimum Detection Threshold of Screening Technology <sup>47</sup>	2022 Supplemental Minimum Detection Threshold of Screening Technology <sup>48</sup>	Final Rule Minimum Detection Threshold of Screening Technology <sup>49</sup>
Semiannual		≤ 1 kg/hr	≤ 1 kg/hr
Triannual		≤ 2 kg/hr	≤ 2 kg/hr

<sup>39</sup> Id. at 205–206.

<sup>40</sup> Id. at 206.

<sup>41</sup> Id. at 1295–96.

<sup>42</sup> 2021 Proposal at 63,175.

<sup>43</sup> [EPA’s Supplemental Methane Proposal – A Comprehensive Regulatory Framework to Encourage Use of Advanced Technologies and Significantly Reduce Methane Emissions](#) at 6.

<sup>44</sup> Id. at 1295–96.

<sup>45</sup> Final Rule at 986.

<sup>46</sup> Id. at 1296.

<sup>47</sup> 2021 Proposal 63.175.

<sup>48</sup> [EPA’s Supplemental Methane Proposal – A Comprehensive Regulatory Framework to Encourage Use of Advanced Technologies and Significantly Reduce Methane Emissions](#) at 6.

<sup>49</sup> Id. at 1296.

Minimum Screening Frequency	2021 Proposal Minimum Detection Threshold of Screening Technology <sup>47</sup>	2022 Supplemental Minimum Detection Threshold of Screening Technology <sup>48</sup>	Final Rule Minimum Detection Threshold of Screening Technology <sup>49</sup>
Triannual + Annual OGI		≤ 5 kg/hr	≤ 10 kg/hr
Quarterly			≤ 5 kg/hr
Quarterly + Annual OGI		≤ 15 kg/hr	≤ 15 kg/hr
Bimonthly	≤ 10 kg/hr		≤ 15 kg/hr
Monthly + Annual OGI		≤ 30 kg/hr	

One key change included in the final rule is the requirement for advanced technology if there is an emissions detection from a fugitive emissions component. While the Supplemental Proposal proposed to require owners and operators to conduct post-detection follow-up monitoring with an OGI of the entire site, the final rule allows a more targeted survey dependent on the spatial resolution of the advanced technology used in the initial monitoring survey.<sup>50</sup> The final rule allows for three classifications of spatial resolution, outlined in Table 5.

**Table 5. Alternative Technology Follow-up Monitoring<sup>51</sup>**

Classification	Spatial Resolution	Follow-up Monitoring
Facility-level	Able to identify emissions within the boundary of a well site, centralized production facility, or compressor station	<ul style="list-style-type: none"> <li>• A monitoring survey of all the fugitive emissions components in an affected facility using either OGI or Method 21;</li> <li>• Inspection of all covers and closed vent systems (CVS) of the affected facility with either OGI or Method 21; and visual inspection of all CVS and covers to identify if there are any defects.</li> </ul>
Area-level	Able to identify emissions within a radius of 2 meters of the emission source	<ul style="list-style-type: none"> <li>• A monitoring survey of all the fugitive emissions components located within a 4-meter radius of the location of the confirmed detection using either OGI or Method 21; and</li> <li>• If the confirmed detection occurred in a portion of a site with a storage vessel or CVS, inspection of all covers and CVS that are connected to all storage vessels and CVS that are within a 2-meter radius of the confirmed detection location (i.e., you must inspect the whole system that is connected to the portion of the system, not just the portion of the system that falls within the radius of the detected event). Inspection must be conducted using either OGI or Method 21; and visual inspection of all CVS and covers to identify if there are any defects.</li> </ul>

<sup>50</sup> Final Rule at 207 & 359.

<sup>51</sup> Id. at 207–09.



Classification	Spatial Resolution	Follow-up Monitoring
Component-level	Able to identify emissions within a radius of 0.5 meters of the emission source	<ul style="list-style-type: none"> <li>• A monitoring survey of all the fugitive emissions components located within a 1-meter radius of the location of the confirmed detection using either OGI or Method 21; and</li> <li>• If the confirmed detection occurred in a portion of a site with a storage vessel or CVS, inspection of all covers and CVS that are connected to all storage vessels and CVS that are within a 0.5-meter radius of the confirmed detection location (i.e., you must inspect the whole system that is connected to the portion of the system, not just the portion of the system that falls within the radius of the detected event); and visual inspection of all CVS and covers to identify if there are any defects.</li> </ul>

### ***Delay of Repair Due to Supply Chain Concerns***

In response to supply chain concerns, the final rule expands delay-of-repair requirements to include delays because of parts unavailability of parts for certain components of well sites, centralized production facilities, and compressor stations.<sup>52</sup> Specifically, the final rule allows owners and operators additional time to repair fugitive emission components if a replacement is required but parts cannot be acquired or installed due to the following conditions:

- Replacement valve supplies have been sufficiently stocked but are depleted at the time of the repair;
- Replacement fugitive emissions component (or a part) requires custom fabrication.<sup>53</sup>

For these two situations, EPA is allowing additional time provided the operator orders the replacement within 10 calendar days after the first attempt at repair and completes the repair within 30 calendar days after receipt of the replacement or during the next scheduled maintenance shutdown once the replacement is received.<sup>54</sup>

EPA explains that while it declined to provide a similar extension in the 2016 rule, the agency concluded that well sites and compressor stations face “some of the same valve assembly supply constraints as onshore natural gas processing plants” and operators cannot control replacement delivery timelines.<sup>55</sup> Additionally, EPA states that “[r]ecent examples of extensive supply chain delays have highlighted that a delay of repair may be needed for circumstances beyond an owner or operator’s control.”<sup>56</sup>

EPA also allows for delay of repair for other facilities, including reciprocating compressors and centrifugal compressors.<sup>57</sup> For these facilities, EPA allows for delays if the replacement supplies have been sufficiently stocked but are depleted at the time of repair within the same timelines listed above.

### **Alternative Continuous Monitoring Approach**

In the final rule, EPA clarifies that continuous monitoring technology can fit within the periodic screening framework.<sup>58</sup> Similar to the Supplemental Proposal, EPA also includes a separate matrix for continuous

<sup>52</sup> Id. at 336.

<sup>53</sup> Id. at 345.

<sup>54</sup> Id. 1375, §60.5397c(h)(3)(ii)(C).

<sup>55</sup> Id. at 346.

<sup>56</sup> Id. at 347.

<sup>57</sup> Id. at 1341 & 1345.

<sup>58</sup> Id. at 358–59

monitoring screening for fugitive emission components that incorporates public comments on EPA’s 2022 Supplemental Proposal.<sup>59</sup>

Specifically, the final rule requires continuous monitoring operating systems to:

- generate a valid methane mass emission rate (or equivalent) once at least every twelve-hour block,
- have an operation downtime of less than 10 percent,
- have checks in place to monitor the health of the system,
- include systems with detection thresholds of  $\leq 0.40$  kg/hr<sup>60</sup>, and
- transmit data at least once every 24 hours.<sup>61</sup>

Consistent with the Supplemental Proposal, the final rule includes sensitivity thresholds for continuous monitoring, but EPA revises the action levels to account for background emissions (i.e., methane emission concentrations in the area due to activities or natural cases other than released from regulated sources).<sup>62</sup> The final rule also includes new criteria for establishing the site-specific baseline emissions, requirements to calculate emission exceedances once the baseline for a site has been established, and adds some refinements to the supplemental proposal specifying what an operator must do when an “action level” is exceeded.<sup>63</sup>

**Table 6. Continuous Monitoring Action Levels<sup>64</sup>**

Type of Site	Action Levels	
	90-Day Rolling Average*	7-Day Rolling Average*
Wellhead only sites	1.2 kg/hr	15 kg/hr
Other well sites and compressor stations	1.6 kg/hr	21 kg/hr

\*Over the site-specific baseline.

The final rule requires owners and operators to initiate an investigative analysis within 5 days of the exceedance and complete the investigative analysis within 30 days after the exceedance for the 90-day action level and 5 days after the exceedance for the 7-day action level.<sup>65</sup> It also requires owners and operators to develop mass emission rate reduction when certain conditions have been met.<sup>66</sup>

### ***Alternative Test Method Approval***

The final rule includes the alternative test method approval process, which EPA will use to approve advanced technologies for the periodic screening, continuous monitoring, and super-emitter detection.<sup>67</sup> Consistent with the Supplemental Proposal, EPA intends this process to be more streamlined than the current alternative means of emission limitation (AMEL) process.

<sup>59</sup> Id. at 210.

<sup>60</sup> Id. at 364.

<sup>61</sup> Id. at 210–11.

<sup>62</sup> “An action-level is the time weighted average that triggers an investigative analysis to identify the cause(s) of the exceedance.” Id. at 211; see also [EPA’s Supplemental Methane Proposal – A Comprehensive Regulatory Framework to Encourage Use of Advanced Technologies and Significantly Reduce Methane Emissions](#) at 7.

<sup>63</sup> Final Rule at 212.

<sup>64</sup> Id. at 211–12.

<sup>65</sup> Id. at 213.

<sup>66</sup> Id. at 213–14 (“For an exceedance of the 90-day action-level, 30-day average mass emission rate for the 30 days following the completion of the investigative analysis and initial steps to reduce the mass emission rate is not below the applicable 90-day action-level. For an exceedance of the 7-day action-level, the mass emission rate for the 24-hour period after the completion of the investigative analysis and initial steps to reduce the mass emission rate is not below the applicable 7-day action-level. The actions needed to reduce the emission rate below the applicable action-level will take more than 30 days to implement.”).

<sup>67</sup> Id. at 214.

The final rule makes clear that technology approval requests will be submitted to EPA's Measurement Technology Group through the [methane detection portal](#).<sup>68</sup> EPA will assess the completeness of the submission within 90 days and issue an approval or disapproval within 270 days of receiving a request.<sup>69</sup> If EPA does not provide a decision within 270 days, EPA will grant the alternative test method "conditional approval status".<sup>70</sup> The applicant can request site-specific or more broadly applicable approval of the technology.<sup>71</sup>

In the final rule, EPA expands the entities that may submit applications to include owners and operators that are internally developing proprietary advanced methane measurement technology.<sup>72</sup> The final rule also details the minimum information required to be submitted in the approval requests. EPA explains that this information is intended to help it "completely understand the functionality of candidate measurement technology systems, how these systems are applied to generate a methane mass emission rate (kg/hr) or equivalent emission rate, data management, detection threshold, and spatial resolution."<sup>73</sup>

The application must provide additional information to EPA, including how the system collects and stores data; converts results to a mass emission rate or equivalent; and provides information to the end-user.<sup>74</sup> EPA also revised the detection threshold to an average aggregate, which is defined as "the average of all site-level detection thresholds from a single deployment (e.g., a singular flight that surveys multiple well sites, centralized production facility, and/or compressor stations)."<sup>75</sup> The final rule also requires entities to verify the spatial resolution of the system with supporting information in the form of published reports.<sup>76</sup>

## Covers and Closed Vent Systems (CVS)

EPA finalizes, as proposed, an emission limit of "no identifiable emissions" (NIE) for covers and CVS.<sup>77</sup> Owners and operators are obligated to demonstrate compliance with the NIE standards with OGI or Method 21 monitoring and AVO inspections conducted with the same frequency as fugitive emissions monitoring. EPA clarifies that "CVS and covers subject to the NIE standards are not fugitive components or any other type of affected/designated facilities . . . rather, they are part of the emission control for an affected/designated facility . . . that is using a control device to meet its performance standard."<sup>78</sup> However, like the Supplemental Proposal, EPA allows use of advanced methane detection technologies to demonstrate compliance.<sup>79</sup>

If advanced technologies are used, covers and CVS are determined to be operating with NIE if no emissions are detected during the periodic survey or for where continuous monitoring is conducted, if the site remains under the action level. However, if advanced technology confirms a detection, the final rules require owners and operators to conduct additional OGI or Method 21 monitoring of the CVS or cover to confirm emissions and that NIE is assumed until OGI or Method 21 indicates a detection at the cover or CVS.<sup>80</sup> If emissions are

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<sup>68</sup> Id.

<sup>69</sup> Id. at 215.

<sup>70</sup> Id. at 1006.

<sup>71</sup> Id. at 215.

<sup>72</sup> Id. at 215–16.

<sup>73</sup> Id. at 216.

<sup>74</sup> Id. at 217.

<sup>75</sup> Id.

<sup>76</sup> Id. at 218.

<sup>77</sup> Id. at 303.

<sup>78</sup> Id. at 650.

<sup>79</sup> Id. at 303–05.

<sup>80</sup> Id. at 305.

detected during this inspection, owners and operators must make a first attempt of repair within 5 days, final repair within 30 days of detection, and repairs must be completed by the end of the next shutdown.<sup>81</sup>

## Process (Pneumatic) Controllers

EPA explains that in 2019, natural-gas driven process controllers<sup>82</sup> contributed “65 percent of the total methane emissions from petroleum system onshore production and 28 percent of the total methane emissions from natural gas systems onshore production.”<sup>83</sup> In the Supplemental Proposal, EPA proposed zero emissions standards for process controllers by powering them with electricity, capturing emissions and routing emissions to a process, or by using self-contained controllers. The final rule codifies the proposal’s standards but provides extended compliance dates.<sup>84</sup> EPA explains that based on commenters’ concerns about their ability to obtain the necessary equipment, EPA is extending the NSPS compliance deadline for process controllers to one year from the final rule effective date.<sup>85</sup> The final rule also requires monitoring of process controllers to ensure the emission standard is achieved.

**Table 7. Summary of Process Controller Emissions Standards<sup>86</sup>**

Location of Site	Site has Access to Electrical Power	Emission Standard	Emissions Standard Compliance Method
Outside Alaska	Yes or No	Zero GHG and VOC emissions	<ul style="list-style-type: none"> <li>• Use process controllers not driven by natural gas;</li> <li>• Route natural gas-driven process controller emissions through a CVS to a process;</li> <li>• Use self-contained natural gas-driven process controllers; or</li> <li>• Other means to achieve zero-emissions</li> </ul>
In Alaska	Yes	Zero GHG and VOC emissions	<ul style="list-style-type: none"> <li>• Use process controllers not driven by natural gas;</li> <li>• Route natural gas-driven process controller emissions through a CVS to a process;</li> <li>• Use self-contained natural gas-driven process controllers; or</li> <li>• Other means to achieve zero-emissions</li> </ul>
In Alaska	No	95% emissions control or emissions achieved by use of low-emitting controllers	<ul style="list-style-type: none"> <li>• Route natural gas-driven process controller emissions through a CVS to a control device that reduces emissions by <math>\geq 95\%</math>; or</li> <li>• Use low-bleed or intermittent vent natural gas-driven process controllers with monitoring for intermittent process controllers</li> </ul>

Source: Table 12 of final rule, p. 240–41.

<sup>81</sup> Id. at 306–07.

<sup>82</sup> In the final rule, EPA changed the terminology from “pneumatic controllers” to “process controllers” and limits methane emissions from this equipment. The final rule defines process controllers as “automated instruments used for maintaining a process condition” and many are powered by pressurized natural gas that can lead to emissions. Id. at 25.

<sup>83</sup> Id. at 238.

<sup>84</sup> Id.

<sup>85</sup> Id. at 241.

<sup>86</sup> See EPA Table 12. Id. at 240–41.

## Flares and Associated Gas for Oil Wells

The final rule includes requirements to limit routine flaring of associated gas though the requirements differ for new sources and existing sources.

For new sources, the final rule phases out routine flaring of associated gas from newly constructed wells that are developed after the effective date of the rule. EPA reasons that for wells where advanced planning is possible, EPA expects that at least one of the four options to avoid routine flaring will be feasible, including:

- routing the gas to a sales line,
- using the gas as an onsite fuel source,
- using the gas for another purpose, or
- reinjecting the gas into a well.

By comparison, for existing wells, EPA’s presumptive standard requires wells that produce associated gas with over 40 tpy of methane implement one of the same four options as required for new sources (i.e., route the gas to a sales line, use the gas as an onsite fuel source, use the gas for another purpose, or reinject the gas into a well). However, if the operator demonstrates to EPA that such options are technically infeasible,<sup>87</sup> the gas can be routed to a flare or other control device that achieves at least a 95 percent reduction in methane and VOC emissions.<sup>88</sup>

For smaller wells that produce associated gas with 40 tpy of methane or less, operators can route associated gas to a flare or control device that achieves a 95 percent reduction in methane without an infeasibility determination or certification. In addition, for all types of wells, the rule provides specific exemptions for temporary and emergency uses of flaring.<sup>89</sup> Table 8 outlines the flare control requirements depending on when construction of the well commenced and its emissions.

**Table 8. Flare Control Requirements<sup>90</sup>**

Commence Construction Timing	BSER	Exemption Allowing Routing to a Flare or Control Device with 95% Reduction in Emissions
New well construction commencing 2 years after publication	Route the gas to a sales line, using the gas as an onsite fuel source, using the gas for another purpose, or reinjecting the gas into a well	Temporary situations beyond the owner/operators control due to technical infeasibility or safety concerns*
New wells construction commencing after 60 days of publication		<ul style="list-style-type: none"> <li>• For the first two years after publication, if technical infeasibility demonstration; or</li> <li>• Temporary situations beyond the owner/operators control due to technical infeasibility or safety concerns*</li> </ul>
New wells construction commencing between Dec. 6, 2022 and 60 days after publication		<ul style="list-style-type: none"> <li>• If technical infeasibility demonstration (annual infeasibility demonstration required); or</li> <li>• Temporary situations beyond the</li> </ul>
Existing wells construction		

<sup>87</sup> The components for a technical infeasibility demonstration include an evaluation of each technology and the explanation of why each is not possible for the well and each demonstration must be certified by a “qualified professional engineer or other qualified individual.” See, e.g., id. at 259–64.

<sup>88</sup> Id. at 264.

<sup>89</sup> Id. at 257.

<sup>90</sup> Id. at 256–58.

Commence Construction Timing	BSER	Exemption Allowing Routing to a Flare or Control Device with 95% Reduction in Emissions
commencing before Dec. 6, 2022 with methane emissions greater than 40 tpy		owner/operators control due to technical infeasibility or safety concerns*
Existing wells construction commencing before Dec. 6, 2022 with methane emissions of 40 tpy or less	Flare or control device with a 95% reduction in methane emissions	

\*Temporary routing of associated case to a flare or control device is allowed for a maximum duration of 24 hours to 30 days depending on the situation.<sup>91</sup>

## Response Requirements for Component Sources of Fugitive Emissions, Closed Vent Systems, and Control Devices

In response to public comments that the Supplemental Proposal’s requirement to undertake a “root cause analysis” requires a “much more involved process than” EPA envisioned with this rule, the final rule now requires an “investigative analysis” if emissions are detected through a periodic screening. Owners or operators must determine the “underlying primary and other contributing cause(s) of the emissions event.”<sup>92</sup> The final rule includes specific follow up requirements depending on the technology used to detect the emission and the source of the emissions (e.g., from a fugitive emissions source, closed vent system, or control device).

## Liquids Unloading

Using the 2014 GHG Inventory data, EPA estimated that emissions from liquids unloading in 2012 were 14 percent of all methane emissions from the natural gas production segment. For both the NSPS and EGs, the final rule requires owners and operators to “employ best management practices to minimize or eliminate venting of emissions to the maximum extent possible” or reduce emissions from each unloading event by 95 percent by routing emissions to a control device via CVS.<sup>93</sup> This applies to both planned and unintended venting due to malfunctions or errors.<sup>94</sup>

The final rule differs slightly from the 2022 Supplemental Proposal. EPA had proposed to require techniques that eliminate methane emissions during well liquids unloading operations, with safety and infeasibility exceptions.<sup>95</sup> However, EPA agreed with commenters that a work practice standard was more appropriate due to the “intermittent and necessary nature of allowing for variable methods and technologies employed to unload liquids, the inability to measure emissions during events, and the often-unpredictable timing as to when owners and operators may need to vent emissions”.<sup>96</sup> EPA explains that the finalized work practice standards will result in the same emissions reductions without requiring owners and operators to document each infeasibility exception.<sup>97</sup>

<sup>91</sup> Id. at 257–58.

<sup>92</sup> Id. at 361–62.

<sup>93</sup> Id. at 266 & 267.

<sup>94</sup> Id. at 268.

<sup>95</sup> Id. at 515.

<sup>96</sup> Id. at 519.

<sup>97</sup> Id. at 520.



## Super-Emitter Program

The final rule includes provisions to address super-emitter events similar to the Supplemental Proposal but includes a few important changes to the legal and implementation framework.<sup>98</sup> EPA developed the super-emitter program in response to studies indicating that large, irregular emissions events contribute almost 50 percent of methane emissions from the oil and natural gas sector.<sup>99</sup> The final rule defines a super-emitter event as one that has a methane emission rate of at least 100kg/hr.<sup>100</sup> The program relies on data collected by EPA-certified third parties using EPA-approved remote sensing technologies to identify super-emitter events.

However, unlike the proposal, in response to public comments on the Supplemental Proposal, EPA will play a more central role in the program.<sup>101</sup> EPA notes that it intends for the program to provide a cost-effective, transparent, reliable mechanism for owners and operators to receive timely notification of emissions data. If the emissions event is attributable to a regulated source under CAA section 111, the responsible operator must take action in response to EPA's notification in accordance with underlying applicable regulation.<sup>102</sup>

### *How Does the Super-Emitter Program Work?*

EPA intends the super-emitter program to serve as a backstop to the other provisions of the final rule by allowing EPA-certified third parties to supplement a facility's required routine monitoring using EPA approved, remote, advanced sensing technologies capable of identifying an ongoing super emissions event. The approved third parties must notify EPA within 15 days of discovering an ongoing event. EPA will then review the third party's data for completeness and accuracy "to a reasonable degree of certainty." If the data meet EPA's criteria, EPA will notify the party believed to be the owners or operator of the potential event and post the notification on its website: [www.epa.gov/super-emitter](http://www.epa.gov/super-emitter). At this point, EPA will *not* post the name of the owners or operator(s) to whom the notification is sent and attributed to the event. Upon notice from EPA, the owner or operator must begin its investigation within five days and submit its investigation report to EPA within 15 days. Once submitted, or if the 15 days pass and no report is submitted, EPA will update the website with the owner and operator attribution. If the investigation identifies an ongoing super-emitter release, the owner or operator must also notify EPA within five days after the end of the event.

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<sup>98</sup> Id. at 218.

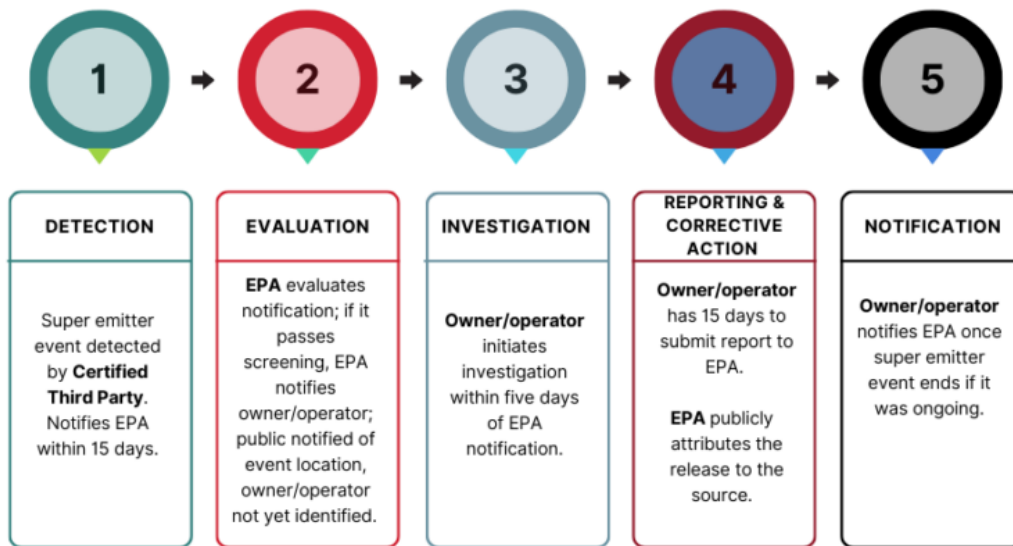
<sup>99</sup> Id.

<sup>100</sup> Id. at 219

<sup>101</sup> Id.

<sup>102</sup> Id.

Figure 2. Steps and Roles for the Super-Emitter Program



### EPA Approval of Third Parties

Consistent with the proposal, EPA must certify a third party in order for EPA to accept data of super-emitter events from that entity. The final rule includes updated certification criteria, including third parties' technical qualifications; standard operating procedures for data review, including accuracy of the data and location identification; and data management and retention systems. Third parties must also be independent entities that are separate from the owner or operator of any facility they will be monitoring.<sup>103</sup>

However, the rule also includes provisions to revoke the certification of a third party if it makes material changes in its qualifications, engages in illegal activity during the assessment of a super emitter such as trespassing, fails to submit accurate data, or persistently submits data with significant errors.<sup>104</sup> Additionally, EPA can revoke a certification if it determines, based on a petition from an owners and operators, that it has received more than three EPA notifications with "meaningful and/or demonstrable errors" at the same facility based on data from the same third party and the owner or operator demonstrates that the claimed event did not occur. However, the rule makes clear that failure to find the event is not proof by itself, of "demonstrable error" by the third party.<sup>105</sup>

Once certified, EPA will assign the third-party notifier a unique notifier ID, which will be posted at [www.epa.gov/emc/third-party-certifications](http://www.epa.gov/emc/third-party-certifications).<sup>106</sup>

### EPA Approval of Advanced Technology for Super-Emitters

The final rule clarifies that certified third parties will only be authorized to use "remote sensing technologies" such as satellites or aerial surveys, to ensure facility safety and to prevent operational disruption and trespassing. Additionally, certified third parties must be able to identify well sites within 50 meters of the identified latitude and longitude of the emission event.<sup>107</sup>

<sup>103</sup> Id. at 227.

<sup>104</sup> Id. at 229.

<sup>105</sup> Id. at 914.

<sup>106</sup> Id. at 229.

<sup>107</sup> Id. at 228-30.

### **Owner or Operator Requirements for Super-Emitter Notifications from EPA**

Once an owner or operator receives a notification from EPA of a super-emitter event, the owner or operator must initiate an investigation within five days and submit a report to EPA of its investigation. The final rule describes potential actions that can be taken to identify the potential cause of the super-emitter event including:

- Review any maintenance activities, such as liquids unloading, which may lead to allowable releases of emissions during the same time period as the event;
- Review all monitoring data from control devices (e.g., flares) during the same time period as the event;
- Review any fugitive emission surveys or continuous emissions monitoring surveys during the same time period as the event; or
- Screen the well site, centralized production facility, or compressor station with “OGI, Method 21, or alternative test method(s)”.<sup>108</sup>

Thus, the report due within 15 days of any notification must indicate if the owner or operator owns a facility within the immediate area. If the owner or operator does not own a nearby facility, the final rule clarifies that no additional information would be required. If a super-emitter event is identified, the owner or operator must report whether the emissions were from a regulated source under the final rule and the dates of the emission event. If the event remains ongoing, the owner or operator must explain how it intends to end the event and the target date for completion. In that latter case, once the event ends, the owner or operator must notify EPA within five days of the super-emitter event ending.

As part of this final rule, EPA makes clear that it will publish on the website the owner or operator’s report upon receipt and at that time, or if the 15-day deadline has passed, EPA will update the public posting with the owner or operator attribution.

### ***EPA’s Legal Authority for the Super-Emitter Program***

#### **Investigate (CAA section 114)**

Unlike the proposal, the final rule’s super-emitter program is based on EPA’s authority under CAA section 114(a). This section authorizes EPA to require “any person who owns or operates any emissions source” (other than mobile sources) to provide information necessary to carry out the purposes of the CAA and its authority to regulate sources under CAA section 111.<sup>109</sup> Therefore, the requirement to investigate potential super-emitter sources applies to all sources, including those not regulated under CAA section 111.<sup>110</sup>

#### **Repair (CAA section 111)**

By comparison, the obligation to repair the cause of the super-emitter event only applies to regulated sources under CAA section 111 where the owner or operator determines the leak is a result of action that requires a response consistent with the other provisions of the final rule. Thus, EPA’s authority to require regulated sources to respond to the super-emitter event remains CAA section 111.<sup>111</sup> For regulated sources, therefore, the super-emitter program serves as both an additional work practice standard for fugitive emissions from new sources (and a presumptive standard for existing sources). Additionally, it serves as a compliance assurance measure for the final rules’ requirements including design, operational and monitoring requirements.<sup>112</sup>

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<sup>108</sup> Id. at 233.

<sup>109</sup> Id. at 221.

<sup>110</sup> Id. at 220.

<sup>111</sup> Id.

<sup>112</sup> Id. at 221.

Notably, EPA states in the final rule that although CAA section 114(a) does not require regulatory text for EPA to exercise its authority, EPA codifies the super-emitter provisions into the regulations for new sources (i.e., NSPS 0000b). EPA also amends the regulatory text, where appropriate, to include super-emitter investigation and reporting requirements for regulated sources (e.g., the underlying regulatory language for fugitive emissions includes an obligation for owners and operators to repair the source of a super-emitter event). EPA also provides the regulatory text in the model rule for existing sources. However, EPA notes that “the super-emitter response program is nevertheless severable from the standards of performance and work practice standards that are being separately established for each of the sources addressed in this rule.”<sup>113</sup>

## Considerations for States’ Compliance Plans for Existing Sources

Once EPA establishes a new source performance standard (NSPS) for a particular source category, the CAA requires EPA to issue EGs for existing sources in that category and EPA must also establish the process for states to submit plans that establish, implement, and enforce standards of performance for existing sources.

On November 17, 2023, [EPA issued final regulations that provide a default process for states to develop emissions plans for existing sources](#) unless EPA issues EG-specific regulations that supersede those requirements. EPA explains that under CAA section 111(d)(2), it has a duty to approve state plans that it finds “satisfactory”.<sup>114</sup> In this final rule, EPA includes several provisions that supersede the default implementing regulation requirements, including deadlines for state plans, flexibilities in implementing the plans, and implementation and enforcement measures.

### *Deadlines for State Compliance Plans*

The final rule includes several changes to provide states additional time to develop their state plans and to allow operators additional time to comply with requirements in state plans due to potential supply chain concerns.

EPA had proposed in the supplemental rule that state plans would be due 18 months after the rule effective date. However, in the final rule EPA extends the submittal deadline to 24 months. EPA explains that it agreed with commenters that additional time is warranted for several reasons, including that states may have to “perform considerable engineering and/or economic analyses for their plans.”<sup>115</sup>

Consistent with the Supplemental Proposal, the final rule requires that owners or operators comply with the standards of performance no later than three years following the state plan submittal deadline, which is almost two years longer than the default implementing regulations.<sup>116</sup>

Given these longer compliance deadlines, EPA also finalized, consistent with the Supplemental Proposal, that states must include in their state plans legally enforceable increments of progress. The final rule instructs state plans to require owners and operators to include: (1) a final compliance control plan within 28 months of state plan submission; and (2) a final compliance report within 60 days of the state plan compliance date.<sup>117</sup> The remaining deadlines are the same as EPA’s default implementation regulations. Table 9 lists the deadlines in the final rule compared to the Supplemental Proposal and default 2023 implementing regulations.

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<sup>113</sup> Id. at 224, FN 186.

<sup>114</sup> Id. at 733.

<sup>115</sup> Id. at 745.

<sup>116</sup> EPA had proposed a two-year compliance deadline in the 2021 Proposal but listed several factors in the 2022 Supplemental that supported this longer timeframe, including the number of designated facilities, the complexity of the requirements, and the availability of equipment.

<sup>117</sup> Id. at 1316.

**Table 9. Timing Requirements for Emission Guidelines<sup>118</sup>**

	Default Implementing Regulations <sup>119</sup>	2022 Supplemental Proposal 0000c <sup>120</sup>	Finalized 0000c <sup>121</sup>
<b>State Plans Submittal Deadline after Rule Effective Date</b>	18 months	18 months	24 months ( <i>estimated Q1 2026</i> ) <sup>*</sup>
<b>EPA Decision on State Plans</b>	14 months after submittal	14 months after submittal	14 months after submittal ( <i>estimated Q2 2025</i> )
<b>Deadline for EPA to Issue Federal Plan</b>	1 year after failure to submit or EPA disapproval	1 year after failure to submit or EPA disapproval	1 year after failure to submit or EPA disapproval ( <i>estimated no later than Q1 2027</i> )
<b>Facility Compliance with State Plan<sup>*</sup></b>	6 months after EPA decision (3 years 2 months after effective date)	22 months after EPA decision (4 years 6 months after effective date)	22 months after EPA decision (5 years after effective date) ( <i>estimated Q1 2029</i> )
<b>Requirements for Increments of Progress after submittal deadline</b>	If compliance is >20 months.	24 months after submittal	28 months after submittal <sup>122</sup>

<sup>\*</sup> Dates are estimated for final rule assuming the timing of the publication in the Federal Register results in an effective date of Q1 2024.

### ***Flexibilities in State Compliance Plans***

The final rule includes provisions consistent with the proposals to allow states to include requirements that are more stringent than the EG and allow certain trading and averaging. EPA specifies criteria that states must identify to demonstrate to EPA that the plan meets the necessary level of stringency and does not undermine the EGs. Of note, these criteria apply where a state is not invoking the CAA provision of “remaining useful life and other factors” (RULOF).<sup>123</sup> EPA will evaluate these state plans through a source-by-source evaluation methodology consistent with the following steps:<sup>124</sup>

- **Sources Covered:** Confirm that the states’ regulated sources (i.e., designated facility) are the same as EPA’s definition, pollutant, and format.
- **Emission Reduction:** Demonstrate that the state requirements for such designated facilities achieve the same or greater emission reductions as the presumptive EGs by:
  - Showing the same degree of emission reduction for EPA’s model plant/representative facility;
  - Showing the same degree of emission reduction for an actual facility in the state compared to the EPA’s model plant/representative facility; or

<sup>118</sup> Id. at 738.

<sup>119</sup> [Adoption and Submittal of State Plans for Designated Facilities: Implementing Regulations Under Clean Air Act Section 111\(d\)](#), 88 Fed. Reg. 80480, 80486 (Nov. 17, 2023).

<sup>120</sup> [EPA’s Supplemental Methane Proposal – A Comprehensive Regulatory Framework to Encourage Use of Advanced Technologies and Significantly Reduce Methane Emissions](#) at 13 (Nov. 21, 2022).

<sup>121</sup> Final Rule at 738.

<sup>122</sup> Id.

<sup>123</sup> EPA does not finalize any EG-specific related to states use of RULOF to apply less stringent standards of performance, and instead directs states to the provisions finalized in its default implementing regulations. Id. at 691.

<sup>124</sup> Id. at 690.

- Calculating the state-wide emission reduction based on the presumptive standard and demonstrating that the state program requirements would achieve the same or greater emission reductions.
- **Compliance Measures:** Demonstrate that the compliance measures (e.g., monitoring and recordkeeping) are sufficient to ensure continued compliance with the standards and projected emission reductions.

The final rule, consistent with the proposal, does not enable states to evaluate equivalency based on total program evaluation. However, the final rule enables states to allow trading and averaging within each type of designated facility. EPA cites an acceptable example of trading between sources as “storage vessel designated facilities to storage vessel designated facilities”.<sup>125</sup> EPA will require states to adequately demonstrate that the state standards are no less stringent than the presumptive standards.

## Meaningful Engagement and Environmental Justice

In the proposals, EPA solicited comments on requiring states to perform early outreach and meaningful engagement with stakeholders. However, in the final rule, EPA relies on the requirements of the default implementing regulations that EPA finalized in November 2023. These default requirements obligate states to submit “documentation of meaningful engagement including a list of identified pertinent stakeholders and/or their representatives, a summary of the engagement conducted, a summary of stakeholder input received, and a description of how stakeholder input was considered in the development of the plan or plan revisions.”<sup>126</sup>

In addition, EPA notes that it received information through comments about existing state and Tribal nation EJ programs and through analyses that EPA compiled into a memorandum in the docket titled, *Summary of State, Tribal and Local Environmental Justice (EJ) Programs and Analyses*.<sup>127</sup> EPA explains that this will be a helpful resource to states and pertinent stakeholders in conducting their state planning processes. EPA also compiled information that can help states identify best practices for conducting meaningful engagement in a second memorandum titled, *Summary of Strategies for Meaningful Engagement on Environmental Justice (EJ) Topics*.<sup>128</sup> This memorandum “reviews over fifty EJ reports, policies, plans, and publications that have been produced by various state and local jurisdictions”.<sup>129</sup>

In the final rule, EPA states that it conducted extensive outreach with a broad range of stakeholders in developing this rule, including industry, small businesses, Tribal nations, and communities most vulnerable to the impacts of the rule.<sup>130</sup> EPA notes that engagement with these stakeholders surfaced concerns about “health effects of air pollution associated with oil and natural gas facilities, the implications of climate change and associated extreme weather events for health and well-being in overburdened and vulnerable communities, and accessibility to data and information regarding sources near environmental justice communities.”<sup>131</sup>

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<sup>125</sup> Id. at 701.

<sup>126</sup> Id. at 732.

<sup>127</sup> Id. at 731.

<sup>128</sup> Id. at 733.

<sup>129</sup> Id.

<sup>130</sup> Id. at 159.

<sup>131</sup> Id. at 784.



EPA further notes that the rule is anticipated to achieve significant reductions in methane pollution, yielding climate benefits that will be of particular importance to these communities.<sup>132</sup> The rule will also achieve VOC reductions, leading to air quality and health benefits for nearby communities.<sup>133</sup>

## Estimated Costs and Benefits of the Final Rule

EPA estimates that the benefits of the final rule are significantly greater than the estimated compliance and economic costs.<sup>134</sup> In terms of methane emission reductions, EPA projects that the final rule will result in approximately 58 million short tons of methane emissions reduced from 2024 to 2038 as well as 16 million tons of VOCs reduced, and 590 thousand tons of HAPs reduced.<sup>135</sup> By comparison, EPA estimated that the provisions proposed in 2021 would have resulted in a reduction of 41 million short tons of methane from 2023 to 2035.

EPA emphasizes that its benefits analysis required under EO 12866 is “entirely distinct” from the statutory analysis to identify the “best system of emission reduction” (BSER) to set each standard in the final rule.<sup>136</sup> This November, EPA released supplemental material for the Regulatory Impact Analysis (RIA), *Report on the Social Cost of Greenhouse Gases*, which outlines the methodical updates. Applying these most recent updates,<sup>137</sup> EPA estimates that the rule will yield net climate and ozone health benefits of \$97 billion (using a 2 percent discount rate) to \$98 billion (using a 7 percent discount rate) dollars from 2024 to 2038 after accounting for the costs of compliance and savings from recovered natural gas.

EPA states that it estimates that the pollution control costs for industry represent two to three percent of the industry’s annual capital expenditures, not accounting for increased revenue from the sales of captured gas through compliance with the final rule, which would offset some of these costs.<sup>138</sup>

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<sup>132</sup> Id. at 784–85.

<sup>133</sup> In its Regulatory Impact Analysis, EPA estimates the potential cost and benefits through 2038. Because differences in exposure and susceptibility contribute to environmental impacts, EPA assessed “whether exposure and health effect disparities exist under the baseline scenario” and then if and how those disparities are impacted under the rule. EPA explains that the EJ exposure portion of the analysis focused on “associating ambient ozone concentrations with various demographic variables” and on outcomes with the strongest scientific support. EPA states that the “EJ health effects analysis “does not include information about differences in other factors that could affect the likelihood of adverse impacts (e.g., access to health care, BMI) across groups, due to limitations on the underlying data.” The full analysis is available in section 4.3 of the [Regulatory Impact Analysis of the Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review](#). Id. at 785.

<sup>134</sup> EPA’s conclusions were based in part on the application of its “discount” rate methodology. EPA explains that [s]ince 2003, agencies have used annual discount rates of 3% and 7% in benefit-cost analysis for new regulations. But more recent economic evidence indicates that a substantially lower discount rate is appropriate, meaning that federal regulators have undervalued long-term benefits and costs. In November 2023, the White House Office of Management and Budget (OMB) revised the default discount rate to 2%. This lower rate means that long-term benefits and costs will properly receive greater weight in regulatory analysis, consistent with the latest theory and evidence.” See, e.g., [Analytical Clarity How Updated Climate-Damage Values and Discount Rates Will Affect Regulatory Analysis](#), Matushima and Sarinsky Dec 2023, Institute for Policy Integrity New York University.

<sup>135</sup> Final Rule Regulatory Impact Analysis at 2-70 & 3-1.

<sup>136</sup> Final Rule at 781.

<sup>137</sup> Following a scientific peer review process in May 2023, EPA finalized its technical report on the updated SC-GHG estimates reflecting recent advances in the science on climate change. That report, which also addressed recommendations of the National Academies of Science, Engineering, and Medicine, was used to value emissions reductions in the final rule. See generally, Regulatory Impact Analysis of the Standards of performance for New, Reconstructed, and Modified Sources, and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review.

<sup>138</sup> For methane, the controls EPA identified as BSER in the final NSPS 0000b and EG 0000c were determined to be reasonable at cost effectiveness values up to \$2,048/ton of methane reduction. Final Rule at 167.

EPA concludes that, “based on the totality of circumstances, the advantages that the rule provides—namely in the form of a substantial and meaningful reduction in methane and VOC pollution, and the associated positive impacts on public health and the natural environment—outweigh its disadvantages, namely cost of industry compliance in the context of the industry’s revenue and expenditures.”<sup>139</sup>

## Next Steps for EPA, States, and Stakeholders

The final rule will become effective 60 days after EPA publishes it in the Federal Register, which will confirm the [timing for compliance and state plans and potential interaction with EPA’s other forthcoming rules](#). EPA will be taking steps to establish the advance technology approval process, recognizing that some of the implementation details will continue to be clarified as technology providers and owners and operators develop technology approval requests and monitoring plans for fugitive emissions. States will be evaluating the EGs to understand the application of the presumptive standards for the facilities in their state.

Separate from the final rule, EPA is also developing its proposed Methane Waste Emission Charge rule, which Congress enacted as part of the Inflation Reduction Act (IRA). The IRA also requires EPA to update its GHG Reporting Rule, Subpart W, since the methane waste emission charge will be based on emissions that owners and operators report under Subpart W. In its Subpart W revisions, EPA proposed that owners and operators must report any large emissions events detected as part of this final rule. However, the calculation of such emissions depends on the assumed duration of the event, which an owner or operator can limit if using more frequent periodic or continuous screenings for compliance with the fugitive emission requirements. Thus, all three rules have the potential to build on each other and it will be important to consider how the three can align incentives to drive methane emission reductions.

You can stay updated on EPA’s methane regulation on our [Methane Rules for Oil and Gas Facilities page \(which includes BLM and PHMSA rules\)](#) our [Regulatory Tracker page for EPA’s rules](#), and by signing up for our monthly [Trackers newsletter](#).

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<sup>139</sup> Id. at 179; EPA Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances (Nov. 2023).