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Subpart P - Hydrogen Production

 A printer-friendly version (pdf) (21 pp, 9,945K) of GHG reporting instructions for this subpart

Please select a help topic from the list below:

- Using e-GGRT to Prepare Your Subpart P Report
 - Subpart P Summary Information for this Facility
 - Subpart P Process Unit Information for Units NOT Monitored by CEMS
 - Subpart P Process Unit Information for Units Monitored by CEMS
 - Subpart P Emissions Information for Process Units NOT Monitored by CEMS
 - Subpart P Emissions Information for Process Units Monitored by CEMS
- Using Subpart P Calculation Spreadsheets
- Carry forward of data from previous submissions into RY2011 forms
- Subpart P Rule Guidance
- Subpart P Rule Language (eCFR)

Additional Resources:

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

Using e-GGRT to Prepare Your Subpart P Report

This page provides an overview of sub-topics that are central to Subpart P reporting:

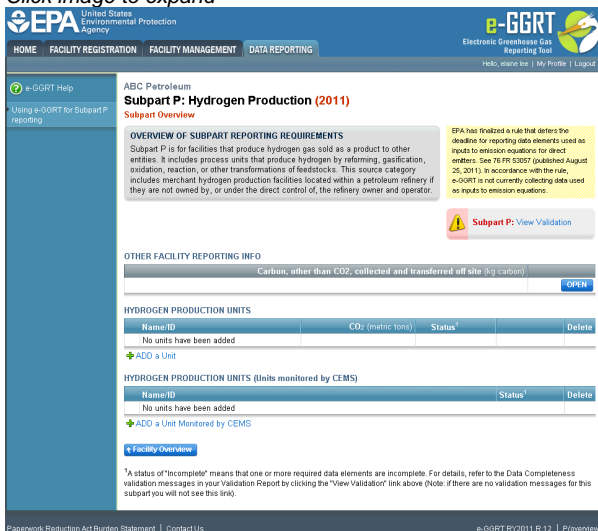
- Summary Information for this Facility
- Process Unit Information
- Emissions Information
- Validation Report

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

The image below displays the Subpart P Overview page

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](#).

Click image to expand



The screenshot shows the EPA e-GGRT web application interface. The main heading is "Subpart P: Hydrogen Production (2011)". Below this, there is a section titled "OVERVIEW OF SUBPART REPORTING REQUIREMENTS" which explains that Subpart P is for facilities that produce hydrogen gas sold as a product to other entities. A yellow callout box notes that EPA has finalized a rule that alters the schedule for reporting data elements used as inputs to emission equations for direct emitters, effective August 25, 2011. A red warning icon indicates "Subpart P: View Validation". Below this, there are sections for "OTHER FACILITY REPORTING INFO" (Carbon, other than CO2, collected and transferred off site (kg carbon)) and two tables for "HYDROGEN PRODUCTION UNITS". The first table is for units not monitored by CEMS, and the second is for units monitored by CEMS. Both tables currently show "No units have been added". A "Facility Overview" link is at the bottom. A footer note explains that a status of "incomplete" means that one or more required data elements are incomplete.

Summary Information for this Facility

Subpart P requires you to report the following data about your facility:

- The annual quantity of carbon, other than CO₂, collected and transferred off site in either gas, liquid or solid form (in kg carbon)

Process Unit Information

The required process unit information and the manner by which required process unit information is entered into e-GGRT is different for units that are monitored by a Continuous Emissions Monitoring System (CEMS) and units that are NOT monitored by a CEMS

As a result, separate help content has been created in this subpart for entering process unit information for units monitored by CEMS and units NOT monitored by CEMS

For each process unit that is NOT monitored by CEMS at your facility, the following process unit information is required:

- A unique name or identifier for the unit, plus optional description for this unit
- The quantity of hydrogen produced (in metric tons)
- The quantity of ammonia produced (in metric tons)
- The name and type (solid, liquid, or gaseous) of each fuel or feedstock used in the unit

For each process unit that is monitored by CEMS at your facility, the following process unit information is required:

- A unique name or identifier for the unit, plus optional description for this unit
- The quantity of hydrogen produced (in metric tons)
- The quantity of ammonia produced (in metric tons)

Emissions Information

The required emissions information and the manner by which required emissions information is entered into e-GGRT is different for units that are monitored by a CEMS and units that are NOT monitored by a CEMS

As a result, separate help content has been created in this subpart for entering emissions information for units monitored by CEMS and units NOT monitored by CEMS

For each process unit that is NOT monitored by CEMS at your facility, the following emissions information is required:

- The total annual CO₂ emissions from each hydrogen production process unit (in metric tons)
- Substitute data information for each fuel or feedstock used in each process unit:
 - An indication if the monthly consumption is based on one or more substitute data values
 - An indication if the monthly carbon content is based on one or more substitute data values
 - An indication if the monthly molecular weight is based on one or more substitute data values (applies to gaseous feedstocks only)

For each CEMS Monitoring Location (CML), provide the following information:

- A unique unit name or identifier for the CML (see also [About Unique Unit Names](#))
- An optional description or label for the CML
- The configuration of processes or process units that are monitored by the CML:
 - Single industrial process or process unit that exhausts to a dedicated stack
 - Multiple industrial processes or process units share a common stack
 - Industrial process or process unit shares a common stack with one or more stationary fuel combustion units
- The name of each fuel combusted in the unit(s) monitored by the CEMS
- The Tier 4/CEMS methodology start and end dates
- The cumulative total of hourly CO₂ mass emissions for each quarter of the reporting year (in metric tons) (*Do not cumulate emissions data between quarters*)
- The total annual CO₂ mass emissions measured by the CEMS (in metric tons)
- An indication whether emissions reported for the CEMS include emissions calculated according to 98.33(a)(4)(viii) for a slipstream that bypassed the CEMS
- The total annual biogenic CO₂ emissions from the combustion of all biomass fuels combined (in metric tons) (*if applicable*)
- The total annual non-biogenic CO₂ emissions (includes fossil fuel, sorbent, and process CO₂ emissions, in metric tons)
- The total annual CH₄ and N₂O emissions associated with the combustion of all [Table C-2](#) fuels combusted in all processes/process units monitored by the CEMS derived from application of [Equation C-10](#) (in metric tons) (*if there are no combustion emissions in this CML, please enter zero*)
- The total number of source operating hours in the reporting year
- The total operating hours in which a substitute data value was used in the emissions calculations for the CO₂ concentration parameter
- The total operating hours in which a substitute data value was used in the emissions calculations for the stack gas flow rate parameter
- If moisture correction is required and a continuous moisture monitor is used, the total operating hours in which a substitute data value was used in the emissions calculations for the stack gas moisture content parameter

- An indication of the process units monitored by the CML

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.

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See Also

Screen Errors

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

[Subpart P Summary Information for this Facility](#)

[Subpart P Process Unit Information for Units NOT Monitored by CEMS](#)

[Subpart P Process Unit Information for Units Monitored by CEMS](#)

[Subpart P Emissions Information for Process Units NOT Monitored by CEMS](#)

[Subpart P Emissions Information for Process Units Monitored by CEMS](#)

[Subpart Validation Report](#)

Subpart P Summary Information for this Facility

This topic provides a step-by-step description of how to enter Subpart P summary information about this facility.

Adding or Updating Summary Information for this Facility

To add or update Subpart P Summary Information for this Facility, locate the OTHER FACILITY REPORTING INFO table on the Subpart P Overview page, and click OPEN.

Click image to expand

Subpart P: Hydrogen Production (2011)
Subpart Overview

OVERVIEW OF SUBPART REPORTING REQUIREMENTS
Subpart P is for facilities that produce hydrogen gas sold as a product to other entities. It includes process units that produce hydrogen by reforming, gasification, oxidation, reaction, or other transformations of feedstocks. This source category includes merchant hydrogen production facilities located within a petroleum refinery if they are not owned by, or under the direct control of, the refinery owner and operator.

EPA has finalized a rule that defers the deadline for reporting data elements used as inputs to emission equations for direct emitters. See the EPA e-GGRT published August 25, 2011, in accordance with the rule, e-GGRT is not currently collecting data used as inputs to emission equations.

OTHER FACILITY REPORTING INFO
Carbon, other than CO₂, collected and transferred off site (kg carbon) **OPEN**

Name ¹ ID	CO ₂ (metric tons)	Status ²	Delete
No units have been added			

HYDROGEN PRODUCTION UNITS (Units monitored by CEMS)

Name ¹ ID	Status ²	Delete
No units have been added		

¹A status of "incomplete" means that one or more required data elements are incomplete. For details, refer to the Data Completeness validation messages in your Validation Report by clicking the "View Validation" link above these. If there are no validation messages for this subpart you will not see this link.

Subpart P requires you to report the following data about your facility:

- The annual quantity of carbon, other than CO₂, collected and transferred off site in either gas, liquid or solid form (in kg carbon)

This value must be input to e-GGRT.

When you have entered the required information, click SAVE

Click image to expand

The screenshot shows the EPA e-GGRT web interface for Hydrogen Production, Company 1 (2011). The page is titled "e-GGRT Greenhouse Gas Data Reporting" and includes a navigation menu with "HOME", "FACILITY REGISTRATION", "FACILITY MANAGEMENT", and "DATA REPORTING". The main content area is divided into several sections:

- FACILITY OR SUPPLIER OVERVIEW:** This section provides instructions on how to add source and/or supplier categories and how to initiate the annual report review and submission process. It also displays the facility's GHG Reporting Method as "Data entry via e-GGRT web-forms".
- REPORT DATA:** This section contains a table with columns for "Report", "Uploaded File Name", "Status", "Sign Date", "Submitted Date", and "View". The table is currently empty.
- FACILITIES NOT SUBMITTING AN ANNUAL REPORT:** This section provides information for facilities that are not submitting an annual report, including a checkbox for "This facility is NOT required to submit a report".

At the bottom of the page, there is a "SAVE" button and a footer with the text "Paperwork Reduction Act Burden Statement | Contact Us" and "e-GGRT RY2010 R.44 | DR-facility-overview".

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See Also

Screen Errors

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

[Subpart P Summary Information for this Facility](#)

[Subpart P Process Unit Information for Units NOT Monitored by CEMS](#)

[Subpart P Process Unit Information for Units Monitored by CEMS](#)

[Subpart P Emissions Information for Process Units NOT Monitored by CEMS](#)

[Subpart P Emissions Information for Process Units Monitored by CEMS](#)

[Subpart Validation Report](#)

Subpart P Process Unit Information for Units NOT Monitored by CEMS

This page provides step-by-step instructions on how to enter and edit Subpart P Hydrogen Production process unit information for units that are NOT monitored by a CEMS.

Step 1: Add a unit

To add a unit that is NOT monitored by a CEMS, find the HYDROGEN PROCESSING UNITS table on the Subpart Overview page and click the link titled "ADD a Unit"

To edit a unit, click the edit icon or the Name/ID link located in the first column of the HYDROGEN PROCESSING UNITS table

To delete a unit, click the delete icon located in the last column of the HYDROGEN PROCESSING UNITS table

Click image to expand



Step 2: Indicate CEMS utilization for a unit

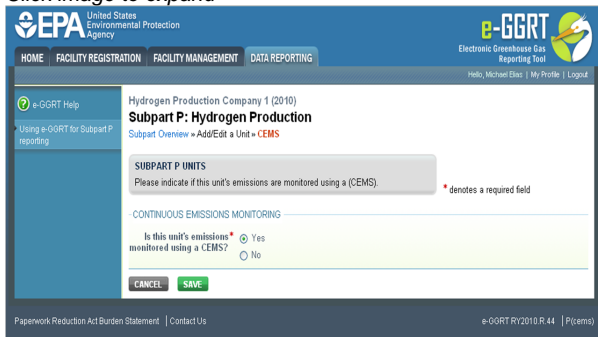
For each process unit, confirm whether or not the process unit utilizes CEMS

Note that when adding a new unit you are prompted to answer the CEMS question immediately (the answer to this question will default to "No" for units added using the "ADD a Unit" link and will default to "Yes" for units added using the "ADD a Unit Monitored by CEMS" link)

The CEMS response may be changed here and the unit information will be relocated to the appropriate table on the Subpart Overview page

When finished, click SAVE

Click image to expand



Step 3: Enter required information for a unit

For each process unit NOT monitored by a CEMS, report the following required information:

- A unique name or identifier for the unit, plus optional description for this unit (see also [About Unique Unit Names](#) [98.166(b)(1)])
- The quantity of hydrogen produced (in metric tons) [98.166(b)(3)]
- The quantity of ammonia produced (in metric tons) [98.166(b)(4)]
- The name and type (solid, liquid, or gaseous) of each fuel or feedstock used in the unit [98.166(b)(2)]

To add a fuel or feedstock for a unit, find the FUELS AND FEEDSTOCKS table on the Add/Edit a Unit page and click the link titled "ADD a Fuel or Feedstock"

To edit a fuel or feedstock, click the edit icon or the Name/ID link located in the first column of the FUELS AND FEEDSTOCKS table

To delete a fuel or feedstock, click the delete icon located in the last column of the FUELS AND FEEDSTOCKS table

Click image to expand

For each fuel or feedstock used in a unit, enter a name and type (see also [About Unique Unit Names](#))

When you are finished entering fuel/feedstock information, click **SAVE** to return to the Add/Edit a Unit page

Click image to expand

Step 4: Save entered data for a unit

When you are finished entering all information for a unit, click **SAVE** to return to the Subpart Overview page

Click image to expand

Step 5: Repeat Steps 1-4

Repeat Steps 1-4 until all process units NOT monitored by a CEMS have been added for your facility

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See Also

[Screen Errors](#)

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[Subpart Validation Report](#)

Subpart P Process Unit Information for Units Monitored by CEMS

This page provides step-by-step instructions on how to enter and edit Subpart P Hydrogen Production process unit information for units that are monitored by a CEMS.


Step 1: Add a unit

To add a unit that is monitored by a CEMS, find the HYDROGEN PROCESSING UNITS (Units monitored by CEMS) table on the Subpart Overview page and click the link titled "ADD a Unit Monitored by CEMS"

To edit a unit, click the edit icon or the Name/ID link located in the first column of the HYDROGEN PROCESSING UNITS (Units monitored by CEMS) table

To delete a unit, click the delete icon located in the last column of the HYDROGEN PROCESSING UNITS (Units monitored by CEMS) table

Click image to expand



The screenshot shows the EPA e-GGRT interface for 'Subpart P: Hydrogen Production (2011)'. It features a navigation bar with 'HOME', 'FACILITY REGISTRATION', 'FACILITY MANAGEMENT', and 'DATA REPORTING'. The main content area includes a 'Subpart Overview' section with reporting requirements, a warning for 'Subpart P: View Validation', and two tables for 'HYDROGEN PRODUCTION UNITS'. The second table is for units monitored by CEMS. The footer contains links for Paperwork Reduction Act Burden Statement, Contact Us, and e-GGRT (FY2011) R.13 | P(overview).

Step 2: Indicate CEMS utilization for a unit

For each process unit, confirm whether or not the process unit utilizes CEMS

Note that when adding a new unit you are prompted to answer the CEMS question immediately (the answer to this question will default to "No" for units added using the "ADD a Unit" link and will default to "Yes" for units added using the "ADD a Unit Monitored by CEMS" link)

The CEMS response may be changed here and the unit information will be relocated to the appropriate table on the Subpart Overview page

When finished, click SAVE

Click image to expand

Step 3: Enter required information for a unit

For each process unit monitored by a CEMS, report the following required information:

- A unique name or identifier for the unit, plus optional description for this unit (see also About Unique Unit Names) [98.166(a)(1)]
- The quantity of hydrogen produced (in metric tons) [98.166(a)(2)]
- The quantity of ammonia produced (in metric tons) [98.166(a)(3)]

When finished, click SAVE

Click image to expand

Step 4: Repeat Steps 1-3

Repeat Steps 1-3 until all process units monitored by a CEMS have been added for your facility

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See Also

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- [Using e-GGRT to Prepare Your Subpart P Report](#)
- [Subpart P Summary Information for this Facility](#)
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- [Subpart P Emissions Information for Process Units NOT Monitored by CEMS](#)
- [Subpart P Emissions Information for Process Units Monitored by CEMS](#)
- [Subpart Validation Report](#)

Subpart P Emissions Information for Process Units NOT Monitored by CEMS

This page provides step-by-step instructions on how to enter and edit Subpart P Hydrogen Production emissions information for process unit that are NOT monitored by a CEMS

Step 1: Select a unit

To select a unit for which to enter emissions data, find the unit in the HYDROGEN PROCESSING UNITS table and click OPEN

Click image to expand

The screenshot shows the EPA e-GGRT interface for Subpart P: Hydrogen Production (2011). The page includes a navigation menu with 'HOME', 'FACILITY REGISTRATION', 'FACILITY MANAGEMENT', and 'DATA REPORTING'. The main content area is titled 'ABC Petroleum' and 'Subpart P: Hydrogen Production (2011)'. It features an 'OVERVIEW OF SUBPART REPORTING REQUIREMENTS' section, a 'Subpart P: View Validation' button, and two tables for 'HYDROGEN PRODUCTION UNITS'. The first table is for units not monitored by CEMS, and the second is for units monitored by CEMS. Both tables show 'Name/ID', 'CO₂ (metric tons)', 'Status', and 'Delete' columns. A 'Facility Overview' button is also present.

Step 2: Equation Summary and Result

For each process unit NOT monitored by CEMS at your facility, enter the total annual CO₂ emissions from each hydrogen production process unit (the sum of Equations P-1, P-2, and P-3 for all of the unit's fuels and feedstocks, in metric tons)

For assistance in calculating process CO₂ emissions using Equations P-1, P-2, or P-3, access the calculation spreadsheets for this subpart by clicking the link provided for each listed feedstock, then follow the provided instructions:

- For gaseous feedstock, the link will read "Use P-1 spreadsheet to calculate emissions for this feedstock"
- For liquid feedstock, the link will read "Use P-2 spreadsheet to calculate emissions for this feedstock"
- For solid feedstock, the link will read "Use P-3 spreadsheet to calculate emissions for this feedstock"

Click image to expand

The screenshot shows the EPA e-GGRT interface for 'Hydrogen Production Company 1 (2010)' and 'Subpart P: Hydrogen Production'. It displays a 'CO₂ CARBON DIOXIDE (CO₂) EMISSIONS CALCULATION' section with a result of 44,010 metric tons. Below this is a 'UNIT CO₂ CALCULATION RESULT' section showing 'Annual process CO₂ emissions from hydrogen processing unit' as 44010 (metric tons), which is the 'Sum of annual emissions associated with each feedstock'. There is also a 'NATURAL GAS' section with a link to a spreadsheet and a note about substitute data values. 'CANCEL' and 'SAVE' buttons are visible at the bottom.

For each fuel/feedstock used in each process unit, follow the link titled "Indicate which are based on substitute data values" and provide the following monthly values as appropriate:

- An indication if the monthly consumption is based on one or more substitute data values calculated per the procedures described in §98.165(a) [98.3(c)(8)]
- An indication if the monthly carbon content is based on one or more substitute data values calculated per the procedures described in §98.165(b) [98.3(c)(8)]
- An indication if the monthly molecular weight is based on one or more substitute data values calculated per the procedures described in §98.165(b) [98.3(c)(8)] (applies to gaseous feedstocks only)

Click image to expand

When finished entering fuel/feedstock information, click SAVE

Step 3: Save emissions data for a unit

When you have finished entering emissions data for a unit, click SAVE

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

After you save the data on this page, the next time you open the page, the calculator on the top of the page will display the CO₂ process emissions for a unit, rounded to the nearest 0.1 of a metric ton: the value displayed is for informational purposes only

Click image to expand

Step 4: Repeat Steps 1-3

Repeat Steps 1-3 until emissions data has been entered for all process units NOT monitored by a CEMS

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See Also

- [Screen Errors](#)
- [Using e-GGRT to Prepare Your Subpart P Report](#)
- [Subpart P Summary Information for this Facility](#)
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- [Subpart P Emissions Information for Process Units NOT Monitored by CEMS](#)
- [Subpart P Emissions Information for Process Units Monitored by CEMS](#)
- [Subpart Validation Report](#)

Subpart P Emissions Information for Process Units Monitored by CEMS

This page provides step-by-step instructions on how to enter and edit Subpart P Hydrogen Production emissions information for process units that

are monitored by a CEMS.

Step 1: Add a CEMS Monitoring Location (CML)

To add a CML, click the “Add a CEMS Monitoring Location” link below the CEMS MONITORING LOCATION (CML) SUMMARY table on the Subpart Overview page



The screenshot below is from Subpart G and is displayed as an example. The screen for other subparts may differ slightly.

Click image to expand

Step 2: Define a CML and report emissions information

For each CEMS Monitoring Location, provide the following information:


- A unique unit name or identifier for the CML (see also [About Unique Unit Names](#))
- An optional description or label for the CML
- The configuration of processes or process units that are monitored by the CML:
 - Single process or process unit that exhausts to a dedicated stack
 - Multiple processes or process units that share a common stack
 - Process or process unit that shares a common stack with one or more stationary fuel combustion units
- The types of fuel combusted in the unit(s) monitored by the CEMS
- The Tier 4/CEMS methodology start and end dates
- The cumulative total of hourly CO₂ mass emissions for each quarter of the reporting year (metric tons) (*Do not cumulate emissions data between quarters*)
- The total annual CO₂ mass emissions measured by the CEMS (metric tons)
- An indication whether emissions reported for the CEMS include emissions calculated according to 98.33(a)(4)(viii) for a slipstream that bypassed the CEMS
- The total annual biogenic CO₂ emissions from the combustion of all biomass fuels combined (metric tons) (*if not applicable, enter '0'*)
- The total annual non-biogenic CO₂ emissions which includes fossil fuel, sorbent, and process CO₂ emissions (metric tons)
- The total annual CH₄ and N₂O emissions associated with the combustion of all [Table C-2](#) fuels combusted in all processes/process units monitored by the CEMS derived from application of [Equation C-10](#) (metric tons) (*if there are no combustion emissions in this CML, please enter '0'*)
- The total number of source operating hours in the reporting year
- The total operating hours in which a substitute data value was used in the emissions calculations for the CO₂ concentration parameter
- The total operating hours in which a substitute data value was used in the emissions calculations for the stack gas flow rate parameter
- If moisture correction is required and a continuous moisture monitor is used, the total operating hours in which a substitute data value was used in the emissions calculations for the stack gas moisture content parameter
- The total annual CO₂ emissions from the CEMS Monitoring Location (CML) Summary attributable to combustion (metric tons)

Do not leave any of these fields blank. If, for example, your facility has no biogenic CO₂ emissions, enter '0'.

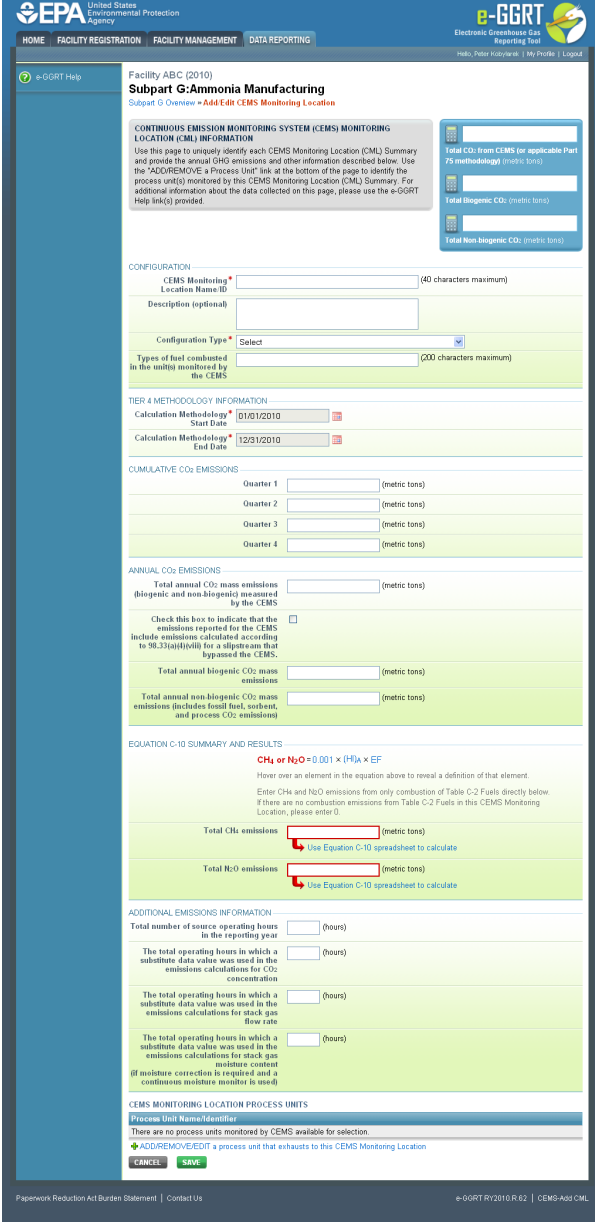
For assistance in calculating annual CH₄ and N₂O emissions using [Equation C-10](#), access the optional calculation spreadsheet by clicking one of the links titled “[Use Equation C-10 spreadsheet to calculate](#)” located below each of the red emissions information data entry boxes and follow the provided instructions

Step 3: Identify process units monitored at a CML

To identify the process units monitored at a CML, first click the link titled "ADD/REMOVE a process unit that exhausts to this CEMS Monitoring Location" at the bottom of the page

 The screenshot below is from Subpart G and is displayed as an example. The screen for other subparts may differ slightly.


Click image to expand



The screenshot displays the EPA e-GGRT web application interface for adding or removing process units. The page is titled "Subpart G: Ammonia Manufacturing" and "Subpart G Overview - Add/Edit CEMS Monitoring Location". It contains several sections for data entry:

- CONTINUOUS EMISSION MONITORING SYSTEM (CEMS) MONITORING LOCATION (CML) INFORMATION:** Includes instructions and a "Total CO₂ from CEMS (on applicable Part 75 methodology) (metric tons)" field.
- CONFIGURATION:** Fields for "CEMS Monitoring Location Name ID", "Description (optional)", "Configuration Type", and "Types of fuel combusted in the units monitored by the CEMS".
- TIER 4 METHODOLOGY INFORMATION:** Fields for "Calculation Methodology Start Date" and "Calculation Methodology End Date".
- CUMULATIVE CO₂ EMISSIONS:** Four input fields for "Quarter 1" through "Quarter 4" (metric tons).
- ANNUAL CO₂ EMISSIONS:** Fields for "Total annual CO₂ mass emissions (biogenic and non-biogenic) measured by the CEMS", a checkbox for "Check this box to indicate that the emissions reported for the CEMS include emissions calculated according to 98.2(a)(4)(vi) for a slipstream that bypasses the CEMS", "Total annual biogenic CO₂ mass emissions", and "Total annual non-biogenic CO₂ mass emissions (includes fossil fuel, solvent, and process CO₂ emissions)".
- EQUATION C-10 SUMMARY AND RESULTS:** Includes the equation $CH_4 \text{ or } N_2O = 0.01 \times (F)_{CH_4} \times EF$, instructions for entering CH₄ and N₂O emissions, and input fields for "Total CH₄ emissions" and "Total N₂O emissions" (metric tons).
- ADDITIONAL EMISSIONS INFORMATION:** Fields for "Total number of source operating hours in the reporting year" and three checkboxes for "The total operating hours in which a substitute data value was used in the emissions calculations for CO₂ concentration" under different conditions.
- CEMS MONITORING LOCATION PROCESS UNITS:** A section for selecting process units, currently showing "There are no process units monitored by CEMS available for selection." and a link to "ADD/REMOVE/EDIT a process unit that exhausts to this CEMS Monitoring Location".

On the CML Process Units Selection page, use the check boxes to select the process unit(s) monitored at this CML. This will indicate that the unit(s) selected vent emission through the stack monitored by this CML.

 The screenshot below is from Subpart G and is displayed as an example. The screen for other will differ slightly depending on the number of units with emissions monitored by a single CML at your facility.

Click image to expand

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

HOME | FACILITY REGISTRATION | FACILITY MANAGEMENT | DATA REPORTING

Subpart G: Ammonia Manufacturing

IDENTIFY PROCESS UNITS

Use this page to select each process unit that is monitored by the CML. For additional information about this page, please use the e-GGRT Help link(s) provided. * denotes a required field

PROCESS UNIT: GASEOUS CEMS

Is this process unit monitored by the CEMS Monitoring Location? (check if true)

CANCEL SAVE

Subpart Y also collects the CO₂ emissions from this CEMS Monitoring Location that are attributable to process CO₂ emissions from this process unit (metric tons).

Click image to expand

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

HOME | FACILITY REGISTRATION | FACILITY MANAGEMENT | DATA REPORTING

Facility ABC (2010)

Subpart Y: Petroleum Refineries

IDENTIFY PROCESS UNITS

Use this page to select each process unit that is monitored by the CEMS Monitoring Location (CML) Summary. For additional information about this page, please use the e-GGRT Help link(s) provided. * denotes a required field

PROCESS UNIT: CEMS1

Is this process unit monitored by the CEMS Monitoring Location? (check if true)

CO₂ emissions from this CEMS Monitoring Location that are attributable to process CO₂ emissions from this process unit: 8000 (metric tons)

PROCESS UNIT: CEMS3

Is this process unit monitored by the CEMS Monitoring Location? (check if true)

CO₂ emissions from this CEMS Monitoring Location that are attributable to process CO₂ emissions from this process unit: 7100 (metric tons)

PROCESS UNIT: CEMS2

Is this process unit monitored by the CEMS Monitoring Location? (check if true)

CANCEL SAVE

When finished selecting process unit for the CML and entering additional required information (if applicable), click SAVE. You should then be directed back to the Add/Edit a CML Location form and see the units you selected listed in the CEMS MONITORING LOCATION (CML) PROCESS UNITS table.

Step 4: Save entered data for a CML

When you have finished entering data for a CML, click SAVE. You will then return to the Subpart Overview page. You will see the status of data entry for the CML updated to "Complete" in the Status column in the CEMS MONITORING LOCATION (CML) SUMMARY table.

If you don't have all the data, you can enter some now, save it, and finish later by clicking on the hyperlinked name of the CML in the CEMS MONITORING LOCATION (CML) SUMMARY table.

After you save the data on this page, the next time you open the page, the calculator on the top of the page will display the CO₂ process emissions for the CML, rounded to the nearest 0.1 of a metric ton. The value displayed is for informational purposes only.



Note: the screenshot below is from Subpart G and is displayed as an example. The screen for other subparts will differ slightly.

Click image to expand

Facility ABC (2010)
Subpart G: Ammonia Manufacturing
 Subpart G Overview • [Add/Edit CEMS Monitoring Location](#)

CONTINUOUS EMISSION MONITORING SYSTEM (CEMS) MONITORING LOCATION (CML) INFORMATION
 Use this page to uniquely identify each CEMS Monitoring Location (CML) Summary and provide the annual OGH emissions and other information described below. Use the "ADD/REMOVE a Process Unit" link at the bottom of the page to identify the process unit(s) monitored by this CEMS Monitoring Location (CML) Summary. For additional information about the data collected on this page, please use the e-GGRT Help link(s) provided.

CONFIGURATION
 CEMS Monitoring Location Name ID: _____ (40 characters maximum)
 Description (optional): _____
 Configuration Type: Select
 Types of fuel combusted in the unit(s) monitored by the CEMS: _____ (200 characters maximum)

TIER 4 METHODOLOGY INFORMATION
 Calculation Methodology Start Date: 01/01/2010
 Calculation Methodology End Date: 12/31/2010

CUMULATIVE CO₂ EMISSIONS
 Quarter 1: _____ (metric tons)
 Quarter 2: _____ (metric tons)
 Quarter 3: _____ (metric tons)
 Quarter 4: _____ (metric tons)

ANNUAL CO₂ EMISSIONS
 Total annual CO₂ mass emissions (biogenic and non-biogenic) measured by the CEMS: _____ (metric tons)
 Check this box to indicate that the emissions reported for the CEMS include emissions calculated according to 98.33(a)(4)(ii) for a slipstream that bypassed the CEMS.
 Total annual biogenic CO₂ mass emissions: _____ (metric tons)
 Total annual non-biogenic CO₂ mass emissions (includes fossil fuel, solvent, and process CO₂ emissions): _____ (metric tons)

EQUATION C-10 SUMMARY AND RESULTS
 $CH_4 \text{ or } N_2O = 0.001 \times (H)_a \times EF$
 Hover over an element in the equation above to reveal a definition of that element.
 Enter CH₄ and N₂O emissions from only combustion of Table C-2 Fuels directly below. If there are no combustion emissions from Table C-2 Fuels in this CEMS Monitoring Location, please enter 0.
 Total CH₄ emissions: _____ (metric tons) [Use Equation C-10 spreadsheet to calculate]
 Total N₂O emissions: _____ (metric tons) [Use Equation C-10 spreadsheet to calculate]

ADDITIONAL EMISSIONS INFORMATION
 Total number of source operating hours in the reporting year: _____ (hours)
 The total operating hours in which a substitute data value was used in the emissions calculations for CO₂ concentration: _____ (hours)
 The total operating hours in which a substitute data value was used in the emissions calculations for stack gas flow rate: _____ (hours)
 The total operating hours in which a substitute data value was used in the emissions calculations for stack gas moisture content (if moisture correction is required and a continuous moisture monitor is used): _____ (hours)

CEMS MONITORING LOCATION PROCESS UNITS
 Process Unit Name/Identifier: _____
 There are no process units monitored by CEMS available for selection.
 ADD/REMOVE/EDIT a process unit that exhausts to this CEMS Monitoring Location

Buttons: CANCEL SAVE

Step 5: Repeat Steps 1-4

Repeat Steps 1-4 until emissions information has been entered for all CMLs. If you have missed something, the validation report messages will help you identify any incomplete entries.

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See Also

Screen Errors

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

[Subpart P Summary Information for this Facility](#)

[Subpart P Process Unit Information for Units NOT Monitored by CEMS](#)

[Subpart P Process Unit Information for Units Monitored by CEMS](#)

[Subpart P Emissions Information for Process Units NOT Monitored by CEMS](#)

[Subpart P Emissions Information for Process Units Monitored by CEMS](#)

[Subpart Validation Report](#)

Using Subpart P Calculation Spreadsheets



These optional spreadsheets are provided to assist reporters in calculating emissions and in keeping records of these calculations.

Reporters are required to keep records of these calculations under 40 CFR 98.3(g) and additional subpart-specific provisions, but are not required to use these spreadsheets or to submit any spreadsheets to EPA.

Spreadsheets may include inputs to emission equations, reporting of which EPA has deferred (See 76 FR 53057, published August 25, 2011, <http://www.gpo.gov/fdsys/pkg/FR-2011-08-25/pdf/2011-21727.pdf>).

Overview

This help page provides guidance for working with the supplemental Subpart P calculation spreadsheets. The guidance provides step-by-step instructions for the following tasks:

- [Selecting the Appropriate Calculation Spreadsheet](#)
- [Downloading a Calculation Spreadsheet](#)
- [General information on Using a Calculation Spreadsheet](#)
- [Using the Equation P-1 Calculation Spreadsheet](#)
- [Using the Equation P-2 Calculation Spreadsheet](#)
- [Using the Equation P-3 Calculation Spreadsheet](#)

Specific information on each of the calculation spreadsheets is provided below:

Calculation Spreadsheets (click to download)	Selection Criteria: Feedstock Type	Instructions (click to view)
Equation P-1 Calculation Spreadsheet.xls	Gaseous	P-1 Help
Equation P-2 Calculation Spreadsheet.xls	Liquid	P-2 Help
Equation P-3 Calculation Spreadsheet.xls	Solid	P-3 Help

Selecting the Appropriate Calculation Spreadsheet

Subpart P requires a facility to report annual CO₂ emissions from each hydrogen production process unit. To calculate the annual CO₂ emissions from each hydrogen production process unit, users must use one or more of three equations based on the unit feedstock consumed during the data collection year. Users may use different calculation worksheets for different process units as required by the feedstock type for each unit. Users may use more than one calculation worksheet for a process unit if the unit has more than one type of feedstock.

For each process unit with a gaseous feedstock, users should calculate annual CO₂ emissions using Equation P-1 via the Equation P-1 Calculation Worksheet. Equation P-1 is provided below:

(Equation P-1)

$$CO_2 = \left(\sum_{n=1}^k \frac{44}{12} * Fdstk_n * CC_n * \frac{MW}{MVC} \right) * 0.001$$

For each process unit with a liquid feedstock, users should calculate annual CO₂ emissions using Equation P-2 via the Equation P-2 Calculation Worksheet. Equation P-2 is provided below:

(Equation P-2)

$$CO_2 = \left(\sum_{n=1}^k \frac{44}{12} * Fdstk_n * CC_n \right) * 0.001$$

For each process unit with a solid feedstock, users should calculate annual CO₂ emissions using Equation P-3 via the Equation P-3 Calculation

Worksheet. Equation P-3 is provided below:

(Equation P-3)	$CO_2 = \left(\sum_{n=1}^k \frac{44}{12} * Fdstk_n * CC_n \right) * 0.001$
-----------------------	-----------------------------------------------------------------------------

Downloading a Calculation Spreadsheet

Calculation spreadsheets for Subpart P may be downloaded by clicking one of the links in the first column of the table below. Users may also jump to instructions for each calculation spreadsheet by clicking one of the links in the third column.

Calculation Spreadsheets (click to download)	Selection Criteria: Feedstock Type	Instructions (click to view)
Equation P-1 Calculation Spreadsheet.xls	Gaseous	P-1 Help
Equation P-2 Calculation Spreadsheet.xls	Liquid	P-2 Help
Equation P-3 Calculation Spreadsheet.xls	Solid	P-3 Help

Using a Spreadsheet to Make Calculations

The guidance provided in this section applies to each of the calculation spreadsheets for Subpart P. Additional guidance is provided for each individual calculation spreadsheet in the sections below.

Color coding

The calculation spreadsheets contain green input cells, gray informational cells, and red-bordered results cells filled with yellow or white. Users should use green input cells to enter all data specific to their facility, unit, or process. Gray informational cells contain parameter names, column and row headings, equation constants and subtotals. Calculation results are displayed in red-bordered results cells filled with yellow or white. For red-bordered, yellow-filled results cells, the values in these cells should be entered in the appropriate and separate calculation spreadsheet (as directed below cell) where additional calculations will be made. For red-bordered, white filled results cells, the values in these cells should be entered in e-GGRT for the appropriate process units. All cells that are not green input cells are locked and cannot be modified.

	Green input cell (data entry)
	Gray informational cells (locked)
	Red-bordered, yellow-filled results cells (enter in appropriate and separate calculation spreadsheet)
	Red-bordered, white filled results cells (enter in e-GGRT)

Stop and Warning Messages

The calculation spreadsheets will display a stop message if the user enters a value that is invalid or a warning message if the user enters a value outside the EPA estimated range for a particular data element. For invalid data entries, the stop messages will not allow a user to proceed and the user must reenter valid data before moving forward. For data entries that are outside the EPA estimated range for a particular data element, the warning messages will allow a user to proceed if the user deems the entered value to be accurate.

Multiple process units

Users with multiple process units should use separate calculation spreadsheets for each process unit. Users should not aggregate data for multiple process units when using these calculation spreadsheets.

Using the P-1 Calculation Spreadsheet

Use the P-1 Calculation Worksheet to calculate the annual CO₂ emissions from each hydrogen production process unit with a gaseous feedstock. A separate worksheet is to be used for each fuel and feedstock used in each hydrogen production process unit. Calculations for hydrogen production process units with liquid and solid feedstocks should be performed using different calculation worksheets and different equations. The P-1 Calculation Worksheet performs the calculation using Equation P-1, provided below.

(Equation P-1)

$$CO_2 = \left(\sum_{n=1}^k \frac{44}{12} * Fdstk_n * CC_n * \frac{MW}{MVC} \right) * 0.001$$

Begin by entering the facility name, your name, the process unit name or identifier, the reporting period, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name/ ID:	
Reporting Period:	
Comments:	
Unit Type:	Hydrogen Production Process Unit

Next, enter the requested information in the green input cells in the Input Data table.

Input Data

Month	[Fdstk _n] = Volume of the gaseous fuel and feedstock used in month n (scf (at standard conditions of 68 °F and atmospheric pressure) of fuel and feedstock)	[CC _n] = Average carbon content of the gaseous fuel and feedstock, from the results of one or more analyses for month n (kg carbon per kg of fuel and feedstock). If measurements are taken more frequently than monthly, use the arithmetic average of measurement values within the month to calculate a monthly average	[MW _n] = Average molecular weight of the gaseous fuel and feedstock from the results of one or more analyses for month n (kg/kg-mole)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

The calculation worksheet will calculate the annual CO₂ emissions from a unit with a gaseous feedstock. This calculated value will be displayed in the red-bordered cell in the Annual CO₂ Emissions (metric tons) from Equation P-1 table at the bottom of the worksheet. This value should be entered in e-GGRT for this process unit.

Annual CO₂ Emissions (metric tons) from Equation P-1

[CO ₂] = Annual CO ₂ emissions arising from fuel and feedstock consumption (metric tons/yr)	
--------------------------------------------------------------------------------------------------------------------	--

→ Use this value in Sum of Equations P-1, P-2, P-3

Using the P-2 Calculation Spreadsheet

Use the P-2 Calculation Worksheet to calculate the annual CO₂ emissions from each hydrogen production process unit with a liquid feedstock. A separate worksheet is to be used for each fuel and feedstock used in each hydrogen production process unit. Calculations for process units with gaseous and solid feedstocks should be performed using different calculation worksheets and different equations. The P-2 Calculation Worksheet performs the calculation using Equation P-2, provided below.

(Equation P-2)

$$CO_2 = \left(\sum_{n=1}^k \frac{44}{12} * Fdstk_n * CC_n \right) * 0.001$$

Begin by entering the facility name, your name, the process unit name or identifier, the reporting period, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name/ ID:	
Reporting Period:	
Comments:	
Unit Type:	Hydrogen Production Process Unit

Next, enter the requested information in the green input cells in the Input Data table.

Input Data

Month	[Fdstk _n] = Volume of the liquid fuel and feedstock used in month n (gallons of fuel and feedstock)	[CC _n] = Average carbon content of the liquid fuel and feedstock, from the results of one or more analyses for month n (kg carbon per gallon of fuel and feedstock)
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		

The calculation worksheet will calculate the annual CO₂ emissions from a unit with a liquid feedstock. This calculated value will be displayed in the red-bordered cell in the Annual CO₂ Emissions (metric tons) from Equation P-2 table at the bottom of the worksheet. This value should be entered in e-GGRT for this process unit.

Annual CO₂ Emissions (metric tons) from Equation P-2

[CO ₂] = Annual CO ₂ emissions arising from fuel and feedstock consumption (metric tons/yr)	
--------------------------------------------------------------------------------------------------------------------	--

Use this value in Sum of Equations P-1, P-2, P-3

Using the P-3 Calculation Spreadsheet

Use the P-3 Calculation Worksheet to calculate the annual CO₂ emissions from each hydrogen production process unit with a solid feedstock. A separate worksheet is to be used for each fuel and feedstock used in each hydrogen production process unit. Calculations for process units with gaseous and liquid feedstocks should be performed using different calculation worksheets and different equations. The P-3 Calculation Worksheet performs the calculation using Equation P-3, provided below.

(Equation P-3)

$$CO_2 = \left(\sum_{n=1}^k \frac{44}{12} * Fdstk_n * CC_n \right) * 0.001$$

Begin by entering the facility name, your name, the process unit name or identifier, the reporting period, and any additional comments in the green input cells of the general information table located immediately below the equation in the calculation spreadsheet. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name/ ID:	
Reporting Period:	
Comments:	
Unit Type:	Hydrogen Production Process Unit

Next, enter the requested information in the green input cells in the Input Data table.


Input Data

Month	[Fdstk _n] = Mass of solid fuel and feedstock used in month n (kg of fuel and feedstock)	[CC _n] = Average carbon content of the solid fuel and feedstock, from the results of one or more analyses for month n (kg carbon per kg of fuel and feedstock)
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		

The calculation worksheet will calculate the annual CO₂ emissions from a unit with a solid feedstock. This calculated value will be displayed in the red-bordered cell in the Annual CO₂ Emissions (metric tons) from Equation P-3 table at the bottom of the worksheet. This value should be entered in e-GGRT for this process unit.

Annual CO₂ Emissions (metric tons) from Equation P-3

[CO ₂] = Annual CO ₂ emissions arising from fuel and feedstock consumption (metric tons/yr)	
--------------------------------------------------------------------------------------------------------------------	--

 Use this value in Sum of Equations P-1, P-2, P-3

Gather the data from all spreadsheets used for this unit to total the CO₂ emissions from the unit during the reporting year. The final step is to enter this total quantity of annual CO₂ emissions for this unit in the red box on the corresponding hydrogen production process unit page of e-GGRT

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