



OFFICE OF ATMOSPHERIC PROTECTION

WASHINGTON, D.C. 20460

MEMORANDUM

Date: December 2024

SUBJECT: Examples of charge calculations and netting under the final Waste Emissions Charge

Background

On November 18, 2024, the EPA finalized a regulation, “Waste Emissions Charge for Petroleum and Natural Gas Systems: Procedures for Facilitating Compliance, Including Netting and Exemptions” (“WEC Rule”), to facilitate compliance with the requirements of Clean Air Act (CAA) section 136(c) through (g). The WEC implements a charge on methane emissions that exceed statutorily specified waste emissions thresholds from owners or operators of applicable facilities. The waste emissions threshold is a facility-specific quantity of metric tons (mt) of methane emissions calculated using the segment-specific methane intensity thresholds defined in CAA section 136(f)(1) through (3) and a facility’s natural gas throughput (or oil throughput in certain circumstances). The waste emissions charge, or WEC, is specified in CAA section 136(e) to begin for emissions occurring in 2024 at \$900 per mt of methane exceeding the threshold, increasing to \$1,200 per mt of methane in 2025, and to \$1,500 per mt of methane in 2026 and each year thereafter. The WEC only applies to the subset of a facility’s emissions that are above the waste emissions threshold.

The purpose of this memorandum is to illustrate the steps to determine the WEC obligation (i.e., the amount owed) for a WEC obligated party. This document provides an overview of the WEC calculation and netting with illustrative examples under different scenarios; please see the final WEC Rule and other supporting documents for additional details on individual elements of the rule (e.g., common ownership or control, implementation of exemptions). An accompanying Excel spreadsheet shows the calculations for the quantitative examples used in the memorandum.

General Procedure for Determination of WEC Obligation

The final WEC Rule relies primarily on data reported pursuant to the Greenhouse Gas Reporting Program (GHGRP) petroleum and natural gas systems source category (i.e., 40 CFR Part 98 subpart W, also referred to as subpart W) for determining applicability and any charge. In general, the inputs to the calculation equations in the final WEC Rule are data elements present in, or derived from, the annual report submitted pursuant to subpart W.

Before calculating any WEC amount owed, WEC obligated parties must first determine if their subpart W facilities are subject to the WEC Rule. As required by Congress, the final WEC Rule is applicable to subpart W facilities in nine industry segments:

- Onshore petroleum and natural gas production
- Offshore petroleum and natural gas production
- Onshore petroleum and natural gas gathering and boosting
- Onshore natural gas processing
- Onshore natural gas transmission compression
- Onshore natural gas transmission pipeline
- Underground natural gas storage
- Liquefied natural gas (LNG) import and export equipment
- LNG storage

Facilities in these segments must report more than 25,000 mt of carbon dioxide equivalent (CO₂e) under subpart W to be subject to the WEC Rule. Subpart W facilities that report 25,000 mt CO₂e or less under subpart W (i.e., report certain emissions under 40 CFR Part 98 subpart C or are on the GHGRP reporting offramp) are not subject to the WEC Rule. For subpart W facilities with equipment in multiple industry segments (e.g., a single subpart W facility that includes equipment in both the transmission compression and underground storage industry segments), the 25,000 mt CO₂e threshold is assessed using the sum of CO₂e across all industry segments.

Facilities in the nine industry segments listed above that report more than 25,000 mt CO₂e under subpart W are “WEC applicable facilities” and could be subject to charge if their emissions exceed the waste emissions thresholds. The steps below summarize the calculations for individual WEC applicable facilities and the netting processes used to determine if WEC obligated parties are required to pay any charge.

- 1. Calculate Waste Emissions Threshold.** The waste emissions threshold is calculated at the facility level by multiplying facility-level throughput by the industry segment-specific methane intensity thresholds set by Congress in CAA section 136(f) and the density of methane. Table 1 shows the throughput metrics and industry segment-specific methane intensity thresholds for each industry segment. Natural gas throughput is reported under subpart W in volumetric units of thousand standard cubic feet (Mscf), while methane emissions are reported by mass in metric tons. The industry segment-specific methane intensity thresholds are percentages, which requires both the numerator (methane emissions) and denominator (throughput) to be in like units. Further, the WEC is assessed in dollars per metric ton of methane. The final WEC Rule calculates the waste emissions threshold for a WEC applicable facility directly in metric tons methane by multiplying the product of facility throughput and the segment-specific methane intensity threshold by the density of methane (0.0192 mt/Mscf)¹. This waste emissions threshold equals the metric tons of methane at the segment-specific methane intensity threshold given a facility’s individual throughput. For onshore and offshore production

¹ Density of methane at standard temperature and pressure of 60° F and 14.7 psia.

facilities that do not send any natural gas to sale, oil production is used as the throughput metric. The waste emissions threshold for these facilities is calculated by multiplying the barrels of oil sent to sale from the facility by ten and 10^{-6} . This calculates the waste emissions threshold equal to the intensity value of ten mt methane per million barrels of oil sent to sale established by Congress in CAA section 136(f). For WEC applicable facilities with equipment in multiple industry segments, the facility's waste emission threshold is calculated as the sum of the waste emissions threshold for each industry segment at the facility.

Table 1. Industry Segment Throughput Metrics and Methane Intensities

Industry Segment	Throughput Metric ^a	IRA-Established Industry Segment-Specific Methane Intensity
Onshore petroleum and natural gas production	The quantity of natural gas produced from producing wells that is sent to sale in the calendar year, in thousand standard cubic feet; or the quantity of crude oil produced from producing wells that is sent to sale in the calendar year, in barrels, if facility sends no natural gas to sale	0.20 percent of natural gas sent to sale from facility; or 10 metric tons of methane per million barrels of oil sent to sale from facility, if facility sends no natural gas to sale
Offshore petroleum and natural gas production		
Onshore petroleum and natural gas gathering and boosting	The quantity of natural gas transported through the facility to a downstream endpoint such as a natural gas processing facility, a natural gas transmission pipeline, a natural gas distribution pipeline, a storage facility, or another gathering and boosting facility in the calendar year, in thousand standard cubic feet	0.05 percent of natural gas sent to sale from or through facility
Onshore natural gas processing	The quantity of residue gas leaving that has been processed by the facility and any gas that passes through the facility to sale without being processed by the facility in the calendar year, in thousand standard cubic feet	

Onshore natural gas transmission compression	The quantity of natural gas transported through the compressor station in the calendar year, in thousand standard cubic feet	0.11 percent of natural gas sent to sale from or through facility
Onshore natural gas transmission pipeline	The quantity of natural gas transported through the facility and transferred to third parties such as local distribution companies or other transmission pipelines in the calendar year, in thousand standard cubic feet	
Underground natural gas storage	The quantity of natural gas withdrawn from storage and sent to sale in the calendar year, in thousand standard cubic feet	
LNG import and export equipment	For LNG import equipment, the quantity of LNG imported that is sent to sale in the calendar year, in thousand standard cubic feet; for LNG export equipment, the quantity of LNG exported that is sent to sale in the calendar year, in thousand standard cubic feet	0.05 percent of natural gas sent to sale from or through facility
LNG storage	The quantity of LNG withdrawn from storage and sent to sale in the calendar year, in thousand standard cubic feet	

^a Throughput metrics in this table are based on the subpart W reporting elements in the Greenhouse Gas Reporting Rule: Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems final rule (89 FR 42062).

2. **Determine Facility Methane Emissions.** The WEC is applied to the amount of facility methane emissions that exceed the waste emissions threshold. The final rule uses facility methane emissions as reported under subpart W as the value that is compared against the waste emissions threshold.² For WEC applicable facilities with equipment in multiple industry segments, the facility's methane emissions are calculated as the sum of methane emissions from each industry segment at the facility.
3. **Facility WEC Calculation.** The facility waste emissions threshold and reported facility methane emissions are used to determine if the facility's methane emissions are below or exceed the waste emissions threshold. Depending on if a facility's emissions exceed the waste emissions threshold and if the facility is eligible for exemptions, this may be a two-step process.
 - a. **Facility Applicable Emissions.** As a first step, the waste emissions threshold is subtracted from reported methane emissions. This yields a value in metric tons methane, the facility applicable emissions, that is positive if the facility's emissions exceed the waste emissions threshold and negative if the facility's emissions are below

² If a subpart W facility reports emissions from other large release events at combustion sources, these subpart W emissions may need to be adjusted to avoid double counting. See section II.C.2 of the final rule preamble for more information.

the waste emissions threshold (or zero if emissions are equal to the waste emissions threshold).

- b. **WEC Applicable Emissions.** Under the final WEC Rule, WEC exemptions are only available to facilities whose emissions exceed the waste emissions threshold. The next step is therefore to apply the exemptions where eligible. For WEC applicable facilities whose facility applicable emissions exceed the waste emissions threshold, any eligible emissions under the unreasonable delay, regulatory compliance, and plugged well exemptions are subtracted from facility applicable emissions.³ This yields WEC applicable emissions, the final value of tons of methane below or exceeding the waste emissions threshold for each WEC applicable facility. For facilities that qualify for the regulatory compliance exemption for the entire WEC filing year (i.e., all four calendar quarters), WEC applicable emissions are zero. For WEC applicable facilities that are not eligible for any exemptions, WEC applicable emissions equal facility applicable emissions.

- 4. **Netting.** CAA section 136(f)(4) allows netting of emissions from facilities exceeding the waste emissions threshold (positive WEC applicable emissions) with emissions from facilities below the waste emissions threshold (negative WEC applicable emissions) for facilities under common ownership or control. The final WEC Rule implements netting at the parent-company level in a two-step process.

- a. First, **net WEC emissions** are calculated for a WEC obligated party by summing the WEC applicable emissions (both positive and negative) from all of a WEC obligated party's WEC applicable facilities. Net WEC emissions represent the cumulative metric tons of methane above or below the waste emissions thresholds across all of a WEC obligated party's WEC applicable facilities. Under the final rule, a facility's WEC obligated party is the reported owner or operator associated with the facility under GHGRP reporting. For WEC obligated parties with a single facility, net WEC emissions are equal to that facility's WEC applicable emissions.
- b. Second, **net WEC emissions after transfers** are calculated. For WEC obligated parties with the same parent company, WEC obligated parties with negative net WEC emissions may transfer those negative emissions to WEC obligated parties with positive net WEC emissions. These transferred negative emissions decrease the metric tons exceeding the threshold for the WEC obligated parties that receive them. If a WEC obligated party does not have any common parent companies with which to net, or if no parent-company level netting occurs, the WEC obligated party's net WEC emissions after transfers are equal to its net WEC emissions. WEC obligated parties with the same

³ Only methane emissions that exceed the waste emissions threshold are eligible for exemption. In cases where eligible exempted emissions are greater than positive facility applicable emissions, facility WEC applicable emissions are zero (i.e., a facility with the unreasonable delay or plugged well exemption cannot have negative WEC applicable emissions). See the final rule for details of the requirements for each exemption.

parent company are responsible for coordinating the transfer of negative emissions with the electronic WEC filing system.

5. **Calculate WEC Obligation.** Net WEC emissions after transfers represent the final number of metric tons of methane exceeding or below the waste emissions threshold(s) for a WEC obligated party. If net WEC emissions after transfers are equal to or below zero, the WEC obligated party does not owe any WEC. If net WEC emissions after transfers are greater than zero, the amount of metric tons methane is multiplied by the annual WEC amount (e.g., \$900/mt for 2024 emissions) to calculate the total WEC obligation.

Example Facility Calculations

Tables 2 through 6 present WEC calculations for four hypothetical WEC obligated parties with the same parent company. The tables and accompanying text illustrate how WEC applicable emissions are calculated at the facility, how net WEC emissions and net WEC emissions after transfers are calculated, and how the total WEC obligation for each hypothetical WEC obligated party is calculated. In addition to showing the general mechanics of the WEC calculation, each example highlights specific circumstances that may apply to WEC applicable facilities and WEC obligated parties, as described in the table titles. These examples use a WEC of \$900/mt.

Table 2. WEC Obligated Party A – Facility with Exempted Emissions

Facility	Industry Segment	Subpart W Total GHG (mt CO ₂ e)*	Subpart W Methane (mt)	Throughput (Mscf)	Segment Methane Intensity Threshold	Waste Emissions Threshold (mt)	Facility Applicable Emissions (mt)	Potentially Exempt Emissions (mt)	WEC Applicable Emissions (mt)
1	Offshore Production	56,250	900	18,000,000	0.2%	691.2	208.8	0	208.8
2	Onshore Production	165,000	3,000	60,000,000	0.2%	2,304	696	40	656
3	Onshore Production	97,125	2,100	76,000,000	0.2%	2,918.4	-818.4	20	-818.4
4	Gathering & Boosting	99,000	1,800	140,000,000	0.05%	1,344	456	0	456
WEC Obligated Party A Net WEC Emissions									502.4 mt

* Total subpart W CO₂e includes emissions from CO₂ and N₂O that are not identified separately in table; while the WEC is based only on methane emissions, all subpart W greenhouse gas emissions are considered for the 25,000 mt CO₂e WEC applicability threshold. In this example, 100-year global warming potentials of 28 and 265 are applied for methane and N₂O, respectively.

Note: calculated values in table are rounded.

All four of WEC Obligated Party A's subpart W facilities are in industry segments subject to the final WEC Rule and report more than 25,000 mt CO₂e under subpart W; they are all therefore WEC applicable facilities. For each facility, the waste emissions threshold is calculated by multiplying throughput by the segment-specific methane intensity and the density of methane (0.0192 mt CH₄ / Mscf). The waste emissions threshold is then subtracted from reported methane emissions to calculate facility applicable emissions. Facility 1 does not have any eligible exempted emissions, and facility applicable emissions are equal to WEC applicable emissions. Facility 2's emissions are above the waste emissions threshold, and its 40 mt of eligible exempted emissions are subtracted from facility applicable emissions to calculate WEC

applicable emissions. Facility 3's methane emissions are below the waste emissions threshold, and therefore the 20 mt from that facility associated with exemptions cannot be subtracted; facility applicable emissions are equal to WEC applicable emissions. This is also true for Facility 4, which does not have any eligible exempted exemptions. The WEC applicable emissions from all four facilities are summed, yielding net WEC emissions of 502.4 mt. This represents the total tons of methane exceeding the waste emissions thresholds across all of WEC Obligated Party A's WEC applicable facilities. If WEC Obligated Party A did not have any other WEC obligated parties with the same parent company with which it could net, net WEC emissions after transfers would equal net WEC emissions, and the total WEC obligation would be calculated by multiplying 502.4 mt by the annual WEC amount (\$900/mt in this example), resulting in a total WEC obligation of \$452,160.

Table 3. WEC Obligated Party B – Production Facility with no Natural Gas Sales

Facility	Industry Segment	Subpart W Total GHG (mt CO ₂ e)*	Subpart W Methane (mt)	Throughput	Segment Methane Intensity Threshold	Waste Emissions Threshold (mt)	Facility Applicable Emissions (mt)	Potentially Exempt Emissions (mt)	WEC Applicable Emissions (mt)
1	Onshore Production	38,000	400	6,000,000 (bbl oil)	10 mt / million bbl	60	340	0	340
2	Processing	60,000	300	400,000,000 (Mscf)	0.05%	3,840	-3,540	0	-3,540
WEC Obligated Party B Net WEC Emissions									-3,200 mt

* Total subpart W CO₂e includes emissions from CO₂ and N₂O that are not identified separately in table; while the WEC is based only on methane emissions, all subpart W greenhouse gas emissions are considered for the 25,000 mt CO₂e WEC applicability threshold. In this example, 100-year global warming potentials of 28 and 265 are applied for methane and N₂O, respectively.

Note: calculated values in table are rounded

Both of WEC Obligated Party B's subpart W facilities are in industry segments subject to the final WEC Rule and report more than 25,000 mt CO₂e under subpart W; they are both therefore WEC applicable facilities. Facility 1 is an onshore production facility with zero gas sales and is assessed using the oil-based intensity metric of 10 mt methane per million barrels of oil sent to sale from the facility. The waste emissions threshold for Facility 1 is calculated by multiplying the facility's reported barrels of oil sales by ten and multiplying by 10⁻⁶ (or dividing by one million). For Facility 2, the waste emissions threshold is calculated by multiplying throughput by the segment-specific methane intensity and the density of methane. For both facilities, the waste emissions threshold is subtracted from reported methane emissions to calculate facility applicable emissions. Neither facility has any eligible emissions associated with exemptions, and therefore WEC applicable emissions

equal facility applicable emissions for both facilities. The WEC applicable emissions from both facilities are summed, yielding net WEC emissions of negative 3,200 mt. This represents the total tons of methane below the waste emissions thresholds across all of WEC Obligated Party B's WEC applicable facilities. Because net WEC emissions are below zero, WEC Obligated Party B does not have any WEC obligation, and it can transfer negative tons to WEC obligated parties with positive net WEC emissions if those WEC obligated parties have the same parent company.

Table 4. WEC Obligated Party C – Facility with Multiple Industry Segments

Facility	Industry Segment	Subpart W Total GHG (mt CO ₂ e)*	Subpart W Methane (mt)	Throughput (Mscf)	Segment Methane Intensity Threshold	Waste Emissions Threshold (mt)	Facility Applicable Emissions (mt)	Potentially Exempt Emissions (mt)	WEC Applicable Emissions (mt)
1	Transmission Compression	23,540	750	300,000,000	0.11%	6,336	-5,586	0	-5,586
	Underground Storage	62,000	2,000	35,000,000	0.11%	739.2	1,260.8	0	1,260.8
	Facility Total	85,540	2,750			7,075.2	-4,325.2		-4,325.2
2	Transmission Pipeline	75,008	2,580	900,000,000	0.11%	19,008	-16,428	0	-16,428
WEC Obligated Party C Net WEC Emissions									-20,753.2 mt

* Total subpart W CO₂e includes emissions from CO₂ and N₂O that are not identified separately in table; while the WEC is based only on methane emissions, all subpart W greenhouse gas emissions are considered for the 25,000 mt CO₂e WEC applicability threshold. In this example, 100-year global warming potentials of 28 and 265 are applied for methane and N₂O, respectively.

Note: calculated values in table are rounded

WEC Obligated Party C has two subpart W facilities, one of which, Facility 1, has operations in two industry segments that are subject to the final WEC Rule. Because WEC applicability is based on total subpart W CO₂e from the entire facility, Facility 1's total subpart W CO₂e is calculated as the sum of emissions from both of its constituent segments, which is equal to 85,540 mt CO₂e. Note that while the transmission compression equipment located at Facility 1 reports less than 25,000 mt CO₂e under subpart W, because the combined subpart W emissions from transmission compression and underground storage equipment are greater than 25,000 mt CO₂e, Facility 1 is a WEC applicable facility. Facility 2 reports more than 25,000 mt CO₂e under subpart W and is also a WEC applicable facility. For Facility 1, the waste emissions threshold is calculated individually for each segment (throughput multiplied by segment-specific methane intensity and the density of methane) and then summed to calculate the WEC applicable facility's waste emissions threshold. Methane emissions from both

segments within Facility 1 are also summed, and the waste emissions threshold is subtracted from this value to calculate facility applicable emissions. Facility 1 does not have any eligible exempt emissions, and therefore WEC applicable emissions are equal to facility applicable emissions. For Facility 2, the waste emissions threshold is calculated by multiplying throughput by the segment-specific methane intensity and the density of methane. The waste emissions threshold is subtracted from reported methane emissions to calculate facility applicable emissions, and because Facility 2 does not have any eligible exempt emissions, this value is also equal to WEC applicable emissions. To calculate WEC Obligated Party C's net WEC emissions, WEC applicable emissions from Facility 1 and 2 are summed, yielding negative 20,753.2 mt. This represents the total tons of methane below the waste emissions thresholds across all of WEC Obligated Party C's WEC applicable facilities. Because net WEC emissions are below zero, WEC Obligated Party C does not have any WEC obligation, and it can transfer negative tons to WEC obligated parties with positive net WEC emissions if those WEC obligated parties have the same parent company.

Table 5. WEC Obligated Party D – Facility Below 25,000 mt CO₂e in Subpart W

Facility	Industry Segment	Subpart W Total GHG (mt CO ₂ e)*	Subpart W Methane (mt)	Throughput (Mscf)	Segment Methane Intensity Threshold	Waste Emissions Threshold (mt)	Facility Applicable Emissions (mt)	Potentially Exempt Emissions (mt)	WEC Applicable Emissions (mt)
1	Onshore Production	37,188	850	20,000,000	0.2%	768	82	0	82
2	Onshore Production	22,000	400	10,000,000	0.2%	NA	NA	NA	NA
WEC Obligated Party D Net WEC Emissions									82 mt

* Total subpart W CO₂e includes emissions from CO₂ and N₂O that are not identified separately in table; while the WEC is based only on methane emissions, all subpart W greenhouse gas emissions are considered for the 25,000 mt CO₂e WEC applicability threshold. In this example, 100-year global warming potentials of 28 and 265 are applied for methane and N₂O, respectively.

Note: calculated values in table are rounded

WEC Obligated Party D has two subpart W facilities in the onshore petroleum and natural gas production segment. Facility 1 reports emissions greater than 25,000 mt CO₂e under subpart W and is therefore a WEC applicable facility. Facility 2 reports subpart W emissions that are not greater than 25,000 mt CO₂e and therefore is not a WEC applicable facility and is not subject to the final WEC Rule. Facility 1's waste emissions threshold is calculated by multiplying throughput by the segment-specific methane intensity and the density of methane. The waste emissions threshold is then subtracted from reported methane emissions to calculate facility applicable emissions of 82 mt. Facility 1 does not have any eligible exempted emissions, and facility applicable emissions are equal to WEC applicable emissions. Because

WEC Obligated Party D has only one WEC applicable facility, WEC applicable emissions from that facility are equal to net WEC emissions. Net WEC emissions are equal to 82 mt, representing the total tons of methane exceeding the waste emissions thresholds for WEC Obligated Party D. If WEC Obligated Party A did not have any other WEC obligated parties with the same parent company with which it could net, net WEC emissions after transfers would equal net WEC emissions, and the total WEC obligation is calculated by multiplying 82 mt by the annual WEC amount (\$900/mt in this example), resulting in a total WEC obligation of \$73,800.

Table 6. Net WEC Emissions After Transfers and WEC Obligation

WEC Obligated Party	Net WEC Emissions (mt)	Transferred Emissions (mt)	Net WEC Emissions After Transfers (mt)	WEC Obligation
A	502.4	Receives -502.4 from WEC Obligated Party B	0	\$0
B	-3,200	Transfers -502.4 to WEC Obligated Party b Transfers -82 to WEC Obligated Party C	-2,615.6	\$0
C	-20,753.2	No Transfers	-20,753.2	\$0
D	82	Receives -82 from WEC Obligated Party B	0	\$0

Table 6 provides an example of netting at the parent company level via transfer of negative net WEC emissions between WEC obligated parties with the same parent company. Because WEC Obligated Parties A, B, C, and D all have the same parent company, they may transfer negative net WEC emissions among themselves. WEC Obligated Parties B and C both have enough negative emissions to net out WEC Obligated Party A's and D's positive emissions. In this example, WEC Obligated Party B transfers 502.4 negative tons to WEC Obligated Party A and 82 negative tons to WEC Obligated Party D. As a result, the net WEC emissions after transfers for WEC Obligated Parties A and D are zero, and the net WEC emissions after transfers for WEC Obligated Party B are negative 2,615.6. WEC Obligated Party C does not transfer any negative emissions and its net WEC emissions after transfers are the same as net WEC emissions. All four WEC obligated parties have net WEC emissions after transfers of zero or less, and therefore none of them owe a WEC obligation. This is just one of many possible netting outcomes with these example WEC obligated parties. The negative net WEC emissions from WEC Obligated Parties B and C could have been distributed in many different ways and quantities. For example, WEC Obligated Party C could have transferred negative emissions to WEC Obligated Parties A and D instead of WEC Obligated Party B transferring negative emissions. Or, WEC Obligated Parties B and C could have each transferred some amount of negative emissions to WEC Obligated Parties A and D. WEC Obligated Parties B and C could have also elected to not transfer any of their negative emissions, in which case WEC Obligated Parties A and D would owe WEC obligations based on their net WEC emissions values.