



Proposed Changes to the EPA Greenhouse Gas Reporting Program Concerning Natural Gas Transmission and Distribution

Introduction

The EPA has recently proposed multiple revisions to the Greenhouse Gas Reporting Program (GHGRP) that aim to improve the quality of the data collected by adopting new calculations and monitoring methods or even collecting new data altogether where necessary.¹ The proposed revisions will become effective on January 1, 2023, and reporters will be required to implement these changes for the 2023 reporting year when they submit reports April 1, 2024. A number of these important changes affect the petroleum and natural gas systems in Subpart W, namely the way local distribution companies (LDCs) are expected to report their measurements going forward. The current draft of the changes is on the EPA website but has not be published in the Federal Register. Once published in the Federal Register entities will have 60 days to provide comment.

Transmission and Distribution Sector Changes

The natural gas transmission and distribution sectors have a variety of proposed changes to the reporting requirements in Subpart W of the EPA's pre-publication version of the proposed preamble² including updates to the emission factors for natural gas pneumatic devices (in transmission) and equipment leaks from distribution sources. Specifically, the equipment leaks from pipeline mains and services, below grade transmission distribution transfer stations, and below grade metering-regulating stations. The EPA referenced recent studies from Lamb *et al.*³ and Weller *et al.*⁴ to justify these changes in emission factors. There are also additional emission factors that account for alternative methods of leak surveying like using an optical gas imaging (OGI) instrument, an infrared laser beam illuminated instrument, or an acoustic leak detection device. Lastly, multiple data elements contained within Subpart W are to be removed where analogous data elements are already being reported in Subpart NN.

Large release events

The EPA is also proposing to add calculation methodologies and requirements to report GHG emissions for "other large release events" that is meant to capture abnormal events that Subpart W does not currently account for. Events such as storage wellhead leaks, well blowouts, or any other large, atypical release would need to be covered for all types of facilities subject to Subpart W. The EPA expects operators to calculate GHG emissions using measurement data or engineering estimates of the amount of gas released if available, or process knowledge (best available data) to estimate the composition of the released gas.

Updated Table W-7

Many of the distribution sector changes outlined in the previous section are reflected in the alterations to table W-7 (the version soon to be replaced can be seen here -





https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-98/subpart-W/appendix-Table%20W-7%20to%20Subpart%20W%20of%20Part%2098) that will now be contained in

table W-7A and table W-7B.

Table W-7A

Below is the new table W-7A and a discussion of how it compares to previous renditions of the EPA GHGRP.

Table W-7A to Subpart W of Part 98—Default Total Hydrocarbon Leaker EmissionFactors for Onshore Natural Gas Processing

	Emission factor (scf/hour/component)		
Natural gas distribution	If you survey using Method 21 as specified in § 98.234(a)(2)(i)	If you survey using any of the methods in § 98.234(a)(1), (3), or (5)	
Leaker Emission Factors—Transmission-Distribution Transfer Station ¹ Components,			
	Gas Service		
Connector	1.69	6.7	
Block Valve	0.557	2.3	
Control Valve	9.34	38	
Pressure Relief Valve	0.27	1.1	
Orifice Meter	0.212	0.87	
Regulator	0.772	3.2	
Open-ended Line	26.131	107	

¹ Excluding customer meters.

§ 98.234 Monitoring and QA/QC requirements has been completely overhauled and the § 98.234(a)(1), (3), or (5) column is a new addition that accounts for using an optical gas imaging instrument (1), an infrared laser beam illuminated instrument (3), or an acoustic leak detection device (5). The leaker emission factors contained within the § 98.234(a)(2)(i) column refer to traditional leak surveying practices and are unchanged from the previous GHGRP.

Table W-7B

Below is the new table W-7B with an additional column to better compare emission factors to the most recent version of the GHGRP.

Table W-7B to Subpart W of Part 98—Default Methane Population EmissionFactors forNatural Gas Distribution

	Emission factor
Natural gas distribution	(scf/hour/component)





Population Emission Factors—Below Grade Transmission-Distribution Transfer Station Components and Below Grade Metering-Regulating Station ¹ Components, Gas Service ²			
	Formerly	Updated	
Below Grade T-D Transfer Station	Divided up by component type	0.30	
Below Grade M&R Station	1.3 for >300 psig inlet pressure .2 for 100-300 psig .1 for <100 psig	0.30	
Population Emission Factors—Distribution Mains, Gas Service ³			
	Formerly	Updated	
Unprotected Steel	12.58	1.2	
Protected Steel	0.35	2.3	
Plastic	1.13	0.45	
Cast Iron	27.25	2.8	
Population Emission Factors—Distribution Services, Gas Service ⁴			
	Formerly	Updated	
Unprotected Steel	0.19	0.086	
Protected Steel	0.02	0.0077	
Plastic	0.001	0.0016	
Copper	0.03	0.03	

¹ Excluding customer meters.

² Emission Factor is in units of "scf/hour/station."

³ Emission Factor is in units of "scf/hour/mile."

⁴ Emission Factor is in units of "scf/hour/number of services."

Many population emission factors have been altered including that of below grade M&R stations which are no longer contingent on the recorded inlet pressure. The emission factors for unprotected steel and plastic mains have been reduced while the protected steel emission factor has been increased. For services, both unprotected and protected steel mains' emission factors have been decreased while plastic has been slightly increased, and copper was unchanged.

Discussion

The EPA outlined that the proposed changes to emission factors for distribution services were solely influenced by the Lamb et al. study³ as services were not included in the Weller et al. study.⁴ They also discussed how they have decided to combine data from both studies to update the distribution mains emission factors and **are actively seeking comment on this decision any**





time before July 1st. The proposed changes to the below grade T-D transfer stations and M&R stations allows for a minimization of necessary data reporting elements as well as allowing for GHGRP emission factors to be consistent with the U.S. GHG Inventory.

Reporting Updates to Avoid Overlap with Subpart NN

The final change concerning the natural gas distribution sector is the removal of multiple duplicative reporting elements contained in section 98.236 (a historical version can be seen here - <u>https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-98/subpart-W/section-98.236</u>) of Subpart W that LDCs must already report in Subpart NN.

Subpart W Data Elements Proposed to be Eliminated		Analogous Subpart NN Data Elements	
Citation	Description	Citation	Description
Local Distribution Col	mpanies		
§98.236(aa)(9)(i)	Quantity of natural gas received at all custody transfer stations	§98.406(b)(1) §98.406(b)(5)	Annual volume of natural gas received by the LDC at its city gate stations and Annual volume natural gas that bypassed the city gate(s)
§98.236(aa)(9)(ii)	Quantity of natural gas withdrawn from in-system storage	§98.406(b)(3)	Annual volume natural gas withdrawn from on- system storage and annual volume of vaporized LNG withdrawn from storage
§98.236(aa)(9)(iii)	Quantity of natural gas added to in- system storage	§98.406(b)(2)	Annual volume of natural gas placed into storage or liquefied and stored

List of Proposed Subpart W Data Elements to be Removed where Analogous Subpart NN Data Elements are Reported





§98.236(aa)(9)(iv)	Quantity of natural gas delivered to end users	§98.406(b)(13)(i) through (iv)	Annual volume of natural gas delivered by the LDC to residential consumers, commercial consumers, industrial consumers, electricity generating facilities
§98.236(aa)(9)(v)	Quantity of natural gas transferred to third parties	§98.406(b)(6)	Annual volume of natural gas delivered to downstream gas transmission pipelines and other local distribution companies

Transmission Compression Updates

Table W-3A updates emission factors for alternative leak surveying methods in a similar way to Table W-7A where onshore natural gas transmission compression facilities now have the option to survey traditionally (the first two columns that have remained unchanged) or use alternative methods that can be seen in section 98.234(a)(1), (3), or (5).

Table W-3A to Subpart W of Part 98—Default Total Hydrocarbon Leaker EmissionFactors for Onshore Natural Gas Transmission Compression

	Emission factor (scf/hour/component)			
Onshore natural gas transmission compression	If you survey using Method 21 as specified in § 98.234(a)(2)(i)	If you survey using Method 21 as specified in § 98.234(a)(2)(ii)	If you survey using any of the methods in § 98.234(a)(1), (3), or (5)	
Leake	Leaker Emission Factors—Compressor Components, Gas Service			
Valve ¹	14.84	9.51	61	
Connector	5.59	3.58	23	
Open-Ended Line	17.27	11.07	71	
Pressure Relief Valve	39.66	25.42	163	
Meter or Instrument	19.33	12.39	79	
Other ²	4.1	2.63	17	





Leaker Emission Factors—Non-Compressor Components, Gas Service			
Valve ¹	6.42	4.12	26
Connector	5.71	3.66	23
Open-Ended Line	11.27	7.22	46
Pressure Relief Valve	2.01	1.29	8.2
Meter or Instrument	2.93	1.88	12
Other ²	4.1	2.63	17

Table W-3B updates three emission factor concerned with pneumatic devices. Both continuous low and high bleed pneumatic device vents' emission factors have increased while intermittent bleed pneumatic device vents have a decreased emission factor in the proposed GHGRP.

Table W-3B to Subpart W of Part 98—Default Whole Gas Population Emission Factors for Onshore Natural Gas Transmission Compression

Population emission factors—gas service onshore natural gas transmission compression	Emission factor (scf whole gas/hour/device)	
	Formerly	Updated
Continuous Low Bleed Pneumatic Device Vents	1.37	6.8
Continuous High Bleed Pneumatic Device Vents	18.2	32.4
Intermittent Bleed Pneumatic Device Vents	2.35	2.3

References

(1) USEPA. Fact Sheet - Proposed Rule: Revisions and Confidentiality Determinations for Data Elements

Under the Greenhouse Gas Reporting Rule. <u>https://www.epa.gov/system/files/documents/2022-04/gharp-data-quality-improvements-proposal_fact-sheet.pdf</u>. 2022. (accessed 2022 May 26).
(2) USEPA. 40 CFR Parts 9 and 98 [EPA-HQ-OAR-2019-0424; FRL-0730-02-OAR]. Revisions and Confidentiality Determinations for Data Elements Under the Greenhouse Gas Reporting Rule. <u>https://www.epa.gov/system/files/documents/2022-04/revisions-and-confidentiality-determinations-for-data-elements-under-the-greenhouse-gas-reporting-rule.pdf</u>. 2022. (accessed 2022 May 25).
(3) Lamb, B. K.; Edburg, S. L.; Ferrara, T. W.; Howard, T.; Harrison, M. R.; Kolb, C. E.; Townsend-Small, A.; Dyck, W.; Possolo, A.; Whetstone, J. R. Direct Measurements Show Decreasing Methane Emissions from Natural Gas Local Distribution Systems in the United States. *Environmental Science & Technology* 2015, 49 (8), 5161-5169. DOI: 10.1021/es505116p.





(4) Weller, Z. D.; Hamburg, S. P.; von Fischer, J. C. A National Estimate of Methane Leakage from Pipeline Mains in Natural Gas Local Distribution Systems. *Environmental Science & Technology* **2020**, *54* (14), 8958-8967. DOI: 10.1021/acs.est.0c00437.