# Suppliers of Carbon Dioxide

## Subpart PP, Greenhouse Gas Reporting Program

**OVERVIEW**

*Subpart PP of the Greenhouse Gas Reporting Program (GHGRP) (40 CFR 98.420 – 98.428) applies to suppliers of carbon dioxide ($CO_2$) that meet the Subpart PP source category definition. Some subparts have thresholds that determine applicability for reporting, and some do not. To decide whether your facility must report under this subpart, please refer to 40 CFR 98.421 and the GHGRP Applicability Tool.*

*This Information Sheet is intended to help facilities reporting under Subpart PP understand how the source category is defined, what greenhouse gases (GHGs) must be reported, how GHG emissions must be calculated and shared with EPA, and where to find more information.*

## How is This Source Category Defined?

Suppliers of carbon dioxide ($CO_2$) consist of the following:

- Facilities with production process units that capture and supply $CO_2$ for commercial applications.
- Facilities that capture and maintain custody of a $CO_2$ stream to sequester or otherwise inject it underground.
- Facilities with $CO_2$ production wells that extract or produce a $CO_2$ stream for purposes of supplying $CO_2$ for commercial applications or that extract and maintain custody of a $CO_2$ stream to sequester or otherwise inject it underground.
- Importers of bulk $CO_2$.
- Exporters of bulk $CO_2$.
- Facilities with process units, including but not limited to direct air capture (DAC), that capture a $CO_2$ stream from ambient air for purposes of supplying $CO_2$ for commercial applications or that capture and maintain custody of a $CO_2$ stream in order to sequester or otherwise inject it underground.

This source category does not cover the following activities: storage of $CO_2$ through geologic sequestration (GS) or above ground storage; use of $CO_2$ in enhanced oil and gas recovery ($CO_2$-EOR); transportation or distribution of $CO_2$; purification, compression, or processing of $CO_2$. This source category does not include imported or exported CO2 in equipment (e.g., fire extinguishers).

If GS or other injection of $CO_2$ is done at the facility, the facility may be required to report under both Subpart PP and another Greenhouse Gas Reporting Program (GHGRP) subpart, such as Subpart RR (Geologic Sequestration of Carbon Dioxide), Subpart UU (Injection of Carbon Dioxide), and/or Subpart VV (Geologic Sequestration of Carbon Dioxide With Enhanced Oil Recovery Using ISO 27916).

## What GHGs Must Be Reported?

Suppliers of $CO_2$ must report the following:

- Mass of $CO_2$ captured from production process units.

- Mass of $CO_2$ extracted from production wells.
- Mass of $CO_2$ that is imported and exported.
- Mass of $CO_2$ captured from DAC process units.
- Mass of $CO_2$ captured from ambient air.
- Mass of $CO_2$ captured from any on-site heat and/or electricity generation, where applicable.

If multiple GHGRP source categories are co-located at a facility, the facility may also need to report greenhouse gas (GHG) emissions under a different subpart. Please refer to the relevant Information Sheet for a summary of the rule requirements for any other source categories located at the facility.

## How Must GHG Emissions Be Calculated?

All suppliers must calculate the quantity of $CO_2$ supplied by measuring the mass flow of gas and multiplying by the $CO_2$ composition of the gas, as specified below:

- Reporters measuring mass flow must calculate the mass of the $CO_2$ supplied by multiplying the mass of the $CO_2$ stream or container by the $CO_2$ concentration.
- Reporters measuring volumetric flow must calculate the mass of the $CO_2$ by multiplying the volume of the $CO_2$ stream or container by the density and $CO_2$ concentration of the stream.
- Facilities with production process units or DAC process units that capture a $CO_2$ stream and measure ahead of segregating the $CO_2$ stream, the total $CO_2$ supplied is calculated by subtracting the annual mass of $CO_2$ that passes through subsequent flow meters for use on-site from the annual mass of $CO_2$ that passes through the main flow meter.
- Importers or exporters that import or export $CO_2$ in containers must calculate the total mass of $CO_2$ imported or exported prior to any subsequent purification, processing, or compressing, based on summing the mass in each $CO_2$ container using weigh bills, scales, or load cells (in metric tons).

A checklist for data that must be monitored is available here: Subpart PP Monitoring Checklist.

## What Information Must Be Reported?

In addition to the information required by the General Provisions in Subpart A, found at 40 CFR 98.3(c), the following must be reported:

- If a mass flow meter is used to measure the mass flow rate of the $CO_2$ stream:
  - Quarterly concentration of the $CO_2$ stream, and the method used to measure it.
  - Quarterly mass of $CO_2$ (in metric tons).
- If a volumetric flow meter is used to measure the volumetric flow rate of the $CO_2$ stream:
  - Quarterly volume of the $CO_2$ stream.
  - Density of the $CO_2$ stream and the method used to measure it.
  - Quarterly concentration of the $CO_2$ stream method used to measure it.
  - The location of the flow meter in the process chain.
- For facilities with production process units or production wells that capture or extract a $CO_2$ stream and either measure it after segregation or do not segregate the flow, report the annual $CO_2$ mass from all flow meters and $CO_2$ streams that deliver $CO_2$ to containers (in metric tons).

- For facilities with production process units that capture a $CO_2$ stream and measure it ahead of segregation, report:
    - Total annual $CO_2$ through the main flow meter(s).
    - Total annual $CO_2$ through subsequent flow meter(s).
    - Location of each flow meter in relation to the point of segregation.
- Importers or exporters that import or export $CO_2$ in containers, report the annual mass of $CO_2$ in all $CO_2$ containers that are imported or exported.
- The type of equipment used to measure the total flow of $CO_2$ stream or the total mass or volume of containers.
- The standard used to operate and calibrate the equipment.
- The number of days in the reporting year for which substitute data procedures were used.
- Annual amounts of $CO_2$ transferred to the following end-use applications (if known):
    - Food and beverage.
    - Industrial and municipal water/wastewater treatment.
    - Metal fabrication, including welding and cutting.
    - Greenhouse uses for plant growth.
    - Fumigants (e.g., grain storage) and herbicides.
    - Pulp and paper.
    - Cleaning and solvent use.
    - Fire fighting.
    - Transportation and storage of explosives.
    - Injection of $CO_2$ for EOR covered by Subpart UU.
    - GS of $CO_2$ covered by Subpart RR.
    - GS of $CO_2$ with EOR that is covered by Subpart VV.
    - Research and development (R&D).
    - Other end-use.
- If capturing $CO_2$ from a production process, report the percentage of the total annual mass of $CO_2$ that is biomass-based.
- If capturing a $CO_2$ stream from a facility that is subject to this part and transferring $CO_2$ to any GS facilities that are subject to Subpart RR or Subpart VV, report:
    - Facility identification number for the facility that is the source of the captured $CO_2$ stream.
    - Facility identification number for each Subpart RR and Subpart VV facility.
    - Annual mass of $CO_2$ transferred to each Subpart RR and Subpart VV facility.
- If capturing a $CO_2$ stream at a facility with a DAC process unit, report the annual quantity of on-site and off-site electricity and heat generated for each DAC process unit. The quantities must be provided per energy source if known and must represent the electricity and heat used for the DAC process unit starting with air intake and ending with the compressed $CO_2$ stream (i.e., the $CO_2$ stream ready for supply for commercial applications or, if maintaining custody of the stream, sequestration or injection of the stream underground).

### *Electricity excluding combined heat and power (CHP)*

- If electricity is provided to a dedicated meter for the DAC process unit, report the annual quantity of electricity consumed (in megawatt hours (MWh)) and if the electricity is sourced from a grid connection, report the following information:
  - State where the facility with the DAC process unit is located.
  - County where the facility with the DAC process unit is located.
  - Name of the electric utility company that supplied the electricity as shown on the last monthly bill issued by the utility company during the reporting period.
  - Name of the electric utility company that delivered the electricity.
  - Annual quantity of electricity consumed (in MWh).
- If electricity is sourced from on-site or through a contractual mechanism for dedicated off-site generation, report the annual quantity of electricity consumed (in MWh), for non-hydropower renewable sources, including solar, wind, geothermal, tidal; hydropower; natural gas; oil; coal; nuclear; and other applicable energy sources. If the on-site electricity source is natural gas, oil, or coal, also indicate whether flue gas is also captured by the DAC process unit.

### *Heat excluding CHP*

- For solar, geothermal, natural gas, oil, coal, nuclear, and other applicable energy sources, report the annual quantity of heat, steam, or other forms of thermal energy sourced from on-site or through a contractual mechanism for dedicated off-site generation (in megajoules (MJ)). If the on-site heat source is natural gas, oil, or coal, also indicate whether flue gas is also captured by the DAC process unit.

### *Electricity from CHP*

- If electricity from CHP is sourced from on-site or through a contractual mechanism for dedicated off-site generation, for non-hydropower renewable sources including, solar, wind, geothermal and tidal; hydropower; natural gas; oil; coal; nuclear; and other applicable energy sources, report the annual quantity consumed (in MWh). If the on-site electricity source for CHP is natural gas, oil, or coal, also indicate whether flue gas is also captured by the DAC process unit.

### *Heat from CHP*

- For solar, geothermal, natural gas, oil, coal, nuclear, and other applicable energy sources, report the quantity of heat, steam, or other forms of thermal energy from CHP sourced from on-site or through a contractual mechanism for dedicated off-site generation (in MJ). If the on-site heat source is natural gas, oil, or coal, also indicate whether flue gas is also captured by the DAC process unit.

## What Records Must Be Maintained?

Reporters are required to retain records that pertain to their annual GHGRP report for at least three years after the date the report is submitted. Please see the Subpart A Information Sheet and 40 CFR 98.3(g) for general recordkeeping requirements. Specific recordkeeping requirements for Subpart PP are listed at 40 CFR 98.427.

## When and How Must Reports Be Submitted?

Reporters must submit their annual GHGRP reports for the previous calendar year to the EPA by March 31st, unless the 31st falls on a Saturday, Sunday, or federal holiday, in which case reports are due on the next business day. Annual reports must be submitted electronically using the electronic Greenhouse Gas Reporting Tool (e-GGRT), the GHGRP's online reporting system.

Additional information on setting up user accounts, registering a facility, and submitting annual reports is available on the GHGRP Help webpage.

## When Can a Facility Stop Reporting?

A facility may discontinue reporting under several scenarios, which are summarized in Subpart A (found at 40 CFR 98.2(i)) and the Subpart A Information Sheet.

## For More Information

For additional information on Subpart PP, please visit the Subpart PP webpage. For additional information on the GHGRP, please visit the GHGRP website, which includes additional information sheets, data previously reported to the GHGRP, training materials, and links to Frequently Asked Questions (FAQs). For questions that cannot be answered through the GHGRP website, please contact us at: GHGreporting@epa.gov.

*This Information Sheet is provided solely for informational purposes. It does not replace the need to read and comply with the regulatory text contained in the rule. Rather, it is intended to help reporting facilities and suppliers understand key provisions of the GHGRP. It does not provide legal advice; have a legally binding effect; or expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits with regard to any person or entity.*