

1. Subpart PP - Suppliers of Carbon Dioxide	2
1.1 Using e-GGRT to Prepare Your Subpart PP Report	2
1.1.1 Subpart PP Summary Information for this Supplier	4
1.1.2 Subpart PP Product and Equipment Information	6
1.1.3 Subpart PP Supply Information	9

Subpart PP - Suppliers of Carbon Dioxide

 A printer-friendly version (pdf) (30 pp, 7,688K) of GHG reporting instructions for this subpart

Please select a help topic from the list below:

- Using e-GGRT to Prepare Your Subpart PP Report
 - Subpart PP Summary Information for this Supplier
 - Subpart PP Product and Equipment Information
 - Subpart PP Supply Information
- Carry forward of data from previous submissions into RY2011 forms
- Subpart PP Rule Guidance
- Subpart PP Rule Language (eCFR)

Additional Resources:

- Part 98 Terms and Definitions
- Frequently Asked Questions (FAQs)
- Webinar Slides

Using e-GGRT to Prepare Your Subpart PP Report

This page provides an overview of subtopics that are central to Subpart PP Suppliers of Carbon Dioxide reporting:

- Summary Information for this Supplier
- Product and Equipment Information
- Supply Information
- Validation Report

If you previously reported for Reporting Year (RY) 2010, the Agency has carried some of your RY2010 data forward and entered it in your RY2011 forms to reduce reporting burden. It is still your responsibility to review and assure that all the information in your submission is correct, but the Agency believes that most of the data which is carried forward is unlikely to change significantly from year to year. For more information about carry forward data, please see the [Carry forward of data from previous submissions into RY2011 forms help content](#).

The end of the page contains links you can use for more information on these topics.

Click image to expand



The screenshot shows the EPA e-GGRT web application interface. The main heading is "Subpart PP: Suppliers of Carbon Dioxide (2011)". Below this, there is an "OVERVIEW OF SUBPART REPORTING REQUIREMENTS" section with a text box explaining the subpart's scope. A "Supplier Type" dropdown is set to "Capture" with a "CHANGE" button. The "Calculation Methodology" is "Flow Meters with no segregation". A "MISCELLANEOUS INFORMATION" table shows "Total Annual CO₂ Transferred to End-Use Applications (metric tons)" as 0.0. Below this is a "FLOW METERS" table with columns for "Flow Meter Name/ID", "CO₂ (metric tons)", "Status", and "Delete". A "Facility Overview" link is at the bottom. The footer includes "Paperwork Reduction Act Burden Statement | Contact Us" and "e-GGRT RY2011 R.12 | PP-overview-3".

Summary Information for this Supplier

Subpart PP requires you to report the following data about your facility or company:

- The classification that describes your facility (or company in case of importers and exporters)
- The calculation methodology used to estimate quantities of CO₂

Product and Equipment Information

Subpart PP requires capture and extract facilities to report the following information at the facility level; importers and exporters must report the information at the corporate level:

- The type of equipment used to measure CO₂ and the standard used to operate and calibrate the equipment
- The aggregated annual quantity of CO₂ transferred to each of the following end-use categories, 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
 - Enhanced oil and natural gas recovery
 - Long-term storage (sequestration)
 - Research and development
 - Other
 - Unknown
- The number of days in the reporting year for which substitute data procedures were used to measure the following:
 - CO₂ mass or volume
 - CO₂ concentration
 - CO₂ stream density

Supply Information

Capture facilities, extract facilities, importers, and exporters that use flow meters (regardless of segregation) must report the following information at the facility or corporate level:

- Annual mass of CO₂ for each flow meter (in metric tons)

e-GGRT will calculate this value based on inputs you provide for each individual flow meter. The following information is required for each individual flow meter:

- If a mass flow meter is used to report CO₂ supply:
 - A unique flow meter name or ID
 - Quarterly mass of each CO₂ stream (in metric tons)
 - Quarterly concentration of each CO₂ stream (in weight percent CO₂) and the standard used to measure it
 - The location of the mass flow meter in the process chain
 - The percentage of the CO₂ stream that is biomass-based
- If a volumetric flow meter is used to report CO₂ supply:
 - A unique flow meter name or ID
 - Quarterly volume of each CO₂ stream (in standard cubic meters)
 - Quarterly CO₂ concentration of each CO₂ stream (in weight or volume percent CO₂) and the standard used to measure it
 - Quarterly density (in metric tons per standard cubic meter)
 - if the CO₂ concentration is measured in weight percent, provide the quarterly density of the CO₂ stream and the standard used to measure it
 - if the CO₂ concentration is measured in volume percent, the quarterly density of CO₂ required by the rule will be displayed
 - The location of the volumetric flow meter in the process chain

Capture and extract facilities that supply CO₂ in containers must report the following information at the facility level:

- Annual mass of CO₂ for each CO₂ stream supplied in containers (in metric tons)

e-GGRT will calculate this value based on inputs you provide for each CO₂ stream supplied in containers. The following information is required for each CO₂ stream supplied in containers:

- If mass is used to report CO₂ supply:
 - A unique CO₂ stream name or ID

- Quarterly mass of each CO₂ stream (in metric tons)
- Quarterly concentration of each CO₂ stream (in weight percent CO₂) and the standard used to measure it
- If volume is used to report CO₂ supply:
 - A unique CO₂ stream name or ID
 - Quarterly volume of each CO₂ stream (in standard cubic meters)
 - Quarterly CO₂ concentration of each CO₂ stream (in weight or volume percent CO₂) and the standard used to measure it
 - Quarterly density (in metric tons per standard cubic meter)
 - if the CO₂ concentration is measured in volume percent, provide the quarterly density of the CO₂ stream and the standard used to measure it
 - if the CO₂ concentration is measured in weight percent, the quarterly density of CO₂ required by the rule will be displayed

Importers and exporters that supply CO₂ in containers must report the following information at the corporate level:

- Annual mass of CO₂ in all containers imported (in metric tons)
- Annual mass of CO₂ in all containers exported (in metric tons)

Validation Report

You can use the Validation Report to assist with the completeness and quality of your reporting data.

You should use the Validation Report to check your work. The Validation Report performs two types of checks:

- Data Completeness: Data that are required for reporting are missing or incomplete.
- Data Quality: Data are outside of the expected range of values.

You may view the Validation Report at any time.



Note that the Validation Report is intended to assist users in entering data, but it is not an indication that the reporter has entered all necessary information, nor is it an indication that the reporter is in compliance with part 98. Furthermore a negative finding on the validation report is not a guarantee that a data element was entered incorrectly.

[Back to Top](#)

See Also

[Screen Errors](#)
[Subpart PP Summary Information for this Supplier](#)
[Subpart PP Product and Equipment Information](#)
[Subpart PP Supply Information](#)
[Subpart Validation Report](#)

Subpart PP Summary Information for this Supplier

This topic provides a step-by-step description of how to enter Subpart PP Suppliers of Carbon Dioxide summary information about this Supplier.

Adding or Updating Summary Information for this Supplier

To add or update Subpart PP Summary Information for this Supplier, locate the Summary table on the Subpart PP Overview page, and click OPEN.

Click image to expand

United States Environmental Protection Agency | e-GGRT Electronic Greenhouse Gas Reporting Tool

HOME | FACILITY REGISTRATION | FACILITY MANAGEMENT | DATA REPORTING

Suppliers of Carbon Dioxide Company (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview

SELECT SUPPLIER CLASSIFICATION
 As a supplier of carbon dioxide (CO₂), please select below the classification that describes your facility. This will enable e-GGRT to tailor the subpart screens to properly include those reporting requirements germane to your facility. * denotes a required field

SUPPLIER TYPE
 Please select the classification that describes your facility

- Capture Facility: A facility with production process units that capture a CO₂ stream for purposes of supplying CO₂ for commercial applications or that capture and maintain custody of a CO₂ stream in order to sequester or otherwise inject it underground. Capture refers to the initial separation and removal of CO₂ from a manufacturing process or any other process.
- Extract Facility: A facility with CO₂ production wells that extract or produce a CO₂ stream for purposes of supplying CO₂ for commercial applications or that extract and maintain custody of a CO₂ stream in order to sequester or otherwise inject it underground.
- Importers or Exporters: Importers or exporters of bulk CO₂.

CANCEL | NEXT

Paperwork Reduction Act Burden Statement | Contact Us | e-GGRT RY2010.R.45 | PP-type

Subpart PP requires you to report the following data about your facility or company:

- The classification that describes your facility (or company in case of importers and exporters)
- The calculation methodology used to estimate quantities of CO₂

This information must be input to e-GGRT.

To enter your supplier type for the first time, select the classification that describes your facility (or company for importers and exporters) using the radio buttons and click NEXT.

Click image to expand

United States Environmental Protection Agency | e-GGRT Electronic Greenhouse Gas Reporting Tool

HOME | FACILITY REGISTRATION | FACILITY MANAGEMENT | DATA REPORTING

Suppliers of Carbon Dioxide Company (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview

SELECT CALCULATION METHODOLOGY
 As a supplier of CO₂, please select below the classification that describes your facility. This will enable e-GGRT to tailor the subpart screens to properly include those reporting requirements germane to your facility. * denotes a required field

CALCULATION METHODOLOGY
 Please select the calculation methodology you will use to estimate quantities of CO₂

- Flow Meters with no segregation: Use equation PP-1 or PP-2 for each meter (e-GGRT aggregating at the facility level using equation PP-3a.)
- Flow Meters with segregation: Use equation PP-1 or PP-2 for each meter (e-GGRT aggregating at the facility level using equation PP-3b.)
- Streams that deliver CO₂ to containers: Use equation PP-1 or PP-2 for each stream (e-GGRT aggregating at the facility level using equation PP-3a. CO₂ concentration measurement required.)

CANCEL | NEXT

Paperwork Reduction Act Burden Statement | Contact Us | e-GGRT RY2010.R.45 | PP-method

Select the calculation methodology used to estimate quantities of CO₂ using the radio buttons. The calculation methodologies available for you to use depend on the supplier type you selected on the previous screen. If you selected “capture facility,” you can select flow meter(s) with no segregation, flow meters with segregation, or stream(s) that deliver CO₂ to containers. If you selected “extract facility,” you can select flow meter(s) or stream(s) that deliver CO₂ to containers. If you selected “importer or exporter,” you can select flow meter(s) or containers.

When finished, click NEXT.

Click image to expand

The screenshot shows the EPA e-GGRT interface for Subpart PP reporting. The main content area is titled "R H H Environmental Subpart PP: Suppliers of Carbon Dioxide (2011)". It provides an overview of reporting requirements and allows users to manage their supplier information. Key elements include:

- Supplier Type:** Set to "Capture" with a "CHANGE" button.
- Calculation Methodology:** "Flow Meters with no segregation".
- MISCELLANEOUS INFORMATION Table:**

Total Annual CO ₂ Transferred to End Use Applications (metric tons)	Types of Equipment Used to Measure CO ₂
0.0	OPEN
- FLOW METERS Table:**

Flow Meter Name/ID	CO ₂ (metric tons)	Status ¹	Delete
+ ADD a Flow Meter			
- Validation Warning:** A yellow warning icon with the text "Subpart PP: View Validation".

To change your supplier type or calculation methodology, click CHANGE and use radio buttons to make changes as appropriate.

When finished, click NEXT.

[Back to Top](#)

See Also

- [Screen Errors](#)
- [Using e-GGRT to Prepare Your Subpart PP Report](#)
- [Subpart PP Product and Equipment Information](#)
- [Subpart PP Supply Information](#)
- [Subpart Validation Report](#)

Subpart PP Product and Equipment Information

This topic provides a step-by-step description of how to enter subpart PP Suppliers of Carbon Dioxide Product and Equipment Information for this Supplier.

Click image to expand

This expanded screenshot shows the same interface as above, but with a focus on the data entry sections. The "MISCELLANEOUS INFORMATION" table and the "FLOW METERS" table are clearly visible, along with the "ADD a Flow Meter" button and the "OPEN" button in the miscellaneous information table.

To add or update subpart PP Product and Equipment Information for this Supplier, locate the MISCELLANEOUS INFORMATION table on the Subpart Overview page, and click OPEN.

Click image to expand

Suppliers of Carbon Dioxide Company (2010)
Subpart PP: Suppliers of Carbon Dioxide
Subpart Overview > **Miscellaneous Information**

MISCELLANEOUS INFORMATION FOR SUPPLIERS OF CARBON DIOXIDE

- Each type of equipment used to measure the total flow of the CO₂ stream
- The number of days for which substitute data procedures were used to determine the mass or volume, concentration and density
- The annual quantity of CO₂ transferred to one or more end use application

TYPES OF EQUIPMENT USED TO MEASURE THE TOTAL FLOW OF THE CO₂ STREAM

Id	Equipment Type	Delete
ADD a Type of Equipment		

Please provide the aggregated annual quantity of CO₂ your facility transferred to each of the following end-use categories:

Food and beverage	<input type="text"/>	(metric tons)
Industrial and municipal water/wastewater treatment	<input type="text"/>	(metric tons)
Metal fabrication, including welding and cutting	<input type="text"/>	(metric tons)
Greenhouse uses for plant growth	<input type="text"/>	(metric tons)
Fumigants (e.g., grain storage) and herbicides	<input type="text"/>	(metric tons)
Pulp and paper	<input type="text"/>	(metric tons)
Cleaning and solvent use	<input type="text"/>	(metric tons)
Fire fighting	<input type="text"/>	(metric tons)
Transportation and storage of explosives	<input type="text"/>	(metric tons)
Enhanced oil and natural gas recovery	<input type="text"/>	(metric tons)
Long-term storage (sequestration)	<input type="text"/>	(metric tons)
Research and Development	<input type="text"/>	(metric tons)
Other/unknowns	<input type="text"/>	(metric tons)

Please provide the number of days for which substitute data procedures were used to measure the following:

CO ₂ mass or volume	<input type="text"/>	(days)
CO ₂ concentration	<input type="text"/>	(days)
CO ₂ stream density	<input type="text"/>	(days)

Subpart PP requires capture and extract facilities to report the following information at the facility level; importers and exporters must report the information at the corporate level:

- The type of equipment used to measure CO₂ and the standard used to operate and calibrate the equipment
- The aggregated annual quantity of CO₂ transferred to each of the following end-use categories, 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
 - Enhanced oil and natural gas recovery
 - Long-term storage (sequestration)
 - Research and development
 - Other
 - Unknown
- The number of days in the reporting year for which substitute data procedures were used to measure the following:
 - CO₂ mass or volume
 - CO₂ concentration
 - CO₂ stream density

This information must be input to e-GGRT.

To add a type of equipment, click the link labeled “ADD a Type of Equipment” located below the TYPES OF EQUIPMENT USED TO MEASURE THE TOTAL FLOW OF THE CO₂ STREAM table.

Click image to expand

Suppliers of Carbon Dioxide Company (2010)
Subpart PP: Suppliers of Carbon Dioxide
Subpart Overview > Miscellaneous Information > **CO₂ Equipment Type**

TYPES OF EQUIPMENT USED TO MEASURE CO₂
Specify a type of equipment used to measure the total flow of the CO₂ stream.

Equipment Type

Standard used to operate and calibrate the equipment

Use the drop-down menu to select an equipment type and use the text box to enter the name of the standard used to operate and calibrate the equipment. If you select “other” as the equipment type, enter a description in the text box that appears to the right of the drop-down menu.

Ensure that the type of equipment you select in the equipment type drop-down menu corresponds to the calculation methodology you select and the measurement type you select for each flow meter or CO₂ stream supplied in containers added. For example, if you select “flow meters with segregation” as your calculation methodology and add a flow meter on the Subpart Overview page with “mass basis” as measure type, then you should select “mass flow meter” from the equipment type drop-down menu. For more examples, please refer to the table below.

Calculation Methodology:	Measurement Type:	Equipment Type
Flow meters with no segregation	Mass basis	Mass flow meter
Flow meters with no segregation	Volume basis	Volumetric flow meter
Flow meters with segregation	Mass basis	Mass flow meter
Flow meters with segregation	Volume basis	Volumetric flow meter
Streams that deliver CO ₂ to containers	Mass basis	Weigh bills, scale or load cell
Streams that deliver CO ₂ to containers	Volumetric basis	Loaded container volume

When finished, click SAVE.

Repeat this step until you have added all types of equipment you used to measure the total flow of CO₂.

Click image to expand

Once all types of equipment used to measure the total flow of CO₂ streams have been added to the table, use the text boxes to enter the aggregated annual quantity of CO₂ transferred to each end-use category and the number of days in the reporting year for which substitute data procedures were used to measure CO₂ mass or volume, concentration, and stream density.

Enter a value in each text box. If no CO₂ was transferred to one or more of the end-use categories, or if substitute data procedures were not used for one or more of the data elements, the value “0” must be entered in each applicable text box.

For importers and exporters, do not distinguish between quantities imported to an end-use category and quantities exported to an end-use category. In each end-use category text box, enter the aggregated quantity imported and exported.

In most cases, the total amount of CO₂ transferred to end-use categories will be equivalent to the total CO₂ supply displayed on the Subpart Overview page.

When finished, click SAVE.

[Back to Top](#)

See Also

[Screen Errors](#)
[Using e-GGRT to Prepare Your Subpart PP Report](#)
[Subpart PP Summary Information for this Supplier](#)
[Subpart PP Supply Information](#)
[Subpart Validation Report](#)

Subpart PP Supply Information

This page provides a step-by-step description of how to enter subpart PP Suppliers of Carbon Dioxide supply data.

Subpart PP supply reporting is different for four types of suppliers:

- Supplier Type A: Capture Facilities That Use Flow Meter(s) With or Without Segregation
- Supplier Type B: Importers, Exporters, and Extract Facilities That Use Flow Meter(s)
- Supplier Type C: Capture and Extract Facilities With Stream(s) That Deliver CO₂ to Containers
- Supplier Type D: Importers and Exporters That Use Containers

Capture Facilities that use one or more flow meters, with or without segregation, should proceed to the section titled "Supplier Type A: Capture Facilities That Use Flow Meters" and may disregard all other sections.

Importers, Exporters, and Extract Facilities that use one or more flow meters should proceed to the section titled "Supplier Type B: Importers, Exporters, and Extract Facilities That Use Flow Meters With No System Aggregation" and may disregard all other sections.

Capture and Extract Facilities with one or more streams that deliver CO₂ to containers should proceed to the section titled "Supplier Type C: Capture and Extract Facilities With Streams That Deliver CO₂ to Containers" and may disregard all other sections.

Importers and Exporters that use containers should proceed to the section titled "Supplier Type D: Importers and Exporters That Use Containers" and may disregard all other sections.

Supplier Type A: Capture Facilities That Use Flow Meters

The supply information required for capture facilities that use flow meters includes three steps:

- A1: Flow Meter Information
- A2
 - A2.1: Equation PP-1 (mass-based measurements)
 - OR
 - A2.2: Equation PP-2 (volume-based measurements)
- A3
 - A3.1: Equation PP-3a (aggregation for flow meters with no segregation)
 - OR
 - A3.2: Equation PP-3b (aggregation for flow meters with segregation)

The steps required for Capture Facilities that use flow meters include the use of either Step A2.1 or Step A2.2, but not both and either Step A3.1 or Step A3.2, but not both.

Your selection of a flow meter type and measurement basis will determine whether e-GGRT uses Step A2.1 or Step A2.2 and A3.1 or A3.2 to calculate CO₂ quantities.

If measurements are reported on a mass basis, e-GGRT will use Step A2.1: Equation PP-1 to calculate CO₂ quantities.

If measurements are reported on a volumetric basis, e-GGRT will use Step A2.2: Equation PP-2 to calculate CO₂ quantities.

e-GGRT will use Step A3.1: Equation PP-3a to calculate facility-level CO₂ quantities for flow meters with no segregation by summing the annual mass of CO₂ measured by each individual flow meter.

e-GGRT will use Step A3.2: Equation PP-3b to calculate facility-level CO₂ quantities for flow meters with segregation by subtracting the total annual mass of CO₂ measured by all flow meters downstream of the point(s) of segregation from the total annual mass of CO₂ measured by all flow meters upstream of the point(s) of segregation. For example, if your facility captures a portion of CO₂ for use onsite, and supplies the other portion for commercial applications or to inject or sequester it underground, e-GGRT would use the value you entered for total CO₂ captured (flow meter upstream of segregation) less the value you entered for CO₂ used onsite (flow meter downstream of segregation) to calculate the CO₂ quantity supplied. If you supply captured CO₂ in containers, see Supplier Type C.

Each Step is described below.

Step A1: Flow Meter Information

Click image to expand

The screenshot shows the EPA e-GGRT interface for Subpart PP: Suppliers of Carbon Dioxide (2011). The 'FLOW METERS' table is currently empty. Below the table, there is a link labeled 'ADD a Flow Meter'. The interface also includes sections for 'OVERVIEW OF SUBPART REPORTING REQUIREMENTS', 'MISCELLANEOUS INFORMATION', and 'Facility Overview'.

To add a flow meter, click the link labeled “ADD a Flow Meter” located below the FLOW METERS table.

Click image to expand

The screenshot shows the same EPA e-GGRT interface, but now the 'FLOW METERS' table contains two entries:

Flow Meter Name/ID	CO ₂ (metric tons)	Status	Delete
Flow Meter 1		Incomplete	OPEN X
Flow Meter 2		Incomplete	OPEN X

Below the table, the 'ADD a Flow Meter' link is still present. The rest of the interface remains the same.

The following information is required for each individual flow meter on this screen:

- A unique flow meter name or ID
- The location of the flow meter in relation to dehydration equipment, compression equipment, and other processing equipment
- The percentage of the CO₂ stream that is biomass-based
- Measurement type
- If you use flow meters with segregation, you must also report the location of the flow meter in relation the point of segregation

Use the text boxes and radio buttons to enter all required information for each flow meter.

If you have “other processing equipment,” describe it in the text box. If you have more than one type of “other processing equipment,” describe each type in the text box, including whether it is upstream or downstream of the flow meter.

If you don't have all the data, you can enter some now, save it, then finish it later.

When finished, click SAVE. You will be returned to the OVERVIEW screen, which will display the flow meter information you just saved.

Click image to expand

Subpart PP: Suppliers of Carbon Dioxide (2011)
Subpart Overview

OVERVIEW OF SUBPART REPORTING REQUIREMENTS
This subpart consists of facilities with production process units that capture a CO₂ stream for purposes of supplying CO₂ for commercial applications or that capture and maintain custody of a CO₂ stream in order to sequester or otherwise inject it underground, facilities with CO₂ production wells that extract or produce a CO₂ stream for purposes of supplying CO₂ for commercial applications or that extract and maintain custody of a CO₂ stream in order to sequester or otherwise inject it underground and importers or exporters of bulk CO₂.

Supplier Type: Capture **CHANGE**
Calculation Methodology: Flow Meters with no segregation

MISCELLANEOUS INFORMATION

Total Annual CO ₂ Transferred to End-Use Applications (metric tons)	Types of Equipment Used to Measure CO ₂
0.0	OPEN

FLOW METERS

Flow Meter Name/ID	CO ₂ (metric tons)	Status	OPEN	Delete
Flow Meter 1		Incomplete	OPEN	X
Flow Meter 2		Incomplete	OPEN	X

ADD a Flow Meter
Facility Overview

*A status of "incomplete" for a given flow meter or CO₂ stream means that one or more data elements required by e-GGRT to calculate your OGH supply is incomplete. For details, refer to the Equation Completeness validation messages in your Validation Report by clicking the "View Validation" link above. A status of "complete" for a given flow meter or CO₂ stream does not necessarily mean that all required information has been entered, only that all data elements required to calculate your OGH supply are complete. See the Data Completeness validation messages for details about any incomplete data by clicking the "View Validation" link above. (Note, if there are no validation messages for this subpart you will not see the "View Validation" link above.)

Paperwork Reduction Act Burden Statement | Contact Us | e-GGRT RY2011.R.12 | PP-overview

Repeat this step until you have added all flow meters. Once all flow meters used at your facility have been added to the table, click OPEN to enter measurement data for each flow meter.

For each flow meter measuring on a mass basis, e-GGRT will calculate GHGs using Equation PP-1 described in Step A2.1.

For each flow meter measuring on a volume basis, e-GGRT will calculate GHGs using Equation PP-2 described in Step A2.2.

Step A2.1: Equation PP-1 (mass-based measurements)

Click image to expand

Suppliers of Carbon Dioxide Company (2010)
Subpart PP: Suppliers of Carbon Dioxide
Subpart Overview - Flow Meter 1 - Eq. PP-1

ANNUAL MASS OF CO₂ CALCULATION
For each mass flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the mass flow by the composition data using Equation PP-1.

Equation Summary (PP-1)
 Quarterly mass flow rate measurement
 Quarterly CO₂ concentration measurement in flow

SUMMARY

$$\text{Equation PP-1 } CO_{2,u} = \sum_{j=1}^4 Q_{j,CO_2} \times C_{CO_2,j}$$

Hover over an element in the equation above to reveal a definition of that element.

Period	Q (metric tons)	C (wt. %CO ₂)	Result
Quarter 1			
Quarter 2			
Quarter 3			
Quarter 4			
Incomplete — View Validation			

What result do you want to report to EPA?
 Use the calculated result rounded
 Enter my own result (value will be rounded)

FINISHED NEXT

Paperwork Reduction Act Burden Statement | Contact Us | e-GGRT RY2010.R.45 | PP1-summary

This page will be blank until you enter more data in subsequent screens. Use the radio buttons to select whether you would like to report results calculated by e-GGRT or enter your own results. If you choose to enter your own results, enter the value in the text box that is displayed below the radio buttons.

When finished, click NEXT.

Click image to expand

Suppliers of Carbon Dioxide Company 1 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview = Flow Meter 1 = Eq. PP-1

ANNUAL MASS OF CO₂ CALCULATION
 For each mass flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the mass flow by the composition data using Equation PP-1.

Equation Summary (PP-1)
 Quarterly mass flow rate measurement
 Quarterly CO₂ concentration measurement in flow

Mass of CO ₂ stream, Quarter 1	800000 (metric tons)
Mass of CO ₂ stream, Quarter 2	800000 (metric tons)
Mass of CO ₂ stream, Quarter 3	800000 (metric tons)
Mass of CO ₂ stream, Quarter 4	800000 (metric tons)

[BACK](#) [NEXT](#)

Use the text boxes to enter the mass of the CO₂ stream (in metric tons) for this flow meter in each quarter of the reporting year.

When finished, click NEXT.

Click image to expand

Suppliers of Carbon Dioxide Company 1 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview = Flow Meter 1 = Eq. PP-1

ANNUAL MASS OF CO₂ CALCULATION
 For each mass flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the mass flow by the composition data using Equation PP-1.

Equation Summary (PP-1)
 Quarterly mass flow rate measurement
 Quarterly CO₂ concentration measurement in flow

Concentration of CO ₂ stream, Quarter 1	(wt. %CO ₂ expressed as fraction)
Concentration of CO ₂ stream, Quarter 2	3 (wt. %CO ₂ expressed as fraction)
Concentration of CO ₂ stream, Quarter 3	9 (wt. %CO ₂ expressed as fraction)
Concentration of CO ₂ stream, Quarter 4	1 (wt. %CO ₂ expressed as fraction)

Standard used to measure CO₂ concentration

[BACK](#) [SUMMARY](#)

Use the text boxes to enter the concentration of the CO₂ stream (in weight percent CO₂) for this flow meter in each quarter of the reporting year and the name of the standard used to measure CO₂ concentration. Express the concentration as a decimal fraction (e.g., enter 0.9 for a concentration of 90 percent). If you used more than one standard during the reporting year, enter them all.

When finished, click SUMMARY.

}
 Click image to expand

Suppliers of Carbon Dioxide Company 1 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview = Flow Meter 1 = Eq. PP-1

ANNUAL MASS OF CO₂ CALCULATION
 For each mass flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the mass flow by the composition data using Equation PP-1.

Equation Summary (PP-1)
 Quarterly mass flow rate measurement
 Quarterly CO₂ concentration measurement in flow

SUMMARY

Equation PP-1 $CO_2_u = \sum_{p=1}^4 Q_{p,u} \times C_{CO_2,p,w}$

Hover over an element in the equation above to reveal a definition of that element.

Period	Q (metric tons)	C (wt. %CO ₂)	Result
Quarter 1			
Quarter 2			
Quarter 3			
Quarter 4			Incomplete — View Validation

What result do you want to report to EPA?
 Use the calculated result rounded
 Enter my own result (value will be rounded)

[FINISHED](#) [NEXT](#)

To view the validation page for Equation PP-1, click the link labeled "View Validation."

Once all data has been entered for this flow meter, click FINISHED.

Step A2.2: Equation PP-2 (volume-based measurements)

Click image to expand

Suppliers of Carbon Dioxide Company 1 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview = Flow Meter 2 = Eq. PP-2

ANNUAL MASS OF CO₂ CALCULATION
 For each volumetric flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the volumetric flow by the concentration and density data using Equation PP-2.

Equation Summary (PP-2)

- Quarterly volume of the CO₂ stream
- Density of the CO₂ stream
- Quarterly concentration of the CO₂ stream

SUMMARY

$$\text{Equation PP-2: } \text{CO}_2 \text{ mass} = \sum_{p=1}^n Q_p \times D_p \times C_{\text{CO}_2,p}$$

Hover over an element in the equation above to reveal a definition of that element.

Period	Q (ccm)	D (metric tons/ccm)	C (wt. %CO ₂)	Result
Quarter 1	53,000,000	0.001969	0.05	4,952.85
Quarter 2	0	0.00196	0.9	0.00
Quarter 3	53,000,000	0.1967	0.9	8,905,590.00
Quarter 4	53,000,000	0	0.9	0.00
Total				8,910,542.85

What result do you want to report to EPA?
 Use the calculated result rounded (8,910,543 metric tons)
 Enter my own result (value will be rounded)

Use the radio buttons to select whether you would like to report results calculated by e-GGRT or enter your own results. If you choose to enter your own results, enter the value in the text box that is displayed below the radio buttons.

When finished, click NEXT.

Click image to expand

Suppliers of Carbon Dioxide Company 1 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview = Flow Meter 2 = Eq. PP-2

ANNUAL MASS OF CO₂ CALCULATION
 For each volumetric flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the volumetric flow by the concentration and density data using Equation PP-2.

Equation Summary (PP-2)

- Quarterly volume of the CO₂ stream
- Density of the CO₂ stream
- Quarterly concentration of the CO₂ stream

Volume of CO₂ stream, Quarter 1: 53000000 (standard cubic meters)
 Volume of CO₂ stream, Quarter 2: 0 (standard cubic meters)
 Volume of CO₂ stream, Quarter 3: 53000000 (standard cubic meters)
 Volume of CO₂ stream, Quarter 4: 53000000 (standard cubic meters)

Use the text boxes to enter the volume of the CO₂ stream (in standard cubic meters) for this flow meter in each quarter of the reporting year.

When finished, click NEXT.

Click image to expand

Suppliers of Carbon Dioxide Company 1 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview = Flow Meter 2 = Eq. PP-2

ANNUAL MASS OF CO₂ CALCULATION
 For each volumetric flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the volumetric flow by the concentration and density data using Equation PP-2.

Equation Summary (PP-2)

- Quarterly volume of the CO₂ stream
- Density of the CO₂ stream
- Quarterly concentration of the CO₂ stream

Density of CO₂ stream, Quarter 1: 0.001969 (metric tons per standard cubic meter)
 Density of CO₂ stream, Quarter 2: 0.00196 (metric tons per standard cubic meter)
 Density of CO₂ stream, Quarter 3: 0.1967 (metric tons per standard cubic meter)
 Density of CO₂ stream, Quarter 4: 0 (metric tons per standard cubic meter)

Standard used to measure CO₂ Density: []

This screen is for the density (metric tons per standard cubic meter) for this flow meter in each quarter of the reporting year.

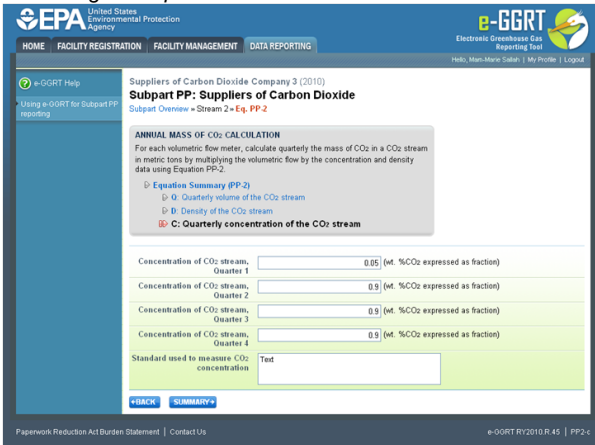
If you selected the flow meter measurement type as “concentration in weight percentage” on the Add/Edit Flow Meter page, blank text boxes will be displayed, and you should enter the density of the CO₂ stream and the name of the standard used to measure CO₂ stream density. If you used more than one standard during the reporting year, enter them all.

If you selected the flow meter measurement type as “concentration in volume percentage” on the Add/Edit Flow Meter page, populated text boxes

will be displayed with the density of CO₂ that is required in the rule (0.001868 metric tons per standard cubic meter). A text box for the standard used to measure CO₂ density will not be displayed.

When finished, click NEXT.

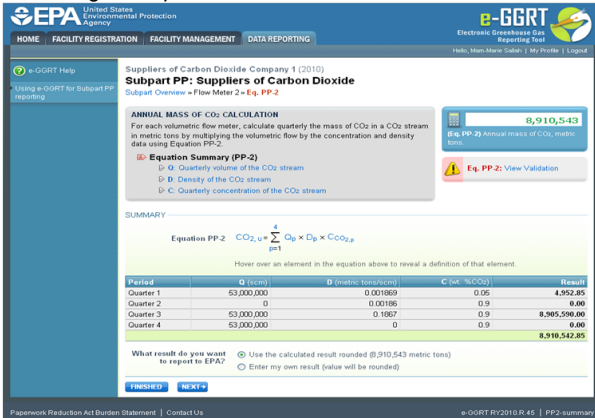
Click image to expand



Use the text boxes to enter the concentration of the CO₂ stream (in weight percent CO₂ or volume percent CO₂ depending on the flow meter measurement type selected on the Add/Edit Flow Meter page) for this flow meter in each quarter of the reporting year and the name of the standard used to measure CO₂ concentration. Express the concentration as a decimal fraction (e.g., enter 0.9 for a concentration of 90 percent). If you used more than one standard during the reporting year, enter them all.

When finished, click NEXT.

Click image to expand



To view the validation page for Equation PP-2, click the link labeled "View Validation."

Once all data has been entered for this flow meter, click FINISHED.

Step A3.1: Equation PP-3a (aggregation for flow meters with no segregation)

Click image to expand

Subpart PP: Suppliers of Carbon Dioxide (2011)
Subpart Overview

OVERVIEW OF SUBPART REPORTING REQUIREMENTS
This subpart consists of facilities with production process units that capture a CO₂ stream for purposes of supplying CO₂ for commercial applications or that capture and maintain custody of a CO₂ stream in order to sequester or otherwise inject it underground, facilities with CO₂ production wells that extract or produce a CO₂ stream for purposes of supplying CO₂ for commercial applications or that extract and maintain custody of a CO₂ stream in order to sequester or otherwise inject it underground and importers or exporters of bulk CO₂.

Supplier Type: Capture **CHANGE**

Calculation Methodology: Flow Meters with no segregation

MISCELLANEOUS INFORMATION

Total Annual CO ₂ Transferred to End-Use Applications (metric tons)	Types of Equipment Used to Measure CO ₂
0.0	OPEN

FLOW METERS

Flow Meter Name/ID	CO ₂ (metric tons)	Status ¹	Delete
Flow Meter 1		Incomplete	OPEN ✕
Flow Meter 2	929.0	Complete	OPEN ✕

VIEW SUMMARY

Subpart PP: View Validation

Facility Overview

¹A status of "incomplete" for a given flow meter or CO₂ stream means that one or more data elements required by e-GGRT to calculate your GHO supply is incomplete. For details, refer to the Equation Completeness validation messages in your Validation Report by clicking the "View Validation" link above. A status of "complete" for a given flow meter or CO₂ stream does not necessarily mean that all required information has been entered, only that all data elements required to calculate your GHO supply are complete. See the Data Completeness validation messages for details about any incomplete data by clicking the "View Validation" link above. (Note, if there are no validation messages for this subpart you will not see the "View Validation" link above.)

To view the results of Equation 3a, on the Subpart Overview page click **VIEW SUMMARY**.

Click image to expand

Suppliers of Carbon Dioxide Company 3 (2011)
Subpart PP: Suppliers of Carbon Dioxide
Subpart Overview → Eq. PP-3a

ANNUAL MASS OF CO₂ EMISSIONS AGGREGATION
e-GGRT uses equation PP-3a to arrive at a facility level value for CO₂ emissions. This value, reported to EPA, is a simple summation of all CO₂ emissions from individual flow meters or CO₂ streams.

SUMMARY

Equation PP-3a $CO_2 = \sum CO_2 u$

Hover over an element in the equation above to reveal a definition of that element.

CO ₂ Stream Name/ID	CO ₂ (metric tons)	Status
Stream 1		Incomplete
Stream 2	8,910,543	Complete

BACK

To return to the Subpart Overview page once you have reviewed the facility-level data, click **BACK**.

Step A3.2: Equation PP-3b (aggregation for flow meters with segregation)

Click image to expand

Subpart PP: Suppliers of Carbon Dioxide (2011)
Subpart Overview

OVERVIEW OF SUBPART REPORTING REQUIREMENTS
This subpart consists of facilities with production process units that capture a CO₂ stream for purposes of supplying CO₂ for commercial applications or that capture and maintain custody of a CO₂ stream in order to sequester or otherwise inject it underground, facilities with CO₂ production wells that extract or produce a CO₂ stream for purposes of supplying CO₂ for commercial applications or that extract and maintain custody of a CO₂ stream in order to sequester or otherwise inject it underground and importers or exporters of bulk CO₂.

Supplier Type: Capture **CHANGE**

Calculation Methodology: Flow Meters with segregation

MISCELLANEOUS INFORMATION

Total Annual CO ₂ Transferred to End-Use Applications (metric tons)	Types of Equipment Used to Measure CO ₂
0.0	OPEN

FLOW METERS

Flow Meter Name/ID	Meter Location	CO ₂ (metric tons)	Status ¹	Delete
Flow Meter 1	Upstream		Incomplete	OPEN ✕
Flow Meter 2	Downstream	1,528.4	Complete	OPEN ✕

VIEW SUMMARY

Subpart PP: View Validation

Facility Overview

¹A status of "incomplete" for a given flow meter or CO₂ stream means that one or more data elements required by e-GGRT to calculate your GHO supply is incomplete. For details, refer to the Equation Completeness validation messages in your Validation Report by clicking the "View Validation" link above. A status of "complete" for a given flow meter or CO₂ stream does not necessarily mean that all required information has been entered, only that all data elements required to calculate your GHO supply are complete. See the Data Completeness validation messages for details about any incomplete data by clicking the "View Validation" link above. (Note, if there are no validation messages for this subpart you will not see the "View Validation" link above.)

To view the results of Equation 3b, on the Subpart Overview page click **VIEW SUMMARY**.

Click image to expand

Suppliers of Carbon Dioxide Company 2 (2011)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview - Eq. PP-3b

ANNUAL MASS OF CO₂ EMISSIONS AGGREGATION
 e-GGRT uses Equation PP-3b to arrive at a facility level value for CO₂ emission. This value, reported to EPA, is the result of all CO₂ emissions from upstream flow meters minus all CO₂ emissions from downstream flow meters.

SUMMARY
 Equation PP-3b: $CO_2 = \sum CO_{2,u} - \sum CO_{2,d}$
 Hover over an element in the equation above to reveal a definition of that element.

Flow Meter Name/ID	Upstream or Downstream	CO ₂ (metric tons)	Status
Flow Meter 1	Upstream		Incomplete
Flow Meter 2	Downstream	13,958	Complete
Flow Meter 3	Downstream	1,731,638,000	Complete
		1,731,649,858	

BACK

To return to the Subpart Overview page once you have reviewed the facility-level data, click BACK.

Supplier Type B: Importers, Exporters, and Extract Facilities That Use Flow Meter(s)

The supply information required for Importers, Exporters and Extract Facilities that use flow meters includes three Steps:

- B1: Flow Meter Information
- B2
 - B2.1: Equation PP-1 (mass-based measurements)
OR
 - B2.2: Equation PP-2 (volume-based measurements)
- B3
 - B3.1: Annual CO₂ Extracted
OR
 - B3.2: Annual CO₂ Imported and Exported

The steps required for Importers, Exporters and Extract Facilities that use flow meters include the use of either Step B2.1 or Step B2.2, but not both.

Your selection of a measurement type and supplier type will determine whether e-GGRT uses Step B2.1 or Step B2.2 and Step B3.1 or B3.2 to calculate CO₂ emissions.

If measurements are reported on a mass basis, e-GGRT will use Step B2.1: Equation PP-1 to calculate CO₂ quantities.

If measurements are reported on a volumetric basis, e-GGRT will use Step B2.2: Equation PP-2 to calculate CO₂ quantities.

e-GGRT will use Step B3.1: Annual CO₂ Extracted to report aggregated GHG information for Extract Facilities.

e-GGRT will use Step B3.2: Annual CO₂ Imported and Exported to report aggregated GHG information for Importers and Exporters.

Each Step is described below.

Step B1: Flow Meter Information

Click image to expand

Suppliers of Carbon Dioxide (2011)
 Subpart Overview

OVERVIEW OF SUBPART REPORTING REQUIREMENTS
 This subpart consists of facilities with production process units that capture a CO₂ stream for purposes of supplying CO₂ for commercial applications or that capture and maintain custody of a CO₂ stream in order to sequester or otherwise inject it underground, facilities with CO₂ production wells that extract or produce a CO₂ stream for purposes of supplying CO₂ for commercial applications or that extract and maintain custody of a CO₂ stream in order to sequester or otherwise inject it underground and importers or exporters of bulk CO₂.

Supplier Type: Capture **CHANGE**
 Calculation Methodology: Flow Meters with segregation

MIXCELLANEOUS INFORMATION
 Total Annual CO₂ Transferred to End Use Applications (metric tons): 0
 Type of Equipment Used to Measure CO₂: 0

FLOW METERS

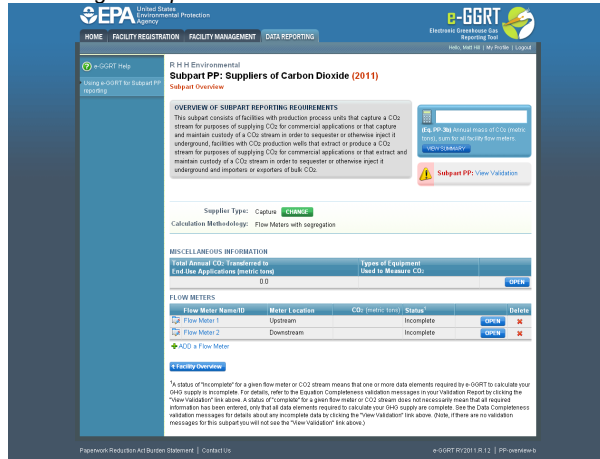
Flow Meter Name/ID	Meter Location	CO ₂ (metric tons)	Status	Details
Flow Meter 1	Upstream		Incomplete	OPEN X
Flow Meter 2	Downstream	1,528.4	Complete	OPEN X
Flow Meter 3	Downstream	1,198.0	Complete	OPEN X
ADD a Flow Meter				

Facility Overview

*A status of "Incomplete" for a given flow meter in CO₂ stream means that one or more data elements required by e-GGRT to calculate your GHG supply is incomplete. For details, refer to the Equation Completeness validation messages in your Validation Report by clicking the "View Validation" link above. A status of "Complete" for a given flow meter in CO₂ stream does not necessarily mean that all required information has been entered, only that all data elements required to calculate your GHG supply are complete. See the Data Completeness validation messages for details about any incomplete data by clicking the "View Validation" link above. Note: There are no validation messages for this subpart so you will not see the "View Validation" link above.

To add a flow meter, click the link labeled “ADD a Flow Meter” located below the FLOW METERS table on the Subpart Overview page.

Click image to expand



The following information is required for each individual flow meter on this screen:

- A unique flow meter name or ID
- The location of the flow meter in relation to dehydration equipment, compression equipment, and other processing equipment
- The percentage of the CO₂ stream that is biomass-based
- Measurement type

Use the text boxes and radio buttons to enter all required information for each flow meter.

If you have “other process equipment”, describe it in the text box. If you have more than one type of “other processing equipment,” describe each type in the text box, including whether it is upstream or downstream of the flow meter.

If you don't have all the data, you can enter some now, save it, then finish it later.

When finished, click SAVE. You will be returned to the OVERVIEW screen, which will display the flow meter information you just saved.

Click image to expand



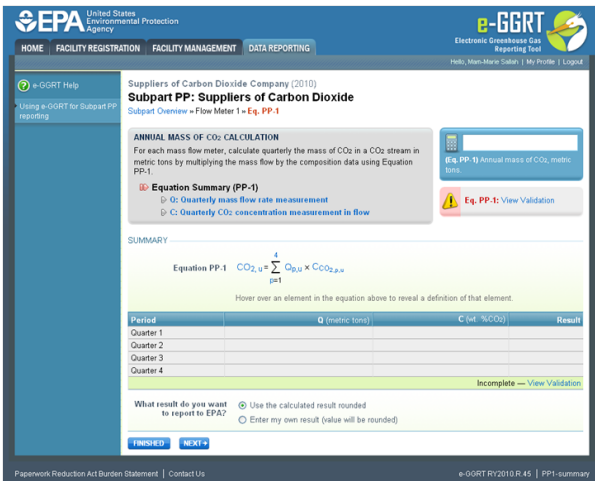
Repeat this step until you have added all flow meters. Once all flow meters used at your facility have been added to the table, click OPEN to enter measurement data for each flow meter.

For each flow meter measuring on a mass basis, e-GGRT will calculate emissions using Equation PP-1 described in Step B2.1.

For each flow meter measuring on a volume basis, e-GGRT will calculate emissions using Equation PP-2 described in Step B2.2.

Step B2.1: Equation PP-1 (mass-based measurements)

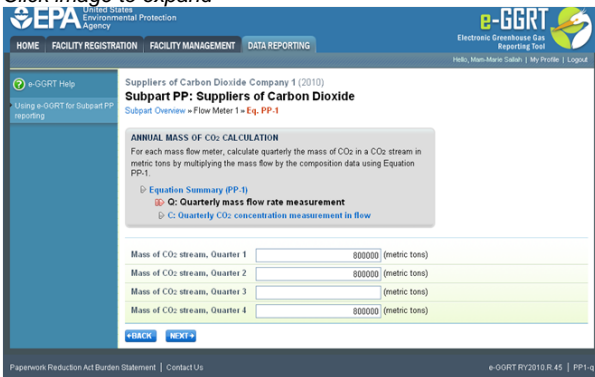
Click image to expand



This page will be blank until you enter more data in subsequent screens. Use the radio buttons to select whether you would like to report results calculated by e-GGRT or enter your own results. If you choose to enter your own results, enter the value in the text box that is displayed below the radio buttons.

When finished, click NEXT.

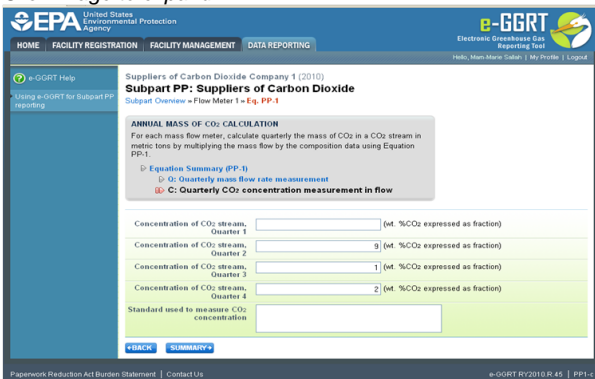
Click image to expand



Use the text boxes to enter the mass of the CO₂ stream (in metric tons) for this flow meter in each quarter of the reporting year.

When finished, click NEXT.

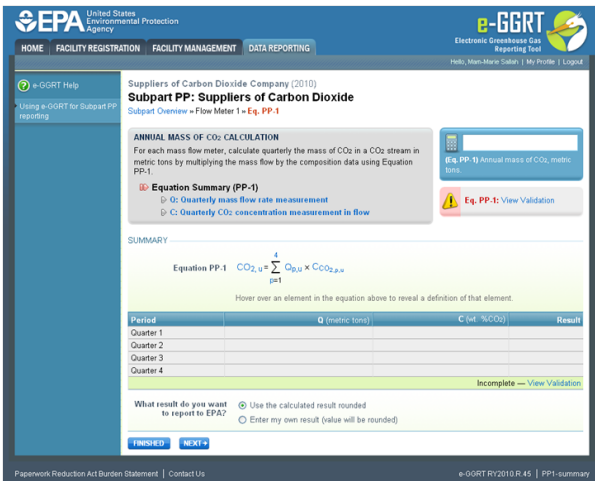
Click image to expand



Use the text boxes to enter the concentration of the CO₂ stream (in weight percent CO₂) for this flow meter in each quarter of the reporting year and the name of the standard used to measure CO₂ concentration. Express the concentration as a decimal fraction (e.g., enter 0.9 for a concentration of 90 percent). If you used more than one standard during the reporting year, enter them all.

When finished, click SUMMARY.

Click image to expand



To view the validation page for Equation PP-1, click the link labeled "View Validation."

Once all data has been entered for this flow meter, click FINISHED.

Step B2.2: Equation PP-2 (volume-based measurements)

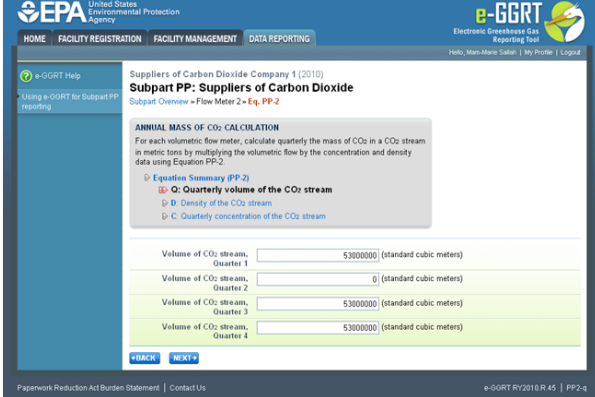
Click image to expand



Use the radio buttons to select whether you would like to report results calculated by e-GGRT or enter your own results. If you choose to enter your own results, enter the value in the text box that is displayed below the radio buttons.

When finished, click NEXT.

Click image to expand



Use the text boxes to enter the volume of the CO₂ stream (in standard cubic meters) for this flow meter in each quarter of the reporting year.

When finished, click NEXT.

Click image to expand

Suppliers of Carbon Dioxide Company 1 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview - Flow Meter 2 - Eq. PP.2

ANNUAL MASS OF CO₂ CALCULATION
 For each volumetric flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the volumetric flow by the concentration and density data using Equation PP-2.

Quarterly volume of the CO₂ stream
 D: Density of the CO₂ stream
 Quarterly concentration of the CO₂ stream

Density of CO₂ stream, Quarter 1: 0.001868 (metric tons per standard cubic meter)
 Density of CO₂ stream, Quarter 2: 0.001868 (metric tons per standard cubic meter)
 Density of CO₂ stream, Quarter 3: 0.001868 (metric tons per standard cubic meter)
 Density of CO₂ stream, Quarter 4: 0 (metric tons per standard cubic meter)

Standard used to measure CO₂ density: [Empty]

BACK NEXT

This screen is for the density (metric tons per standard cubic meter) for this flow meter in each quarter of the reporting year.

If you selected the flow meter measurement type as “concentration in weight percentage” on the Add/Edit Flow Meter page, blank text boxes will be displayed, and you should enter the density of the CO₂ stream and the name of the standard used to measure CO₂ stream density. If you use more than one standard during the reporting year, enter them all.

If you selected the flow meter measurement type as “concentration in volume percentage” on the Add/Edit Flow Meter page, populated text boxes will be displayed with the density of CO₂ that is required in the rule (0.001868 metric tons per standard cubic meter). A text box for the standard used to measure CO₂ density will not be displayed.

When finished, click NEXT.

Click image to expand

Suppliers of Carbon Dioxide Company 3 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview - Stream 2 - Eq. PP.2

ANNUAL MASS OF CO₂ CALCULATION
 For each volumetric flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the volumetric flow by the concentration and density data using Equation PP-2.

Quarterly volume of the CO₂ stream
 Density of the CO₂ stream
 C: Quarterly concentration of the CO₂ stream

Concentration of CO₂ stream, Quarter 1: 0.9 (wt. %CO₂ expressed as fraction)
 Concentration of CO₂ stream, Quarter 2: 0.9 (wt. %CO₂ expressed as fraction)
 Concentration of CO₂ stream, Quarter 3: 0.9 (wt. %CO₂ expressed as fraction)
 Concentration of CO₂ stream, Quarter 4: 0.9 (wt. %CO₂ expressed as fraction)

Standard used to measure CO₂ concentration: Text

BACK SUMMARY

Use the text boxes to enter the concentration of the CO₂ stream (in weight percent CO₂ or volume percent CO₂ depending on the flow meter measurement type selected on the Add/Edit Flow Meter page) for this flow meter in each quarter of the reporting year and the name of the standard used to measure CO₂ concentration. Express the concentration as a decimal fraction (e.g., enter 0.9 for a concentration of 90 percent). If you used more than one standard during the reporting year, enter them all.

When finished, click NEXT.

Click image to expand

Suppliers of Carbon Dioxide Company 1 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview • Flow Meter 2 • Eq. PP-2

ANNUAL MASS OF CO₂ CALCULATION
 For each volumetric flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the volumetric flow by the concentration and density data using Equation PP-2.

Equation Summary (PP-2)
 D: Quarterly volume of the CO₂ stream
 B: Density of the CO₂ stream
 C: Quarterly concentration of the CO₂ stream

SUMMARY

$$\text{Equation PP-2: } \text{CO}_2 \text{ (t)} = \sum_{p=1}^n Q_p \times D_p \times C_{\text{CO}_2,p}$$
 Hover over an element in the equation above to reveal a definition of that element.

Period	Q (ccm)	D (metric tons/ccm)	C (wt %CO ₂)	Result
Quarter 1	53,000,000	0.001969	0.05	4,952.85
Quarter 2	0	0.00196	0.9	0.00
Quarter 3	53,000,000	0.1967	0.9	8,965,596.00
Quarter 4	53,000,000	0	0.9	0.00
				8,910,543.85

What result do you want to report to EPA?
 Use the calculated result rounded (8,910,543 metric tons)
 Enter my own result (value will be rounded)

[FINISHED](#) [View Validation](#)

To view the validation page for Equation PP-2, click the link labeled “View Validation.”

Once all data has been entered for this flow meter, click FINISHED.

Step B3.1: Annual CO₂ Extracted

Click image to expand

Suppliers of Carbon Dioxide Company 4 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview

OVERVIEW OF SUBPART REPORTING REQUIREMENTS
 This subpart consists of facilities with production process units that capture a CO₂ stream for purposes of supplying CO₂ for commercial applications or that capture and maintain custody of a CO₂ stream in order to sequester or otherwise inject it underground, facilities with CO₂ production wells that extract or produce a CO₂ stream for purposes of supplying CO₂ for commercial applications or that extract and maintain custody of a CO₂ stream in order to sequester or otherwise inject it underground and importers or exporters of bulk CO₂.

Supplier Type: Extract [CHANGE](#)
 Calculation Methodology: Flow Meters with no system aggregation

MISCELLANEOUS INFORMATION
 Total Annual CO₂ Transferred to End Use Applications (metric tons): 1,300
 Types of Equipment Used to Measure CO₂: Mass flow meter [OPEN](#)

AGGREGATED GHG INFORMATION
 Extracted CO₂ (metric tons) [OPEN](#)

FLOW METERS

Flow Meter Name/ID	CO ₂ (metric tons)	Status	Open	Delete
Flow Meter 1	13,856,500	Complete	OPEN	X
Flow Meter 2	8,736,336	Complete	OPEN	X
Flow Meter 3		Incomplete	OPEN	X

[ADD a Flow Meter](#)
[Facility Overview](#)

*A status of "incomplete" for a given flow meter means that one or more data elements that are inputs to one of this subpart's equations are incomplete. As a result, e-GGRT is unable to perform the necessary calculation(s). For details, refer to the Equation Completeness validation messages in your Validation Report by clicking the "View Validation" link above (note: if there are no validation messages for this subpart you will not see this link).

To enter aggregated GHG information, find the AGGREGATED GHG INFORMATION table and click OPEN.

Click image to expand

Suppliers of Carbon Dioxide Company 6 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview • Aggregated CO₂

ANNUAL MASS OF CO₂, AGGREGATED

Annual mass of CO₂ imported: (metric tons)
 Annual mass of CO₂ exported: (metric tons)

[CANCEL](#) [SAVE](#)

Use the text box to enter the total annual mass of CO₂ extracted (in metric tons) at your facility. Ensure that the value you enter here is equal to the sum of CO₂ through all flow meters you use, as listed on the Subpart Overview page.

When finished, click SAVE.

Step B3.2: Annual CO₂ Imported and Exported

Click image to expand

To enter aggregated GHG information, find the AGGREGATED GHG INFORMATION table and click OPEN.

Click image to expand

Use the text boxes to enter the total annual mass of CO₂ imported and exported (in metric tons) at the corporate level. Enter a value of “0” for the total annual mass of CO₂ imported if you exported only, and vice versa. Ensure that the value you enter here as imported is equal to the sum of CO₂ through all import flow meters you use, as listed on the Subpart Overview page. Ensure the same for the exported value.

When finished, click SAVE.

{anchor:Supplier Type C: Capture and Extract Facilities With Streams That Deliver CO₂ to Containers}

Supplier Type C: Capture and Extract Facilities With Streams That Deliver CO₂ to Containers

The supply information required for Capture and Extract Facilities that supply CO₂ to containers includes three Steps:

- C1: CO₂ Stream Information
- C2
 - C2.1: Equation PP-1 (mass-based measurements)
 - OR
 - C2.2: Equation PP-2 (volume-based measurements)
- C3: Equation PP-3a (aggregation of CO₂ streams supplied in containers)

The steps required for Capture and Extract Facilities that supply CO₂ streams in containers include the use of either Step C2.1 or Step C2.2, but not both and Step C3.

Your selection of a CO₂ stream type and measurement basis will determine whether e-GGRT uses Step C2.1 or Step C2.2 to calculate CO₂ quantities.

If measurements are reported on a mass basis, e-GGRT will use Step C2.1: Equation PP-1 to calculate CO₂ quantities.

If measurements are reported on a volumetric basis, e-GGRT will use Step C2.2: Equation PP-2 to calculate CO₂ quantities.

E-GGRT will use Step C3: Equation PP-3a to calculate facility-level CO₂ quantities for CO₂ streams supplied in containers by summing the annual mass of CO₂ measured for each individual CO₂ stream.

Each Step is described below.

Step C1: CO₂ Stream Information

Click image to expand

The screenshot shows the EPA e-GGRT interface for 'Suppliers of Carbon Dioxide Company 6 (2010)'. The subpart is 'Suppliers of Carbon Dioxide'. The overview section states that this subpart consists of facilities with production process units that capture a CO₂ stream for purposes of supplying CO₂ for commercial applications or that capture and maintain custody of a CO₂ stream in order to sequester or otherwise inject it underground. The supplier type is 'Import/Export' and the calculation methodology is 'Flow Meters with no system aggregation'. The 'MISCELLANEOUS INFORMATION' table shows 'Total Annual CO₂ Transferred to End-Use Applications from Imports (metric tons)' as 0 and 'Total Annual CO₂ Transferred to End-Use Applications from Exports (metric tons)' as 0. The 'AGGREGATED GHG INFORMATION' table shows 'Imported CO₂ (metric tons)' as 200 and 'Exported CO₂ (metric tons)' as 800. The 'FLOW METERS' table lists three flow meters: 'Flow Meter 1' (Imported, 13,856,500 metric tons, Complete), 'Flow Meter 2' (Exported, 6,849,965 metric tons, Complete), and 'Flow Meter 3' (Exported, Incomplete). A link 'ADD a Flow Meter' is located below the table.

To add a CO₂ stream supplied in containers, click the link labeled "ADD a CO₂ Stream" located below the CO₂ STREAMS table.

Click image to expand

The screenshot shows the 'ADD OR EDIT CO₂ STREAM' form in the EPA e-GGRT interface. The subpart is 'Suppliers of Carbon Dioxide Company 3 (2010)'. The form includes a section for 'UNIT INFORMATION' with a 'Name or ID' field containing 'Stream 1' and a 'Description (optional)' field containing 'Stream to Containers'. The 'Type' is set to 'CO₂ Stream'. Under 'Measurement Type', the 'Mass basis' radio button is selected. There are 'CANCEL' and 'SAVE' buttons at the bottom of the form.

The following information is required for each CO₂ stream supplied in containers on this screen:

- A unique CO₂ Stream Name or ID
- Measurement Type

Use the text boxes and radio buttons to enter all required information for each CO₂ stream.

If you don't have all the data, you can enter some now, save it, then finish it later.

When finished, click SAVE. You will be returned to the OVERVIEW screen, which will display the flow meter information you just saved.

Click image to expand

Suppliers of Carbon Dioxide Company 6 (2010)
Subpart PP: Suppliers of Carbon Dioxide

OVERVIEW OF SHEPARD REPORTING REQUIREMENTS
 This subpart consists of facilities with production process units that capture a CO₂ stream for purposes of supplying CO₂ for commercial applications or that capture and maintain custody of a CO₂ stream in order to sequester or otherwise inject it underground, facilities with CO₂ production wells that extract or produce a CO₂ stream for purposes of supplying CO₂ for commercial applications or that extract and maintain custody of a CO₂ stream in order to sequester or otherwise inject it underground and importers or exporters of bulk CO₂.

Supplier Type: **Importer/Exporter** **Customer**
 Calculative Methodology: Flow Meters with no system aggregation

MISCELLANEOUS INFORMATION

Total Annual CO ₂ Transferred to End Use Applications from Imports (metric tons)	Total Annual CO ₂ Transferred to End Use Applications from Exports (metric tons)	Type of Equipment Used to Measure CO ₂
0	0	

AGGREGATED GHG INFORMATION

Imported CO ₂ (metric tons)	Exported CO ₂ (metric tons)
200	800

FLOW METERS

Flow Meter Name/ID	CO ₂ Imported or Exported?	CO ₂ (metric tons)	Status
Flow Meter 1	Imported	13,896,500	Complete
Flow Meter 2	Exported	6,849,965	Complete
Flow Meter 3	Exported		Incomplete

Repeat this step until you have added all CO₂ streams. Once all CO₂ streams at your facility have been added to the table, click OPEN to enter measurement data for each CO₂ stream.

For each CO₂ stream measured on a mass basis, e-GGRT will calculate GHGs using Equation PP-1 described in Step C2.1.

For each CO₂ stream measured on a volume basis, e-GGRT will calculate GHGs using Equation PP-2 described in Step C2.2.

Step C2.1: Equation PP-1 (mass-based measurements)

Click image to expand

ANNUAL MASS OF CO₂ CALCULATION
 For each mass flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the mass flow by the composition data using Equation PP-1.

Equation Summary (PP-1)
 Quarterly mass flow rate measurement
 Quarterly CO₂ concentration measurement in flow

SUMMARY

$$\text{Equation PP-1: } \text{CO}_2 (t) = \sum_{p=1}^4 Q_{p,u} \times C_{\text{CO}_2,p,u}$$

Hover over an element in the equation above to reveal a definition of that element.

Period	Q (metric tons)	C (wt % CO ₂)	Result
Quarter 1			
Quarter 2			
Quarter 3			
Quarter 4			

Incomplete — View Validation

What result do you want to report to EPA?
 Use the calculated result rounded
 Enter my own result (value will be rounded)

This page will be blank until you enter more data in subsequent screen. Use the radio buttons to select whether you would like to report results calculated by e-GGRT or enter your own results. If you choose to enter your own results, enter the value in the text box that is displayed below the radio buttons.

When finished, click NEXT.

Click image to expand

Suppliers of Carbon Dioxide Company 1 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview - Flow Meter 1 - Eq. PP-1

ANNUAL MASS OF CO₂ CALCULATION
 For each mass flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the mass flow by the composition data using Equation PP-1.

Equation Summary (PP-1)
 Q: Quarterly mass flow rate measurement
 C: Quarterly CO₂ concentration measurement in flow

Mass of CO₂ stream, Quarter 1: 800000 (metric tons)
 Mass of CO₂ stream, Quarter 2: 800000 (metric tons)
 Mass of CO₂ stream, Quarter 3: 800000 (metric tons)
 Mass of CO₂ stream, Quarter 4: 800000 (metric tons)

Buttons: [SEARCH](#) [NEXT](#)

Use the text boxes to enter the mass of the CO₂ stream (in metric tons) in each quarter of the reporting year.

When finished, click NEXT.

Click image to expand

Suppliers of Carbon Dioxide Company 1 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview - Flow Meter 1 - Eq. PP-1

ANNUAL MASS OF CO₂ CALCULATION
 For each mass flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the mass flow by the composition data using Equation PP-1.

Equation Summary (PP-1)
 Q: Quarterly mass flow rate measurement
 C: Quarterly CO₂ concentration measurement in flow

Concentration of CO₂ stream, Quarter 1: 0.9 (wt. %CO₂ expressed as fraction)
 Concentration of CO₂ stream, Quarter 2: 0.9 (wt. %CO₂ expressed as fraction)
 Concentration of CO₂ stream, Quarter 3: 0.9 (wt. %CO₂ expressed as fraction)
 Concentration of CO₂ stream, Quarter 4: 0.9 (wt. %CO₂ expressed as fraction)
 Standard used to measure CO₂ concentration: [Empty]

Buttons: [SEARCH](#) [SUMMARY](#)

Use the text boxes to enter the concentration of the CO₂ stream (in weight percent CO₂) in each quarter of the reporting year and the name of the standard used to measure CO₂ concentration. Express the concentration as a decimal fraction (e.g., enter 0.9 for a concentration of 90 percent). If you used more than one standard during the reporting year, enter them all.

When finished, click SUMMARY.

Click image to expand

Suppliers of Carbon Dioxide Company 1 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview - Flow Meter 1 - Eq. PP-1

ANNUAL MASS OF CO₂ CALCULATION
 For each mass flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the mass flow by the composition data using Equation PP-1.

Equation Summary (PP-1)
 Q: Quarterly mass flow rate measurement
 C: Quarterly CO₂ concentration measurement in flow

SUMMARY

Equation PP-1: $CO_{2, t} = \sum_{q=1}^4 Q_{CO_2, q} \times C_{CO_2, q}$

Hover over an element in the equation above to reveal a definition of that element.

Period	Q (metric tons)	C (wt. %CO ₂)	Result
Quarter 1			
Quarter 2			
Quarter 3			
Quarter 4			Incomplete - View Validation

What result do you want to report to EPA?
 Use the calculated result rounded
 Enter my own result (value will be rounded)

Buttons: [FINISHED](#) [NEXT](#)

To view the validation page for Equation PP-1, click the link labeled “View Validation.”

Once all data has been entered for this CO₂ stream, click FINISHED.

Step C2.2: Equation PP-2 (volume-based measurements)

Click image to expand

Suppliers of Carbon Dioxide Company 1 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview + Flow Meter 2 + Eq. PP-2

ANNUAL MASS OF CO₂ CALCULATION
 For each volumetric flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the volumetric flow by the concentration and density data using Equation PP-2.

Equation Summary (PP-2)

- Quarterly volume of the CO₂ stream
- Density of the CO₂ stream
- Quarterly concentration of the CO₂ stream

SUMMARY

Equation PP-2: $CO_2_u = \sum_{p=1}^n Q_p \times D_p \times C_{CO_2_p}$

Hover over an element in the equation above to reveal a definition of that element.

Period	Q (ccm)	D (metric tons/ccm)	C (wt %CO ₂)	Result
Quarter 1	53,000,000	0.001969	0.05	4,952,85
Quarter 2	0	0.00196	0.9	0.00
Quarter 3	53,000,000	0.1967	0.9	8,905,596.00
Quarter 4	53,000,000	0	0.9	0.00
				8,910,542.85

What result do you want to report to EPA?
 Use the calculated result rounded (8,910,543 metric tons)
 Enter my own result (value will be rounded)

← BACK NEXT →

Use the radio buttons to select whether you would like to report results calculated by e-GGRT or enter your own results. If you choose to enter your own results, enter the value in the text box that is displayed below the radio buttons.

When finished, click NEXT.

Click image to expand

Suppliers of Carbon Dioxide Company 1 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview + Flow Meter 2 + Eq. PP-2

ANNUAL MASS OF CO₂ CALCULATION
 For each volumetric flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the volumetric flow by the concentration and density data using Equation PP-2.

Equation Summary (PP-2)

- Quarterly volume of the CO₂ stream
- Density of the CO₂ stream
- Quarterly concentration of the CO₂ stream

Volume of CO₂ stream, Quarter 1: (standard cubic meters)

Volume of CO₂ stream, Quarter 2: (standard cubic meters)

Volume of CO₂ stream, Quarter 3: (standard cubic meters)

Volume of CO₂ stream, Quarter 4: (standard cubic meters)

← BACK NEXT →

Use the text boxes to enter the volume of the CO₂ stream (in standard cubic meters) in each quarter of the reporting year.

When finished, click NEXT.

Click image to expand

Suppliers of Carbon Dioxide Company 1 (2010)
Subpart PP: Suppliers of Carbon Dioxide
 Subpart Overview + Flow Meter 2 + Eq. PP-2

ANNUAL MASS OF CO₂ CALCULATION
 For each volumetric flow meter, calculate quarterly the mass of CO₂ in a CO₂ stream in metric tons by multiplying the volumetric flow by the concentration and density data using Equation PP-2.

Equation Summary (PP-2)

- Quarterly volume of the CO₂ stream
- Density of the CO₂ stream
- Quarterly concentration of the CO₂ stream

Density of CO₂ stream, Quarter 1: (metric tons per standard cubic meter)

Density of CO₂ stream, Quarter 2: (metric tons per standard cubic meter)

Density of CO₂ stream, Quarter 3: (metric tons per standard cubic meter)

Density of CO₂ stream, Quarter 4: (metric tons per standard cubic meter)

Standard used to measure CO₂ Density:

← BACK NEXT →

This screen is for the density (metric tons per standard cubic meter) for this CO₂ stream supplied in containers in each quarter of the reporting year.

If you selected the CO₂ stream measurement type as “concentration in weight percentage” on the Add/Edit CO₂ stream page, blank text boxes will be displayed, and you should enter the density of the CO₂ stream and the name of the standard used to measure CO₂ stream density. If you use more than one standard during the reporting year, enter them all.

If you selected the flow meter measurement type as “concentration in volume percentage” on the Add/Edit CO₂ stream page, populated text boxes will be displayed with the density of CO₂ that is required in the rule (0.001868 metric tons per standard cubic meter). A text box for the standard used to measure CO₂ density will not be displayed.

When finished, click NEXT.

Click image to expand



Use the text boxes to enter the concentration of the CO₂ stream (in weight percent CO₂ or volume percent CO₂ depending on the CO₂ stream measurement type selected on the Add/Edit CO₂ Stream page) in each quarter of the reporting year and the name of the standard used to measure CO₂ concentration. Express the concentration as a decimal fraction (e.g., enter 0.9 for a concentration of 90 percent). If you used more than one standard during the reporting year, enter them all.

When finished, click NEXT.

Click image to expand



To view the validation page for Equation PP-2, click the link labeled “View Validation.”

Once all data has been entered for this CO₂ stream, click FINISHED.

Step C3: Equation PP-3a (aggregation of CO₂ streams)

Click image to expand



To view the results of Equation 3a, on the Subpart Overview page click VIEW SUMMARY.

Click image to expand



To return to the Subpart Overview page once you have reviewed the facility-level data, click BACK.

Supplier Type D: Importers and Exporters That Use Containers

Click image to expand



Subpart PP requires importers and exporters that supply CO₂ in containers to report the following information at the corporate level:

- Annual mass of CO₂ in all containers imported (in metric tons)
- Annual mass of CO₂ in all containers exported (in metric tons)

To enter CO₂ import and export data, click OPEN in the ALL CONTAINERS table on the Subpart Overview page.

Click image to expand

United States Environmental Protection Agency

e-GGRT Electronic Greenhouse Gas Reporting Tool

HOME FACILITY REGISTRATION FACILITY MANAGEMENT DATA REPORTING

Suppliers of Carbon Dioxide Company 7 (2010)

Subpart PP: Suppliers of Carbon Dioxide

Subpart Overview - Eq. PP-4

ANNUAL MASS OF CO₂ CALCULATION

Enter the total mass of CO₂ in all containers imported and exported during the reporting year, using Equation PP-4. If you exported only, enter the number "0" for mass of CO₂ imported. If you imported only, enter the number "0" for mass of CO₂ exported.

Equation Summary and Result (PP-4)

SUMMARY AND RESULT

Equation PP-4
$$CO_2 = \sum_{j=1}^I Q_j$$

Hover over an element in the equation above to reveal a definition of that element.

Annual mass of CO₂ in all containers imported (metric tons)

Annual mass of CO₂ in all containers exported (metric tons)

Paperwork Reduction Act Burden Statement | Contact Us

e-GGRT Rv2010 R.45 | PP4-summary

Use the text boxes to enter the total annual mass of CO₂ imported and exported (in metric tons) at the corporate level. Enter a value of "0" for the total annual mass of CO₂ imported if you exported only, and vice versa.

When finished, click SAVE.

[Back to Top](#)

See Also

[Screen Errors](#)

[Using e-GGRT to Prepare Your Subpart PP Report](#)

[Subpart PP Summary Information for this Supplier](#)

[Subpart PP Product and Equipment Information](#)

[Subpart Validation Report](#)