

Chapter 173-444 WAC

173-444-020

Definitions.

The definitions in this section apply throughout this chapter unless the context clearly requires otherwise.

- (1) **"Biomass energy:"**
 - a. Includes:
 - i. Organic by-products of pulping and the wood manufacturing process;
 - ii. animal manure;
 - iii. solid organic fuels from wood;
 - iv. forest or field residues;
 - v. untreated wooden demolition or construction debris;
 - vi. food waste and food processing residuals;
 - vii. liquors derived from algae;
 - viii. dedicated energy crops; and
 - ix. yard waste.
 - b. Does not include:
 - i. Wood pieces that have been treated with chemical preservatives such as creosote, pentachlorophenol, or copper-chrome-arsenic;
 - ii. wood from old growth forests; or
 - iii. municipal solid waste.
- (2) **"Carbon dioxide equivalent" or "CO₂e"** means a metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential as established in Table A-1 in WAC 173-441-040.
- (3) **"Energy Information Administration" or "EIA"** means the U.S. Department of Energy's Energy Information Administration
- (4) **"Environmental Protection Agency" or "EPA"** means the U.S. Environmental Protection Agency.
- (5) **"Form EIA-923"** means the survey data published by the Energy Information Administration that describes detailed electric power data -- monthly and annually -- on electricity generation, fuel consumption, fossil fuel stocks, and receipts at the power plant and prime mover level. Page 1 Generation and Fuel Data is typically used for compliance with this chapter.
- (6) **"Fossil fuel"** means natural gas, petroleum, coal, or any form of solid, liquid, or gaseous fuel derived from such a material.
- (7) **"Greenhouse gas," "greenhouse gases," "GHG," and "GHGs"** includes carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. "Greenhouse gas" also includes any other gas or gases designated by ecology by rule in Table A-1 in WAC 173-441-040.
- (8) **"Nonemitting electric generation"**
 - a. means electricity from a generating facility or a resource that provides electric energy, capacity, or ancillary services to an electric utility and that does not emit greenhouse gases as a by-product of energy generation.
 - b. "Nonemitting electric generation" does not include renewable resources.
- (9) **"Renewable hydrogen"** means hydrogen produced using renewable resources both as the source for the hydrogen and the source for the energy input into the production process.

(10) "**Renewable natural gas**" means a gas consisting largely of methane and other hydrocarbons derived from the decomposition of organic material in landfills, wastewater treatment facilities, and anaerobic digesters.

(11) "**Renewable resource**" means:

- a. Water;
- b. wind;
- c. solar energy;
- d. geothermal energy;
- e. renewable natural gas;
- f. renewable hydrogen;
- g. wave, ocean, or tidal power;
- h. biodiesel fuel that is not derived from crops raised on land cleared from old growth or first growth forests; or
- i. biomass energy.

(12) "**Unspecified electricity**" means an electricity source for which the fuel attribute is unknown or has been separated from the energy delivered to retail electric customers.

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Greenhouse gas content calculation. Use the following methods to calculate the greenhouse gas emissions content in electricity.

(1) **Utility emissions.**

- a. Total utility greenhouse gas emissions are calculated using Equation 1 of this subsection.

Equation 1:

$$\text{Utility Emissions} = \text{EPA} + \text{EIA} + \text{unspecified}$$

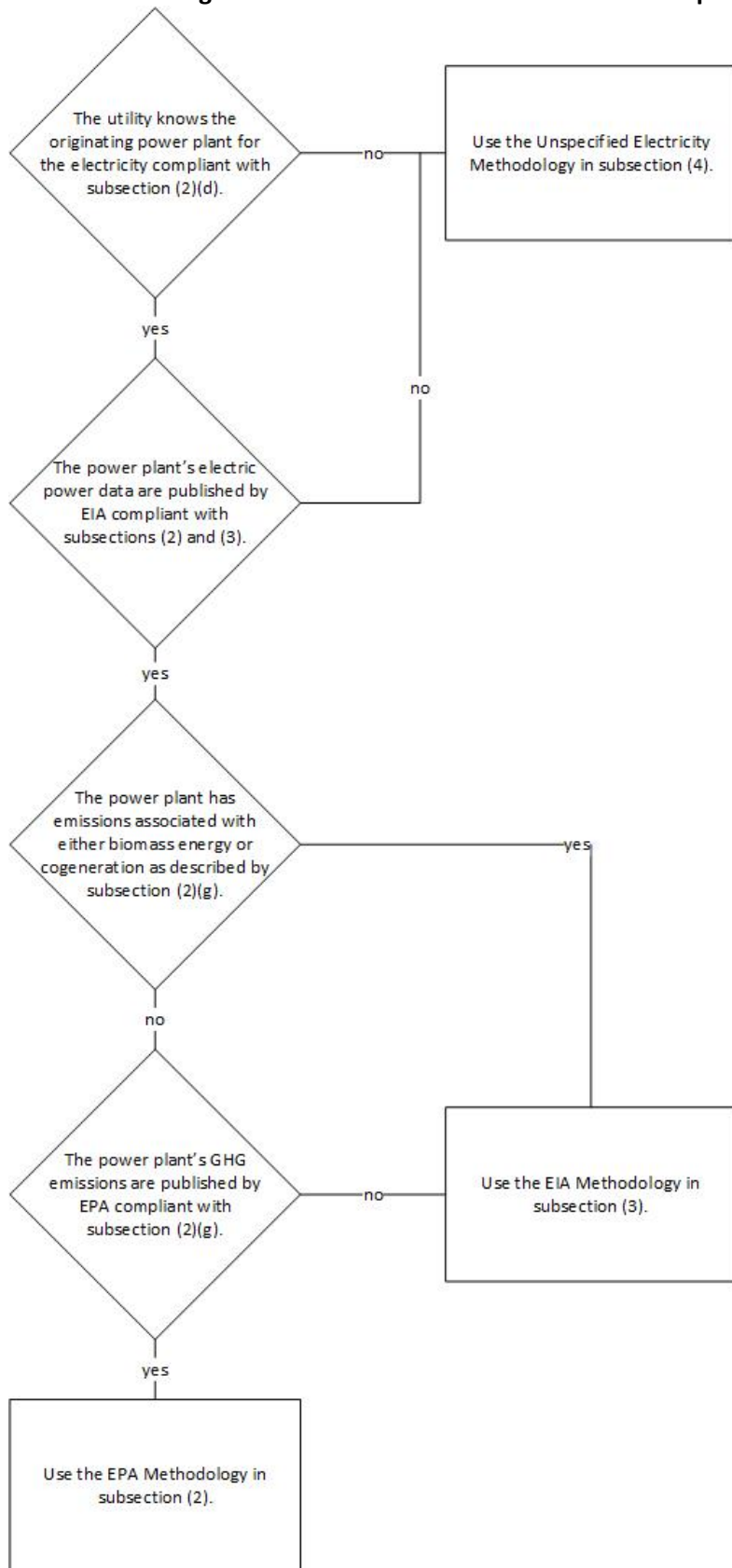
Where:

- Utility emissions = Total of all GHG emissions for the facility for the calendar year, metric tons CO₂e/year.
- EPA = Total of all GHG emissions calculated using the EPA methodology in subsection (2) of this section, metric tons CO₂e/year.
- EIA = Total of all GHG emissions calculated using the EIA methodology in subsection (3) of this section, metric tons CO₂e/year.
- Unspecified = Total of all GHG emissions calculated using the unspecified electricity methodology in subsection (5) of this section, metric tons CO₂e/year.

- b. Do not include nonemitting electric generation and renewable resources when calculating utility emissions using Equation 1 of this subsection.
- c. Methodology selection.
 - i. Use the conditions in subsections (2)(g), (3)(f), and (4) of this section to determine the appropriate method for a given quantity of electricity. Figure 1 of this subsection provides a simplified representation of the method selection process, but subsections (2)(g), (3)(f), and (4) of this section take precedence.

- ii. The methodologies in subsections (2) through (4) of this section are ordered from most to least preferred, with subsection (2) being the most preferred.
- iii. The Department of Ecology, Department of Commerce, and Utilities and Transportation Commission may instruct a utility to use a specific method from this section on a case by case basis if the agency determines another method is not appropriate in that case.

Figure 1: Flow chart of emission calculation options



(2) **EPA methodology.** This methodology calculates greenhouse gas emissions content in electricity using public data from the Environmental Protection Agency (EPA)'s Greenhouse Gas Reporting Program (GHGRP) established under 40 CFR Part 98 as adopted by WAC 173-441-120 and public data from the Energy Information Administration (EIA)'s Form EIA-923 program.

- a. GHG emissions from each power plant are calculated individually then summed to create a utility specific total for this method using Equation 2 of this subsection.

Equation 2:

$$EPA = \sum_{i=1}^n \frac{\text{EPA plant GHG emissions} \times \text{cogeneration correction factor}}{\text{plant net electric generation} + \text{transmission losses}} \times (\text{utility claims})$$

Where:

- EPA = Total of all GHG emissions calculated using the EPA methodology, metric tons CO₂e/year.
 - EPA plant GHG emissions = sum of all GHG emissions from the individual power plant as calculated by subsection (2)(b) of this section, metric tons CO₂e/year.
 - Cogeneration correction factor = ratio of electric energy to total energy for the individual power plant as calculated by subsection (2)(f) of this section, unitless.
 - Plant net electric generation = sum of all net generation from the individual power plant as calculated by subsection (2)(c) of this section, MWh/year.
 - Utility claims = sum of all utility claims for the individual power plant as calculated by subsection (2)(d) of this section, MWh/year.
 - Transmission losses = estimate of transmission losses between the individual power plant and utility customers as calculated by subsection (2)(e) of this section, MWh/year.
 - n = number of power plants with utility claims using this method in the given calendar year
- b. EPA Plant GHG emissions. GHG emissions for this method are defined as the sum of all Subpart C and Subpart D emissions from the individual power plant as published by EPA based on 40 CFR Part 98 reporting consistent with the methods adopted in WAC 173-441-120. Emissions are on a calendar year basis and in units of metric tons CO₂e. The total must include all reported GHGs, including biogenic CO₂, included in Table A-1 of WAC 173-441-040 converted into CO₂e as specified in that section.
 - c. Plant net electric generation. Sum all annual Net Generation (Megawatthours) from Form EIA-923 for the power plant for the calendar year for all Reported Fuel Type Codes.
 - d. Utility claims. Utility claims for the power plant for the calendar year as established by:
 - i. Claimant Plant Claims Adjusted MWh from Report-05 as reported to the Department of Commerce, or
 - ii. Energy and emissions intensity reporting to Utilities and Transportation Commission under WAC 480-109-300.
 - e. Transmission losses.
 - f. Cogeneration correction factor. Account for non-electric heat use at the power plant by dividing the sum of all annual Elec Fuel Consumption MMBtu by the sum of all annual Total Fuel Consumption MMBtu from Form EIA-923.

- g. Use this methodology only when all of the following conditions are met for the individual power plant and calendar year:
- i. The utility knows the originating power plant for the electricity with a claim that meets the standards of subsection (2)(d) of this section.
 - ii. EPA has published GHG emissions totals for the power plant consistent with subsection (2)(b) of this section. The published report should not be flagged by EPA as having not met EPA's verification requirements.
 - iii. Published EPA GHG emissions for the power plant must not include any biomass energy.
 - iv. EIA has published electric power data for the power plant consistent with subsections (2)(c) and (f) of this section.
 - v. The power plant is not classified as a combined heat and power plant in that year's Form EIA-923 report.
 - vi. The cogeneration correction factor calculated in subsection (2)(f) of this section must be 90% or greater.
- (3) **EIA methodology.** This methodology calculates greenhouse gas emissions content in electricity using public data from the EIA's Form EIA-923 program.
- a. GHG emissions from each power plant are calculated individually then summed to create a utility specific total for this method using Equation 3 of this subsection.

Equation 3:

$$EIA = \sum_{i=1}^n \frac{EIA \text{ plant GHG emissions}}{\text{plant net electric generation}} \times (\text{utility claims} + \text{transmission losses})$$

Where:

- EIA = Total of all GHG emissions calculated using the EIA methodology, metric tons CO₂e/year.
 - EIA plant GHG emissions = sum of all GHG emissions from the individual power plant as calculated by subsection (3)(b) of this section, metric tons CO₂e/year.
 - Plant net electric generation = sum of all net generation from the individual power plant as calculated by subsection (3)(c) of this section, MWh/year.
 - Utility claims = sum of all utility claims for the individual power plant as calculated by subsection (3)(d) of this section, MWh/year.
 - Transmission losses = estimate of transmission losses between the individual power plant and utility customers as calculated by subsection (3)(e) of this section, MWh/year.
 - n = number of power plants with utility claims using this method in the given calendar year
- b. EIA plant GHG emissions. GHG emissions for this method are defined as the sum of all GHG emissions from the individual power plant based on fuel quantities published by EIA. Emissions are on a calendar year basis and in units of metric tons CO₂e.
 - i. GHG emissions are calculated separately for each power plant, calendar year, and reported fuel type.
 - ii. GHG emissions for nonemitting electric generation and renewable resources must be calculated, but kept separate from other types of GHG emissions.
 - iii. GHG emissions from combustion are calculated using the Tier 1 Calculation Methodology in Subpart C of 40 CFR Part 98 as adopted by WAC 173-441-120.

1. Use annual Electric Fuel Consumption Quantity as the fuel quantity.
 2. Use WAC 174-441-080 to convert units from those specified in Physical Unit Label as needed.
 3. The high heat value, CO₂ emissions factor, CH₄ emissions factor, and N₂O emissions factor for the following technologies are assumed to be 0.
 - a. Geothermal
 - b. Nuclear
 - c. Solar
 - d. Water
 - e. Wind
 4. Calculate emissions for carbon dioxide, methane, and nitrous oxide. Calculate total GHG emissions for each Reported Fuel Type Code using Equation A-1 of WAC 173-441-030.
 - iv. Fugitive CO₂ emissions from steam geothermal sources must be calculated by multiplying plant net electric generation from steam geothermal sources as described in subsection (3)(c) of this section by 0.04028 MT/MWh. Add this value to the combustion emissions calculated in subsection (3)(b)(iii) of this section.
 - v. Sum total GHG emissions for all Reported Fuel Type Codes to get the total power plant GHG emissions for the year, including nonemitting electric generation and renewable resources. Provide a second total that excludes nonemitting electric generation and renewable resources.
 - c. Plant net electric generation. Sum all Net Generation (Megawatthours) for the power plant for the calendar year for all Reported Fuel Type Codes.
 - d. Utility claims. Utility claims for the power plant for the calendar year as established by:
 - i. Claimant Plant Claims Adjusted MWh from Report-05 as reported to the Department of Commerce, or
 - ii. Energy and emissions intensity reporting to Utilities and Transportation Commission under WAC 480-109-300.
 - e. Transmission losses.
 - f. Use this methodology only when all of the following conditions are met for the individual power plant and calendar year:
 - i. The utility knows the originating power plant for the electricity with a claim that meets the standards of subsection (3)(d) of this section.
 - ii. EIA has published electric power data for the power plant consistent with subsections (2)(b) and (c) of this section.
- (4) **Unspecified electricity.** Use Equation 4 of this subsection when calculating greenhouse gas emissions content in electricity for unspecified electricity.

Equation 4:

$$unspecified = UE \times UCO_2e$$

Where:

- Unspecified = Total of all GHG emissions calculated using the unspecified electricity methodology, metric tons CO₂e/year.

- UE = Total electricity subject to this method, MWh/calendar year
- UCO_2e = 0.437 metric tons CO_2e /MWh of electricity.