Greenhouse Gas Reporting Program

XML Reporting Instructions
for Subpart P –
Hydrogen Production

United States Environmental Protection Agency
Climate Change Division
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These instructions explain how to report the required data for the applicable regulations. Owners and operators of units should refer to the applicable regulations for information about what data are required to be reported.

EPA has finalized a rule that defers the deadline for reporting data elements used as inputs to emission equations for direct emitters. (See http://www.epa.gov/climatechange/emissions/ notices.html for a pre-publication version of the rule). In accordance with the rule, e-GGRT is not currently collecting data used as inputs to emission equations.

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I.   Introduction

The U.S. Environmental Protection Agency's (EPA's) electronic greenhouse gas reporting tool (e-GGRT) extensible markup language (XML) Reporting Schema contains all of the data elements needed to comply with the Greenhouse Gas Reporting Program (GHGRP) beginning with the 2010 data collection year. The XML schema defines expected data elements and attributes, allowable data formats for each data element, and the hierarchical structure and sequence in which data elements must appear in the XML file. Similar to an architectural blueprint that describes the structural design of a house, an XML schema describes the structural design of an XML file. In some cases, it also defines which elements are optional and which are required and the maximum number of occurrences allowed for each element.

The e-GGRT XML schema is made up of a root data element and complex and simple data elements. A simple element is a single piece of data. A complex element is a group of simple elements which are logically grouped together. The root data element is the base of the XML schema.

The schema's structure can be thought of as a family tree. The elements are related to each other in parent-child relationships. The root element is the parent element of the entire schema. Complex elements are children of the root element, and complex elements can also be children of other complex elements.

The XML upload method may be used for reporting a facility or supplier's annual greenhouse gas (GHG) data; however, the following actions can only be performed using the e-GGRT web forms:

- User, facility and supplier registration
- Certificate of Representation and Notice of Delegation signing
- Facility representative and agent changes
- Facility and supplier address changes
- Notice of intent to not submit an annual GHG report

All XML files submitted to e-GGRT must be well formed and will be accepted only if they conform to the current version of the e-GGRT XML schema.

An XML submission must only contain GHG data for a single facility or supplier. All data for a facility or supplier must be submitted in a single file as a complete report and must include all of the relevant Subparts. It is not possible to submit a subset of any portion of a facility's data to add, delete, correct or update. The entire report must be resubmitted to make any modification at all. Each subsequent submission for the same facility replaces all of the previously submitted data.

The e-GGRT XML schema contains enumerated values for certain data elements. For rules regarding the unit of measure or allowable values for a specific data element, please refer to the appropriate Data Element Definitions table.

The e-GGRT XML Reporting Schema is available for download at the e-GGRT help website: http://www.ccdsupport.com/confluence/display/help/XML+Reporting+Instructions. The zip file contains:

- **GHG_Final.xsd and Included Files**
- **SchemaChanges.xlsx**

Table 1
Reporting Numbers for Subpart P

Number Format	Description
Rounding	- CO_2e and CO_2 data expressed in metric tons should be rounded to one decimal place. This should be done regardless of the level of data collection (e.g., unit-level, facility-level). Quantities less than 0.05 metric tons would round to 0.0 and be reported as such. Quantities greater than or equal to 0.05 metric tons would round up to 0.1 and be reported as such. - CH_4 emissions data expressed in metric tons should be rounded to two decimal places. - N_2O emissions data expressed in metric tons should be rounded to three decimal places. - Other (non-emissions) quantitative data reported by the user (e.g., a monthly HHV sample result, an annual production quantity) will not need to be rounded. - In the case of aggregation/roll-ups, those calculations should be performed on the rounded values.
Percentages	If a value must be reported as a percentage, then the number should be within the range of 0 to 100 (percent), e.g. 85.5% should be reported as 85.5.
Fractions	If a value must be reported as a decimal fraction, then the number should be within the range of 0 and 1, e.g., 1/4 should be reported as 0.25. Leading zeroes are optional.

Key XML Terms

- XML: A markup language for documents containing structured information. The XML specification defines a standard way to add markup to documents. Its primary purpose is to facilitate the sharing of structured data across different information systems, particularly via the internet.

- XML Schema: An XML schema describes the structure of an XML document. The schema also defines the set of rules to which the XML document must conform in order to be considered "valid".

- XML file: A file containing data organized into a structured document using XML markup.

- Data Element: An XML data element is used for storing and classifying data in an XML file. Opening and closing tags represent the start and end of a data element. An opening tag looks like <elementName>, while a closing tag has a slash that is placed before the element's name </elementName>. The following example shows how to report the facility's identification number: <FacilitySiteIdentifier>23222</FacilitySiteIdentifier>. The information shaded in

blue represents the data element's value.

If a data element does not contain a value, then a single empty tag name may be used. An empty tag has a slash placed after the element's name <FacilitySiteIdentifier/>. **Note:** If you do not intend to report a value for a particular data element, then it is recommended that you do not include the data element in the XML file.

- **Attribute:** An XML attribute contains additional information about a specific data element. An attribute for a data element is placed within the opening tag. The syntax for including an attribute in an element is <elementName attributeName="value">. For example, <TotalCH4CombustionEmissions massUOM="Metric Tons">.

- **Root/Parent/Child Element:** The schema's structure can be thought of as a family tree. At the top of the tree is some early ancestor and at the bottom of the tree are the latest children. With a tree structure you can see which children belong to which parents and many other relationships.

XML data elements are sometimes referenced in terms of how they relate to each other, e.g., parent-child relationships, within the schema's tree structure, also known are hierarchy. The top of the XML tree is considered the root – it is the parent to all data elements within the schema. In the example below, "GHG_Unit_Details" is the root, and just like in many other family trees, there is more than one item with the same name (e.g., "Unit_ID"). The easiest way to distinguish these items is by referencing them in terms of their parent-child relationships, e.g., NoCEMS /Unit_ID vs. CEMS/Unit_ID.

Figure 1
Example of an XML Tree
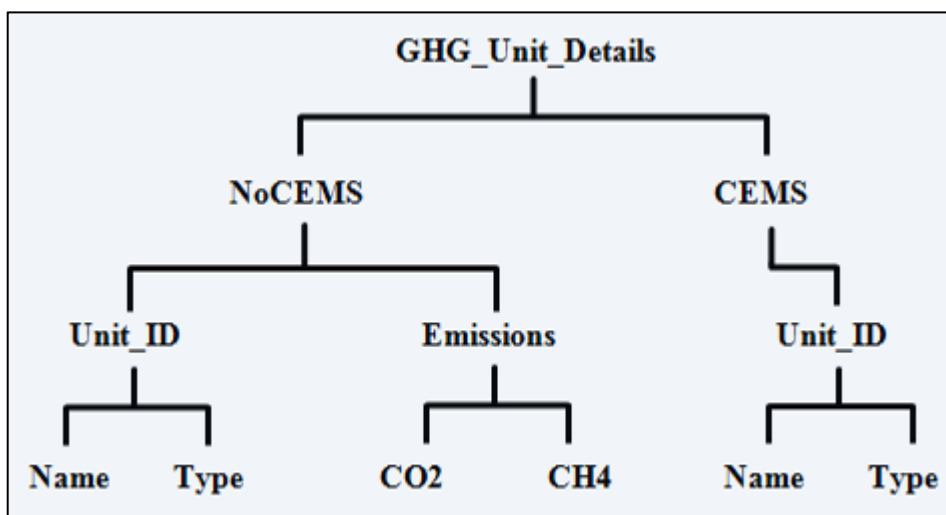
This document provides a step-by-step description of how to report emissions data using the XML schema. Please note the following:

- **Non-applicable data elements should not be included in the facility's XML file.** The schema contains many data elements, some of which may not be applicable to XML reporters in general or to a particular situation. If a data element is not referenced in the instructions (definition tables), then **do not** report or include it in the facility's XML file.

- **Data elements must be reported in a specific order.** The figures and tables in this document depict the specific sequence in which data elements must be arranged in the facility's XML file in order to produce a well-formed XML report.

- **Enumerations are case sensitive.** Many data elements have a defined set of allowable values, also known as enumerations. Values for enumerations must be entered exactly as they are defined within the schema (including punctuation marks) in order to be accepted by schema validation. See the definition tables for a complete list of enumerations.

- **Schema diagrams depict the hierarchy (or tree structure).** The primary purpose of the schema diagrams is to indicate the sequence in which data elements must appear within the facility's XML file and to identify the data elements that are required (must be reported) and conditionally required (see last bullet). Required data elements are boxed in red and conditionally required data elements are noted.

- **Definition tables provide details for required and conditionally required data elements.** The tables are designed to provide unique instructions for reporting a given data element, including the list of enumerations and required units of measure, if defined. As noted above, there are some data elements in the schema that are not applicable to XML reporters or to a particular situation. For example, the "OverrideIndicator" data element is used solely by e-GGRT to indicate that the web form reporter chose to override the system's calculated value with their own. These non-applicable data elements **are not** included in the definition tables. If a data element is not referenced in a definition table, then **do not** report or include it in the facility's XML file.

- **Commonly used data types are not depicted in the schema diagrams nor listed separately in the definition tables.** The schema diagrams display almost every data element in the schema except those that are associated with the three most commonly occurring data types:

    o Calculated Details
    o Measurement Details
    o Unit Identification Details

    Once defined, these data types (static collection of data elements) are then associated as children to every data element in the schema containing a measured or calculated value or unit details. These child data elements do not appear in the diagrams and are not listed on separate rows in the definition tables in order reduce their redundancy. They are however, referenced in the tables in the description of their parent data element. See Figures 2-4 and Tables 2-4.

- **Some data elements are conditionally required.** Data elements which are conditionally required are noted in the schema diagrams and the data element definitions tables. If your facility meets the condition specified for the data element, then the data element is required and you must report it in the facility's XML file. If your facility does not meet the condition specified for the data element, then **do not** include the data element in the facility's XML file. If a parent element is not required, then **do not** include any of its child data elements in the facility's XML file.

Figure 2
Calculated Details Data Type Schema Diagram
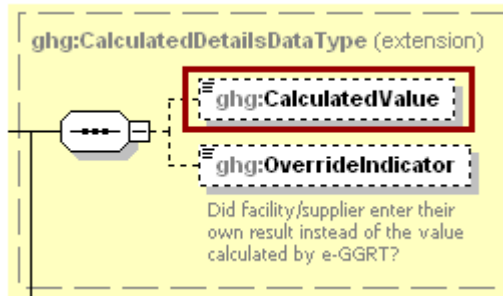
Note: Data elements boxed in red are required.

Table 2
Calculated Details Data Element Definitions

Data Element Name	Description
CalculatedDetailsDataType	
CalculatedValue	Calculated value (decimal).
OverrideIndicator	**Note:** Do not include this data element in the facility's XML file because it only applies to web form reporters. It is a flag set by e-GGRT to indicate that the system-calculated value was overridden with the web form reporter's value.

Figure 3
Measurement Details Data Type Schema Diagram
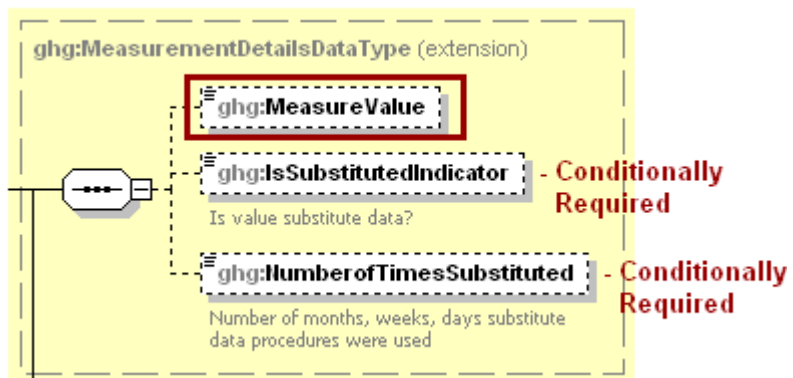
Note: Data elements boxed in red are required. Please see page 4 of this document for more information on conditionally required elements.

Table 3
Measurement Details Data Element Definitions

Data Element Name	Description
MeasurementDetailsDataType	
MeasureValue	Measured value (decimal).
IsSubstitutedIndicator	An indication (Y/N) that the measured value contains substituted data. **Note:** Do not include this data element in your XML file unless noted in the instructions for the particular measured value.
NumberofTimesSubstituted	The number (integer) of days, months, weeks or hours in the reporting year that missing data procedures were followed. **Note:** Do not include this data element in your XML file unless noted in the instructions for the particular measured value.

Figure 4
Unit Identification Details Data Type Schema Diagram
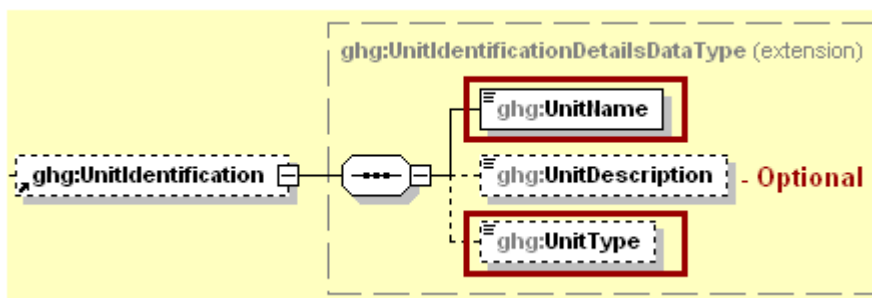
Note: Data elements boxed in red are required.

Table 4
Unit Identification Details Data Element Definitions

Data Element Name	Description
UnitIdentificationDetails	
UnitName	A unique name (ID) for each unit so that the data for different units can be recorded, maintained and retrieved clearly.
UnitDescription	Optional brief description of the unit.
UnitType	The type of unit. The list of allowable values varies. For more information, see the instructions for the specific unit process to be reported. For example, if reporting Flare Gas details, the unit type would be "Flare".

The XML symbol "1..∞" shown in Figure 5 means that the parent element is "unbounded" so that multiple instances of the parent element can be reported. XML Excerpt 1 shows an example of reporting multiple instances of a parent element.

Figure 5
"Unbounded" Symbol in Schema Diagram
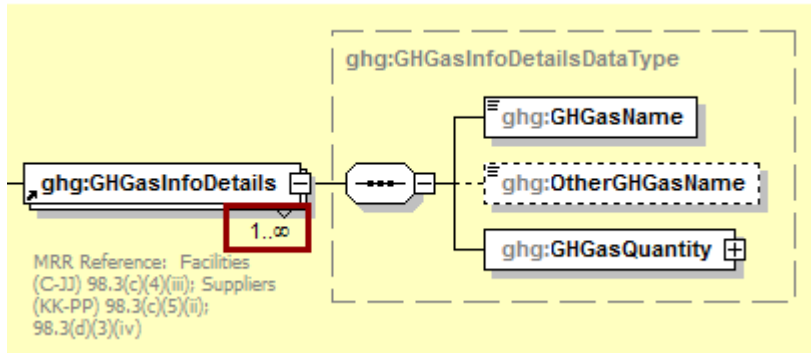
XML Excerpt 1
Example for "Unbounded" Parent Element

```
<ghg:GHGasInfoDetails>
        <ghg:GHGasName>Carbon Dioxide </ghg:GHGasName>
        <ghg:GHGasQuantity massUOM="Metric Tons">
        <ghg:CalculatedValue>384781.2</ghg:CalculatedValue>
        </ghg:GHGasQuantity></ghg:GHGasInfoDetails>
<ghg:GHGasInfoDetails>
<ghg:GHGasInfoDetails>
        <ghg:GHGasName>Methane</ghg:GHGasName>
        <ghg:GHGasQuantity massUOM="Metric Tons">
        <ghg:CalculatedValue>4004.12</ghg:CalculatedValue>
        </ghg:GHGasQuantity></ghg:GHGasInfoDetails>
<ghg:GHGasInfoDetails>
```

The XML symbol for a logical "Or" shown in Figure 6 means that **only one** of the data elements following the symbol can be reported for the current instance of the parent element.

Figure 6
Logical "Or" Symbol in Schema Diagram
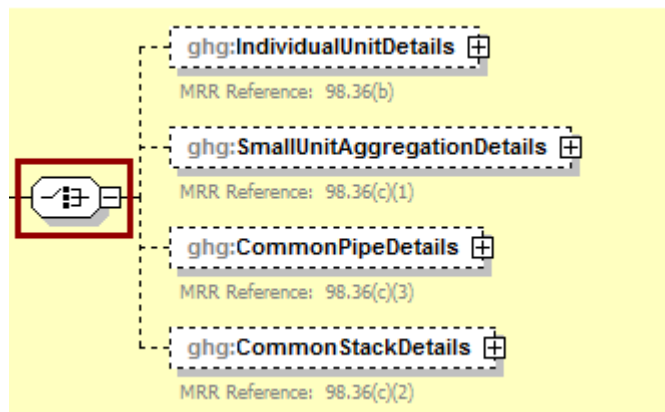
II.   Summary of Changes

The following modifications were applied to the previous version of the GHG XML schema in relation to Subpart P (GHG_SubPartP_v2.0.xsd) for reporting year 2011.

Table 5
Summary of Changes to the Schema for Subpart P

No.	Change Description
1	Typo correction. Renamed data element "**AnnuualCO2Emission**" to "**AnnualCO2Emission**". (Xpath = NoCEMSHydrogenUnitDetails)
2	Removed attribute "**massUOM**" from data element "**ConsumptionFuelFeedStock**". (XPath = NoCEMSHydrogenUnitDetails/FuelFeedStockDetails/MonthlyHydrogen)
3	Removed attribute "**carboncontentUOM**" from data element "**CarbonContentFuelFeedStock**". (XPath = NoCEMSHydrogenUnitDetails/FuelFeedStockDetails/MonthlyHydrogen)
4	Removed attribute "**molewtUOM**" from data element "**MolecularWeightOfGaseousFuel**". (XPath = NoCEMSHydrogenUnitDetails/FuelFeedStockDetails/MonthlyHydrogen)

Document Changes:

3-9-2012 – Modified some of the emissions values within the XML excerpts to emphasize the rounding rules, see Table 1.

3-15-2012 - Updated Figure 12 to reflect required data elements. Added "ParentCompanyDetails" to sample XML document.

III. Subpart P Overview

This document provides a step-by-step description of how to report data for Subpart P Hydrogen Production and overall total Subpart P emissions for a facility using the XML schema.

Figure 7
Subpart P Reporting Diagram
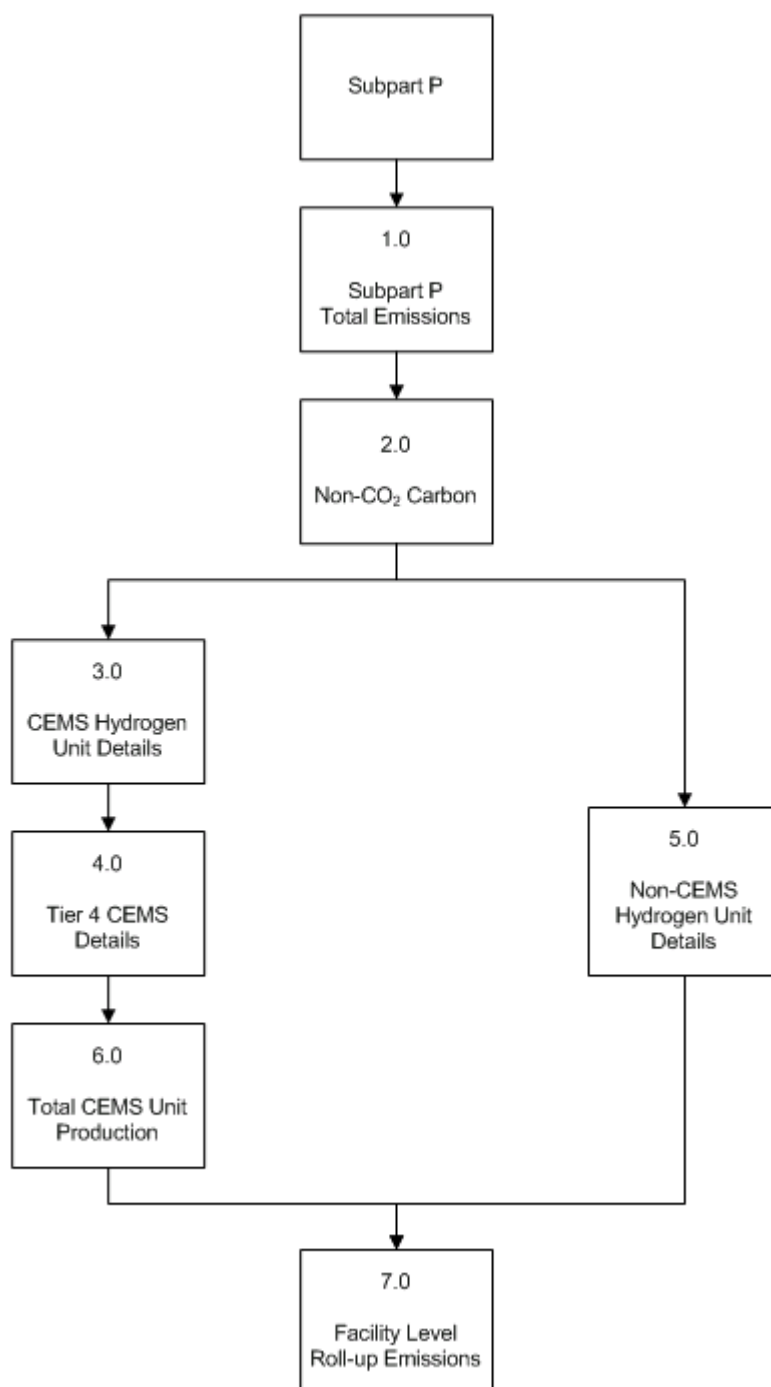
Subpart P is comprised of process units that produce hydrogen by reforming, gasification, oxidation, reaction or other transformations of feedstock and that sell the hydrogen gas or liquid as a product to other entities. Hydrogen production units that are located within other facilities are included in this source category if they are not owned by or under the direct control of the other facility's owner and operator.

The XML schema includes the following areas for reporting for Subpart P, as displayed in the reporting diagram:

1.0   Subpart P Total Emissions: includes the total emissions for greenhouse gases required to be reported.

2.0   Non-CO_2 Carbon: annual quantity of carbon other than CO_2 collected and transferred off site.

3.0   Continuous emissions monitoring system (CEMS) Hydrogen Unit Details: includes information on unit identification and the quantity of hydrogen and ammonia produced.

4.0   Tier 4 CEMS Details: includes information on each CEMS monitoring location and emissions details.

5.0   Non-CEMS Hydrogen Unit Details: includes information on unit identification, fuel and feedstock details, the quantity of hydrogen and ammonia produced and annual CO_2 emissions.

6.0   Total CEMS Unit Production: includes hydrogen and ammonia produced by all units monitored by CEMS combined.

7.0   Facility Level Roll-up Emissions: includes information on how to report total emissions for CO_2e (excluding biogenic CO_2) and biogenic CO_2.

NOTE: If your facility is subject to reporting under Subpart P (Hydrogen Production), EPA recommends that you also consider the following source categories in your facility applicability determination: Subpart C (General Stationary Fuel Combustion), Subpart X (Petrochemical Production), Subpart Y (Petroleum Refineries), Subpart OO (Suppliers of Industrial Greenhouse Gases) and Subpart PP (Suppliers of CO_2). These source categories are only provided as suggestions - additional Subparts may be relevant for a given facility/supplier and not all listed Subparts are relevant for all facilities/suppliers.

Figure 8
Subpart P Schema Diagram
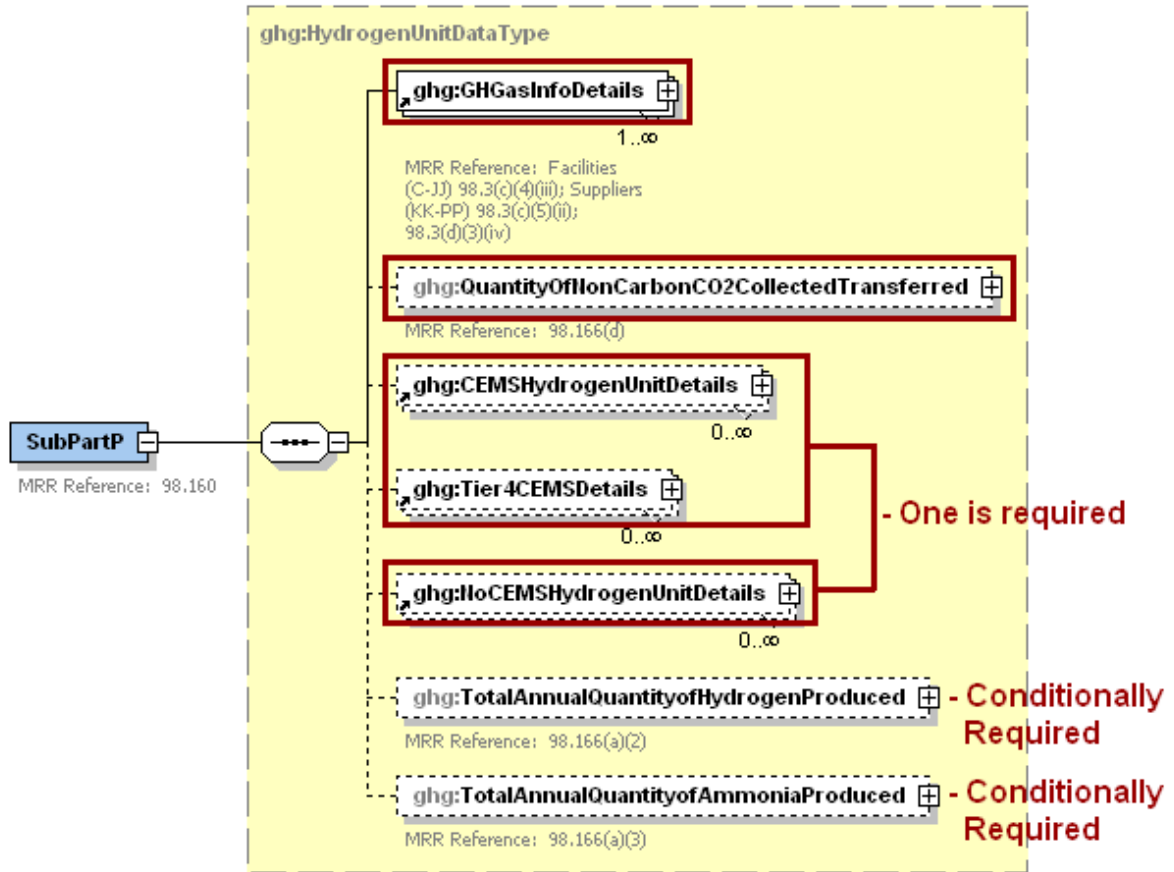
Note: Data elements boxed in red are required. Please see page 4 of this document
for more information on conditionally required elements.

1.0   Subpart P Total Emissions

Greenhouse gas information details comprise a collection of data elements to report the total annual emissions of each greenhouse gas (GHG) listed in Table A-1 of 40 CFR 98 Mandatory Reporting of Greenhouse Gases reported under Subpart P, expressed in metric tons.

Figure 9
Greenhouse Gas Information Details Schema Diagram
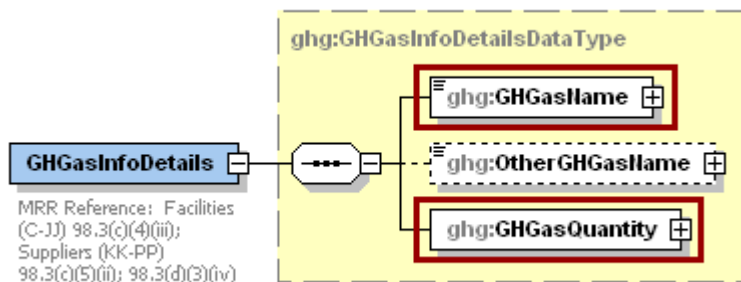
Note: Data elements boxed in red are required.

For Subpart P, report total emissions for carbon dioxide (excluding biogenic CO_2), biogenic CO_2, using the following guidelines.

1) Total CO_2 emissions (excluding biogenic CO_2):
   - Add the annual CO_2 emissions from each hydrogen processing unit in metric tons.
   - Add the total annual CO_2 mass emissions measured by the CEMS in metric tons for each CEMS monitoring location (CML).
   - Subtract the total annual biogenic CO_2 mass emissions in metric tons for each CML.
2) Total biogenic CO_2 emissions: Add the total annual biogenic CO_2 mass emissions in metric tons for each CML.

Note: You must follow the rounding rules found in Table 1.

Table 6
Greenhouse Gas Information Details Data Element Definitions

Data Element Name	Description
GHGasInfoDetails	**Parent Element:** A collection of data elements containing the total annual emissions of each greenhouse gas (GHG) listed in Table A-1 of 40 CFR 98 Mandatory Reporting of Greenhouse Gases reported under this Subpart, expressed in metric tons.
GHGasName	Specify the name of the GHG. See list of allowable values: Carbon Dioxide Biogenic Carbon dioxide
GHGasQuantity	A collection of data elements that quantify the annual emissions from this facility category. Report the value in the child data element **CalculatedValue** using the guidelines above. Set the units of measure to "Metric Tons" in the attribute **massUOM**.

XML Excerpt 2
Example for Greenhouse Gas Information Details

```xml
<ghg:SubPartP>
        <ghg:GHGasInfoDetails>
                <ghg:GHGasName>Biogenic Carbon dioxide</ghg:GHGasName>
                <ghg:GHGasQuantity massUOM="Metric Tons">
                        <ghg:CalculatedValue>150.4</ghg:CalculatedValue>
                </ghg:GHGasQuantity>
        </ghg:GHGasInfoDetails>
        <ghg:GHGasInfoDetails>
                <ghg:GHGasName>Carbon Dioxide</ghg:GHGasName>
                <ghg:GHGasQuantity massUOM="Metric Tons">
                        <ghg:CalculatedValue>102350.2</ghg:CalculatedValue>
                </ghg:GHGasQuantity>
        </ghg:GHGasInfoDetails>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.

2.0   Non-CO$_2$ Carbon

Subpart P requires that the facility report the annual quantity of carbon other than CO_2 collected and transferred off site in either gas, liquid or solid forms (kg carbon) [98.166(d)].

Figure 10
Non-CO$_2$ Carbon Schema Diagram
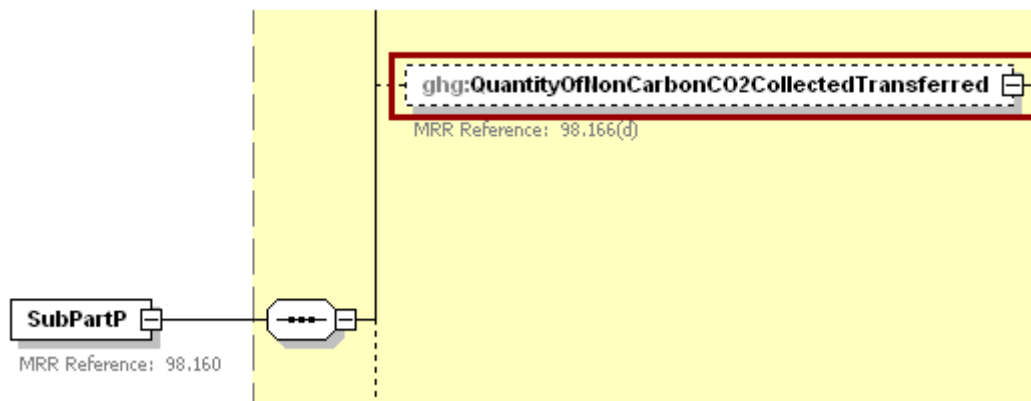
Note: Data elements boxed in red are required.

Table 7
Non-CO$_2$ Carbon Data Element Definitions

Data Element Name	Description
QuantityOfNonCarbonCO2CollectedTransferred	A collection of data elements containing information on the quantity of non-CO$_2$ carbon collected and transferred off site. It includes the annual quantity of carbon other than CO_2 collected and transferred off site in either gas, liquid or solid forms (kg carbon). [98.166(d)] Report the value in the child data element **MeasureValue**. Set the units of measure to "Kilograms" in the attribute **massUOM**.

XML Excerpt 3
Example for Non-CO$_2$ Carbon

```
<ghg:QuantityOfNonCarbonCO2CollectedTransferred massUOM="Kilograms">
        <ghg:MeasureValue>10000.234343</ghg:MeasureValue>
</ghg:QuantityOfNonCarbonCO2CollectedTransferred>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting non-CO$_2$ carbon collected and transferred off site.

3.0   CEMS Hydrogen Unit Details

Conditionally Required: For each hydrogen production processing unit for which CEMS is used to measure greenhouse gas emissions, report the following:

- A unique name or identifier, an optional description and the unit type, "Hydrogen production process unit" [98.166(a)(1)].
- Annual quantity of hydrogen produced (metric tons) [98.166(a)(2)].
- Annual quantity of ammonia produced (metric tons) [98.166(a)(3)].

Figure 11
CEMS Hydrogen Unit Details Schema Diagram
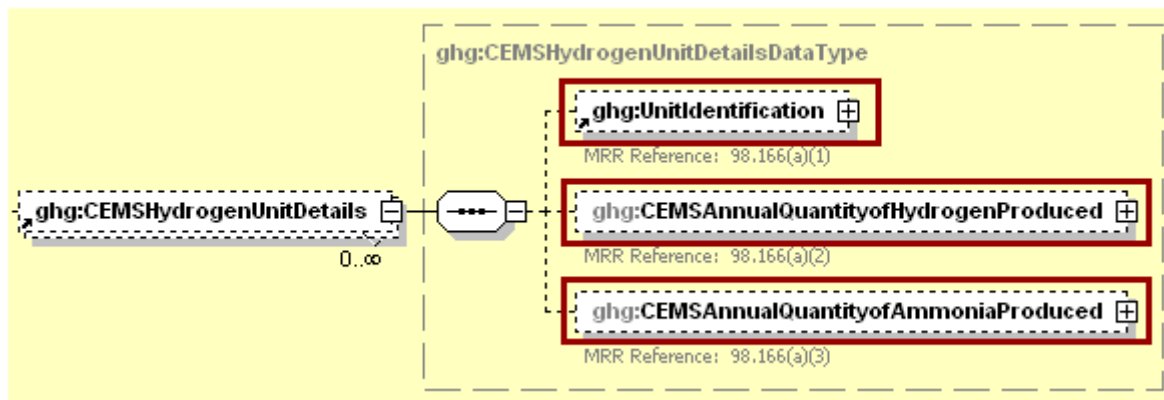
Note: Data elements boxed in red are required.

Table 8
CEMS Unit Details Data Element Definitions

Data Element Name	Description
CEMSHydrogenUnitDetails	**Parent Element (Conditionally Required):** A collection of data elements containing details about units which were monitored using a CEMS.
UnitIdentification	A collection of data elements containing the identity of each hydrogen processing unit monitored by a CEMS. [98.166(a)(1)] Report a unique unit name (ID) in the child data element **UnitName**, an optional brief description in the child data element **UnitDescription** and the type of unit in the child data element **UnitType**: "Hydrogen production process unit".
CEMSAnnualQuantityofHydrogenProduced	A collection of data elements containing information on the quantity of hydrogen produced by the specified unit. [98.166(a)(2)] It includes the annual quantity of hydrogen produced. Report the value in the child data element **MeasureValue**. Set the units of measure to "Metric Tons" in the attribute **massUOM**.

Data Element Name	Description
CEMSAnnualQuantityofAmmoniaProduced	A collection of data elements for the specified hydrogen production process unit containing information on the annual quantity of ammonia produced. [98.166(a)(3)] Report the value in the child data element **MeasureValue**. Set the units of measure to "Metric Tons" in the attribute **massUOM**.

XML Excerpt 4
Example for CEMS Unit Details

```xml
<ghg:CEMSHydrogenUnitDetails>
        <ghg:UnitIdentification>
                <ghg:UnitName>002- CEMS</ghg:UnitName>
                <ghg:UnitDescription>CEMS unit</ghg:UnitDescription>
                <ghg:UnitType>Hydrogen production process unit</ghg:UnitType>
        </ghg:UnitIdentification>
        <ghg:CEMSAnnualQuantityofHydrogenProduced massUOM="Metric Tons">
                <ghg:MeasureValue>3300.789076</ghg:MeasureValue>
        </ghg:CEMSAnnualQuantityofHydrogenProduced>
        <ghg:CEMSAnnualQuantityofAmmoniaProduced massUOM="Metric Tons">
                <ghg:MeasureValue>4400.234678</ghg:MeasureValue>
        </ghg:CEMSAnnualQuantityofAmmoniaProduced>
</ghg:CEMSHydrogenUnitDetails>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting details for a hydrogen production process unit monitored by a CEMS.

4.0   Tier 4 CEMS Details

Conditionally Required: This section describes emissions information that must be reported if a continuous emissions monitoring system (CEMS) was in use during the reporting year.

Figure 12
Tier 4 CEMS Details Schema Diagram
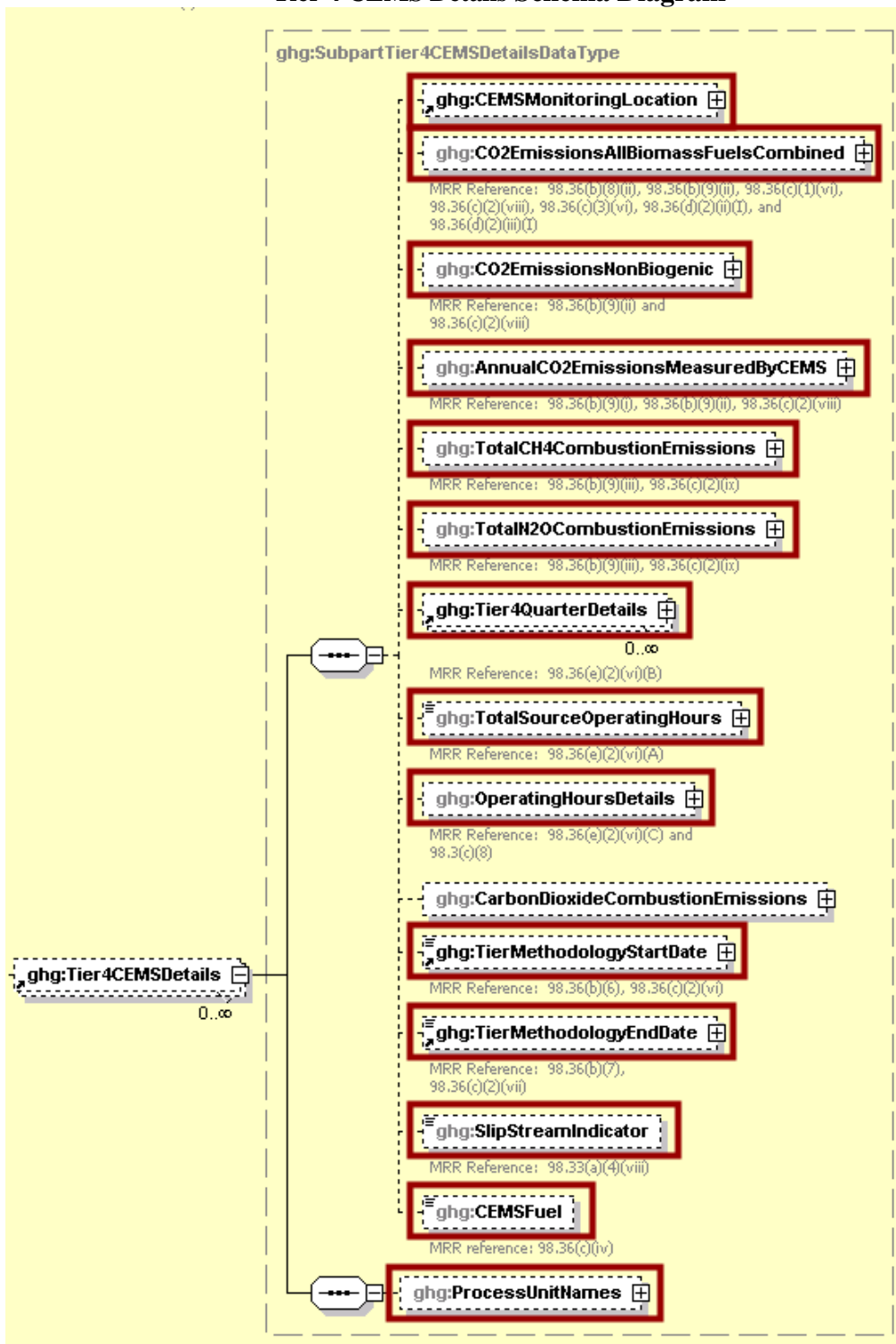
Note: Data elements boxed in red are required.

Figure 13
Tier 4 CEMS Location and Emissions Details Schema Diagram

Note: Data elements boxed in red are required.

For Subpart P, information on each CEMS monitoring location (CML) is required including the name, an optional description and the configuration type. [98.36(c)(2)(i)] For each CML identified by the facility, the facility must specify the configuration type from the following list:

- 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 a Tier 4 stationary fuel combustion unit.

For each CEMS monitoring location identified, the following emissions data must be reported:

- The total annual biogenic CO_2 mass emissions from combustion of all biomass fuels combined [98.36(b)(9)(ii)]
- The total annual non-biogenic CO_2 mass emissions (i.e. CO_2 mass emissions from fossil fuels, sorbent use and process emissions) [98.36(b)(9)(ii)]
- The total annual CO_2 mass emissions (biogenic and non-biogenic) measured by the CEMS [98.36(b)(9)(i)-(ii)]
- The total annual CH_4 mass emissions derived from Equation C-10, in metric tons CH_4 [98.36(c)(2)(ix), 98.166(a)] **Note:** Report CH_4 combustion emissions from fuels referenced in Table C-2 of the MRR only. If there are no combustion emissions from Table C-2 fuels in the CEMS Monitoring Location, please report 0.
- The total annual N_2O mass emissions derived from Equation C-10, in metric tons N_2O [98.36(c)(2)(ix), 98.166(a)] **Note:** Report N_2O combustion emissions from fuels referenced in Table C-2 of the MRR only. If there are no combustion emissions from Table C-2 fuels in the CEMS Monitoring Location, please report 0.

Table 9
Tier 4 CEMS Location and Emissions Details Data Element Definitions

Data Element Name	Description
Tier4CEMSDetails	**Parent Element (Conditionally Required):** A collection of data elements containing information about a CEMS monitoring location (CML).
CEMSMonitoringLocation	A collection of data elements containing the identity of each CEMS monitoring location. [98.36(c)(2)(i)] Report a unique CML name (ID) in the child data element **Name**, an optional brief description in the child data element **Description** and the type of configuration in the child data element **Type**. See the list of allowable configuration types: Single process/process unit exhausts to dedicated stack Multiple processes/process units share common stack Process/stationary combustion units share common stack
CO2EmissionsAllBiomassFuelsCombined	Total annual biogenic CO_2 mass emissions for the specified CEMS monitoring location. [98.36(b)(9)(ii), 98.36(c)(2)(viii)] Report the value in the child data element **CalculatedValue**. Set the units of measure to "Metric Tons" in the attribute **massUOM**.
CO2EmissionsNonBiogenic	The total annual non-biogenic CO_2 mass emissions for the specified CEMS monitoring location. [98.36(b)(9)(ii), 98.36(c)(2)(viii)] Report the value in the child data element **CalculatedValue**. Set the units of measure to "Metric Tons" in the attribute **massUOM**.
AnnualCO2EmissionsMeasuredByCEMS	The total annual CO_2 mass emissions measured by the CEMS at the specified CEMS monitoring location. [98.36(b)(9)(i)-(ii), 98.36(c)(2)(viii)] Report the value in the child data element **CalculatedValue**. Set the units of measure to "Metric Tons" in the attribute **massUOM**.
TotalCH4CombustionEmissions	The total annual CH_4 mass emissions measured by the CEMS at the specified CEMS monitoring location calculated using Equation C-10 expressed in mass of CH_4. [98.36(c)(2)(ix), 98.166(a)(1)] Report the value in the child data element **CalculatedValue**. Set the units of measure to "Metric Tons" in the attribute **massUOM**.
TotalN2OCombustionEmissions	The total annual N_2O mass emissions measured by the CEMS at the specified CEMS monitoring location calculated using Equation C-10 expressed in mass of N_2O. [98.36(c)(2)(ix), 98.166(a)(1)] Report the value in the child data element **CalculatedValue**. Set the units of measure to "Metric Tons" in the attribute **massUOM**.

XML Excerpt 5
Example for Tier 4 CEMS Location and Emissions Details

```
<ghg:Tier4CEMSDetails>
        <ghg:CEMSMonitoringLocation>
                <ghg:Name>003- CML</ghg:Name>
                <ghg:Description>CML</ghg:Description>
                <ghg:Type>Single process/process unit exhausts to dedicated stack</ghg:Type>
        </ghg:CEMSMonitoringLocation>
        <ghg:CO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
                <ghg:CalculatedValue>150.2</ghg:CalculatedValue>
        </ghg:CO2EmissionsAllBiomassFuelsCombined>
        <ghg:CO2EmissionsNonBiogenic massUOM="Metric Tons">
                <ghg:CalculatedValue>140.3</ghg:CalculatedValue>
        </ghg:CO2EmissionsNonBiogenic>
        <ghg:AnnualCO2EmissionsMeasuredByCEMS massUOM="Metric Tons">
                <ghg:CalculatedValue>100000.5</ghg:CalculatedValue>
        </ghg:AnnualCO2EmissionsMeasuredByCEMS>
        <ghg:TotalCH4CombustionEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>111.22</ghg:CalculatedValue>
        </ghg:TotalCH4CombustionEmissions>
        <ghg:TotalN2OCombustionEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>11.333</ghg:CalculatedValue>
        </ghg:TotalN2OCombustionEmissions>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting CEMS monitoring location and emissions details.

Figure 14
Tier 4 CEMS Quarter and Additional Details Schema Diagram
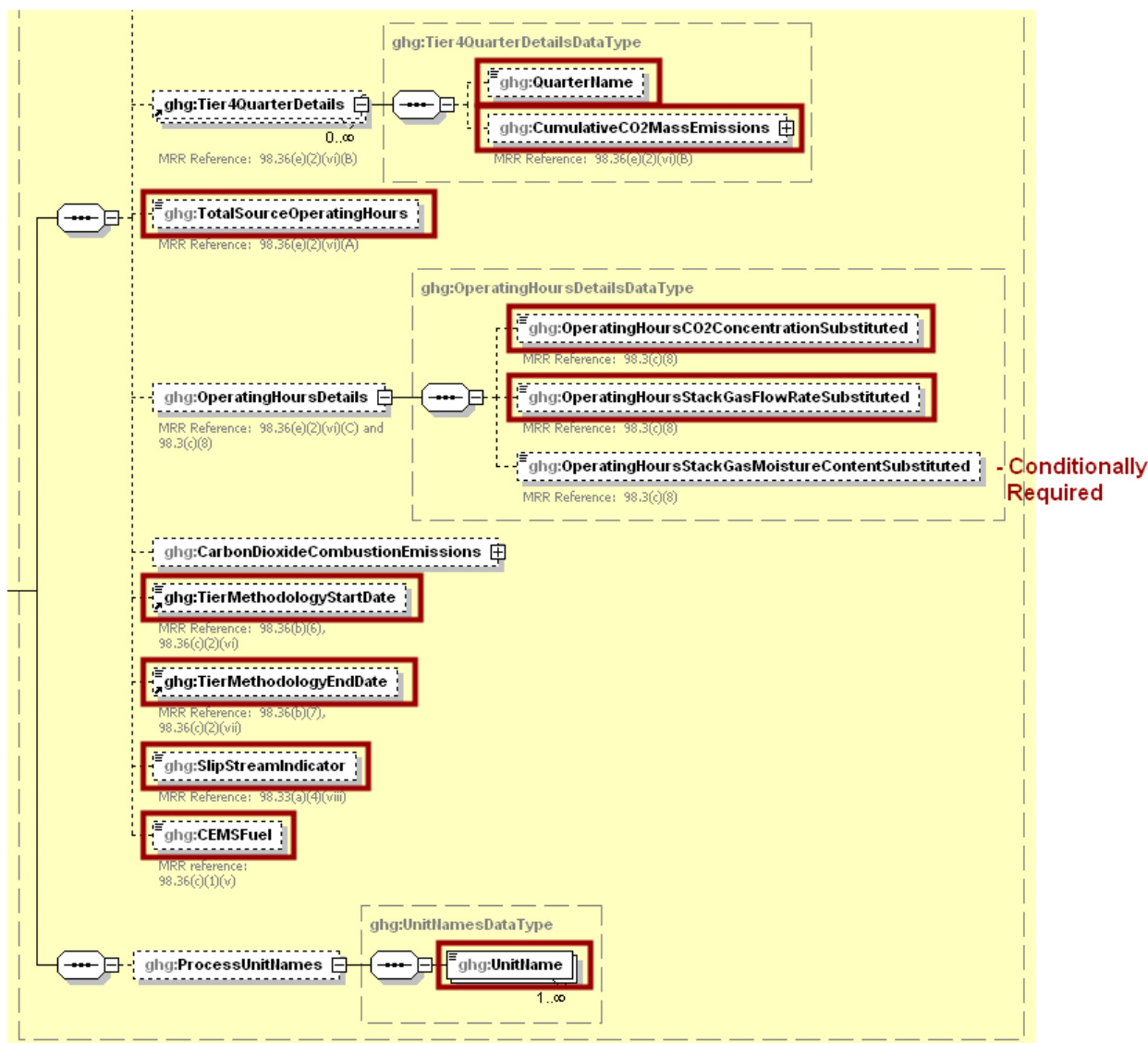
Note: Data elements boxed in red are required. Please see page 4 of this document
for more information on conditionally required elements.

For each quarter of the reporting year, the facility must provide the cumulative CO_2 mass emissions for each CML [98.36(e)(2)(vi)(B)].

The facility must provide the following additional information for each CML:
- The total number of source operating hours in the reporting year [98.36(e)(2)(vi)(A)]
- The total operating hours in which a substitute data value was used in the emissions calculations for the CO_2 concentration parameter [98.36(e)(2)(vi)(C), 98.3(c)(8)]
- The total operating hours in which a substitute data value was used in the emissions calculations for the stack gas flow rate parameter [98.36(e)(2)(vi)(C), 98.3(c)(8)]
- **Conditionally Required:** 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 [98.36(e)(2)(vi)(C), 98.3(c)(8)]

- The Tier 4 methodology start date [98.36(b)(6), 98.36(c)(2)(vi)]
- The Tier 4 methodology end date [98.36(b)(7), 98.36(c)(2)(vii)]
- Specify if emissions reported for the CEMS include emissions calculated according to 98.33(a)(4)(viii) for a slipstream that bypassed the CEMS [98.33(a)(4)(viii)]
- Each type of fuel combusted in the group of units during the reporting year [98.36(b)(4), 98.36(c)(2)(iv)]
- The name of each hydrogen production process unit sharing the stack. [98.166(a)(1)]
  Note: Use the same identification for each unit as was used for the parent element "CEMSHydrogenUnitDetails".

Table 10
Tier 4 CEMS Quarter and Additional Details Data Element Definitions

| Data Element Name	Description
Tier4QuarterDetails	**Parent Element**
QuarterName	The name of the quarter. See list of allowable values: First Quarter Second Quarter Third Quarter Fourth Quarter
CumulativeCO2MassEmissions	The cumulative CO_2 mass emissions for the specified CEMS monitoring location for the specified quarter of the reporting year. [98.36(e)(2)(vi)(B)] Report the value in the child data element **CalculatedValue**. Set the units of measure to "Metric Tons" in the attribute **massUOM**.
TotalSourceOperatingHours	The total number of source operating hours in the reporting year for the specified CEMS monitoring location. [98.36(e)(2)(vi)(A)]
OperatingHoursDetails	**Parent Element**
OperatingHoursCO2ConcentrationSubstituted	The total operating hours in which a substitute data value was used in the emissions calculations for the CO_2 concentration parameter at the specified CEMS monitoring location. [98.36(e)(2)(vi)(C), 98.3(c)(8)]
OperatingHoursStackGasFlowRateSubstituted	The total operating hours in which a substitute data value was used in the emissions calculations for the stack gas flow rate parameter at the specified CEMS monitoring location. [98.36(e)(2)(vi)(C), 98.3(c)(8)]
OperatingHoursStackGasMoistureContentSubstituted	**Conditionally Required:** 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 at the specified CEMS monitoring location. Otherwise do not include this data element in your XML file. [98.36(e)(2)(vi)(C), 98.3(c)(8)]

Data Element Name	Description
TierMethodologyStartDate	The tier methodology start date for the specified CEMS monitoring location (YYYY-MM-DD). [98.36(b)(6), 98.36(c)(2)(vi)]
TierMethodologyEndDate	The tier methodology end date for the specified CEMS monitoring location (YYYY-MM-DD). [98.36(b)(7), 98.36(c)(2)(vii)]
SlipStreamIndicator	An indication (Y/N) that the emissions reported for the CEMS include emissions calculated according to 98.33(a)(4)(viii) for a slipstream that bypassed the CEMS. [98.33(a)(4)(viii)]
CEMSFuel	Each type of fuel combusted in the group of units during the reporting year. [98.36(b)(4), 98.36(c)(2)(iv)]
ProcessUnitNames	**Parent Element:** A collection of data elements identifying each unit or furnace which was monitored at the specified CEMS monitoring location.
UnitName	The name of each hydrogen production process unit that is monitored at the specified CEMS Monitoring Location. [98.166(a)(1)] Report each unit separately. **Note:** Use the same identification for each unit as was used for the parent element "CEMSHydrogenUnitDetails".

XML Excerpt 6
Example for Tier 4 CEMS Quarter and Additional Details

```
<ghg:Tier4QuarterDetails>
        <ghg:QuarterName>First Quarter</ghg:QuarterName>
        <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>10000.6</ghg:CalculatedValue>
        </ghg:CumulativeCO2MassEmissions>
</ghg:Tier4QuarterDetails>
<ghg:Tier4QuarterDetails>
        <ghg:QuarterName>Second Quarter</ghg:QuarterName>
        <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>20000.3</ghg:CalculatedValue>
        </ghg:CumulativeCO2MassEmissions>
</ghg:Tier4QuarterDetails>
<ghg:Tier4QuarterDetails>
        <ghg:QuarterName>Third Quarter</ghg:QuarterName>
        <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>30000.5</ghg:CalculatedValue>
        </ghg:CumulativeCO2MassEmissions>
</ghg:Tier4QuarterDetails>
<ghg:Tier4QuarterDetails>
        <ghg:QuarterName>Fourth Quarter</ghg:QuarterName>
        <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>40000.2</ghg:CalculatedValue>
        </ghg:CumulativeCO2MassEmissions>
</ghg:Tier4QuarterDetails>
<ghg:TotalSourceOperatingHours>8400</ghg:TotalSourceOperatingHours>
<ghg:OperatingHoursDetails>
        <ghg:OperatingHoursCO2ConcentrationSubstituted>20</ghg:OperatingHoursCO2ConcentrationSubstituted>
        <ghg:OperatingHoursStackGasFlowRateSubstituted>30</ghg:OperatingHoursStackGasFlowRateSubstituted>
        <ghg:OperatingHoursStackGasMoistureContentSubstituted>40</ghg:OperatingHoursStackGasMoistureContentSubstituted>
</ghg:OperatingHoursDetails>
<ghg:TierMethodologyStartDate>2011-01-01</ghg:TierMethodologyStartDate>
<ghg:TierMethodologyEndDate>2011-12-31</ghg:TierMethodologyEndDate>
<ghg:SlipStreamIndicator>Y</ghg:SlipStreamIndicator>
<ghg:CEMSFuel>coal, coke, natural gas</ghg:CEMSFuel>
<ghg:ProcessUnitNames>
        <ghg:UnitName>002- CEMS</ghg:UnitName>
        <ghg:UnitName>003- CEMS</ghg:UnitName>
</ghg:ProcessUnitNames>
</ghg:Tier4CEMSDetails>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting Tier 4 CEMS details.

5.0 Non-CEMS Hydrogen Unit Details and Emissions

Conditionally Required: If a CEMS is not used to measure CO_2 emissions, then you must report the following information for each hydrogen production process unit:

- A unique name or identifier, an optional description and the unit type, "Hydrogen production process unit" for each unit [98.166(b)(1)].
- A unique name or identifier plus the phase for each fuel or feedstock. [98.166(b)(2)]
- Indicate if any monthly values used for your emissions calculation are based on substitute data values for each feedstock for each unit. For each month, indicate if:
  - Consumption is based on one or more substitute data values. [98.166(b)(2) and 98.3(c)(8)]
  - Carbon content is based on one or more substitute data values. [98.166(b)(5) and 98.3(c)(8)]
  - **Conditionally Required:** Molecular weight is based on one or more substitute data values (gaseous feedstock only). [98.166(b)(6) and 98.3(c)(8)]
- Annual quantity of hydrogen produced (metric tons) [98.166(b)(3)].
- Annual quantity of ammonia produced (metric tons) [98.166(b)(4)].
- Total annual CO_2 emissions for each feedstock processing unit [98.166(b)(1)]. The annual CO_2 emissions value for the unit is the sum of annual emissions associated with each fuel and feedstock calculated using the following equations:
  - For each gaseous fuel and feedstock, use Equation P-1 [98.163(b)(1)].
  - For each liquid fuel and feedstock, use Equation P-2 [98.163(b)(2)].
  - For each solid fuel and feedstock, use Equation P-3 [98.163(b)(3)].

Figure 15
Non-CEMS Hydrogen Unit Details and Emissions Schema Diagram
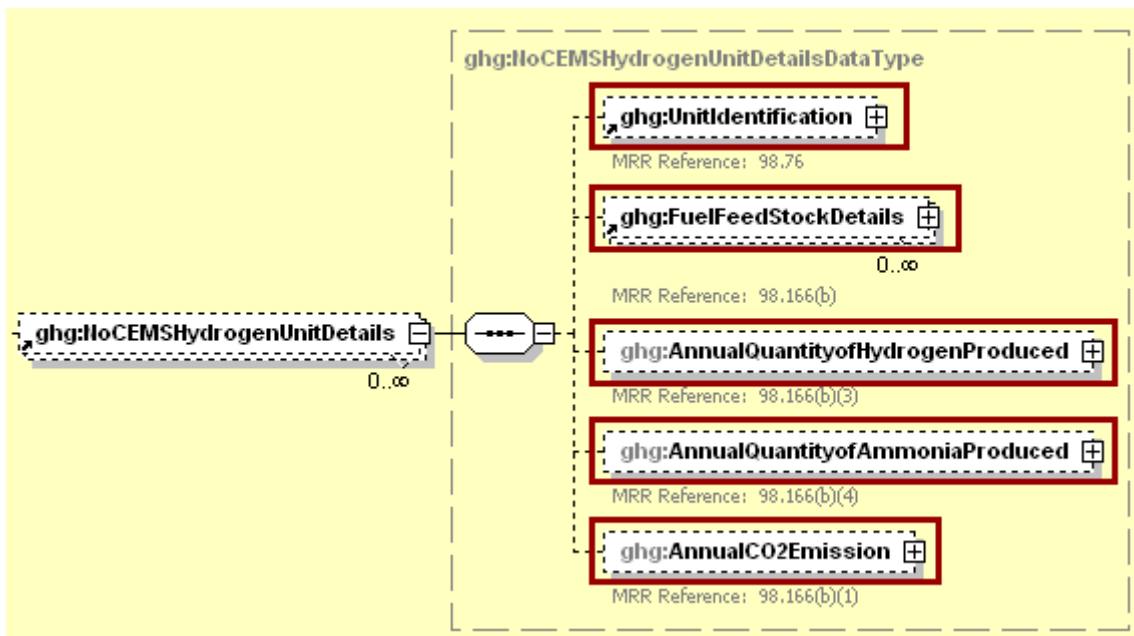
Note: Data elements boxed in red are required.

Figure 16
Fuel Feedstock Details Schema Diagram
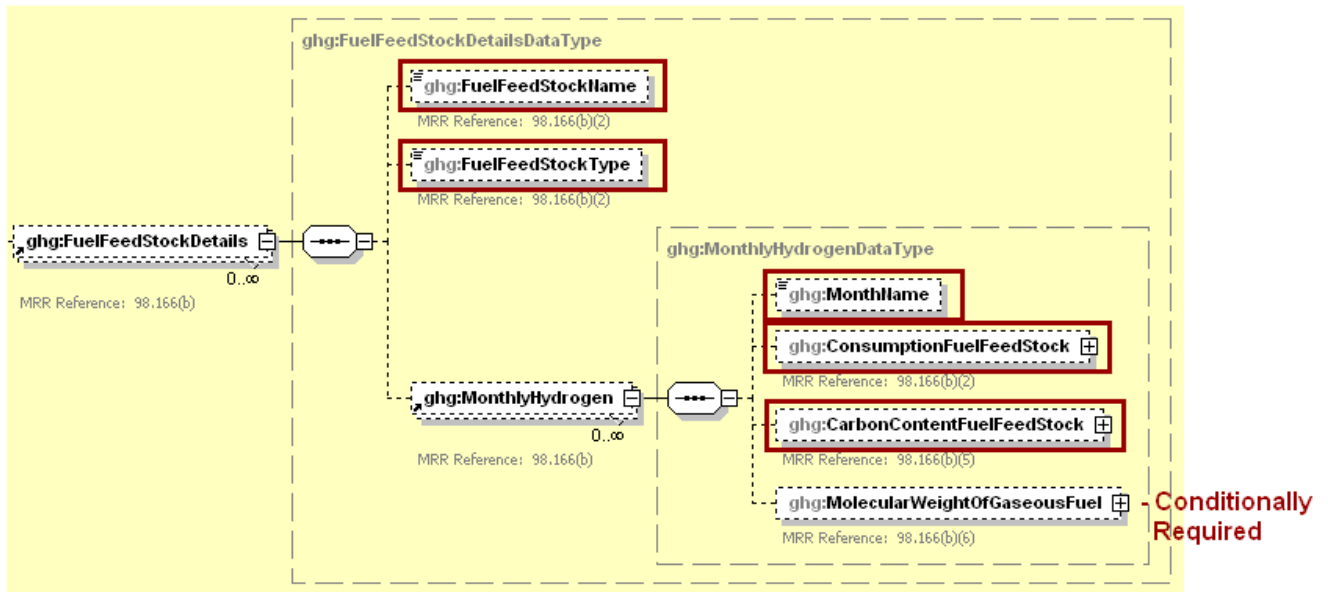
Note: Data elements boxed in red are required. Please see page 4 of this document
for more information on conditionally required elements.

Table 11
Non-CEMS Hydrogen Unit Details and Emissions Factors Data Element
Definitions

Data Element Name	Description
NoCEMSHydrogenUnitDetails	**Parent Element (Conditionally Required):** A collection of data elements containing details for units which were not monitored using a CEMS.
UnitIdentification	A collection of data elements containing the identity of each hydrogen production processing unit which was not monitored using a CEMS. [98.166(b)(1)] Report a unique unit name (ID) in the child data element **UnitName**, an optional brief description in the child data element **UnitDescription** and the type of unit in the child data element **UnitType**: "Hydrogen production process unit".
FuelFeedStockDetails	**Parent Element:** A collection of data elements containing information on each fuel and or feedstock used in the specified unit.
FuelFeedStockName	A name/description for each fuel/feedstock used in the specified hydrogen production process unit during the reporting year. [98.166(b)(2)]

Data Element Name	Description

FuelFeedStockType	The phase of the specified fuel/feedstock used in the specified hydrogen production process unit during the reporting year. [98.166(b)(2)] See list of allowable values:
	
	  gaseous feedstock
	  liquid feedstock
	  solid feedstock

MonthlyHydrogen	**Parent Element:** A collection of data elements containing information on whether substitute data values were used for data for the specified fuel/feedstock for the specified unit for each month.

MonthName	Month name. See list of allowable values:
	
	  January
	  February
	  March
	  April
	  May
	  June
	  July
	  August
	  September
	  October
	  November
	  December

ConsumptionFuelFeedStock	For the specified fuel/feedstock, indicate (Y/N) if the consumption for the specified month is based on one or more substitute data values in the child data element **IsSubstitutedIndicator**. [98.166(b)(2), 98.3(c)(8)]
CarbonContentFuelFeedStock	For the specified fuel/feedstock, indicate (Y/N) if the carbon content for the specified month is based on one or more substitute data values in the child data element **IsSubstitutedIndicator**. [98.166(b)(5), 98.3(c)(8)]
MolecularWeightOfGaseousFuel	**Conditionally Required:** For the specified fuel/feedstock, if of the gaseous phase, indicate (Y/N) if the molecular weight for the specified month is based on one or more substitute data values in the child data element **IsSubstitutedIndicator**. Otherwise do not include this data element in your XML file. [98.166(b)(6), 98.3(c)(8)]
AnnualQuantityofHydrogenProduced	A collection of data elements for the specified hydrogen production process unit containing information on the annual quantity of hydrogen produced. [98.166(b)(3)] Report the value in the child data element **MeasureValue**. Set the units of measure to "Metric Tons" in the attribute **massUOM**.
AnnualQuantityofAmmoniaProduced	A collection of data elements for the specified hydrogen production process unit containing information on the annual quantity of ammonia produced. [98.166(b)(4)] Report the value in the child data element **MeasureValue**. Set the units of measure to "Metric Tons" in the attribute **massUOM**.

Data Element Name	Description
AnnualCO2Emission	A collection of data elements for the total annual CO_2 emissions from the specified hydrogen production process unit. [98.166(b)(1)] Report the value in the child data element **CalculatedValue**. Set the units of measure to "Metric Tons" in the attribute **massUOM**.

XML Excerpt 7
Example for Non-CEMS Hydrogen Unit Details and Emissions

```xml
<ghg:NoCEMSHydrogenUnitDetails>
        <ghg:UnitIdentification>
                <ghg:UnitName>001- Non-CEMS</ghg:UnitName>
                <ghg:UnitDescription>Non-CEMS unit</ghg:UnitDescription>
                <ghg:UnitType>Hydrogen production process unit</ghg:UnitType>
        </ghg:UnitIdentification>
        <ghg:FuelFeedStockDetails>
                <ghg:FuelFeedStockName>Fuel A</ghg:FuelFeedStockName>
                <ghg:FuelFeedStockType>gaseous feedstock</ghg:FuelFeedStockType>
                <ghg:MonthlyHydrogen>
                        <ghg:MonthName>January</ghg:MonthName>
                        <ghg:ConsumptionFuelFeedStock>
                                <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndicator>
                        </ghg:ConsumptionFuelFeedStock>
                        <ghg:CarbonContentFuelFeedStock>
                                <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndicator>
                        </ghg:CarbonContentFuelFeedStock>
                        <ghg:MolecularWeightOfGaseousFuel>
                                <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndicator>
                        </ghg:MolecularWeightOfGaseousFuel>
                </ghg:MonthlyHydrogen>
                <ghg:MonthlyHydrogen>
                        <ghg:MonthName>February</ghg:MonthName>
                        <ghg:ConsumptionFuelFeedStock>
                                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
                        </ghg:ConsumptionFuelFeedStock>
                        <ghg:CarbonContentFuelFeedStock>
                                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
                        </ghg:CarbonContentFuelFeedStock>
                        <ghg:MolecularWeightOfGaseousFuel>
                                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
                        </ghg:MolecularWeightOfGaseousFuel>
                </ghg:MonthlyHydrogen>
                <ghg:MonthlyHydrogen>
                        <ghg:MonthName>March</ghg:MonthName>
                        <ghg:ConsumptionFuelFeedStock>
                                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
                        </ghg:ConsumptionFuelFeedStock>
                        <ghg:CarbonContentFuelFeedStock>
                                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
                        </ghg:CarbonContentFuelFeedStock>
                        <ghg:MolecularWeightOfGaseousFuel>
                                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
                        </ghg:MolecularWeightOfGaseousFuel>
                </ghg:MonthlyHydrogen>
        </ghg:FuelFeedStockDetails>
        <ghg:AnnualQuantityofHydrogenProduced massUOM="Metric Tons">
                <ghg:MeasureValue>1111.23654</ghg:MeasureValue>
        </ghg:AnnualQuantityofHydrogenProduced>
        <ghg:AnnualQuantityofAmmoniaProduced massUOM="Metric Tons">
                <ghg:MeasureValue>2222.25874</ghg:MeasureValue>
        </ghg:AnnualQuantityofAmmoniaProduced>
        <ghg:AnnuualCO2Emission massUOM="Metric Tons">
                <ghg:CalculatedValue>2500.5</ghg:CalculatedValue>
        </ghg:AnnualCO2Emission>
</ghg:NoCEMSHydrogenUnitDetails>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting non-CEMS hydrogen unit details and emissions.

6.0   Total CEMS Unit Production

Conditionally Required: If a CEMS is used to measure CO_2 emissions, then you must report the following information:

- Annual quantity of hydrogen produced (metric tons) for all CEMS process units combined [98.166(a)(2)].
- Annual quantity of ammonia produced (metric tons) for all CEMS process units combined [98.166(a)(3)].

Figure 17
Total CEMS Unit Production Schema Diagram
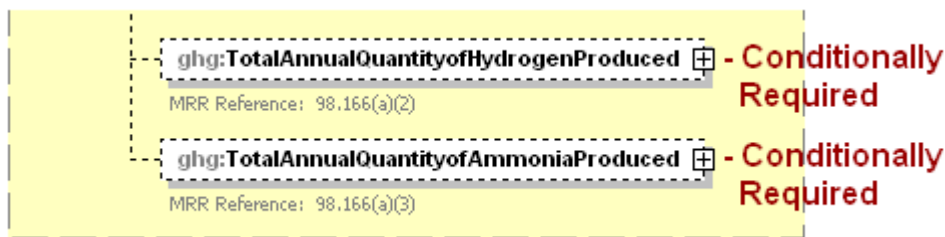
Note: Data elements boxed in red are required. Please see page 4 of this document for more information on conditionally required elements.

Table 12
Total CEMS Unit Production Data Element Definitions

Data Element Name	Description
TotalAnnualQuantityofHydrogen Produced	**Conditionally Required:** A collection of data elements containing the annual quantity of hydrogen produced by all units monitored by CEMS combined. [98.166(a)(2)] This data element is required if reporting CEMS unit(s). Otherwise do not include this data element in your XML file. Report the value in the child data element **MeasureValue**. Set the units of measure to "Metric Tons" in the attribute **massUOM**.
TotalAnnualQuantityofAmmonia Produced	**Conditionally Required:** A collection of data elements containing the annual quantity of ammonia produced by all units monitored by CEMS combined. [98.166(a)(3)] This data element is required if reporting CEMS unit(s). Otherwise do not include this data element in your XML file. Report the value in the child data element **MeasureValue**. Set the units of measure to "Metric Tons" in the attribute **massUOM**.

XML Excerpt 8
Example for Total CEMS Unit Production

```
<ghg:TotalAnnualQuantityofHydrogenProduced massUOM="Metric Tons">
        <ghg:MeasureValue>3333.87987</ghg:MeasureValue>
</ghg:TotalAnnualQuantityofHydrogenProduced>
<ghg:TotalAnnualQuantityofAmmoniaProduced massUOM="Metric Tons">
        <ghg:MeasureValue>4444.2349001</ghg:MeasureValue>
</ghg:TotalAnnualQuantityofAmmoniaProduced>
</ghg:SubPartP>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting total CEMS unit production.

7.0   Facility Level Roll-up Emissions

Each facility must report the following facility-level emission totals:
- Total CO_2 equivalent (CO_2e) emissions (excluding biogenic CO_2) aggregated across all direct emitter source categories (Subparts C-HH) associated with the facility.
- Total biogenic CO_2 emissions aggregated across all direct emitter source categories (Subparts C-HH) associated with the facility.

Each supplier must report the following supplier totals:
- Total CO_2e associated with products supplied aggregated across Subparts NN, OO and PP (as applicable). **Note:** Do not include Subpart LL and MM totals in this data element as these values are not being collected in e-GGRT.

Figure 18
Facility Level Roll-up Emissions Schema Diagram
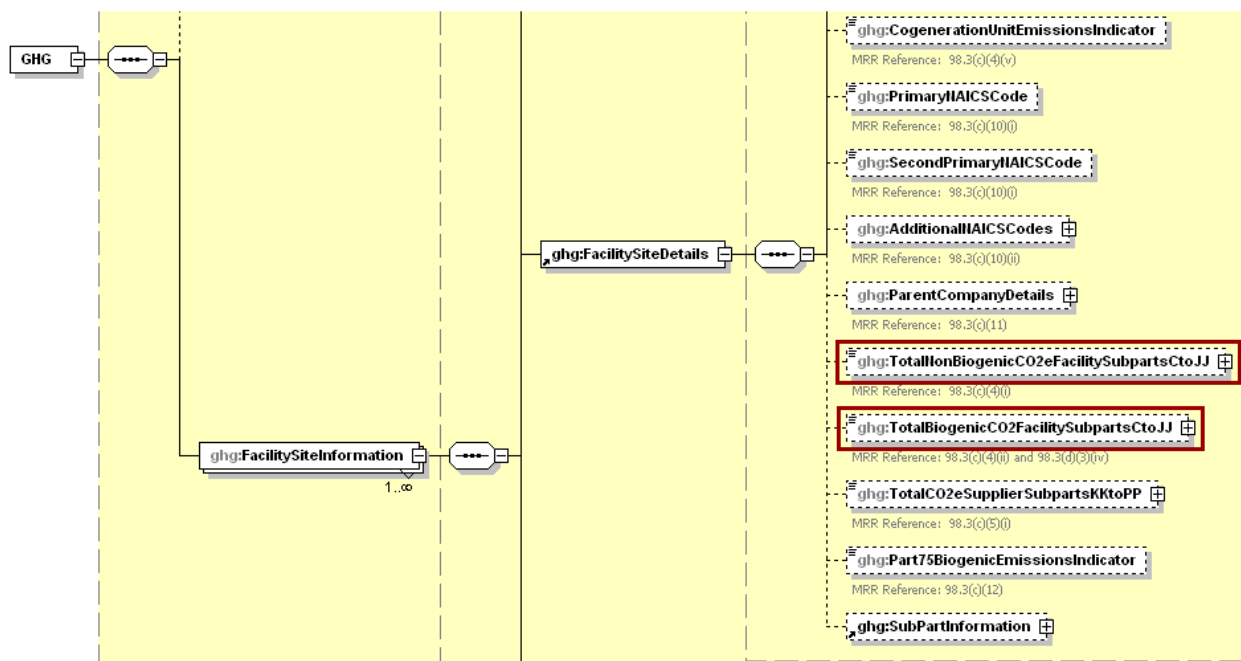
Note: Data elements boxed in red are required.

For Subpart P, report total emissions for CO_2e (excluding biogenic CO_2) and biogenic CO_2 using the following guidelines.

1) Add the total CO_2e value for Subpart P in metric tons to the total CO_2e emissions (excluding biogenic CO_2) aggregated across all source category Subparts associated with the facility as follows:

- Add the annual CO_2 emissions from each hydrogen processing unit in metric tons.
- Add the total annual CO_2 mass emissions measured by the CEMS in metric tons for each CEMS monitoring location (CML) minus the total annual biogenic CO_2 mass emissions in metric tons (the difference of the total CO_2 monitored by the CEMS and the total biogenic CO_2) for each CML.

2) Add the total annual biogenic CO_2 mass emissions in metric tons for each CML to the total biogenic CO_2 aggregated across all source category Subparts associated with the facility.

Note: You must follow the rounding rules found in Table 1.

Table 13
Facility Level Roll-up Emissions Data Element Definitions

Data Element Name	Description
TotalNonBiogenicCO2eFacilitySubpartsCtoJJ	Add the total CO_2e value for Subpart P in metric tons to the total CO_2e emissions (excluding biogenic CO_2) aggregated across all source category Subparts associated with the facility according to the guidelines above. [98.3(c)(4)(i)] Set the units of measure to "Metric Tons" in the attribute **massUOM**.
TotalBiogenicCO2FacilitySubpartsCtoJJ	Add the total annual biogenic CO_2 value for Subpart P in metric tons to the total biogenic CO_2 emissions aggregated across all source category Subparts associated with the facility according to the guideline above. [98.3(c)(4)(ii)] Set the units of measure to "Metric Tons" in the attribute **massUOM**.

XML Excerpt 9
Example for Facility Level Roll-up Emissions

```
<ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ massUOM="Metric Tons">102350.7</ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>
<ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ massUOM="Metric Tons">150.6</ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ>
```

**Note:** The code excerpt above is presented here to demonstrate the concept of reporting facility level roll-up emissions.

IV. Appendix A

Sample XML Document for Subpart P

(Note: Data values do not reflect an actual facility's emissions. Additional sample XML files for Subpart D are posted on the e-GGRT help site.
http://www.ccdsupport.com/confluence/display/help/Additional+XML+Examples)

```xml
<ghg:GHG xmlns="http://www.ccdsupport.com/schema/ghg">
  <ghg:FacilitySiteInformation>
    <ghg:CertificationStatement>The designated representative or alternate designated representative must sign (i.e., agree to) this certification statement. If you are an agent and you click on
"SUBMIT", you are not agreeing to the certification statement, but are submitting the certification statement on behalf of the designated  representative or alternate designated representative who
is agreeing to the certification statement. An agent is only authorized to make the electronic submission on behalf of the designated representative, not to sign (i.e., agree to) the certification
statement.</ghg:CertificationStatement>
    <ghg:ReportingYear>2011</ghg:ReportingYear>
    <ghg:FacilitySiteDetails>
        <ghg:FacilitySite>
                <ghg:FacilitySiteIdentifier>524097</ghg:FacilitySiteIdentifier>
                <ghg:FacilitySiteName>Test Facility P</ghg:FacilitySiteName>
        </ghg:FacilitySite>
        <ghg:LocationAddress>
                <ghg:LocationAddressText>1 Main St.</ghg:LocationAddressText>
                <ghg:LocalityName>Charlottesville</ghg:LocalityName>
                <ghg:StateIdentity>
                        <ghg:StateCode>VA</ghg:StateCode>
                </ghg:StateIdentity>
                <ghg:AddressPostalCode>22911</ghg:AddressPostalCode>
        </ghg:LocationAddress>
        <ghg:CogenerationUnitEmissionsIndicator>N</ghg:CogenerationUnitEmissionsIndicator>
        <ghg:PrimaryNAICSCode>325120</ghg:PrimaryNAICSCode>
        <ghg:ParentCompanyDetails>
                <ghg:ParentCompany>
                        <ghg:ParentCompanyLegalName>Soda Ash Corporation</ghg:ParentCompanyLegalName>
                        <ghg:StreetAddress>108 Hillcrest Street</ghg:StreetAddress>
                        <ghg:City>Sandpoint</ghg:City>
                        <ghg:State>ID</ghg:State>
                        <ghg:Zip>83864</ghg:Zip>
                        <ghg:PercentOwnershipInterest>100.0</ghg:PercentOwnershipInterest>
                </ghg:ParentCompany>
        </ghg:ParentCompanyDetails>
        <ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ massUOM="Metric Tons">102350.7</ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>
        <ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ massUOM="Metric Tons">150.6</ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ>
        <ghg:TotalCO2eSupplierSubpartsKKtoPP massUOM="Metric Tons">0</ghg:TotalCO2eSupplierSubpartsKKtoPP>
        <ghg:SubPartInformation>
                <ghg:SubPartP>
                        <ghg:GHGasInfoDetails>
                                <ghg:GHGasName>Biogenic Carbon dioxide</ghg:GHGasName>
                                <ghg:GHGasQuantity massUOM="Metric Tons">
```

```
                              <ghg:CalculatedValue>150.6</ghg:CalculatedValue>
                    </ghg:GHGasQuantity>
          </ghg:GHGasInfoDetails>
          <ghg:GHGasInfoDetails>
                    <ghg:GHGasName>Carbon Dioxide</ghg:GHGasName>
                    <ghg:GHGasQuantity massUOM="Metric Tons">
                              <ghg:CalculatedValue>102350.7</ghg:CalculatedValue>
                    </ghg:GHGasQuantity>
          </ghg:GHGasInfoDetails>
          <ghg:QuantityOfNonCarbonCO2CollectedTransferred massUOM="Kilograms">
                    <ghg:MeasureValue>10000.12345</ghg:MeasureValue>
          </ghg:QuantityOfNonCarbonCO2CollectedTransferred>
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