ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 98


RIN 2060–AS73

Greenhouse Gas Reporting Rule: Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency is finalizing revisions and confidentiality determinations for the petroleum and natural gas systems source category of the Greenhouse Gas Reporting Program. In particular, this action adds new monitoring methods for detecting leaks from oil and gas equipment in the petroleum and natural gas systems source category consistent with the fugitive emissions monitoring methods in the recently finalized new source performance standards for the oil and gas industry. This action also adds emission factors for leaking equipment to be used in conjunction with these monitoring methods to calculate and report greenhouse gas emissions resulting from equipment leaks. Finally, this action finalizes reporting requirements and confidentiality determinations for nine new or substantially revised data elements contained in these amendments.

DATES: This final rule is effective on January 1, 2017.

ADDRESSES: The EPA has established a docket for this action under Docket ID No. EPA–HQ–OAR–2015–0764. All documents in the docket are listed on the http://www.regulations.gov Web site. Although listed in the index, some information is not publicly available, e.g., confidential business information (CBI) or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available electronically through http://www.regulations.gov.

FOR FURTHER INFORMATION CONTACT: Carole Cook, Climate Change Division, Office of Atmospheric Programs (MC–6207A), Environmental Protection Agency, 1200 Pennsylvania Ave. NW., Washington, DC 20460; telephone number: (202) 343–9334; fax number: (202) 343–2342; email address: GHGReporting@epa.gov. For technical information, please go to the Greenhouse Gas Reporting Rule Web site, http://www.epa.gov/ghgreporting/. To submit a question, select Help Center, followed by “Contact Us.” Worldwide Web (WWW). In addition to being available in the docket, an electronic copy of this final rule will also be available through the WWW. Following the Administrator’s signature, a copy of this action will be posted on the EPA’s Greenhouse Gas Reporting Rule Web site at http://www.epa.gov/ghgreporting/index.html.

SUPPLEMENTARY INFORMATION:

Regulated Entities. These revisions affect entities that must submit annual greenhouse gas (GHG) reports under the Greenhouse Gas Reporting Program (GHGRP), codified in the Code of Federal Regulations (CFR) at 40 CFR part 98. This rule applies to all petroleum and natural gas systems facilities that are subject to 40 CFR part 98, regardless of the facility’s location, and ensures that all these facilities across the United States (U.S.) report GHG data consistently, and therefore is “nationally applicable” within the meaning of section 307(b)(1) of the Clean Air Act (CAA). Further, the Administrator has determined that rules codified in 40 CFR part 98 are subject to the provisions of CAA section 307(d). (See CAA section 307(d)(1)(V) the provisions of section 307(d) apply to “such other actions as the Administrator may determine.”) These are amendments to existing regulations. These amended regulations affect owners or operators of petroleum and natural gas systems that directly emit GHGs. Regulated categories and entities include, but are not limited to, those listed in Table 1 of this preamble:

<table>
<thead>
<tr>
<th>Category</th>
<th>NAICS a</th>
<th>Examples of affected facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum and Natural Gas Systems</td>
<td>486210</td>
<td>Pipeline transportation of natural gas.</td>
</tr>
<tr>
<td></td>
<td>221210</td>
<td>Natural gas distribution.</td>
</tr>
<tr>
<td></td>
<td>211111</td>
<td>Crude petroleum and natural gas extraction.</td>
</tr>
<tr>
<td></td>
<td>211112</td>
<td>Natural gas liquid extraction.</td>
</tr>
</tbody>
</table>

aNorth American Industry Classification System.

Table 1 of this preamble is not intended to be exhaustive, but rather provides a guide for readers regarding facilities likely to be affected by this action. Other types of facilities than those listed in the table could also be subject to reporting requirements. To determine whether you are affected by this action, you should carefully examine the applicability criteria found in 40 CFR part 98, subpart A and 40 CFR part 98, subpart W. If you have questions regarding the applicability of this action to a particular facility, consult the person listed in the preceding FOR FURTHER INFORMATION CONTACT section.

What is the effective date? The final rule is effective on January 1, 2017. Section 553(d) of the Administrative Procedure Act (APA), 5 U.S.C. Chapter 5, generally provides that rules may not take effect earlier than 30 days after they are published in the Federal Register. The EPA is issuing this final rule under section 307(d)(1) of the Clean Air Act, which states: “The provisions of section 553 through 557 * * * of Title 5 shall not, except as expressly provided in this section, apply to actions to which this subsection applies.” Thus, section 553(d) of the APA does not apply to this rule. The EPA is nevertheless acting consistently with the purposes underlying APA section 553(d) in making the first set of amendments to this rule effective on January 1, 2017. Section 553(d) allows an effective date less than 30 days after publication for a rule that “grants or recognizes an exemption or relieves a restriction” or “as otherwise provided by the agency for good cause found and published with the rule.” As explained below, the EPA finds that there is good cause for the first set of amendments to this rule to become effective on January 1, 2017, even though this may result in an effective date fewer than 30 days from date of publication in the Federal Register.

While this action is being signed prior to December 1, 2016, there is likely to
be a significant delay in the publication of this rule as it contains complex equations and tables and is relatively long. As an example, the EPA Administrator signed the Greenhouse Gas Reporting Rule: 2015 Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems final rule on October 1, 2015, but the rule was not published in the Federal Register until October 22, 2015 (80 FR 64262). The purpose of the 30-day waiting period prescribed in 5 U.S.C. 553(d) is to give affected parties a reasonable time to adjust their behavior and prepare before the final rule takes effect. To employ the APA section 553(d)(3) “good cause” exemption, an agency must balance the necessity for immediate implementation against principles of fundamental fairness which require that all affected persons be afforded a reasonable amount of time to prepare for the effective date of its ruling. Where, as here, the final rule will be signed and made available on the EPA Web site more than 30 days before the effective date, but where the publication is likely to be delayed due to the complexity and length of the rule, the regulated entities are afforded this reasonable amount of time. We balance these circumstances with the need for the amendments to be effective by January 1, 2017; a delayed effective date would result in regulatory uncertainty, program disruption, and an inability to have the amendments effective for the 2017 reporting year. Accordingly, we find good cause exists to make this rule effective on January 1, 2017, consistent with the purposes of APA section 553(d)(3).

I. Background

Section I of this preamble provides background information regarding the origin of the final amendments. This section also discusses the EPA’s legal authority under the CAA to promulgate and amend 40 CFR part 98 of the Greenhouse Gas Reporting Rule (hereafter referred to as “part 98”) as well as the legal authority for making confidentiality determinations for the data to be reported. Section II of this preamble contains information on the final amendments to part 98, subpart W (Petroleum and Natural Gas Systems) (hereafter referred to as “subpart W”), including a summary of the major comments that the EPA considered in the development of this final rule. Section III of this preamble discusses the final confidentiality determinations for new or substantially revised data.
reporting elements. Section IV of this preamble discusses the impacts of the final amendments to subpart W. Finally, section V of this preamble describes the statutory and executive order requirements applicable to this action.

B. Background on This Action

The EPA’s GHGRP requires annual reporting of GHG data and other relevant information from large sources and suppliers in the United States. On October 30, 2009, the EPA published part 98 in the Federal Register [FR] for collecting information regarding GHG emissions from a broad range of industry sectors (74 FR 56260). Although reporting requirements for petroleum and natural gas systems were originally proposed to be part of part 98 (74 FR 16448, April 10, 2009), the final October 2009 rulemaking did not include the petroleum and natural gas systems source category as one of the 29 source categories for which reporting requirements were finalized. The EPA re-proposed subpart W in 2010 (75 FR 18608; April 12, 2010), and a subsequent final rulemaking was published on November 30, 2010, with the requirements for the petroleum and natural gas systems source category at 40 CFR part 98, subpart W (75 FR 74458). Following promulgation, the EPA finalized several actions revising subpart W (76 FR 53057, August 25, 2011; 76 FR 59533, September 27, 2011; 76 FR 60554, December 23, 2011; 77 FR 51477, August 24, 2012; 78 FR 25390, May 1, 2013; 78 FR 71904, November 29, 2013; 79 FR 70352, November 25, 2014; 80 FR 64262, October 22, 2015).\footnote{See Greenhouse Gas Reporting Program, Historical Rulemakings. Available at https://www.epa.gov/ghgreporting/rulemaking-notices-ghg-reporting.}

The Strategy to Reduce Methane Emissions in the President’s Climate Action Plan summarizes the sources of CH₄ emissions, commits to new steps to cut emissions of this potent GHG, and outlines the Administration’s efforts to improve the measurement of these emissions. The strategy builds on progress to date and takes steps to further cut CH₄ emissions from several sectors, including the oil and natural gas sector. In the strategy, the EPA was specifically tasked with continuing to review GHGRP regulatory requirements to address potential gaps in coverage, improve methods, and ensure high quality data reporting.\footnote{Climate Action Plan—Strategy to Reduce Methane Emissions. The White House, Washington, DC, March 2014. Available at http://www.whitehouse.gov/sites/default/files/strategy_to_reduce_methane_emissions_2014-03-20_final.pdf/} On January 14, 2015, the Obama administration provided additional direction to the EPA to “explore potential regulatory opportunities for applying remote sensing technologies and other innovations in measurement and monitoring technology to further improve the identification and quantification of emissions” in the oil and natural gas sector, such as the emissions submitted as part of GHGRP annual reporting.\footnote{FACT SHEET: Administration Takes Steps Forward on Climate Action Plan by Announcing Actions to Cut Methane Emissions. The White House, Office of the Press Secretary, January 14, 2015. Available at https://www.whitehouse.gov/the-press-office/2015/01/14/fact-sheet-administration-takes-steps-forward-climate-action-plan-ann-1.}

Under subpart W, GHGs that must be reported by each industry segment and applicable source types are specified in 40 CFR 98.232, including equipment leaks from listed component types. In order to fulfill these equipment leak emissions reporting requirements, reporters must utilize one of two calculation methodologies\footnote{Throughout this preamble, the term “calculation methodology” refers to the procedures used to calculate emissions (e.g., calculation methodology based on equipment leak surveys or the methodology described in 40 CFR 98.233(q) and “monitoring method” refers to the technology, test method, or other method of determining whether an individual component is leaking (see 40 CFR 98.234(a)). The term “leak detection method” that is used in the 40 CFR part 98 subpart W regulatory text has the same meaning as “monitoring method” used in this preamble.) to calculate GHG emissions from equipment leaks as specified in 40 CFR 98.233: (1) Calculation methodology based on equipment leak surveys (40 CFR 98.233(q)), or (2) calculation methodology based on population counts (40 CFR 98.233(r)). For example, facilities in the Onshore Natural Gas Processing and Onshore Natural Gas Transmission industry segments use the calculation methodology based on equipment leak surveys for most components at their facilities. If 40 CFR 98.233(q) specifies that an equipment leak survey is required for the subsection of listed component types in 40 CFR 98.232, reporters must use one of the monitoring methods specified in 40 CFR 98.234 when conducting those leaks to detect leaking components at the facility. The calculation methodology based on equipment leak surveys requires that the reporter then determine the total amount of time each component was assumed to be leaking and multiply that by the concentration of the methane (CH₄) and carbon dioxide (CO₂) in the gas and the applicable emission factor (referred to as a “leaker emission factor”), listed in Table W–1E and Table W–2 through Table W–7, to calculate emissions. Finally, 40 CFR 98.236 specifies the data elements that must be reported to the EPA. On January 29, 2016, the EPA proposed “Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems” (81 FR 4987) to add new monitoring methods for detecting leaks from oil and gas equipment, to revise which industry segments and sources use the calculation methodology based on equipment leak surveys or the calculation methodology based on population counts, to clarify how the definition of fugitive emission components in the new source performance standards (NSPS) for the oil and natural gas sector (40 CFR part 60, subpart OOOOa, at 81 FR 35824) (hereafter referred to as the “NSPS subpart OOOOa”) aligns with the equipment components subject to subpart W, to add leak emission factors for multiple industry segments, and to add reporting requirements and confidentiality determinations for new or substantially revised data elements. Under those proposed amendments, facilities with fugitive emissions components at a well site or compressor station subject to the NSPS subpart OOOOa would use data derived from the NSPS subpart OOOOa fugitive emissions requirements (i.e., which components were determined to have fugitive emissions) along with the subpart W leak emission factors to calculate and report GHG emissions to the GHGRP. The proposed revisions provided the opportunity for owners and operators of sources not subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions standards (e.g., sources participating in a voluntarily implemented program) and not already required to conduct leak surveys under subpart W to optionally use the calculation methodology at 40 CFR 98.233(q) to calculate and report their GHG emissions to the GHGRP. The EPA also proposed that facilities that are already required to conduct leak surveys under subpart W would be able to use the newly proposed monitoring method(s) in 40 CFR 98.234. In addition, the EPA proposed new reporting requirements for all reporters using the calculation methodology.

\footnote{Reporters using the calculation methodology based on population counts determine the total number of all components in the facility and multiply by the average estimated time of operation, the concentration of the CH₄ and CO₂ in the gas, and the applicable emission factor (referred to as a “population emission factor”) to calculate emissions.}
The EPA is finalizing these rule amendments under its existing CAA authority provided in CAA section 114.

As stated in the preamble to the 2009 final GHG reporting rule (74 FR 56260; October 30, 2009), CAA section 114(a)(1) provides the EPA broad authority to require the information to be gathered by this rule because such data will inform and are relevant to the EPA’s carrying out a wide variety of CAA provisions. See the preambles to the proposed (74 FR 16448; April 10, 2009) and final GHG reporting rule (74 FR 56260; October 30, 2009) for further information.

In addition, pursuant to sections 114, 301, and 307 of the CAA, the EPA is publishing final confidentiality determinations for the new or substantially revised data elements required by these amendments. Section 114(c) requires that the EPA make information obtained under section 114 available to the public, except for information (excluding emission data) that qualifies for confidential treatment. The Administrator has determined that this action is subject to the provisions of section 307(d) of the CAA. Section 307(d) contains a set of procedures relating to the issuance and review of certain CAA rules.

D. How do these amendments apply to 2016 and 2017 reports?

These amendments are effective on January 1, 2017. Starting with the 2017 reporting year, facilities must follow the revised methods to detect equipment leaks (if applicable) to determine and report their annual equipment leak emissions. The revisions provide the opportunity for owners and operators of sources not subject to the NSPS subpart OOOOa well site or compressor station subject to the NSPS subpart OOOOa to use the results of the NSPS subpart OOOOa (40 CFR 60.5397a) equipment leak surveys using one of the new monitoring methods to fulfill these subpart W requirements. The EPA is also specifying that facilities with a collection of fugitive emissions components at a well site or compressor station subject to the NSPS subpart OOOOa would be required to survey those components, except as otherwise specified in this subpart W final rule, to fulfill the subpart W calculation methodology based on equipment leak surveys using one of the new monitoring methods being added to subpart W. In practice, this means that facilities can use the results of the NSPS subpart OOOOa-required fugitive emissions monitoring survey to fulfill these subpart W requirements. The EPA is adding leaker emission factors to be used in conjunction with the calculation methodology based on equipment leak surveys to calculate and report GHG emissions. The revisions provide the opportunity for owners and operators of sources not subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions standards (e.g., sources participating in a voluntarily implemented program) and not already required to conduct leak surveys under subpart W to use the new monitoring methods in 40 CFR 98.233(q) to calculate and report their GHG emissions, and to use the new monitoring methods in 40 CFR 98.234 to do so.

Facilities in certain subpart W industry segments that are already required to conduct leak surveys will be able to use the new monitoring methods.

7 These segments are Onshore Natural Gas Transmission Compression, Underground Natural Gas Storage, LNG Storage, and LNG Import and Export Equipment.
in 40 CFR 98.234. If they use either of the two new monitoring methods in 40 CFR 98.234(a)(6) or (7) that are consistent with the NSPS subpart OOOOa, then in addition to surveying the components currently subject to the survey requirements in subpart W, they must also survey all other components that are fugitive emissions components in the NSPS subpart OOOOa, with limited exceptions, as specified in 40 CFR 98.232 (see sections I.C and I.D of this preamble). If they use any of the monitoring methods currently in 40 CFR 98.234(a)(1) through (5), then in addition to surveying the components currently subject to the survey requirements in subpart W, they may elect to survey the other components specified in 40 CFR 98.232.

The comments received on this rule generally do not dispute the merit of allowing the use of new monitoring methods in subpart W, but they do include issues related to the adequacy of the notice and comment process, the calculation methodology based on equipment leak surveys, reporting, and applicability.

2. Summary of Comments and Responses

Comment: Numerous commenters stated that the EPA’s reference to the proposed NSPS subpart OOOOa included in the subpart W proposal was premature, and substantively and procedurally flawed. According to these commenters, by relying on a proposed action, the EPA did not provide the opportunity for notice or comment on how the rule would ultimately affect stakeholders. These commenters stated that at the very least the EPA made it difficult and increased burden for stakeholders to evaluate scope and impacts and to provide comment. Commenters stated that they could only comment on the effect of the incorporation of the NSPS subpart OOOOa proposed requirements, as they could not review and comment on the effect of the finalized NSPS subpart OOOOa requirements on subpart W prior to closure of the comment period for the subpart W proposal. Specifically, the commenters expressed concern that because the EPA received so many comments on the proposed NSPS subpart OOOOa, the final NSPS subpart OOOOa provisions would likely be significantly different in certain aspects and that those details were unknowable at the time of comment. Noting that the EPA expressed intent in the preamble to the subpart W proposed amendments to incorporate NSPS subpart OOOOa provisions in the final subpart W rule, the commenters stated they inherently would have no formal opportunity to meaningfully comment on the effect those final NSPS subpart OOOOa provisions would have on subpart W reporters. Several commenters stated that this created substantive and procedural flaws in the proposed rule, as the EPA provided neither the “terms or substance” nor a “description of the subjects and issues involved” of the proposed rule as required for notice and comment rulemaking under the Administrative Procedure Act, 5 U.S.C. 553(b), nor did the EPA meet the more stringent notice and comment requirements of CAA section 307. Several commenters stated that EPA similarly did not consider changes that might be made to the final NSPS subpart OOOOa through the judicial review process.

Several commenters requested that the EPA either finalize, or re-propose or re-open the public comment period for, the proposed alignment of subpart W with the NSPS subpart OOOOa only after the NSPS subpart OOOOa is finalized. Other commenters requested that the EPA withdraw the proposal to amend subpart W and reconsider whether any revisions are necessary once the NSPS subpart OOOOa is in effect.

Response: The EPA disagrees that the proposed rule for this subpart W revision was premature, or substantively and procedurally flawed. This action is focused on aligning the subpart W requirements, to the extent possible, with the finalized NSPS subpart OOOOa fugitive emissions requirements so that facilities may use the results of the NSPS subpart OOOOa-required fugitive emissions monitoring surveys to fulfill subpart W requirements, and does so through revisions that incorporate final NSPS subpart OOOOa monitoring methods into subpart W and make their use mandatory in subpart W surveys for most components subject to NSPS subpart OOOOa. The proposed rule for subpart W clearly specified that only a monitoring method finalized in the NSPS subpart OOOOa rule would be finalized for subpart W, which ensured that no requirement would reference any monitoring method that was merely at proposal stage. The proposed rule provided adequate notice and opportunity to comment on how the rule will affect stakeholders, and thus this final rule is in compliance with the relevant requirements of CAA section 307(d).

Multiple commenters cited the Administrative Procedure Act (APA), including 5 U.S.C. 553(b)(3), which requires that a notice of proposed rulemaking shall include “either the terms or substance of the proposed rule or a description of the subjects and issues involved.” The EPA notes that our process is also consistent with the notice and comment requirements of the APA, 5 U.S.C. 551–559. In the preamble to the proposed and final rule, as well as in “Response to Public Comments on Greenhouse Gas Reporting Rule: Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems” in Docket ID No. EPA–HQ–OAR–2015–0764, the EPA describes at length the statement and purpose of the revisions, provides explanations for any changes in the rule, and responds to all comments submitted.

Specifically, in regards to the proposed rule referencing the then proposed NSPS subpart OOOOa monitoring method(s) and fugitive emissions component definition, the EPA disagrees that the proposed rule did not give adequate notice and therefore the EPA did not re-propose or re-open the comment period for this action. The proposed rule clearly laid out the EPA’s proposal and requested comment regarding alternatives, as well as the detailed reasoning behind and goals of the proposal. The EPA provided this detailed explanation to ensure that commenters had ample notice of the revisions under consideration, and provided 45 days for the public comment period. This process accords with proper notice and comment procedure.

Commenters posit that referencing the then proposed NSPS subpart OOOOa standard in the proposed rule renders this notice premature and inadequate, and the EPA respectfully disagrees. First, in proposing to add the NSPS subpart OOOOa equipment leak detection methods as approved monitoring methods for subpart W surveys, the EPA was not proposing to require any new collection of data under subpart W, as the data on fugitive emissions components would already be collected to meet the requirements of NSPS subpart OOOOa. Instead, the EPA proposed to add these new monitoring methods under subpart W so that reporters would be able to use, for the purpose of compliance with the proposed mandatory subpart W equipment leak survey, calculation, and reporting requirements, whatever data would already be collected as a result of complying with the monitoring method(s) that would be finalized in the NSPS subpart OOOOa. Similarly, while the EPA proposed to include all fugitive emissions components subject to the

8 The NSPS subpart OOOOa rule has since been finalized. 81 FR 35824 (June 3, 2016).
While there are differences in the subpart W list of monitoring methods, this final rule incorporates the monitoring methods finalized in the NSPS subpart OOOOa with some changes from proposal. To the extent the specific changes in this final subpart W rule is adding method(s) in accordance with the NSPS subpart OOOOa differ from the specifics in the subpart W proposal, as explained further in section II.C of this preamble, these changes are consistent with the purpose detailed in the proposed rule and were made to ensure only those portions of the final NSPS subpart OOOOa that are essential to the integrity of the methods are referenced within the requirements of subpart W. This final rule revises applicable components subject to subpart W to include all components subject to the final NSPS subpart OOOOa, except for the finalized as proposed exclusion of certain components, as further detailed in section II.D of this preamble. The EPA notes that while we finalized the reference to the NSPS subpart OOOOa with certain exceptions regarding applicable components as proposed, the final NSPS subpart OOOOa definition of fugitive emission components was narrower in scope than that rule’s proposal. This final rule also includes revisions, with some changes from proposal as detailed in Sections II.B, II.D, ILE, and IIF of this preamble, to how reporters must use the data obtained in accordance with the methods finalized in the NSPS subpart OOOOa for subpart W reporting. Although the EPA’s own reasoned consideration and its assessment of public comment have resulted in some modifications to the final rule, as explained further in sections II.B through II.F of this preamble, such changes reflect the goals and alternatives as detailed in the EPA’s original proposal, and the proposed rule ensured that interested parties were “fairly apprised” of the elements ultimately included in this final rulemaking. See, e.g., United Steelworkers of America v. Schuykill Metals, 828 F.2d 314 (5th Cir. 1987).

While some changes occurred to the NSPS subpart OOOOa requirements from proposal to final in that rulemaking, including changes to the substance of the monitoring methods and the fugitive emission component definition, those substantive changes are out of scope of this subpart W rulemaking that is intended to align with the final NSPS subpart OOOOa requirements; however, commenters were provided full notice and opportunity to comment within that NSPS subpart OOOOa rulemaking, as fully explained within those proposed and final preambles, the EPA’s response to comments, and the docket of that action.

The commenter is correct that the EPA did not consider changes that may be made to the final NSPS subpart OOOOa through the judicial review process. Any such potential, future changes are premature to consider at this time.

B. Summary of Final Amendments to the Requirement To Use the Calculation Methodology Based on Equipment Leak Surveys

1. Summary of Final Amendments

As noted in section I.B of this preamble, subpart W presently requires reporters with sources in certain industry segments to use the calculation methodology based on population counts according to 40 CFR 98.233(r). For example, reporters in the Onshore Petroleum and Natural Gas Production and the Onshore Petroleum and Natural Gas Gathering and Boosting industry segments are required either to count the number of equipment components of each type (e.g., valve, connector, open-ended line, or pressure relief valve) or to count the number of major equipment at the facility and then calculate the number of equipment components of each type using default average component counts for each piece of major equipment in Tables W–1B and W–1C to subpart W (40 CFR 98.233(r)(2)). The resulting equipment component counts are then multiplied by default “population emission factors” in Table W–1A to subpart W to calculate emissions from equipment leaks.

Other reporters are required to use the calculation methodology based on equipment leak surveys according to 40 CFR 98.233(q) using one of the monitoring methods in 40 CFR 98.234(a). For example, reporters in the Onshore Natural Gas Transmission Compression industry segment must conduct at least one equipment leak survey in a calendar year for the compressor and non-compressor components in gas service listed in Table W–3A to subpart W. These reporters then use the number of leaking

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9 See section ILC of this preamble.

components in the calendar year, the average amount of time each component
was leaking, and the default “leaker emission factors” in Table W-3A to
subpart W to calculate emissions according to Equation W-30. The EPA is finalizing the proposal to apply the calculation methodology based on equipment leak surveys in 40 CFR 98.233(q) to additional reporters in subpart W. Specifically, reporters in any subpart W industry segment with a well
site(s) and/or compressor station(s) required to conduct fugitive emissions
monitoring to comply with the NSPS subpart OO00a will be required to use
the calculation methodology based on equipment leak surveys for those
components 11 under subpart W using the new monitoring methods consistent with the NSPS subpart OO00a (see section II.C of this preamble). While these are new calculation methodology and equipment leak survey
requirements for the subpart W reporting of these components, reporters
may meet the survey requirements by counting the actual number of
components with fugitive emissions identified through implementation of
the NSPS subpart OO00a as leaks for purposes of subpart W and use those
counts with the calculation methodologies specified in 40 CFR 98.233(q) to determine equipment leak emissions for those components.

We received extensive comment regarding the proposed revisions to require facilities in the Onshore Natural Gas Processing industry segment to use the results of the leak surveys conducted to comply with the NSPS subpart OO00a equipment leak requirements for reporting under subpart W. We are still reviewing those comments and are not taking final action on those revisions at this time. For other sources of equipment leaks (i.e., those not subject to the NSPS subpart OO00a well site or compressor station fugitive emissions standards), 12 the amended subpart W requirements depend on whether the component types are currently required to be reported using the calculation methodology based on equipment leak surveys (40 CFR 98.233(q)) or the calculation methodology based on population counts (40 CFR 98.233(r)). For components at facilities in industry segments that are currently required to use the calculation methodology based on equipment leak surveys to comply with subpart W, the EPA is finalizing as proposed that reporters must continue to conduct equipment leak surveys as required by subpart W but may use any
monitoring method in 40 CFR 98.234(a).

If they use either of the two new monitoring methods in 40 CFR 98.234(a)(6) or (7) that are consistent with the NSPS subpart OO00a, then in addition to surveying the components currently subject to the survey requirements in subpart W, they must also survey all other components that are fugitive emissions components in the NSPS subpart OO00a, with limited exceptions, as specified in 40 CFR 98.232. If they use any of the monitoring methods currently in 40 CFR 98.234(a)(1) through (5), then in addition to surveying the components currently subject to the survey requirements in subpart W, they may
elect to survey the other specified in 40 CFR 98.232.

For components at facilities in industry segments that are currently required to use the calculation methodology based on population counts, the reporter may continue to use that methodology. Alternatively, the EPA is finalizing as proposed the option that the reporter may elect to use the calculation methodology based on equipment leak surveys (40 CFR 98.233(q)(1)(iv)) in lieu of the calculation methodology based on population counts (40 CFR 98.233(r)). If this option is selected, then the reporter must use any of the monitoring methods in 40 CFR 98.234(a). If they use a monitoring method in 40 CFR 98.234(a)(6) or (7), then they must
survey all components that would otherwise be subject to the calculation methodology based on population counts, and they must also survey all other components that are fugitive emissions components in the NSPS subpart OO00a, with limited exceptions, as specified in 40 CFR 98.232. If they use any of the monitoring methods currently in 40 CFR 98.234(a)(1) through (5), then in addition to surveying the components that would otherwise be subject to the calculation methodology based on population counts, they may elect to survey the other specified in 40 CFR 98.232. The intent of the new provision in 40 CFR 98.233(q)(1)(iv) is to allow flexibility for reporters currently required to use the calculation methodology based on population counts for components that are not subject to the NSPS subpart OO00a well site or compressor station fugitive emissions standards.

The burden of using the calculation methodology based on equipment leak surveys will be similar to using the existing subpart W calculation methodology based on population counts, and the results will be more representative of the number of leaks at the facility than the calculation methodology based on population counts. Table 2 of this preamble provides a summary of the equipment leak calculation methodologies and monitoring methods that will be available to each industry segment covered by subpart W under these amendments.

### Table 2—Final Equipment Leak Requirements for Subpart W

<table>
<thead>
<tr>
<th>Subpart W industry segments</th>
<th>Components subject to 40 CFR 60.5397a of the NSPS subpart OO00a</th>
<th>Components not subject to 40 CFR 60.5397a of the NSPS subpart OO00a</th>
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<tbody>
<tr>
<td></td>
<td>Subpart W calculation methodology</td>
<td>Subpart W monitoring method for leak detection</td>
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<tr>
<td>Onshore Petroleum and Natural Gas Production.</td>
<td>Leak survey (40 CFR 98.233(q)).</td>
<td>OGI or Method 21 as specified in the NSPS subpart OO00a.</td>
</tr>
<tr>
<td>Onshore Natural Gas Transmission Compression; Underground Natural Gas Storage: Storage stations, gas service.</td>
<td>Leak survey (40 CFR 98.233(q)).</td>
<td>OGI or Method 21 as specified in the NSPS subpart OO00a.</td>
</tr>
</tbody>
</table>

11 See section II.D of this preamble.

12 Except for onshore natural gas processing and natural gas distribution.
2. Summary of Comments and Responses

Comment: Several commenters stated that facilities in the Onshore Petroleum and Natural Gas Production and Onshore Petroleum and Natural Gas Gathering and Boosting industry segments should not be required to use the NSPS subpart OOOOa results to calculate GHG emissions to comply with subpart W. They stated that the proposed NSPS subpart OOOOa leak detection program was limited to one monitoring method, which is inconsistent with the flexibility for reporters conducting equipment leak surveys for subpart W to choose any monitoring method within 40 CFR 98.234(a). The commenters asserted that this requirement will result in some subpart W reporters having to manage multiple equipment leak survey programs within one facility, especially if the facility is located within a state with a different leak detection program, and this result is overly burdensome. In addition, the commenters stated that the equipment leak survey results will be internally inconsistent if they use different methods, and a facility’s emissions could appear to increase one year simply because the number of sites subject to the NSPS subpart OOOOa increases, requiring the reporter to use the OGI method in the NSPS subpart OOOOa for an increased number of components. Instead, the reporters suggested, use of the calculation methodology based on equipment leak surveys, including the selection of monitoring method within 40 CFR 98.234(a), should be voluntary for all facilities not currently required to conduct leak surveys under subpart W.

In contrast, another commenter requested that the EPA require all subpart W reporters to detect leaks using direct equipment leak detection technologies such as OGI. The commenter stated that leak detection using OGI can produce more accurate data than current subpart W methods and that the EPA’s approach is consistent with the EPA’s stated goals to enhance the rigor and transparency of subpart W data. In addition, the commenter stated that applying OGI detection uniformly across subpart W sources will produce data that is readily comparable across facilities and will allow the EPA to assess the performance of facilities over time.

Response: For facilities that have affected sources required to conduct fugitive emissions monitoring to comply with the NSPS subpart OOOOa well site or compressor station fugitive emissions standards, the EPA is finalizing as proposed that these components must meet the subpart W calculation methodology based on equipment leak survey requirements. In practice, this means reporters can meet these requirements by counting the actual number of components with fugitive emissions identified through implementation of the NSPS subpart OOOOa fugitive emission requirements by counting the actual number of components with fugitive emissions identified through implementation of the NSPS subpart OOOOa fugitive emission requirements.

At this time, we are not requiring all subpart W facilities to perform a leak detection survey using direct equipment leak detection technologies such as OGI. Rather this action is focused on aligning the subpart W requirements to the extent possible, with the NSPS subpart OOOOa fugitive emission requirements so that facilities may use the results of the NSPS subpart OOOOa-requiring
fugitive emissions monitoring surveys to fulfill subpart W requirements.

The EPA does not agree that a subpart W requirement to use the results of a previously completed leak survey within the subpart W calculation methodology based on equipment leak surveys will result in an undue burden to these reporters. For components subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions standards, there is little to no burden associated with using the number of components found to have fugitive emissions as the number of leaking components in the subpart W calculation methodology based on equipment leak surveys. The only additional piece of information these reporters need to calculate emissions is the amount of time each component was leaking, and this is a straightforward determination based on the dates of the equipment leak surveys. See section IV.B of this preamble for information and responses to comments related to the EPA’s burden estimates for these amendments.

C. Summary of Final Amendments to Monitoring Methods

1. Summary of Final Amendments

The EPA is finalizing the proposal to add OGI, as specified in the NSPS subpart OOOOa, to the list of monitoring methods in 40 CFR 98.234(a). The addition of this specific OGI method to subpart W at 40 CFR 98.234(a)(6) aligns the methods in the two rulemakings and allows subpart W facilities to directly use information derived from the implementation of the fugitive emissions monitoring conducted under the NSPS subpart OOOOa to calculate and report equipment leak emissions to the GHGRP.

The EPA has made changes to the proposed subpart W amendments after consideration of public comment and/or to be consistent with the final revisions made to the corresponding proposed NSPS subpart OOOOa specifications. The proposed subpart W amendments cross-referenced the proposed 40 CFR 60.5397a(b) through (e) and (g) through (i), which included the requirements to: (1) Develop a corporate-wide fugitive emissions monitoring plan; (2) develop a site-specific monitoring plan; (3) observe each fugitive emissions component for fugitive emissions; (4) conduct monitoring surveys semiannually; and (5) adjust the frequency of monitoring surveys based on the percent of the fugitive emissions components detected to have fugitive emissions. For the reasons described below, the final amendments to subpart W for the OGI method cross-reference a portion of the NSPS subpart OOOOa requirements to develop the fugitive emissions monitoring plan and the NSPS subpart OOOOa requirements to observe each fugitive emissions component for fugitive emissions.

The final NSPS subpart OOOOa requires an emissions monitoring plan that covers the affected sources within each company-defined area. This monitoring plan includes information about the survey frequency, monitoring method and instrument selected, repair procedures and timeframes, recordkeeping, and procedures for calibrating the monitoring instrument and verifying that it can detect fugitive emissions at the required levels.

For the final subpart W amendments, the EPA evaluated the NSPS subpart OOOOa requirements for the monitoring plan along with the level of detail in the existing monitoring methods in 40 CFR 98.234(a). The EPA determined that information about the monitoring instrument selected and procedures for calibrating the monitoring instrument and verifying that it can detect fugitive emissions at the required levels is necessary to ensure the OGI monitoring is performed correctly. Therefore, the new OGI detection method in subpart W does include the NSPS subpart OOOOa requirement to develop a monitoring plan that describes the OGI instrument (40 CFR 60.5397a(c)(3)) and how the OGI survey will be conducted to ensure that fugitive emissions can be imaged effectively (40 CFR 60.5397a(c)(7)). The EPA determined that the NSPS subpart OOOOa survey frequency should not be cross-referenced in subpart W because cross-referencing these frequencies would override the current annual survey requirement in subpart W regardless of whether the use of the new monitoring methods is voluntary or mandatory. The EPA determined that the repair procedures and timeframes should not be cross-referenced because subpart W is part of a reporting program and does not require repair of detected leaks. The EPA also determined that the NSPS subpart OOOOa recordkeeping requirements should not be cross-referenced because they include provisions that are not applicable to greenhouse gas reporting, such as records related to repairs. Applicable recordkeeping requirements for all leak detection methods in subpart W are specified at 40 CFR 98.237.

The final site-specific monitoring plan in the NSPS subpart OOOOa includes three items specific to the OGI method: (1) A sitemap; (2) a defined observation path for the operator that ensures that all fugitive emissions components are within sight of the path; and (3) a monitoring plan for difficult-to-monitor and unsafe-to-monitor fugitive emissions components. The EPA has reviewed these elements as well and determined not to cross-reference these three elements in subpart W. The observation path and the sitemap ensure that the OGI operator visualizes all of the components that must be surveyed, analogous to requirements in some rules to identify all of the equipment that must be monitored using Method 21 (e.g., 40 CFR 60.4866a(e)(1) and 40 CFR 63.162(c)). Subpart W does not include these identification requirements as part of the Method 21 requirements in 40 CFR 98.234(a)(2), so it would be inconsistent to require the observation path as part of the new OGI method. However, while we are not finalizing the explicit requirement to define the observation path the operator will follow during their survey, we do note that 40 CFR part 98, subpart A requires a written GHG monitoring plan for all facilities subject to the GHGRP (see 40 CFR 98.4(g)(5)). Defining an observation path is one item that could be included in the GHG monitoring plan to meet the requirement to describe “procedures and methods that are used for quality assurance . . . of all . . . other instrumentation” used to collect data to comply with the GHGRP (40 CFR 98.3(g)(5)(i)(C)).

The EPA is finalizing the proposed requirement to observe each fugitive emissions component for fugitive emissions (40 CFR 98.234(a) through (f)). The EPA considers surveying all fugitive emissions components (instead of just the current list of equipment in subpart W for a particular industry segment) to be an inherent part of the NSPS subpart OOOOa OGI method.

The EPA is not cross-referencing the semi-annual (well sites) and quarterly (compressor stations) monitoring frequencies of the final NSPS subpart OOOOa. As noted above, cross-referencing these monitoring frequencies would override the current annual survey requirement in subpart W regardless of whether the use of the new monitoring methods is voluntary or mandatory. The EPA is instead clarifying that for reporters with components subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements and for which surveys are required or elected, the results from each equipment leak
survey must be used to calculate GHG emissions for subpart W. The EPA is further clarifying that it is not our intent to require reporters that are not subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements to conduct more than one equipment leak survey in a calendar year for purposes of GHGRP reporting, solely because they choose to use the OGI method. The EPA also notes that the proposed NSPS subpart OOOOa provisions for adjusting the frequency of equipment leak surveys based on the percent of the fugitive emissions components detected to have fugitive emissions were not included in the final NSPS subpart OOOOa and therefore are not cross-referenced in the final subpart W revisions.

Finally, consistent with the final NSPS subpart OOOOa, the EPA is finalizing the use of Method 21 as an alternative monitoring method to OGI (as specified in the NSPS subpart OOOOa) at 40 CFR 98.234(a)(7). As the EPA noted in the preamble for this proposed revision to subpart W (81 FR 4989; Jan. 29, 2016), the NSPS subpart OOOOa proposal identified EPA Method 21 as a monitoring method that may also be used to conduct resurveys of repaired components when fugitive emissions are detected (80 FR 56612 (well sites) and 80 FR 56612 (compressor stations)), and the EPA requested comment on including in the final rule the use of Method 21 for fugitive emissions monitoring as well (80 FR 56638 (well sites) and 80 FR 56643 (compressor stations)). The EPA also made clear in the preamble to these proposed revisions to subpart W that, consistent with the goal of aligning the methods in the two rulemakings (subpart W and the NSPS subpart OOOOa), the EPA expected that the final amendments to subpart W for monitoring methods would reference the final version of the method(s) in the NSPS subpart OOOOa, including any changes made to the NSPS subpart OOOOa in response to comments on the proposed monitoring method(s) (81 FR 4990). Accordingly, the EPA is finalizing the use of Method 21 as an alternative monitoring method to OGI (as specified in the NSPS subpart OOOOa) at 40 CFR 98.234(a)(7).

For reporters that elect to use Method 21 as specified in 40 CFR 98.234(a)(7), either for components that are subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements or voluntarily, a leak is detected if an instrument reading of 500 ppmv or greater is measured. As explained in this section regarding the NSPS subpart OOOOa OGI monitoring method, we determined that the requirements in 40 CFR 60.5397(a)(b) are consistent with the requirements of subpart W regarding the development of an emissions monitoring plan; this monitoring plan is required to include verification that the procedures of Method 21 are followed consistent with the requirements in 40 CFR 60.5397(a)(c)(8). Also, as with the NSPS subpart OOOOa OGI method, the EPA is requiring in subpart W observation of each fugitive emissions component for fugitive emissions consistent with the requirements in 40 CFR 60.5397(a)(e); the EPA considers surveying all fugitive emissions components to be an inherent part of the NSPS subpart OOOOa Method 21 alternative to the OGI method and is consistent with requirements in subpart W to conduct a complete equipment leak survey.

At this time, the EPA is not adding any other monitoring methods to subpart W. We will continue to evaluate equipment leak detection methods and technologies, and may amend subpart W to allow the use of additional methods in the future.

2. Summary of Comments and Responses

Comment: Many commenters disagreed with the EPA’s proposal to add only the OGI method as specified in the NSPS subpart OOOOa to 40 CFR 98.234(a) of subpart W. They asserted that while OGI is an effective method for finding the majority of emissions more quickly than EPA Method 21, it is also a costly technology that cannot quantify emissions. The commenters stated that OGI has other limitations, especially in non-ideal weather conditions; one commenter also stated that use of the OGI camera requires a hot work permit in many instances.

Response: Due to similar comments on the proposed NSPS subpart OOOOa, the final NSPS subpart OOOOa provides owners and operators of new, modified, or reconstructed well sites or compressor stations with the option of using EPA Method 21 with a repair threshold of 500 ppmv if they elect not to use the OGI method (40 CFR 60.5397(a). As discussed in section II.C.1 of this preamble, the final amendments to subpart W provide for the use of EPA Method 21 where a leak is detected for purposes of subpart W if an instrument reading of 500 ppmv or greater is measured. This amendment to subpart W maintains the alignment with the NSPS subpart OOOOa well site and compressor station fugitive emissions monitoring requirements, so that reporters can directly use the NSPS subpart OOOOa monitoring results to count the number of leaks under subpart W.

Comment: Many commenters stated that leak detection technology is a rapidly growing field and there are many alternative technologies and new technologies in development that may be more accurate and less costly than OGI. Some commenters noted that recent emphasis on CH₄ emissions has caused vendors to focus on CH₄ leak detection. Therefore, according to the commenters, some of those technologies may be better options for the purpose of reporting emissions under subpart W than other leak detection programs. The commenters stated that the EPA’s proposal to limit leak surveys to a prescriptive list of methods could limit development of these new technologies.

Commenters provided a variety of suggestions for incorporation of new and emerging technologies into subpart W. Three commenters recommended that the EPA establish a clear process for industry, vendors, and/or the EPA to evaluate the efficacy and accuracy of alternative CH₄ monitoring technologies and approve the use of these technologies. One of these commenters noted that any technology evaluation process should be straightforward and more streamlined than the years-long process needed to approve emissions control devices or continuous emissions monitoring systems. Another of these commenters suggested that the EPA model a technology evaluation process after the vendor testing program for flares and combustors, in which the EPA sets testing protocols and vendors demonstrate that they meet specific criteria. A fourth commenter suggested that the EPA develop a pilot program to incentivize the accelerated development and deployment of advanced monitoring and detection technologies and to compare the effectiveness of these approaches to periodic, OGI-based surveys.

Response: The EPA agrees with the commenters that emissions monitoring in the oil and gas sector is a field of emerging technology, and major advances are expected in the near future. We are seeing a rapidly growing push to develop and produce low-cost monitoring technologies to find fugitive CH₄ emissions sooner and at lower levels than current technology allows, thus enhancing the ability of operators to detect fugitive emissions. The EPA agrees that continued development of these cost-effective technologies is...
important. However, the EPA does not have enough information at this time to evaluate specific technologies to determine if they are equivalent to or better than the monitoring methods provided in and being added to 40 CFR 98.234(a). The EPA may evaluate new options as they become available and determine if they are equivalent to existing methods. For example, the final NSPS subpart OOOOa provides a process for the EPA to determine that a technology can be used as an “alternative means of emission limitation.” If these fugitive emissions are approved through this process, the EPA anticipates that it would contemporaneously incorporate these monitoring methods in subpart W to ensure continued alignment between the NSPS subpart OOOOa and subpart W through future notice and comment rulemaking.

Comment: Multiple commenters addressed the proposed requirement to consider any fugitive emissions observed using OGI during the NSPS subpart OOOOa fugitive emissions monitoring as a leak for purposes of subpart W. Most of these commenters objected to the proposal and stated that the definition of a leak for subpart W should be 10,000 ppmv, regardless of the monitoring method used. These commenters asserted that setting the leak definition consistent with the current methods in subpart W would ensure that the new methods result in new information being collected and reported consistently within a facility and consistent with the equipment leak data already in the GHGRP. One commenter noted that defining a leak as emissions at a set concentration is much less subjective than defining a leak as any emissions observed with OGI, and setting the leak definition at 10,000 ppmv rather than a lower concentration would allow operators to focus on finding (and fixing) large leaks instead of spending resources to identify many small leaks that do not contribute much to overall emissions. Another commenter noted that a leak definition of 10,000 ppmv is consistent with the leaker emission factors currently provided in subpart W as well as the proposed new leaker emission factors.

One commenter agreed with a subpart W leak being defined as any fugitive emissions observed using OGI during the NSPS subpart OOOOa fugitive emissions monitoring or emissions above 500 ppmv detected via EPA Method 21, but the commenter asserted that the leak definition for any new or emerging technologies used in a voluntary leak survey should be 5,000 ppmv. The commenter noted that these new technologies are likely to be more sensitive and detect emissions at lower concentrations than OGI, and companies that are employing more accurate instruments should not be “penalized” by having to report more leaks than if they used OGI.

Response: Subpart W already includes OGI and EPA Method 21 with a leak definition of 10,000 ppmv for use by reporters currently required to conduct leak surveys for subpart W. The final amendments also provide for use of these methods by reporters electing to conduct an equipment leak survey voluntarily (i.e., for sources currently required to use the calculation methodology based on population counts that are not subject to the NSPS subpart OOOOa well site or compressor station fugitive emission requirements). The EPA is adding the methods used for fugitive emissions monitoring in the NSPS subpart OOOOa to 40 CFR 98.234(a), as approved monitoring methods for subpart W leak surveys. This addition facilitates alignment with the NSPS subpart OOOOa and will allow reporters to directly use the NSPS subpart OOOOa monitoring results to count the number of leaks under subpart W. Finally, as noted in section II.C.1 of this preamble, the EPA is not adding any other monitoring methods to subpart W at this time, so it is not necessary to consider a different leak definition for new or emerging technologies.

The EPA disagrees that using a leak definition other than 10,000 ppmv would undermine the quality of the data reported to the GHGRP. First, subpart W currently includes an OGI monitoring method in 40 CFR 98.234(a)(1). While this monitoring method allows facilities to screen the observed leaks using Method 21, it does not require it, and we do not expect that many reporters actively use dual monitoring methods in their leak surveys to screen all OGI-detected leaks using Method 21. Second, we are also finalizing, consistent with the final NSPS subpart OOOOa rule, the ability to use Method 21 with a leak definition of 500 ppmv as an alternative to the OGI method. We agree with commenters that the average emissions rate of leaks identified using Method 21 with a leak definition of 500 ppmv would be less than the average emissions rate of leaks identified using Method 21 with a leak definition of 10,000 ppmv. To address this issue, we are also finalizing separate leaker factors that are appropriate for reporters using this alternative method (Method 21 with a leak definition of 500 ppmv). As described in further detail in section II.E.1 of this preamble and in the document “Greenhouse Gas Reporting Rule: Technical Support for Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems Final Rule” in Docket ID No. EPA–HQ–OAR–2015–0764, these additional emission factors were developed from the same data set that was used to develop the original population emission factors and the proposed leaker factors. Therefore, this additional Method 21 monitoring method, which includes a different leak definition than the other Method 21-based method already available in subpart W at 40 CFR 98.234(a)(2), has been specifically considered and new emission factors are provided in the final rule to ensure that this new monitoring method’s leak definition will not undermine the quality of the emissions reported under subpart W.

If the EPA did not provide the ability for reporters to use the monitoring methods required by the NSPS subpart OOOOa within subpart W, reporters would not be able to use the NSPS subpart OOOOa monitoring results directly; instead, they would have to measure each occurrence of fugitive emissions individually to determine if it is a leak for purposes of subpart W, which would increase the burden for those reporters.

D. Summary of Final Amendments for Components To Be Surveyed

1. Summary of Final Amendments

The EPA proposed to align the subpart W equipment components with the NSPS subpart OOOOa definition of “fugitive emissions component,” with certain exceptions. After careful consideration of comments, the EPA is finalizing that provision consistent with the final NSPS subpart OOOOa definition of “fugitive emissions component” with certain exceptions consistent with the proposal, as described in further detail in this section below. A “fugitive emissions component” is defined in 40 CFR 60.5430a of the final NSPS subpart

16 See 40 CFR 60.5398a titled “What are the alternative means of emission limitations for GHG and volatile organic compounds from well completions, reciprocating compressors, the collection of fugitive emissions components at a well site and the collection of fugitive emissions components at a compressor station?”
OOOOas to include any component that has the potential to emit fugitive emissions of CH4 or volatile organic compounds at a well site or compressor station, including but not limited to valves, connectors, pressure relief devices, open-ended lines, flanges, covers and closed vent systems not subject to 40 CFR 60.5411a, thief hatches or other openings on a controlled storage vessel not subject to 40 CFR 60.5395a, compressors, instruments, and meters. Devices that vent as part of normal operations, such as natural gas-driven pneumatic controllers or natural gas-driven pumps, are not fugitive emissions components, as the natural gas discharged from the device’s vent is not considered a fugitive emission. Emissions originating from a location other than the vent are considered fugitive emissions.

As noted in the preamble to the proposed subpart W amendments, some of the components listed in the NSPS subpart OOOOas definition of fugitive emissions component are already included as part of the W equipment leaks calculation methodologies (either based on equipment leak surveys or on population counts), while other fugitive emissions components are specifically addressed in other calculation methodologies in subpart W. As part of developing the proposed amendments for subpart W, we compared the list of components in the NSPS subpart OOOOas proposed definition of fugitive emissions component with the current methodologies in subpart W to identify which fugitive emissions components were already covered by an existing requirement in subpart W and which fugitive emissions components would be specifically covered in subpart W when using the OGI method as specified in the proposed NSPS subpart OOOOas. The basis for excluding certain components that are subject to the fugitive emissions standards in the final NSPS subpart OOOOas from the final equipment leak survey requirements in 40 CFR 98.233(q) is discussed below.

### Table 3—Final Subpart W Calculation Methodology Requirements for Components Subject to the Fugitive Emissions Standards in NSPS Subpart OOOOa

<table>
<thead>
<tr>
<th>Type of component in definition of fugitive emissions component and subject to the fugitive emissions standards in NSPS subpart OOOOas</th>
<th>Applicable GHG emissions calculation methodology in subpart W by industry segment for components that are also subject to the fugitive emissions standards for well sites or compressor stations in the NSPS subpart OOOOas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onshore petroleum and natural gas production, onshore petroleum and natural gas gathering and boosting</td>
<td>Underground natural gas storage, LNG storage, LNG import and export equipment</td>
</tr>
<tr>
<td><strong>Thief hatches or other openings on controlled storage vessels not subject to 40 CFR 60.5395a.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Compressors, excluding emissions from vents that are part of normal operations (i.e., wet seal oil degassing vents).</strong></td>
<td></td>
</tr>
<tr>
<td>• 40 CFR 98.233(q) for blowdown valve leakage and isolation valve leakage (use factor for “open-ended line” in Table W–1E to subpart W) .</td>
<td>• 40 CFR 98.233(o) for blowdown valve leakage and isolation valve leakage from centrifugal compressors.</td>
</tr>
<tr>
<td>• 40 CFR 98.233(q) for all other leaks from the housing (use factor for “other” components in Table W–1E to subpart W) .</td>
<td>• 40 CFR 98.233(p) for blowdown valve leakage, isolation valve leakage, and rod packing venting from reciprocating compressors.</td>
</tr>
<tr>
<td><strong>All other components</strong></td>
<td></td>
</tr>
</tbody>
</table>

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\[a\] Onshore Natural Gas Processing and Natural Gas Distribution are not included in this table because we are not revising the calculation methodology and monitoring method for leak detection for these industry segments in this action. The current requirements are still applicable to components in these industry segments.

\[b\] The leaker emission factors for “other” components are being finalized in this revision.

\[c\] The leaker emission factors include both factors in the current rule and factors that are being finalized in this action, depending on the specific component and the monitoring method used to conduct the survey, as discussed in section II.E.1 of this preamble.

At proposal, we determined that the subpart W calculation methodology for storage tanks in 40 CFR 98.233(j) already includes emissions from thief hatches or other openings on storage vessels in the Onshore Petroleum and Natural Gas Production and Onshore Petroleum and Natural Gas Gathering and Boosting industry segments. However, we requested comment on whether the agency should consider separate approaches for controlled storage tanks and uncontrolled storage tanks. The final definition of “fugitive emissions component” in the NSPS subpart OOOOas (40 CFR 60.5430a) includes only thief hatches or other openings on a controlled storage vessel; it does not specifically list openings on uncontrolled storage vessels. We reviewed the subpart W calculation methodology specifically for storage tanks with a vapor recovery system (40 CFR 98.233(j)(4)) and storage tanks with a flare (40 CFR 98.233(j)(3)). The procedure for determining emissions from a tank with a vapor recovery system instructs reporters to adjust the storage tank emissions downward by the magnitude of emissions recovered using...
a vapor recovery system as determined by engineering estimate based on best available data [40 CFR 98.233(i)(4)(i)]. The procedure for determining emissions from a tank with a flare references 40 CFR 98.233(n), which instructs reporters to use engineering calculations based on process knowledge, company records, and best available data to determine the flow to the flare if the flare does not have a continuous flow measurement device. If a reporter sees fugitive emissions from a thief hatch or other opening on a controlled storage vessel during an equipment leak survey conducted using OGI, the reporter should consider that information as part of the “best available data” used to calculate emissions from that storage tank. Therefore, we have concluded that emissions from thief hatches or other openings on storage vessels in the Onshore Petroleum and Natural Gas Production and Onshore Petroleum and Natural Gas Gathering and Boosting industry segments are already included in the subpart W storage tank emission calculations in 40 CFR 98.233(j) and are finalizing, consistent with the proposal, that they are not to be considered when determining emissions from equipment leaks for purposes of subpart W.

We are also finalizing as proposed the exclusion of thief hatches and other openings on transmission storage tanks from the equipment leak reporting requirements.19 We note that, for purposes of subpart W reporting, a leaking thief hatch or other opening is functionally a secondary vent, and thus subject to annual screening on an uncontrolled tank according to 40 CFR 98.233(k)(1). If screening shows vapors from the thief hatch or opening are continuous for 5 minutes, then a method in 40 CFR 98.233(k)(2) must be used to quantify the leak rate, and this amount must be combined with any other vent leak rates for reporting.

We are also finalizing the proposed distinction between equipment leak emissions and compressor emissions. Specifically, for centrifugal compressors, emission sources include wet seal oil degassing vents for centrifugal compressors with wet seals, blowdown valve leakage, and isolation valve leakage. For reciprocating compressors, emission sources include reciprocating compressor rod packing vents, blowdown valve leakage, and isolation valve leakage.

19The exceptions to equipment leak reporting requirements were included in Tables W–1 through W–3 and W–6 of the proposal. The final rule moves these exceptions to 40 CFR 98.232, to increase clarity and reduce confusion while achieving the same purpose and effect.

For compressors in the Onshore Petroleum and Natural Gas Production and the Onshore Petroleum and Natural Gas Gathering and Boosting industry segments under subpart W, the compressor methodologies only cover emissions from centrifugal compressor wet seal oil degassing vents and from reciprocating compressor rod packing vents. Thus, the EPA is finalizing as proposed, for these industry segments, that blowdown valve leakage and isolation valve leakage are considered equipment leaks (i.e., open-ended lines), and finalizing as proposed that emissions from centrifugal compressor wet seal oil degassing vents and from reciprocating compressor rod packing vents are not considered equipment leaks when using the calculation methodology based on equipment leak surveys in 40 CFR 98.233(q).20

For the Onshore Natural Gas Transmission Compression, Underground Natural Gas Storage, LNG Storage, and LNG Import and Export Equipment segments, subpart W requires reporters to make “as found” or continuous measurements for compressor emission sources, so the reporters will have either direct measurement data or site-specific emission factors by which to calculate emissions from all of the compressor sources listed above (i.e., wet seal oil degassing vents for centrifugal compressors with wet seals, rod packing vents for reciprocating compressors, and blowdown valve leakage and isolation valve leakage for both centrifugal and reciprocating compressors). Therefore, we are finalizing as proposed to exclude these compressor emission sources from the requirements in the calculation methodology based on equipment leak surveys so that reporters do not double-count emissions from these sources in their GHGRP reports.

Finally, as noted in section II.C.1 of this preamble, we are finalizing the proposed determination that for purposes of subpart W, all other fugitive emissions components as defined in the NSPS subpart OOOOa not specifically identified above (e.g., thief hatches or other openings on a controlled storage vessel, compressor sources with explicit calculation methodologies in subpart W) will be considered equipment components when conducting an equipment leak survey using the OGI method as specified in the NSPS subpart OOOOa or EPA Method 21 with a leak definition of 500 ppmv. In other words, we consider the provision requiring monitoring of fugitive emissions components as defined in the NSPS subpart OOOOa in 40 CFR 60.5397(a) to be an inherent part of the NSPS subpart OOOOa OGI method and EPA Method 21 with a leak definition of 500 ppmv. Therefore, if a reporter with components not subject to the NSPS subpart OOOOa well site or compressor station fugitive emission requirements elects to use the NSPS subpart OOOOa OGI method or EPA Method 21 with a leak definition of 500 ppmv for purposes of subpart W, they are also electing to survey these additional components.

2. Summary of Comments and Responses

Comment: Several commenters stated that the NSPS subpart OOOOa proposed definition of “fugitive emissions component” is too expansive. Because it includes many more emission sources than a more traditional definition of equipment, the commenters asserted that it is inconsistent with current subpart W requirements. The commenters stated that aligning subpart W with the NSPS subpart OOOOa in this respect will complicate the question of which components must be monitored at subpart W facilities and will result in facilities having higher numbers of leaks than they would have if they used any other equipment leak detection method in subpart W. Some commenters stated that even for well sites and compressor station sites subject to the NSPS subpart OOOOa, component types considered to be equipment under subpart W should be consistent with a more traditional definition of equipment. Other commenters requested that equipment under subpart W only include component types for which the EPA can provide specific population factors and leaker emission factors.

Response: As noted in section II.D.1 of this preamble, the final definition of “fugitive emissions component” in the NSPS subpart OOOOa (40 CFR 60.5430a) does not list as many explicit individual component types, as originally proposed. The EPA is finalizing, with the exceptions discussed in section II.D.1 of this preamble and consistent with the extent proposed, this alignment with the NSPS subpart OOOOa, so that reporters may directly use the NSPS subpart OOOOa monitoring results to count the number of leaks under subpart W. Commenters using the calculation methodology based on equipment leak surveys for
components not subject to the NSPS subpart OOOOa may choose which monitoring method to use. If a reporter chooses to use one of the monitoring methods listed in 40 CFR 98.234(a)(1) through (5), that reporter would use the current list of equipment components for the appropriate industry segment in 40 CFR 98.232 (e.g., the list of equipment at 40 CFR 98.232(e)(7) for the Onshore Natural Gas TransmissionCompression industry segment). If a reporter chooses to use the OGI method as specified in the NSPS subpart OOOOa or EPA Method 21 with a leak definition of 500 ppmv, the reporter would use both the current list and the newly added list of equipment components for the appropriate industry segment in 40 CFR 98.232, which in conjunction include the NSPS subpart OOOOa definition of “fugitive emissions component” in 40 CFR 60.5430a with the exceptions discussed in section II.D.1 of this preamble (e.g., the list of equipment at 40 CFR 98.232(e)(7) and (8) for the Onshore Natural Gas Transmission Compression industry segment).

E. Summary of Final Amendments to Leaker Emission Factors and the Calculation Methodology Based on Equipment Leak Surveys

1. Summary of Final Amendments

To quantify emissions from leaking equipment components, subpart W includes leaker emission factors for each component type in each industry segment currently required to use the calculation methodology based on equipment leak surveys. In contrast to the population emission factors, which are multiplied by the total facility component counts, leaker emission factors are multiplied by the actual number of leaks for each component type, as identified by the equipment leak survey. These amendments increase the component types that are required or may elect to use the calculation methodology based on equipment leak surveys, including most of the component types currently using the subpart W calculation methodology based on population counts. Therefore, new leaker emission factors are being added so that reporters can calculate their GHG emissions for these new component types.

Specifically, the EPA proposed to add new sets of leaker emission factors to subpart W for: (1) the Onshore Petroleum and Natural Gas Production industry segment; (2) the Onshore Petroleum and Natural Gas Gathering and Boosting industry segment; (3) storage wellheads in gas service in the Underground Natural Gas Storage industry segment; (4) LNG storage components in gas service in the LNG Storage industry segment; and (5) LNG terminals components in gas service for the LNG Import and Export Equipment industry segment. For industry segments that already include a set of leaker emission factors, the EPA also proposed to expand that set of leaker emission factors to include certain additional components to better align with the definition of fugitive emissions components in the NSPS subpart OOOOa. See the document “Greenhouse Gas Reporting Rule: Technical Support for Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems” in Docket Item No. EPA–HQ–OAR–2015–0764–0028, for more information on the development of the proposed leaker emission factors.

We are finalizing the leaker emission factors for the Onshore Petroleum and Natural Gas Production and the Onshore Petroleum and Natural Gas Gathering and Boosting industry segments as proposed, with clarifications for flanges and connectors noted below. We are also finalizing the following leaker emission factors as proposed: (1) The leaker emission factors for “other” components in Tables W–3A, W–4A, W–5A, and W–6A to subpart W; (2) the leaker emission factors for storage wellhead equipment in gas service within Table W–4A to subpart W; and (3) the leaker emission factors for equipment in gas service for LNG storage components within Table W–5A to subpart W and for LNG terminal components within Table W–6A to subpart W. We are also finalizing the proposal to expand the existing leaker emission factor for meters to also include instruments in Tables W–3A and W–4A to subpart W for the Onshore Natural Gas Transmission Compression and Underground Natural Gas Storage industry segments, respectively. All but one of the proposed leaker factors for flanges in Tables W–3 through W–6 to subpart W (Tables W–3A, W–4A, W–5A, and W–6A to subpart W in these final amendments) were the same as the leaker factors for connectors; the exception was for flanges in gas service associated with storage wellheads at Underground Natural Gas Storage facilities, which had a proposed leaker factor that differed from the proposed leaker factor for connectors in the same service. Flanges are a type of connector, which means the proposed flange factors that were identical to the existing connector factors were redundant. Therefore, we have not finalized the proposed separate factors for flanges where the factor was the same as the factor for connectors and are finalizing that flanges must use the final connector factor, meaning the effect of the final amendments is the same as the proposal. The separate factors for connectors and flanges for storage wellheads in gas service at Underground Natural Gas Storage facilities are finalized as proposed, but to clarify that the factor for connectors applies only to all types of connectors other than flanges, the component name has been changed from “connector” in the proposal to “connector (other)” in Table W–4A of the final amendments. This change also makes the terminology in Table W–4A consistent with the terminology in Tables W–1A and W–1E, which also specify factors for flanges that differ from the factors for other types of connectors.

We are not finalizing the proposed addition of pumps to the leaker factors in Table W–2 for the Onshore Natural Gas Processing industry segment. As described in section II.B.1 of this preamble, we are not taking final action on the Onshore Natural Gas Processing revisions at this time.

In addition to finalizing nearly all of the proposed leaker factors, we are also finalizing an additional set of emission factors corresponding to the average emissions rates of components identified using Method 21 with a leak definition of 500 ppmv. The proposed leaker factors were developed based on Method 21 monitoring using a leak definition of 10,000 ppmv and were to be applied by all reporters regardless of the leak survey monitoring method used. As noted in section II.C of this preamble, the final NSPS subpart OOOOa includes an additional alternative that allows reporters to use Method 21 with a leak definition of 500 ppmv. On average, the emissions from a leak identified with a Method 21 reading above 500 ppmv are less than the emissions from a leak identified with a Method 21 reading of 10,000 ppmv or higher. Consequently, the leaker factor (which is the average emissions rate) for leaks identified when using a leak definition of 500 ppmv is smaller than the leaker factor for leaks identified when using a leak definition of 10,000 ppmv. Therefore, in order to use the NSPS subpart OOOOa survey results directly to calculate emissions for subpart W when Method 21 with a leak definition of 500
ppmv is used, leaker factors were developed consistent with the average emissions rate of a “leak” defined as a measurement reading of 500 ppmv or more using Method 21. We developed these new leaker factors using data from EPA’s Protocol for Equipment Leak Emissions Estimates consistent with the data used to develop the proposed leaker factors for Onshore Petroleum and Natural Gas Production and the Onshore Petroleum and Natural Gas Gathering and Boosting industry segments. See the document “Greenhouse Gas Reporting Rule: Technical Support for Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems Final Rule” in Docket ID No. EPA–HQ–OAR–2015–0764, which provides more information on the development of the final leaker emission factors. The inclusion of leaker factors specific to Method 21 with a leak definition of 500 ppmv is consistent with our proposal to align subpart W calculation methodologies with the monitoring requirements in the NSPS subpart OOOOa.

We are also finalizing the proposed amendments to the time variable \( T_{p,z} \) in Equation W–30 to clarify the total time a surveyed component found leaking is assumed to be leaking and operational. The previous language for the definition of the time variable specifically considers a first leak survey and a last leak survey in the year but does not provide specific language with respect to the duration of any “intermediate” survey conducted between the first and last survey. Therefore, the EPA proposed to amend the definition of the time variable to clarify how to determine the duration of a leak if more than two leak surveys are conducted in a year and to instruct reporters to sum the individual durations to determine the total time the component was leaking during the year.

The EPA is finalizing this amendment as proposed. The amendments to the time variable \( T_{p,z} \) define each equipment leak survey as covering a unique, non-overlapping time period and we are clarifying our intent that a leak detected in the first or any intermediate survey is not considered to continue leaking past the date of that specific equipment leak survey. For the last survey conducted in the calendar year, the leak is assumed to continue until the end of the year. For example, if a reporter conducts three equipment leak surveys in a calendar year and a particular component is found to be leaking in the first and second surveys but not the third, the total leak duration is the sum of the time from January 1 to the date of the second survey. If a reporter conducts three equipment leak surveys in a calendar year and a particular component is found to be leaking in the first and last surveys but not the second, then the total leak duration is the sum of the time from January 1 to the date of the first survey and the time from the date of the second survey to December 31.


Finally, 40 CFR 98.233(q) includes a provision requiring reporters to conduct one equipment leak survey in a calendar year (which must include “all component types” subject to 40 CFR 98.233(q)) or multiple “complete” equipment leak surveys in a calendar year. In response to comments as part of the 2010 subpart W final rule, the EPA noted that subsequent equipment leak surveys should be “conducted for an entire facility.”

The EPA has reviewed how this interpretation could interact with these final amendments for components subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements and finds that additional clarification is necessary. For example, a facility in the Onshore Petroleum and Natural Gas Production industry segment or the Onshore Petroleum and Natural Gas Gathering and Boosting industry segment may have some components that are subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements and others subject to the NSPS subpart OOOOa compressor station fugitive emissions requirements could end up being required to monitor the fugitive emissions components at a well site four times a year instead of twice. Therefore, the EPA is clarifying in 40 CFR 98.233(q)(2)(ii) that any monitoring conducted pursuant to and in compliance with the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements constitutes a “complete” survey for purposes of subpart W and must be used for subpart W reporting. The EPA is further clarifying that, to meet the requirements of 40 CFR 98.233(q), at least one equipment leak survey must be conducted in a calendar year.

2. Summary of Comments and Responses

Comment: Several commenters addressed the EPA’s proposed leaker emission factors. Some of the commenters indicated that the EPA/Gas Research Institute (GRI) data set upon which the proposed factors are based is an older data set and asserted that it may not be representative of operating practices and procedures that have changed significantly over the past 20 years. In addition, the commenters stated that the EPA/GRI data set includes a limited population of measurements, so the proposed leaker emission factors may not account for operational variability on a regional or national level. Some commenters requested that the EPA consider newer studies, including those cited in

“Greenhouse Gas Reporting Rule: Technical Support for Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems” (Docket Item No. EPA–HQ–OAR–2015–0764–0028) either instead of or in combination with the EPA/GRI data set. Several commenters urged the EPA to work with the regulated community to improve the default leaker emission factors in subpart W. One commenter noted that the proposed leaker emission factors may be a viable interim solution but recommended that the EPA analyze more robust data sets consisting of the combined results of all studies for each industry segment and evaluate whether the subpart W leaker emission factors should be revised.

Response: As described in the preamble to the proposed rule and the document “Greenhouse Gas Reporting Rule: Technical Support for Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems Final Rule” in Docket ID No. EPA–HQ–OAR–2015–0764, the EPA is finalizing the leaker emission factors as proposed. The EPA appreciates the commenters’ interest in providing a thorough review of the available study data to develop an accurate set of leaker emission factors. The EPA is committed to working with stakeholders to ensure that GHGRP requirements and calculation methods are based upon the most robust data available. If the EPA determines that revisions to the subpart W leaker emission factors are appropriate in the future based on additional information, we anticipate that we will propose to amend the rule accordingly.

Comment: Numerous commenters stated that reporters should be allowed to use site-specific leak quantification data if available, either directly for each individual leak (i.e., direct measurement data) or to develop their own leaker emission factors on a facility-specific, company-specific, or product-specific basis. Most of these commenters supported the EPA’s proposal to include default leaker emission factors, but stated that reporters should not be limited to using them if the facility has more accurate, site-specific information. Some commenters further noted that the site-specific data reported to the GHGRP could be used to improve the default leaker emission factors in the future. One commenter also requested that the EPA require quantification of any leak that a reporter elects not to repair.

Response: The EPA did not propose and, after review and consideration of comments, is not finalizing provisions allowing reporters to use site-specific information to calculate equipment leak emissions for subpart W. While we agree that direct measurement has the potential to provide more accurate emissions data than using emission factors, we would need to develop criteria and guidelines for using direct measurement data consistently across subpart W reporters for calculating equipment leak emissions. Similarly, we agree that using site-specific emission factors can provide more accurate emissions data than using default emission factors, but a robust set of requirements would be needed for reporters to use when developing their own emission factors to ensure that those factors are as unbiased and representative as possible. In addition, if reporters are using direct measurement or their own emission factors, we would most likely need to amend the reporting requirements (e.g., to require reporters to provide emission factors), and we would need to consider whether any other amendments would be needed to enable us to review and verify reported data. In either of these cases, we would provide the opportunity for the public to comment on those amended requirements before finalizing them within subpart W.

F. Summary of Final Amendments to Reporting Requirements

1. Summary of Final Amendments

The EPA is finalizing largely as proposed the new reporting requirements for facilities conducting equipment leak surveys under subpart W. Reporters in the Onshore Petroleum and Natural Gas Production and the Onshore Petroleum and Natural Gas Gathering and Boosting industry segments, reporters with storage wellheads in the Underground Natural Gas Storage industry segment, and reporters with components in gas service in the LNG Storage and LNG Import and Export Equipment industry segments that begin using the calculation methodology based on equipment leak surveys must report the information currently listed in 40 CFR 98.236(q)(1) and (2), which includes the number of equipment leak surveys, component types, number of leaking components, average time the components were assumed to be leaking, and annual CO₂ and CH₄ emissions. Facilities that conduct surveys using the new monitoring methods in 40 CFR 98.234(a)(6) or (7) must also report the data elements in 40 CFR 98.236(q)(2) for additional component types specified in 40 CFR 98.232. Reporters may elect to report the data elements in 40 CFR 98.236(q)(2) for the additional component types if they conduct surveys using a monitoring method in 40 CFR 98.234(a)(1) through (5).

The data elements in 40 CFR 98.236(q)(1) and (2) are already required to be reported by facilities conducting equipment leak surveys in the Onshore Natural Gas Transmission Compression, Underground Natural Gas Storage (storage stations), and LNG Storage and LNG Import and Export Equipment (components in LNG service) industry segments. However, facilities in those segments conducting equipment leak surveys using the new OGI method or Method 21, as specified in the NSPS subpart OOOOa (finalized in subpart W as 40 CFR 98.234(a)(6) or (7)), must begin reporting the data elements in 40 CFR 98.236(q)(2) for component types with the new leaker emission factors, including component types that are not currently subject to reporting. Facilities conducting equipment leak surveys using a monitoring method in 40 CFR
98.234(a)(1) through (5) may elect to begin reporting the data elements in 40 CFR 98.236(q)(2) for other components that are not currently subject to reporting.

In addition, the EPA is finalizing as proposed three new reporting requirements for facilities conducting equipment leak surveys in all of the above segments as well as the Onshore Natural Gas Processing and Natural Gas Distribution segments. First, facilities in those segments will be required to report the monitoring method(s) in 40 CFR 98.234(a) used to conduct the survey(s). Second, facilities in the above segments except for Onshore Natural Gas Processing and Natural Gas Distribution will be required to indicate whether any of their component types are subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements. Finally, facilities with components for which the calculation methodology based on equipment leak surveys is optional (e.g., facilities in the Onshore Petroleum and Natural Gas Production segment) will be required to indicate whether they elected to use the calculation methodology based on equipment leak surveys for any of their component types at the facility.

Additionally, in reviewing specific reporting requirements while responding to public comments, we recognized that the reporting requirements at 40 CFR 98.236(r)(3)(ii) were unclear, and could be misinterpreted with respect to how this reporting element relates to the calculated emissions. Therefore, we are revising 40 CFR 98.236(r)(3)(ii) by adding the phrase “...for which equipment leak emissions are calculated using the methodology in § 98.233(r)” to clarify our original intent that the major equipment counts reported under this requirement are specific to equipment for which emissions are calculated using the population count methodology.

2. Summary of Comments and Responses

Comment: Two commenters addressed the proposed requirement in 40 CFR 98.236(q)(1)(iii) to indicate whether any component types at a facility are subject to the NSPS subpart OOOOa. One commenter opposed the addition, stating that it is overly burdensome to require reporters to delineate reporting of emission sources subject to the NSPS subpart OOOOa, especially if this is intended to be a numerical response regarding the number of individual components subject to the NSPS subpart OOOOa.

Another commenter asserted that it is not clear if the response to proposed 40 CFR 98.236(q)(1)(iii) is a single yes or no for each facility or if the EPA will be expecting a yes or no response for each component type.

Response: In the final rule, the EPA has revised the proposed requirement in 40 CFR 98.236(q)(1)(iii) (indicate whether any component types are subject to the NSPS subpart OOOOa) to be clear that the EPA expects only one yes or no response for an entire facility. While the EPA understands that the number of leaking components and equipment leak emissions may increase as the number of components subject to the NSPS subpart OOOOa increases, this response will allow the EPA to provide transparent data related to changes in emissions for facilities with component types subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements over time. This data element will also support verification that the appropriate GHGRP monitoring method was used by the facility.

III. Confidentiality Determinations

A. Summary of Final Confidentiality Determinations for New Subpart W Data Elements

As noted in the proposed rule, we are applying the same approach as previously used for making confidentiality determinations for data elements reported under the GHGRP. In the “Confidentiality Determinations for Data Required Under the Mandatory Greenhouse Gas Reporting Rule and Amendments to Special Rules Governing Certain Information Obtained Under the Clean Air Act” (hereafter referred to as “2011 Final CBI Rulemaking”) (76 FR 30782, May 26, 2011), the EPA grouped part 98 data elements for which EPA was determining confidentiality status through that rulemaking into 22 data categories. The EPA then made categorical confidentiality determinations for eight direct emitter data categories and eight supplier data categories and applied the categorical confidentiality determination to all data elements assigned to the category. Of these data categories with categorical determinations, the EPA determined that four direct emitter data categories are comprised of those data elements that meet the definition of “emission data,” as defined at 40 CFR 2.301(a), and are, therefore, not entitled to confidential treatment under section 114(c) of the CAA.24 The EPA determined that the other four direct emitter data categories and the eight supplier data categories do not meet the definition of “emission data.” For these data categories that are determined not to be emission data, the EPA determined categorically that data in three direct emitter data categories and five supplier data categories are eligible for confidential treatment as CBI, and that the data in one direct emitter data category and three supplier data categories are ineligible for confidential treatment as CBI. For two direct emitter data categories, “Unit/Process ‘Static’ Characteristics that Are Not Inputs to Emission Equations” and “Unit/Process Operating Characteristics that Are Not Inputs to Emission Equations,” and three supplier data categories, “GHGs Reported,” “Production/Throughput Quantities and Composition,” and “Unit/Process Operating Characteristics,” the EPA determined in the 2011 Final CBI Rulemaking that the data elements assigned to those categories are not emission data, but the EPA did not make categorical CBI determinations for them. Rather, the EPA made CBI determinations for each individual data element included in those categories on a case-by-case basis taking into consideration the criteria in 40 CFR 2.208. The EPA did not make a final confidentiality determination for data elements assigned to the inputs to emission equation data category (a direct emitter data category) in the 2011 Final CBI Rulemaking. However, the EPA has since proposed and finalized an approach for addressing disclosure concerns associated with inputs to emissions equations.25

In the proposed rule, we assigned the nine proposed new or substantially revised data elements to the appropriate direct emitter data categories created in the 2011 Final CBI Rulemaking based on the type and characteristics of each data element. For the seven data elements the EPA assigned to a direct emitter category with a categorical determination, the EPA proposed that the categorical determination for the category be applied to the proposed new or substantially revised data elements,

24 Direct emitter data categories that meet the definition of “emission data” in 40 CFR 2.301(a) are “Facility and Unit Identification,” “Emissions,” “Calculation Methodology and Methodological Tier,” and “Data Elements Reported for Periods of Missing Data that are not Inputs to Emission Equations.”

as shown in Table 4 of this preamble. For the two data elements assigned to the “Unit/Process Operating Characteristics that Are Not Inputs to Emission Equations,” we proposed confidentiality determinations on a case-by-case basis taking into consideration the criteria in 40 CFR 2.208, consistent with the approach used for data elements previously assigned to these two data categories, as shown in Table 5 of this preamble. Refer to the preamble to the proposed rule (81 FR 4987; January 29, 2016) for additional information regarding the proposed confidentiality determinations.

With consideration of the information provided by commenters, the EPA is finalizing the confidentiality determinations as proposed. Specifically, the EPA is finalizing the proposed determination for each of the nine new or substantially revised data elements to be designated as “emission data” or “not CBI.”

### Table 4—Final Data Category Assignments and Confidentiality Determinations for New Data Elements Assigned to Categories with Categorical Determinations

<table>
<thead>
<tr>
<th>Citation</th>
<th>Data element</th>
<th>Final category assignment</th>
<th>Categorical determination (as established in 2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>§ 98.236(q)(1)(i)</td>
<td>The number of complete equipment leak surveys performed during the calendar year.</td>
<td>Test and Calibration Methods. Facility and Unit Identifier Information.</td>
<td>Not Emission Data and Not CBI.</td>
</tr>
<tr>
<td>§ 98.236(q)(1)(ii)</td>
<td>Whether any component types were subject to 40 CFR part 60, subpart OOOOa.</td>
<td>Emission Data.</td>
<td></td>
</tr>
<tr>
<td>§ 98.236(q)(1)(iii)</td>
<td>Whether you elected to comply with § 98.233(q) per § 98.233(q)(1)(iii).</td>
<td>Emission Data.</td>
<td></td>
</tr>
<tr>
<td>§ 98.236(q)(1)(iv)</td>
<td>Each type of method described in § 98.234(a) that was used to conduct leak surveys.</td>
<td>Test and Calibration Methods. Facility and Unit Identifier Information.</td>
<td>Not Emission Data and Not CBI.</td>
</tr>
<tr>
<td>§ 98.236(q)(2)(i)</td>
<td>For each component type that is located at your facility, component type.</td>
<td>Emissions Information.</td>
<td>Emission Data.</td>
</tr>
<tr>
<td>§ 98.236(q)(2)(iv)</td>
<td>For each component type that is located at your facility, annual CO₂ emissions, in metric tons CO₂.</td>
<td>Emissions Information.</td>
<td>Emission Data.</td>
</tr>
<tr>
<td>§ 98.236(q)(2)(v)</td>
<td>For each component type that is located at your facility, annual CH₄ emissions, in metric tons CH₄.</td>
<td>Emissions Information.</td>
<td>Emission Data.</td>
</tr>
</tbody>
</table>

### Table 5—Final Confidentiality for Data Elements Assigned to the “Unit/Process Operating Characteristics That Are Not Inputs to Emission Equations” Data Category

<table>
<thead>
<tr>
<th>Citation</th>
<th>Data element</th>
<th>Final confidentiality determination and rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>§ 98.236(q)(2)(ii)</td>
<td>For each component type that is located at your facility, total number of the surveyed component type that were identified as leaking in the calendar year (“xₚ”, in Equation W–30).</td>
<td>Not Emission Data (Categorical Determination as Established in 2011). Not CBI. The term “equipment leaks” refers to those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally-equivalent opening. Leaking components at a facility may have a correlation to the level of maintenance at a facility. However, there is no direct correlation between the level of maintenance and process efficiency, i.e., a higher number of leaks in one facility do not indicate that the processes have been running longer or more frequently than those processes at another facility that has a lower number of leaks. Furthermore, Department of Transportation (DOT) regulations require natural gas distribution companies and transmission pipeline companies to conduct periodic leak detection and fix any leaking equipment. The number of leaks detected and fixed is reported to the DOT and is publicly available. Finally, 40 CFR part 60, subpart OOOOa requires reporting for each component with visible emissions at affected well sites and compressor station sites. The EPA is finalizing that this data element is not confidential; and that it will be considered “not CBI.”</td>
</tr>
<tr>
<td>§ 98.236(q)(2)(iii)</td>
<td>For each component type that is located at your facility, average time the surveyed components are assumed to be leaking and operational, in hours (average of “Tₚ,z” from Equation W–30).</td>
<td>Not Emission Data (Categorical Determination as Established in 2011). Not CBI.</td>
</tr>
</tbody>
</table>

### B. Summary of Comments and Responses

This section summarizes the major comments and responses related to the proposed categorical assignments and confidentiality determinations. See “Response to Public Comments on Greenhouse Gas Reporting Rule: Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems” in Docket ID No. EPA–HQ–OAR–2015–

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26 The categorical confidentiality determinations for the data categories listed in this table were finalized on May 26, 2011 (see 76 FR 30782).
IV. Impacts of the Final Amendments to Subpart W

A. Impacts of the Final Amendments

The final amendments to subpart W revise costs associated with the use of the monitoring methods and the calculation methodology based on equipment leak surveys for reporters in the following industry segments: Onshore Natural Gas Production, Onshore Petroleum and Natural Gas Gathering and Boosting, Onshore Natural Gas Transmission Compression, Underground Natural Gas Storage, LNG Storage, and LNG Import and Export Equipment. Reporters in these industry segments are required to use the results of fugitive emissions component monitoring required for well sites and compressor stations under the NSPS subpart OOOOa. Reporters in these segments with components not subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements and for which they are currently required to use the calculation methodology based on population counts under subpart W may voluntarily use the calculation methodology based on equipment leak surveys for those components if the equipment leak survey is conducted following a monitoring method listed in subpart W.

The EPA received comments from one commenter regarding the specific impacts of the proposed amendments. After evaluating these comments and reviewing other changes from proposal, the EPA revised the impacts assessment from proposal. The EPA estimates that the costs of the final amendments to subpart W are slightly more burdensome than we estimated at proposal, but they do not significantly change the overall burden to subpart W reporters. The EPA estimated that the additional costs to subpart W reporters in the Onshore Petroleum and Natural Gas Production and the Onshore Petroleum and Natural Gas Gathering and Boosting industry segments to transition their existing equipment leak recordkeeping, calculating, and reporting systems to use the calculation methodology based on equipment leak surveys and to determine which components are subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements and which are not, will be approximately $110,000 per year, or about $410 per reporter. The EPA estimated that the additional costs for subpart W reporters in the other industry segments (i.e., Onshore Natural Gas Transmission Compression, Underground Natural Gas Storage, Liquefied Natural Gas (LNG) Storage, and LNG Import and Export Equipment) to add a few new emission factors to their existing systems (rather than transitioning their recordkeeping, calculating, and reporting systems) and to determine which components are covered by the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements and which are not, will be approximately $220,000 per year or about $110 per reporter. The total costs are approximately $128,400 per year for all reporters, or about $286 per reporter. See the memorandum, “Assessment of Impacts of the Final Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems” in Docket ID No. EPA–HQ–OAR–2015–0764 for additional information.

B. Summary of Comments and Responses

This section summarizes the major comments and responses related to the impacts of the proposed amendments to subpart W of part 98. We note that while several commenters asserted that the proposed rule would be burdensome for many operators and suggested revisions to the rule requirements that would reduce the burden, only one commenter provided comments on the EPA’s impacts estimate and supporting statement, and that commenter’s major comments are summarized in this section. See “Response to Public Comments on Greenhouse Gas Reporting Rule: Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems” in Docket ID No. EPA–HQ–OAR–2015–0764 for a complete listing of all comments and responses.

Comment: One commenter stated that the EPA’s estimate of two hours of labor and $198 per reporter significantly underestimates and misrepresents the amount of time and effort that goes into implementing a new rule. The commenter provided a cost estimate that assumes more labor hours than in the EPA’s memorandum “Assessment of Impacts of the Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems” (Docket Item No. EPA–HQ–OAR–2015–0764–0025). The commenter noted that as more sites become subject to the NSPS subpart OOOOa at a facility, the costs of managing the data and processing it into a usable format for the GHGRP will increase each year for that reporter. The commenter also noted that the EPA was incorrect in assuming that there would be no costs for facilities in the Onshore Natural Gas Processing segment.

Response: The EPA has evaluated the comments and has made changes to the estimate of burden in the supporting statement. The following paragraphs address each of the points in the commenter’s detailed cost estimate included with the comment letter and explain how the points are being addressed in the final burden and cost estimate.
The commenter suggested adding burden of two hours in the first year related to the initial monitoring plan development and burden of 0.5 hours in subsequent years related to yearly monitoring plan revisions. The EPA did not include costs at proposal related to the monitoring plan because the subpart W amendments do not require the development of a separate monitoring plan. Instead, the subpart W amendments cross reference the monitoring plan that is already being developed according to the NSPS subpart OOOOa. The EPA recognizes that reporters that are not subject to the NSPS subpart OOOOa would not already be required to develop a monitoring plan under the NSPS subpart OOOOa; however, reporters that elect to use one of the new leak detection methods are also electing to incur the burden of developing a monitoring plan. Therefore, there is no monitoring plan burden associated with the subpart W amendments and the final burden and cost estimate has not changed from proposal as a result of this comment.

The commenter suggested changing the number of hours to revise the reporting system to five hours and to allow one hour for maintenance in each subsequent year. At proposal, the EPA estimated that revising the reporting system to use the calculation methodology based on equipment leak surveys would require two hours. The commenter did not provide the basis for their estimate of five hours to update the data management system. The overall reporting costs for compliance already include a burden of ten hours per year and the EPA disagrees that updating the data management system would encompass half of that allotment because EPA anticipates that reporters would only need to add a few emission factors for leaking components to their existing system, rather than something more time-intensive such as creating a new data management system. We reviewed the revisions expected to be needed in the data management system. While we maintain that two hours are sufficient to implement the calculation methodology based on equipment leak surveys into a reporter’s existing system, we recognize that this process will also require quality assurance reviews and testing to ensure the data are stored properly and the calculations are performed correctly. Therefore, we increased the number of hours estimated to revise the reporting system from two hours to 3.5 hours to account for these additional quality reviews of the data management system. However, the EPA has made no changes to burden associated with maintenance of the revised reporting system because the EPA asserts that any reporting system maintenance related to subpart W is already reflected in the twenty hours per year allotted to each subpart W reporter for recordkeeping and reporting activities.

The commenter suggested that the EPA adjust the proposed burden and cost estimate by adding the following activities and burden estimates: (1) Time for staff to process the survey data resulting from the calculation methodology based on equipment leak surveys and to enter it into the GHGRP system at a burden of three hours per year; (2) time for staff training at a burden of two hours for initial training and one hour per year in subsequent years; and (3) time for staff to review the data for quality assurance, follow missing data requirements, report data to the EPA, and retain all records at a burden of four total hours per year.

At proposal, the EPA did not include burden related to these activities because they are covered by the twenty hours per year already accounted for in the overall subpart W reporter burden for recordkeeping and reporting activities. Therefore, the final burden and cost estimate has not changed from proposal as a result of these comments.

However, at proposal, the EPA did not account for the time associated with determining which components in the reporting system are covered by the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements and which are not. As a result, the EPA has added 0.5 hours per reporter in the first year that the reporter has an affected collection of fugitive emissions components subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements and 0.1 hours per reporter in subsequent years.

Finally, for the reasons described in section II.B.2 of this preamble, the final rule language specifies that the requirement to use the NSPS subpart OOOOa results as part of the calculation methodology based on equipment leak surveys only applies to components subject to the NSPS subpart OOOOa well site or compressor station fugitive emissions requirements. The subpart W equipment leak survey requirements for facilities in the Onshore Natural Gas Processing segment do not change as a result of these amendments. Therefore, the EPA is not including any burden estimate for Onshore Natural Gas Processing reporters (i.e., the revisions to the burden estimate described in this response do not apply to the Onshore Natural Gas Processing segment).

Overall, the burden and cost estimate has been revised as discussed above from 502 hours and $50,000 per year at proposal to approximately 1,295 hours and $128,400 per year for all reporters.

V. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at http://www2.epa.gov/laws-and-executive-orders.

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a significant regulatory action and was therefore not submitted to the Office of Management and Budget (OMB) for review.

B. Paperwork Reduction Act (PRA)

The information collection activities in this rule have been submitted for approval to the OMB under the PRA. The Information Collection Request (ICR) document that the EPA prepared has been assigned EPA ICR number 2300.19. You can find a copy of the ICR in the docket for this rule, and it is briefly summarized here. The information collection requirements are not enforceable until OMB approves them.

This action increases burden for industry segments that conduct equipment leak surveys. These revisions are expected to increase respondent burden for subpart W reporters that become subject to the NSPS subpart OOOOa well site or compressor station fugitive requirements. To accommodate the new methods and emission factors added by these final amendments, the EPA expects that each affected subpart W reporter will either revise their reporter-specific calculation mechanism (i.e., calculation spreadsheet, recordkeeping database, etc.) or add a few new emission factors to the reporter-specific calculation mechanism, when and if the reporter becomes subject to the NSPS subpart OOOOa well site or compressor station fugitive requirements. The recordkeeping and reporting requirements are being finalized as proposed. Impacts associated with the final revisions to the recordkeeping and reporting requirements are detailed in the memorandum “Assessment of Impacts of the Final Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems”
Data collection provides a critical tool for communities to identify nearby sources of GHGs and provides information to state and local governments. The data can be used to complement atmospheric GHG studies and inform updates to emission inventories such as the Inventory of U.S. Greenhouse Gas Emissions and Sinks (Inventory). Various activity data are collected that can be used to improve understanding of the occurrence of emissions from a variety of sources.

Data collected must be made available to the public unless the data qualify for CBI treatment under the CAA and EPA regulations. All data determined by the EPA to be CBI are safeguarded in accordance with regulations in 40 CFR chapter 1, part 2, subpart B.

Respondents/affected entities: The respondents in this information collection include owners and operators of petroleum and natural gas systems facilities that report their GHG emissions from equipment leaks to the EPA to comply with subpart W.

Respondent’s obligation to respond: The respondent’s obligation to respond is mandatory under the authority provided in CAA section 114.

Estimated number of respondents: Approximately 899 respondents per year.

Frequency of response: Annual.

Total estimated burden: 1,295 hours (per year). Burden is defined at 5 CFR 1320.3(b).

Total estimated cost: $128,400 (per year), includes $0 annualized capital or operation and maintenance costs.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for the EPA’s regulations in 40 CFR are listed in 40 CFR part 9. When OMB approves this ICR, the EPA will announce that approval in the Federal Register and publish a technical amendment to 40 CFR part 9 to display the OMB control number for the approved information collection activities contained in this final rule.

C. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. The small entities directly regulated by this final rule include small businesses in the petroleum and natural gas industry. The EPA has determined that some small businesses will be affected because their production processes emit GHGs exceeding the reporting threshold. This action includes amendments that may result in a small burden increase on some subpart W reporters, but the EPA has determined that the increased cost of less than $286 per reporter is not a significant impact. Details of this analysis are presented in “Assessment of Impacts of the Final Leak Detection Methodology Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems” in Docket ID No. EPA–HQ–OAR–2015–0764.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain an unfunded mandate of $100 million or more as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. As shown in sections IV.A and V.B of this preamble, the annual cost of this action is $128,400, which is well under $100 million per year.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action has tribal implications. However, it will neither impose substantial direct compliance costs on federally recognized tribal governments, nor preempt tribal law. This regulation will apply directly to petroleum and natural gas facilities that emit GHGs. Although few facilities that will be subject to the rule are likely to be owned by tribal governments, the EPA sought opportunities to provide information to tribal governments and representatives during the development of the proposed and final subpart W that was promulgated on November 30, 2010 (75 FR 74458).

The EPA consulted with tribal officials under the EPA Policy on Consultation and Coordination with Indian Tribes early in the process of developing this regulation to permit them to have meaningful and timely input into its development. A summary of that consultation is provided in section IV.F of the preamble to the re-proposal of subpart W published on April 12, 2010 (75 FR 18608), and section IV.F of the preamble to the subpart W 2010 final rule published on November 30, 2010 (75 FR 74458).

G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of “covered regulatory action” in section 2–202 of the Executive Order. This action is not subject to Executive Order 13045 because it does not concern an environmental health risk or safety risk.

H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act (NTTAA)

This rulemaking does not involve technical standards.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

The EPA believes that this action is not subject to Executive Order 12898 (59 FR 7629, February 16, 1994) because it does not establish an environmental health or safety standard. Instead, this rule addresses information collection and reporting and verification procedures.

K. Congressional Review Act (CRA)

This action is subject to the CRA, and the EPA will submit a rule report to each House of the Congress and to the Comptroller General of the United States. This action is not a “major rule” as defined by 5 U.S.C. 804(2).

List of Subjects in 40 CFR Part 98

Environmental protection, Administrative practice and procedure, Greenhouse gases, Reporting and recordkeeping requirements.

Dated: November 10, 2016.

Gina McCarthy, Administrator.

For the reasons stated in the preamble, title 40, chapter I, of the Code of Federal Regulations is amended as follows:
PART 98—MANDATORY GREENHOUSE GAS REPORTING

1. The authority citation for part 98 continues to read as follows:

Authority: 42 U.S.C. 7401–7671q.

Subpart W—Petroleum and Natural Gas Systems

2. Section 98.232 is amended by:

a. Revising paragraph (c)(21);

b. Adding paragraph (e)(8);

c. Revising paragraph (f)(5);

d. Adding paragraphs (f)(6) through (8);

e. Revising paragraphs (g)(3) and (4);

f. Adding paragraphs (g)(5) through (7);

g. Revising paragraphs (h)(4) and (5);

h. Adding paragraphs (h)(6) through (8); and

i. Revising paragraph (j)(10).

The revisions and additions read as follows:

§ 98.232 GHGs to report.

* * * * *

(c) * * *

(21) Equipment leaks from valves, connectors, open ended lines, pressure relief valves, pumps, flanges, and other components (such as instruments, loading arms, stuffing boxes, compressor seals, dump lever arms, and breather caps, but does not include components listed in paragraph (c)(11) or (19) of this section, and it does not include thief hatches or other openings on a storage vessel).

(e) * * *

(8) Equipment leaks from all other components that are not listed in paragraph (e)(1), (2), or (7) of this section and are either subject to the well site or compressor station fugitive emissions standards in § 60.5397a of this chapter or you elect to survey using a leak detection method described in § 98.234(a)(6) or (7). The other components subject to this paragraph (e)(8) also do not include thief hatches or other openings on a storage vessel. If these other components are not subject to the well site or compressor station fugitive emissions standards in § 60.5397a of this chapter, you may also elect to report emissions from these other components if you elect to survey them using a leak detection method described in § 98.234(a)(1) through (5).

(f) * * *

(5) Equipment leaks from valves, connectors, open ended lines, pressure relief valves, and meters associated with storage stations.

(g) * * *

(3) Flare stack emissions.

(4) Equipment leaks from valves, pump seals, connectors, and other equipment leak sources in LNG service.

(5) Equipment leaks from vapor recovery compressors, if you do not survey components associated with vapor recovery compressors in accordance with paragraph (g)(6) of this section.

(j) * * *

(10) Equipment leaks from valves, connectors, open ended lines, pressure relief valves, pumps, flanges, and other components (such as instruments, loading arms, stuffing boxes, compressor seals, dump lever arms, and breather caps, but does not include components in paragraph (j)(8) or (9) of this section, and it does not include thief hatches or other openings on a storage vessel).

3. Section 98.233 is amended by:

a. Revising the parameter EF, of Equation W–1 in paragraph (a) introductory text, and paragraph (q);
§ 98.233 Calculating GHG emissions.

(a) * * * * *

(b) * * * * *

(c) * * * * *

EFₕ = Population emission factors for natural gas storage facilities, concentration of CH₄, or CO₂, in the total carbon content of any substance.

(ii) For the components listed in § 98.232(c)(1), (e)(7), (e)(8), (f)(5), (f)(6), (f)(7), (f)(8), (g)(4), (g)(6), (g)(7), (h)(5), (h)(7), (h)(8), and (j)(10) that are subject to fugitive emissions standards in § 60.5397a of this chapter, you must conduct surveys using any of the leak detection methods listed in § 98.234(a)(6) or (7) and calculate equipment leak emissions using the procedures specified in paragraph (q)(2) of this section.

(iii) For the components listed in § 98.232(c)(21), (e)(6), (f)(6), (f)(7), (f)(8), (g)(6), (g)(7), (h)(7), (h)(8), and (j)(10) that are subject to fugitive emissions standards in § 60.5397a of this chapter, you must conduct surveys using any of the leak detection methods listed in § 98.234(a)(6) or (7) and calculate equipment leak emissions using the procedures specified in paragraph (q)(2) of this section.

(iv) For the components listed in § 98.232(c)(21), (e)(8), (f)(6), (f)(7), (f)(8), (g)(6), (g)(7), (h)(7), (h)(8), or (j)(10), that are subject to fugitive emissions standards in § 60.5397a of this chapter, you may conduct surveys using any of the leak detection methods listed in § 98.234(a)(6) or (7) and calculate equipment leak emissions using the procedures specified in paragraph (q)(2) of this section.

(Eq. W-30)

Where:

- Eᵣ,ᵣ,i = Annual total volumetric emissions of GHGi from specific component type “p” (in accordance with paragraphs (q)(1)(i) through (iv) of this section) in standard cubic feet per hour per meter of each type “i” in Tables W–2, W–3A, W–3B, and W–4B to this part for onshore petroleum and natural gas production, onshore natural gas transmission compression, and underground natural gas storage facilities, respectively.

- EFₕₚ = Leaker emission factor for specific component type “p” detected as leaking in any leak survey during the year. A component found leaking in two or more surveys during the year is counted as one leaking component.

- xₚ = Total number of specific component type “p” detected as leaking in any leak survey during the year. A component found leaking in two or more surveys during the year is counted as one leaking component.

petroleum and natural gas gathering and boosting facilities, concentration of GHG, CH₄, or CO₂, in produced natural gas as defined in paragraph (u)(2) of this section; for onshore natural gas processing facilities, concentration of GHG, CH₄, or CO₂, in the total hydrocarbon of the feed natural gas; for onshore natural gas transmission compression and underground natural gas production facilities and onshore natural gas storage facilities, respectively.
gas storage, GHG$_i$ equals 0.975 for CH$_4$ and $1.1 \times 10^{-2}$ for CO$_2$; for LNG storage and LNG import and export equipment, GHG equals 1 for CH$_4$ and 0 for CO$_2$; and for natural gas distribution, GHG equals 1 for CH$_4$ and $1.1 \times 10^{-2}$ for CO$_2$.

$T_{p,y} =$ The total time the surveyed component “$p$,” component type “$p$,” was assumed to be leaking and operational, in hours. If one leak detection survey is conducted in the calendar year, assume the component was leaking for the entire calendar year. If multiple leak detection surveys are conducted in the calendar year, assume a component found leaking in the first survey was leaking since the beginning of the year until the date of the survey; assume a component found leaking in the last survey of the year was leaking from the preceding survey through the end of the year; assume a component found leaking in a survey between the first and last surveys of the year was leaking since the preceding survey until the date of the survey; and sum times for all leaking periods. For each leaking component, account for time the component was not operational (i.e., not operating under pressure) using an engineering estimate based on best available data.

(i) You must conduct at least one leak detection survey in a calendar year. The leak detection surveys selected must be conducted during the calendar year. If you conduct multiple complete leak detection surveys in a calendar year, you must use the results from each complete leak detection survey when calculating emissions using Equation W–30. For components subject to the well site and compressor station fugitive emissions standards in § 60.5397a of this chapter, each survey conducted in accordance with § 60.5397a of this chapter will be considered a complete leak detection survey for purposes of this section.

(ii) Calculate both CO$_2$ and CH$_4$ mass emissions using calculations in paragraph (v) of this section.

(iii) Onshore petroleum and natural gas production facilities must use the appropriate default whole gas leak emission factors for components in gas service, light crude service, and heavy crude service listed in Table W–1E to this subpart.

(iv) Onshore petroleum and natural gas gathering and boosting facilities must use the appropriate default whole gas leak emission factors for components in gas service listed in Table W–1E to this subpart.

(v) Onshore natural gas processing facilities must use the appropriate default whole hydrocarbon leak emission factors for compressor components in gas service and non-compressor components in gas service listed in Table W–2 to this subpart.

(vi) Offshore natural gas transmission compression facilities must use the appropriate default whole natural gas leak emission factors for compressor components in gas service and non-compressor components in gas service listed in Table W–3 to this subpart.

(vii) Underground natural gas storage facilities must use the appropriate default total hydrocarbon leak emission factors for storage stations or storage wellheads in gas service listed in Table W–4 to this subpart.

(viii) LNG storage facilities must use the appropriate default methane leak emission factors for natural gas storage components in LNG service or gas service listed in Table W–5 to this subpart.

(ix) LNG import and export facilities must use the appropriate default methane leak emission factors for LNG terminals components in LNG service or gas service listed in Table W–6 to this subpart.

(x) Natural gas distribution facilities may choose to conduct equipment leak surveys at all above grade transmission-distribution transfer stations over multiple years “$n$” not exceeding a five year period to cover all above grade transmission-distribution transfer stations. If the facility chooses to use the multiple year option, then the number of transmission-distribution transfer stations that are monitored in each year should be approximately equal across all years in the cycle.

(B) Use Equation W–31 of this section to determine the meter/regulator run population emission factors for each GHG. As additional survey data become available, you must recalculate the meter/regulator run population emission factors for each GHG, annually according to paragraph (q)(2)(x)(C) of this section.

(Eq. W–31)

$$EF_{s,MR,i} = \frac{\sum_{y=1}^{n} \sum_{p=1}^{7} E_{s,p,y,i} \sum_{w=1}^{n} T_{w,y} \sum_{j=1}^{ \text{Count}_{w,j} } }{ \sum_{y=1}^{n} \sum_{w=1}^{n} T_{w,y} \sum_{j=1}^{ \text{Count}_{w,j} } }$$

Where:

$EF_{s,MR,i} =$ Meter/regulator run population emission factor for GHG, based on all surveyed above grade transmission-distribution transfer stations over “$n$” years, in standard cubic feet of GHG, per operational hour of all meter/regulator runs.

$E_{s,p,y,i} =$ Annual total volumetric emissions at standard conditions of GHG, from component type “$p$” during year “$y$” in standard (“$s$”) cubic feet, as calculated using Equation W–30 of this section.

$p =$ Seven component types listed in Table W–7 to this subpart for transmission-distribution transfer stations.

$T_{w,y} =$ The total time the surveyed meter/regulator run “$w$” was operational, in hours during survey year “$y$” using an engineering estimate based on best available data.

$\text{Count}_{w,j} =$ Count of meter/regulator runs surveyed at above grade transmission-distribution transfer stations in year “$y$”.

$y =$ Year of data included in emission factor “$EF_{s,MR,i}$”, according to paragraph (q)(2)(x)(C) of this section.

$n =$ Number of years of data, according to paragraph (q)(2)(x)(A) of this section, whose results are used to calculate emission factor “$EF_{s,MR,i}$” according to paragraph (q)(2)(x)(C) of this section.

(C) The emission factor “$EF_{s,MR,i}$” based on annual equipment leak surveys at above grade transmission-distribution transfer stations, must be calculated...
annually. If you chose to conduct equipment leak surveys at all above grade transmission-distribution transfer stations over multiple years, “n,” according to paragraph (q)(2)(x)(A) of this section and you have submitted a smaller number of annual reports than the duration of the selected cycle period of 5 years or less, then all available data from the current year and previous years must be used in the calculation of the emission factor “EF_{s,MR,i}” from Equation W−31 of this section. After the first survey cycle of “n” years is completed and beginning in calendar year (n+1), the survey will continue on a rolling basis by including the survey results from the current calendar year and survey results from all previous (n−1) calendar years, such that each annual calculation of the emission factor “EF_{s,MR,i}” from Equation W−31 is based on survey results from “n” years. Upon completion of a cycle, you may elect to change the number of years in the next cycle period (to be 5 years or less). If the number of years in the new cycle is greater than the number of years in the previous cycle, calculate “EF_{s,MR,i}” from Equation W−31 in each year of the new cycle using the survey results from the current calendar year and survey results from the preceding number years that is equal to the number of years in the previous cycle period. If the number of years, “n_{new},” in the new cycle is smaller than the number of years in the previous cycle, “n,” calculate “EF_{s,MR,i}” from Equation W−31 in each year of the new cycle using the survey results from the current calendar year and survey results from all previous (n_{new}−1) calendar years.

(x) If you chose to conduct equipment leak surveys at all above grade transmission-distribution transfer stations over multiple years, “n,” according to paragraph (q)(2)(x)(A) of this section, you must use the meter/regulator run population emission factors calculated using Equation W−31 of this section and the total count of all meter/regulator runs at above grade transmission-distribution transfer stations to calculate emissions from all above grade transmission-distribution transfer stations using Equation W−32B in paragraph (r) of this section.

(r) * * * This paragraph (r) applies to emissions sources listed in § 98.232(c)(21), (f)(7), (g)(5), (h)(6), and (j)(10) if you are not required to comply with paragraph (q) of this section and if you do not elect to comply with paragraph (q) of this section for these components in lieu of this paragraph (r). This paragraph (r) also applies to emissions sources listed in § 98.232(i)(2), (i)(3), (i)(4), (i)(5), (i)(6), and (j)(11). To be subject to the requirements of this paragraph (r), the listed emissions sources also must contact streams with gas content greater than 10 percent CH_{4} plus CO_{2} by weight. Emissions sources that contact streams with gas content less than or equal to 10 percent CH_{4} plus CO_{2} by weight are exempt from the requirements of this paragraph (r) and do not need to be reported.

* * * * *

Count = Total number of the emission source type at the facility. For onshore petroleum and natural gas production facilities and onshore petroleum and natural gas gathering and boosting facilities, average component counts are provided by major equipment piece in Tables W−1B and W−1C to this subpart. Use average component counts as appropriate for operations in Eastern and Western U.S., according to Table W−1D to this subpart. Onshore petroleum and natural gas gathering and boosting facilities must also count the miles of gathering pipelines by material type (protected steel, unprotected steel, plastic, or cast iron). Underground natural gas storage facilities must count each component listed in Table W−4B to this subpart. LNG storage facilities must count the number of vapor recovery compressors. LNG import and export facilities must count the number of vapor recovery compressors. Natural gas distribution facilities must count: (1) The number of distribution services by material type: (2) miles of distribution mains by material type; and (3) number of below grade metering-regulating stations, by pressure type; as listed in Table W−7 to this subpart.

* * * * *

EF_{s,MR,i} = Population emission factor for the specific emission source type, as listed in Tables W−1A, W−4B, W−5B, W−6B, and W−7 to this subpart. Use appropriate population emission factor for operations in Eastern and Western U.S., according to Table W−1D to this subpart.

* * * * *

(3) Underground natural gas storage facilities must use the appropriate default total hydrocarbon population emission factors for storage wellheads in gas service listed in Table W−4B to this subpart.

(4) LNG storage facilities must use the appropriate default methane population emission factor for LNG storage compressors in gas service listed in Table W−5B to this subpart.

(5) LNG import and export facilities must use the appropriate default methane population emission factor for LNG terminal compressors in gas service listed in Table W−6B to this subpart.

* * * * *

§ 98.234 Monitoring and QA/QC requirements.

(a) You must use any of the methods described in paragraphs (a)(1) through (5) of this section to conduct leak detection(s) of through-value leakage from all source types listed in § 98.233(k), (o), and (p) that occur during a calendar year. You must use any of the methods described in paragraphs (a)(1) through (5) of this section to conduct leak detection(s) of equipment leaks from components as specified in § 98.233(q)(1)(i) that occur during a calendar year. You must use any of the methods described in paragraphs (a)(1) through (7) of this section to conduct leak detection(s) of equipment leaks from components as specified in § 98.233(q)(1)(ii) that occur during a calendar year. You must use one of the methods described in paragraph (a)(6) or (7) of this section to conduct leak detection(s) of equipment leaks from components as specified in § 98.233(q)(1)(iii) that occur during a calendar year.

(1) Optical gas imaging instrument as specified in § 60.18 of this chapter.

* * * * *

(2) * * * If the equipment leak detection methods in this paragraph cannot be used, you must use alternative leak detection devices as described in paragraph (a)(1) of this section to monitor inaccessible equipment leaks or vented emissions.

* * * * *

(6) Optical gas imaging instrument as specified in § 60.5397a of this chapter. Use an optical gas imaging instrument for equipment leak detection in accordance with § 60.5397a(b), (c)(3), (c)(7), and (e) of this chapter and paragraphs (a)(6)(i) through (iii) of this section. Unless using methods in paragraph (a)(7) of this section, an optical gas imaging instrument must be used for all source types that are inaccessible and cannot be monitored without elevating the monitoring.
Section 98.236 is amended by:

a. Redesignating paragraphs (a)(1)(xiv) through (xvii) as paragraphs (a)(1)(xv) through (xviii), respectively;

b. Adding new paragraph (a)(1)(xv);

c. Redesignating paragraphs (a)(9)(x) and (xi) as paragraphs (a)(9)(xii) and (xiii), respectively;

d. Adding new paragraph (a)(9)(x);

e. Revising paragraph (q) introductory text, paragraph (q)(1), paragraph (q)(2) introductory text, paragraph (r)(3)(ii) introductory text, and the second sentence of paragraph (z) introductory text.

The revisions and additions read as follows:

§ 98.236 Data reporting requirements.

* * * * *

(a) * * * *

(1) * * * *

(xiv) Equipment leak surveys. Report the information specified in paragraph (q) of this section.

* * * * *

(9) * * * *

(x) Equipment leak surveys. Report the information specified in paragraph (q) of this section.

* * * * *

(q) Equipment leak surveys. For any components subject to or complying with the requirements of § 98.233(q), you must report the information specified in paragraphs (q)(1) and (2) of this section. Natural gas distribution facilities with emission sources listed in § 98.232(i)(1) must also report the information specified in paragraph (q)(3) of this section.

(1) You must report the information specified in paragraphs (q)(1)(i) through (v) of this section.

(i) Except as specified in paragraph (q)(1)(ii) of this section, the number of complete equipment leak surveys performed during the calendar year.

(ii) Natural gas distribution facilities performing equipment leak surveys across a multiple year leak survey cycle must report the number of years in the leak survey cycle.

(iii) Except for onshore natural gas processing facilities and natural gas distribution facilities, indicate whether any equipment components at your facility are subject to the well site or compressor station fugitive emissions standards in § 60.5397a of this chapter.

(iv) For facilities in onshore petroleum and natural gas production, onshore petroleum and natural gas gathering and boosting, onshore natural gas transmission compression, underground natural gas storage, LNG storage, and LNG import and export equipment, indicate whether you elected to comply with § 98.233(q) according to § 98.233(q)(1)(iv) for any equipment components at your facility.

(v) Report each type of method described in § 98.234(a) that was used to conduct leak surveys.

(2) You must indicate whether your facility contains any of the component types subject to or complying with § 98.233(q) that are listed in § 98.234(c)(21), (d)(7), (e)(7), (e)(8), (f)(5), (f)(6), (f)(7), (f)(8), (g)(4), (g)(6), (g)(7), (h)(5), (h)(7), (h)(8), (i)(1), or (j)(10) for your facility’s industry segment. For each component type that is located at your facility, you must report the information specified in paragraphs (q)(2)(i) through (v) of this section but report a zero ("0") for the information required according to paragraphs (q)(2)(ii) through (v) of this section.

* * * * *

(r) * * * *

(3) * * * *

(ii) Onshore petroleum and natural gas production facilities and onshore petroleum and natural gas gathering and boosting facilities must report the information specified in paragraphs (r)(3)(ii)(A) and (B) of this section, for each major equipment type, production type (i.e., natural gas or crude oil), and geographic location combination in Tables W–1B and W–1C to this subpart for which equipment leak emissions are calculated using the methodology in § 98.233(r).

* * * * *

(z) * * * *

(2) * * * *

If your facility contains any combustion units subject to reporting according to paragraph (a)(1)(xvii), (a)(8)(i), or (a)(9)(xii) of this section, then you must report the information specified in paragraphs (z)(1) and (2) of this section, as applicable.

* * * * *

6. Add Table W–1E to subpart W of part 98 in numerical order to read as follows:
### TABLE W–1E to Subpart W of Part 98—Default Whole Gas Leaker Emission Factors for Onshore Petroleum and Natural Gas Production and Onshore Petroleum and Natural Gas Gathering and Boosting

<table>
<thead>
<tr>
<th>Equipment components</th>
<th>Emission factor (scf/hour/component)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If you survey using any of the methods in § 98.234(a)(1) through (6)</td>
</tr>
<tr>
<td>Valve</td>
<td></td>
</tr>
<tr>
<td>Flange</td>
<td>4.9</td>
</tr>
<tr>
<td>Connector (other)</td>
<td>1.3</td>
</tr>
<tr>
<td>Open-Ended Line</td>
<td>2.8</td>
</tr>
<tr>
<td>Pressure Relief Valve</td>
<td>4.5</td>
</tr>
<tr>
<td>Pump Seal</td>
<td>3.7</td>
</tr>
<tr>
<td>Other</td>
<td>4.5</td>
</tr>
</tbody>
</table>

#### Leaker Emission Factors—All Components, Gas Service

- **Valve**: 3.2
- **Flange**: 2.7
- **Connector (other)**: 1.0
- **Open-Ended Line**: 1.6
- **Pump**: 3.7
- **Agitator Seal**: 3.7
- **Other**: 3.1

#### Leaker Emission Factors—All Components, Light Crude Service

- **Valve**: 3.2
- **Flange**: 2.7
- **Connector (other)**: 1.0
- **Open-Ended Line**: 1.6
- **Pump**: 3.7
- **Agitator Seal**: 3.7
- **Other**: 3.1

#### Leaker Emission Factors—All Components, Heavy Crude Service

- **Valve**: 3.2
- **Flange**: 2.7
- **Connector (other)**: 1.0
- **Open-Ended Line**: 1.6
- **Pump**: 3.7
- **Agitator Seal**: 3.7
- **Other**: 3.1

---

1. For multi-phase flow that includes gas, use the gas service emission factors.
2. The open-ended lines component type includes blowdown valve and isolation valve leaks emitted through the blowdown vent stack for centrifugal and reciprocating compressors.
3. “Others” category includes any equipment leak emission point not specifically listed in this table, as specified in § 98.232(c)(21) and (j)(10).
4. Hydrocarbon liquids greater than or equal to 20°API are considered “light crude.”
5. Hydrocarbon liquids less than 20°API are considered “heavy crude.”

7. Remove Table W–3 to subpart W of part 98 and add Table W–3A to subpart W of part 98 in numerical order to read as follows:

### TABLE W–3A to Subpart W of Part 98—Default Total Hydrocarbon Leaker Emission Factors for Onshore Natural Gas Transmission Compression

<table>
<thead>
<tr>
<th>Onshore natural gas transmission compression</th>
<th>Emission factor (scf/hour/component)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If you survey using any of the methods in § 98.234(a)(1) through (6)</td>
</tr>
<tr>
<td>Valve 1</td>
<td>14.84</td>
</tr>
<tr>
<td>Connector</td>
<td>5.59</td>
</tr>
<tr>
<td>Open-Ended Line</td>
<td>17.27</td>
</tr>
<tr>
<td>Pressure Relief Valve</td>
<td>39.66</td>
</tr>
<tr>
<td>Meter or Instrument</td>
<td>19.33</td>
</tr>
<tr>
<td>Other 2</td>
<td>4.1</td>
</tr>
</tbody>
</table>

#### Leaker Emission Factors—Compressor Components, Gas Service

- **Valve**: 6.42
- **Connector**: 5.71
- **Open-Ended Line**: 11.27

#### Leaker Emission Factors—Non-Compressor Components, Gas Service

- **Valve**: 6.42
- **Connector**: 5.71
- **Open-Ended Line**: 11.27
### TABLE W–3A TO SUBPART W OF PART 98—DEFAULT TOTAL HYDROCARBON LEAKER EMISSION FACTORS FOR ONSHORE NATURAL GAS TRANSMISSION COMPRESSION—Continued

<table>
<thead>
<tr>
<th>Onshore natural gas transmission compression</th>
<th>Emission factor (scf/hour/component)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If you survey using any of the methods in § 98.234(a)(1) through (6)</td>
</tr>
<tr>
<td>Pressure Relief Valve</td>
<td>2.01</td>
</tr>
<tr>
<td>Meter or Instrument</td>
<td>2.93</td>
</tr>
<tr>
<td>Other 2</td>
<td>4.1</td>
</tr>
</tbody>
</table>

1 Valves include control valves, block valves and regulator valves.
2 Other includes any potential equipment leak emission point in gas service that is not specifically listed in this table, as specified in § 98.232(e)(8).

### TABLE W–3B TO SUBPART W OF PART 98—DEFAULT TOTAL HYDROCARBON POPULATION EMISSION FACTORS FOR ONSHORE NATURAL GAS TRANSMISSION COMPRESSION

<table>
<thead>
<tr>
<th>Population emission factors—gas service onshore natural gas transmission compression</th>
<th>Emission factor (scf/hour/component)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Continuous Bleed Pneumatic Device Vents 1</td>
<td>1.37</td>
</tr>
<tr>
<td>High Continuous Bleed Pneumatic Device Vents 1</td>
<td>18.20</td>
</tr>
<tr>
<td>Intermittent Bleed Pneumatic Device Vents 1</td>
<td>2.35</td>
</tr>
</tbody>
</table>

1 Emission Factor is in units of scf/hour/device.

### TABLE W–4A TO SUBPART W OF PART 98—DEFAULT TOTAL HYDROCARBON LEAKER EMISSION FACTORS FOR UNDERGROUND NATURAL GAS STORAGE

<table>
<thead>
<tr>
<th>Underground natural gas storage</th>
<th>Emission factor (scf/hour/component)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If you survey using any of the methods in § 98.234(a)(1) through (6)</td>
</tr>
<tr>
<td>Leaker Emission Factors—Storage Station, Gas Service Might Be New Section Here</td>
<td></td>
</tr>
<tr>
<td>Valve 1</td>
<td>14.84</td>
</tr>
<tr>
<td>Connector (other)</td>
<td>5.59</td>
</tr>
<tr>
<td>Open-Ended Line</td>
<td>17.27</td>
</tr>
<tr>
<td>Pressure Relief Valve</td>
<td>39.66</td>
</tr>
<tr>
<td>Meter and Instrument</td>
<td>19.33</td>
</tr>
<tr>
<td>Other 2</td>
<td>4.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Leaker Emission Factors—Storage Wellheads, Gas Service</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve 1</td>
<td>4.5</td>
</tr>
<tr>
<td>Connector (other than flanges)</td>
<td>1.2</td>
</tr>
<tr>
<td>Flange</td>
<td>3.8</td>
</tr>
<tr>
<td>Open-Ended Line</td>
<td>2.5</td>
</tr>
<tr>
<td>Pressure Relief Valve</td>
<td>4.1</td>
</tr>
<tr>
<td>Other 2</td>
<td>4.1</td>
</tr>
</tbody>
</table>

1 Valves include control valves, block valves and regulator valves.
2 Other includes any potential equipment leak emission point in gas service that is not specifically listed in this table, as specified in § 98.232(f)(6) and (8).

### TABLE W–4B TO SUBPART W OF PART 98—DEFAULT TOTAL HYDROCARBON POPULATION EMISSION FACTORS FOR UNDERGROUND NATURAL GAS STORAGE

<table>
<thead>
<tr>
<th>Underground natural gas storage</th>
<th>Emission factor (scf/hour/component)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If you survey using any of the methods in § 98.234(a)(1) through (6)</td>
</tr>
<tr>
<td>Population Emission Factors—Storage Wellheads, Gas Service</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>0.01</td>
</tr>
</tbody>
</table>

8 Remove Table W–4 to subpart W of part 98 and add Table W–4A and Table W–4B to subpart W of part 98 in numerical order to read as follows:
### TABLE W–4B TO SUBPART W OF PART 98—DEFAULT TOTAL HYDROCARBON POPULATION EMISSION FACTORS FOR UNDERGROUND NATURAL GAS STORAGE—Continued

<table>
<thead>
<tr>
<th>Underground natural gas storage</th>
<th>Emission factor (scf/hour/component)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve</td>
<td>0.1</td>
</tr>
<tr>
<td>Pressure Relief Valve</td>
<td>0.17</td>
</tr>
<tr>
<td>Open-Ended Line</td>
<td>0.03</td>
</tr>
</tbody>
</table>

#### Population Emission Factors—Other Components, Gas Service

| Low Continuous Bleed Pneumatic Device Vents | 1.37 |
| High Continuous Bleed Pneumatic Device Vents | 18.20 |
| Intermittent Bleed Pneumatic Device Vents | 2.35 |

1 Emission Factor is in units of “scf/hour/device.”

- **Remove Table W–5 to subpart W of part 98 and add Table W–5A and Table W–5B to subpart W of part 98 in numerical order to read as follows:**

### TABLE W–5A TO SUBPART W OF PART 98—DEFAULT METHANE LEAKER EMISSION FACTORS FOR LIQUEFIED NATURAL GAS (LNG) STORAGE

<table>
<thead>
<tr>
<th>LNG storage</th>
<th>Emission factor (scf/hour/component)</th>
<th>If you survey using any of the methods in §98.234(a)(1) through (6)</th>
<th>If you survey using Method 21 as specified in §98.234(a)(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve</td>
<td>1.19</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>Pump Seal</td>
<td>4.00</td>
<td>0.73</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>0.34</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>Other 1</td>
<td>1.77</td>
<td>0.99</td>
<td></td>
</tr>
</tbody>
</table>

Leaker Emission Factors—LNG Storage Components, LNG Service

| Valve 2 | 14.84 | 9.51 |
| Connector | 5.59 | 3.58 |
| Open-Ended Line | 17.27 | 11.07 |
| Pressure Relief Valve | 39.66 | 25.42 |
| Meter and Instrument | 19.33 | 12.39 |
| Other 3 | 4.1 | 2.63 |

1 “Other” equipment type for components in LNG service should be applied for any equipment type other than connectors, pumps, or valves.

2 Valves include control valves, block valves and regulator valves.

3 “Other” equipment type for components in gas service should be applied for any equipment type other than valves, connectors, flanges, open-ended lines, pressure relief valves, and meters and instruments, as specified in §98.232(g)(6) and (7).

### TABLE W–5B TO SUBPART W OF PART 98—DEFAULT METHANE POPULATION EMISSION FACTORS FOR LIQUEFIED NATURAL GAS (LNG) STORAGE

<table>
<thead>
<tr>
<th>LNG storage</th>
<th>Emission factor (scf/hour/component)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vapor Recovery Compressor 1</td>
<td>4.17</td>
</tr>
</tbody>
</table>

1 Emission Factor is in units of “scf/hour/device.”

- **Remove Table W–6 to subpart W of part 98 and add Table W–6A and Table W–6B to subpart W of part 98 in numerical order to read as follows:**

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### TABLE W–6A TO SUBPART W OF PART 98—DEFAULT METHANE LEAKER EMISSION FACTORS FOR LNG IMPORT AND EXPORT EQUIPMENT

<table>
<thead>
<tr>
<th>LNG import and export equipment</th>
<th>Emission factor (scf/hour/component)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If you survey using any of the methods in § 98.234(a)(1) through (6)</td>
</tr>
<tr>
<td><strong>Leaker Emission Factors—LNG Terminals Components, LNG Service</strong></td>
<td></td>
</tr>
<tr>
<td>Valve</td>
<td>1.19</td>
</tr>
<tr>
<td>Pump Seal</td>
<td>4.00</td>
</tr>
<tr>
<td>Connector</td>
<td>0.34</td>
</tr>
<tr>
<td>Other¹</td>
<td>1.77</td>
</tr>
<tr>
<td><strong>Leaker Emission Factors—LNG Terminals Components, Gas Service</strong></td>
<td></td>
</tr>
<tr>
<td>Valve²</td>
<td>14.84</td>
</tr>
<tr>
<td>Connector</td>
<td>5.59</td>
</tr>
<tr>
<td>Open-Ended Line</td>
<td>17.27</td>
</tr>
<tr>
<td>Pressure Relief Valve</td>
<td>39.66</td>
</tr>
<tr>
<td>Meter and Instrument</td>
<td>19.33</td>
</tr>
<tr>
<td>Other³</td>
<td>4.1</td>
</tr>
</tbody>
</table>

¹ “Other” equipment type for components in LNG service should be applied for any equipment type other than connectors, pumps, or valves.
² Valves include control valves, block valves and regulator valves.
³ “Other” equipment type for components in gas service should be applied for any equipment type other than valves, connectors, flanges, open-ended lines, pressure relief valves, and meters and instruments, as specified in § 98.232(h)(7) and (8).

### TABLE W–6B TO SUBPART W OF PART 98—DEFAULT METHANE POPULATION EMISSION FACTORS FOR LNG IMPORT AND EXPORT EQUIPMENT

<table>
<thead>
<tr>
<th>LNG import and export equipment</th>
<th>Emission factor (scf/hour/component)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population Emission Factors—LNG Terminals Compressor, Gas Service</strong></td>
<td></td>
</tr>
<tr>
<td>Vapor Recovery Compressor¹</td>
<td>4.17</td>
</tr>
</tbody>
</table>

¹ Emission Factor is in units of “scf/hour/compressor.”