# Greenhouse Gas Reporting Program

# XML Reporting Instructions
# for Subpart G -
# Ammonia Manufacturing

United States Environmental Protection Agency
Climate Change Division
Washington, DC

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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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## 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 schema defines expected data elements and attributes, allowable data types for each element and the hierarchy and order in which elements must appear. 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, which are required and the maximum number of occurrences allowed for each element.

The e-GGRT XML schema is made up of a root element, complex elements and simple 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 element is the base of the XML schema.

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. If a complex element is dependent on a parent complex element, the child complex element cannot be included in the XML file unless the appropriate parent complex element is also included.

The XML upload method may be used only for submitting the annual GHG report. User and facility or supplier registration and the Certificate of Representation must be entered on-line using e-GGRT.

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

An XML submission can 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 lists of the units of measures for some data elements and allowable values for some data elements. For rules regarding the unit of measure or allowable values for a specific data element, please refer to the appropriate Data Elements table.

The e-GGRT XML Reporting Schema is available for download at the GHGRP web site here: http://www.epa.gov/climatechange/emissions/e-ggrt_xml.html. The zip file contains:

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

This document provides a step-by-step description of how to report data for Subpart G Ammonia Manufacturing and overall total Subpart G emissions for a facility using the XML schema. Please note the following:

- **Not all data elements included in the schema must be reported.** Required or relevant data components and data elements are boxed in red in the schema diagrams and listed in the tables. If a data element is not listed, it does not need to be reported (e.g., deferred data elements, the data element "IsConfidentialBusinessInformationIndicator"). Some data elements are conditional and only need to be reported if they are relevant to the reporting facility.

- **Enumerations are case sensitive.** Values must be entered exactly as they are displayed in order to be accepted by schema validation.
- **Data elements must be reported in a specific order.** The figures and tables in this document depict the specific order in which data elements must be reported in order to produce a well-formed XML report.
- **Data elements for calculated and measured values are not displayed in the schema diagrams.** The parent elements for calculated and measured values are displayed in the schema diagrams in this document, but the specific data elements to be reported are not displayed. The descriptions in the XML data elements tables include the specific data elements to report, which are commonly the calculated or measured value and the unit of measure. For some values, the number of times substitute data procedures were used may also be required. See Figure 1 for the expanded view of a sample data element which is a calculated value and Figure 2 for the expanded view of a sample data element which is a measured value.

**Figure 1**
**Sample Calculated Value Schema Diagram**
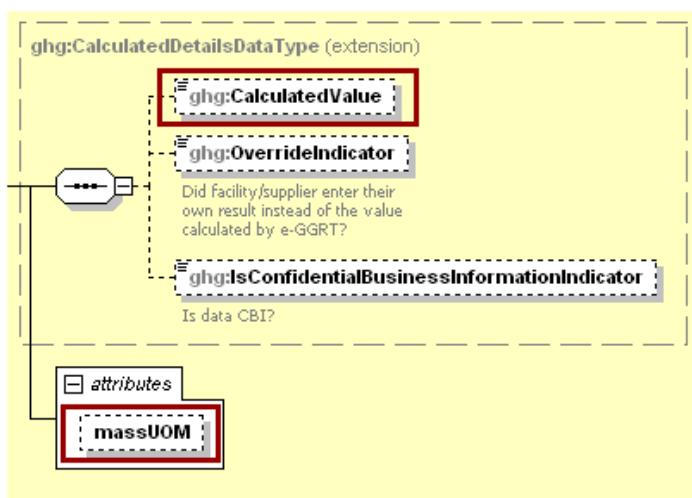


**Figure 2**
**Sample Measured Value Schema Diagram**
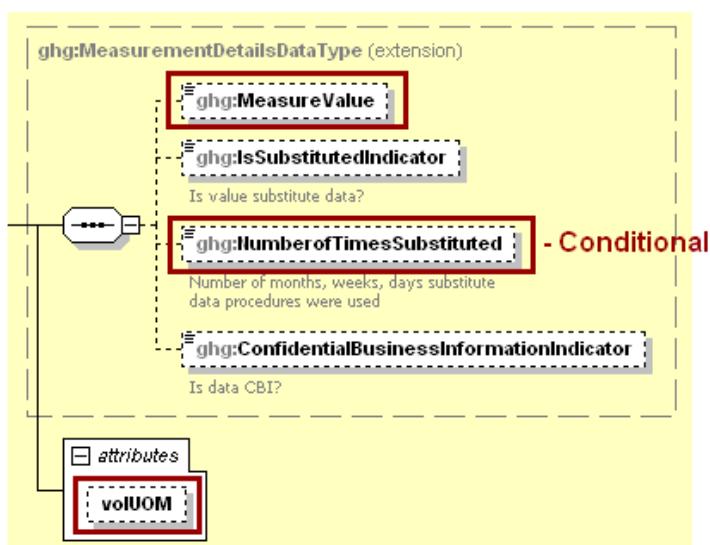
**Figure 3**
**Subpart G Reporting Diagram**
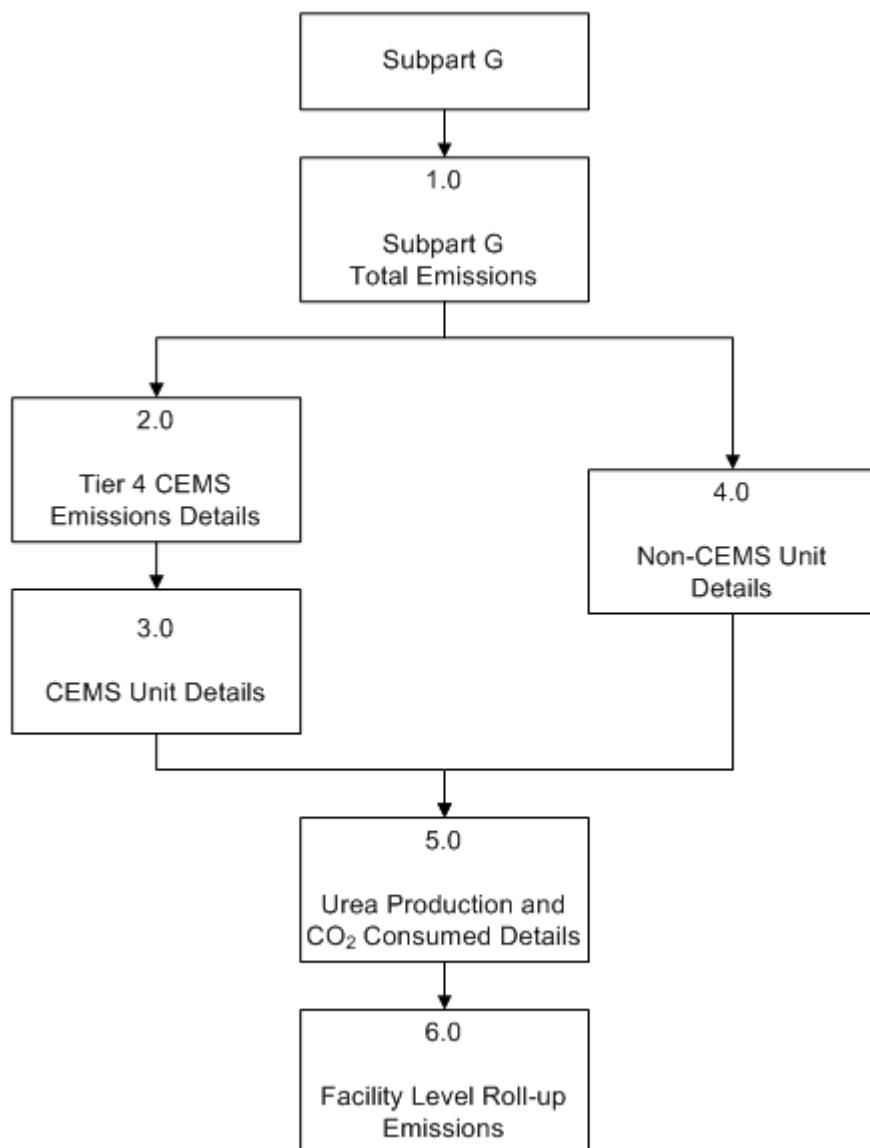


The XML schema includes the following areas for reporting for Subpart G as shown in Figure 3:

1.0 Subpart G Total Emissions:  includes the total (CO2) emissions for greenhouse gases required to be reported.

2.0 Tier 4 CEMS Emissions Details:  includes information on each continuous emission monitoring system *(*CEMS) monitoring location (CML) and emissions (CO2, CH4, N2O, and biogenic CO2) details.

3.0 CEMS Unit Details:  includes information on unit identification and feedstock details if using CEMS.

4.0 Non-CEMS Unit and Emissions Details:  includes information on unit identification, emissions, monthly feedstock details and carbon content of feedstock if not using CEMS.

5.0 Urea Production and $CO_2$ Consumed Details:  includes annual urea produced, $CO_2$ consumed, and method details.

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

The following terminology is used throughout this document:

- Namespace: A namespace uniquely identifies a set of names such that there is no ambiguity when objects having different origins but the same names are mixed together.
- Markup Language: A way to combine text and extra information to show the structure and layout of a document. This information is expressed using markup, which is typically intermingled with the primary text. A commonly known markup language is HTML.
- 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. An XML schema defines the set of rules to which the XML document must conform in order to be considered "valid" according to its schema. An instance of an XML schema is an XML schema document and is a file with the extension .xsd.
- XML Document: An XML document is a file containing data organized into a structured document using XML markup. An XML document is considered to be "well-formed" if it conforms to all XML syntax rules. An XML document is considered to be "valid" if it conforms to all the semantic rules defined by an associated XML schema. An XML document cannot be processed if it is not well-formed or valid. XML documents have the file extension .xml.
- XML Element: An XML element is a unit of the XML document that is expressed as tags in the form "<tagname>." XML elements must have either a start and end tag as in <ghg:GHGasInfoDetails> </ghg:GHGasInfoDetails> or a single empty tag name as in <ghg:GHGasInfoDetails/>. XML elements may be nested within one another in a structured hierarchy and sequence specified in an XML schema.
- XML Attribute: An XML attribute contains additional information about an XML element placed at the start tag of the XML element. XML attributes have the form attributeName = "attributeValue," as in <ghg:GHGasQuantity massUOM="Metric Tons">. XML attributes are used to report identifying information or to help e-GGRT process the data being reported within the data elements.

Rounded results from calculated values should be reported in the XML schema. Please use the following rounding rules:

1) $CO_2e$ and $CO_2$ quantity 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., product-level, supplier-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.
2) $CH_4$ emissions data expressed in metric tons should be rounded to two decimal places.
3) $N_2O$ emissions data expressed in metric tons should be rounded to three decimal places.
4) Emissions data for all GHGs other than $CO_2$, $N_2O$, and $CH_4$ expressed in metric tons should be rounded to the fourth digit to the right of the decimal (one tenth of a kilogram, or 1 ten thousandth of a metric ton). This rounding should be applied regardless of the level of data collection (unit, facility, etc.).
5) 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.
6) In the case of aggregation/roll-ups, those calculations should be performed on the rounded values.

**Figure 4**
**Subpart G Schema Diagram**
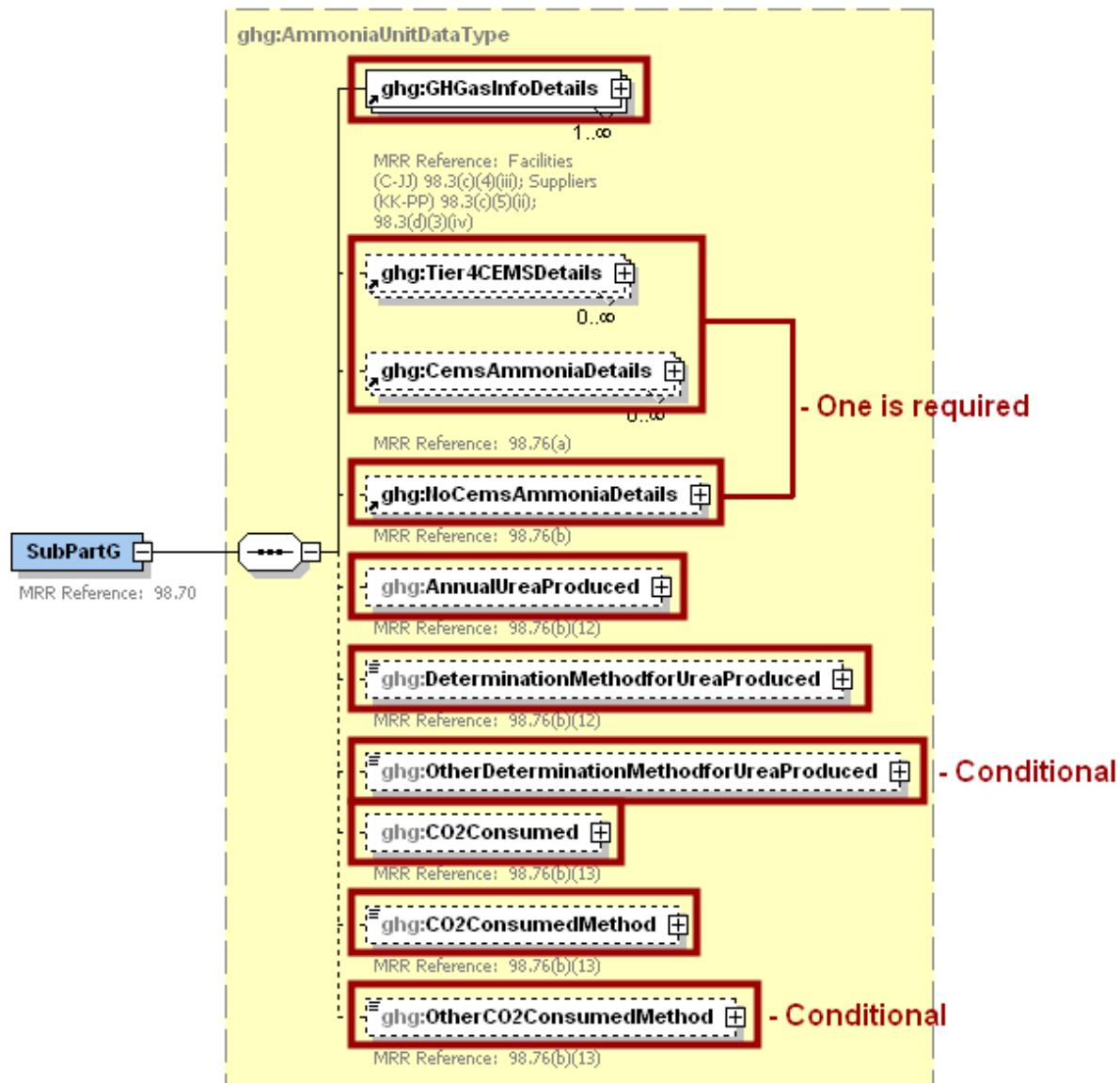
## 1.0 Subpart G Total Emissions

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 the Mandatory Reporting of GHG, Part 98, reported under Subpart G, expressed in metric tons.

**Figure 5**
**Greenhouse Gas Information Details Schema Diagram**

ghg:GHGasInfoDetailsDataType

GHGasInfoDetails

MRR Reference: Facilities
(C-JJ) 98.3(c)(4)(iii);
Suppliers (KK-PP)
98.3(c)(5)(ii); 98.3(d)(3)(iv)

ghg:GHGasName

ghg:OtherGHGasName
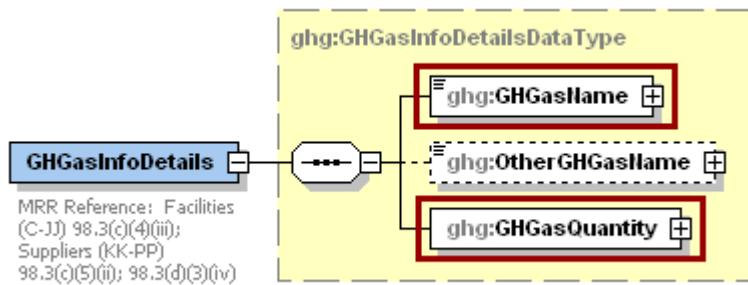
ghg:GHGasQuantity

For Subpart G, report total emissions for carbon dioxide (excluding biogenic $CO_2$), biogenic carbon dioxide ($CO_2$), methane ($CH_4$), and nitrous oxide ($N_2O$). For greenhouse gas quantity, report the calculated value and mass unit of measure (metric tons) only according to the following guidelines:

- For carbon dioxide, report the sum of the following:
  - The total annual $CO_2$ emissions from gaseous, liquid and solid feedstock consumption in metric tons rounded to one decimal place for each non-CEMS unit.
  - The total annual $CO_2$ mass emissions measured by the CEMS in metric tons rounded to one decimal place minus the total annual biogenic $CO_2$ mass emissions in metric tons rounded to one decimal place (the difference of the total $CO_2$ monitored by the CEMS and the total biogenic $CO_2$) for each CEMS monitoring location (CML).
- For biogenic carbon dioxide, report the sum of the total annual biogenic $CO_2$ mass emissions in metric tons rounded to one decimal place for each CML.
- For methane, report the sum of the total $CH_4$ emissions in metric tons rounded to two decimal places for each CML.
- For nitrous oxide, report the sum of the total $N_2O$ emissions in metric tons rounded to three decimal places for each CML.

**Table 1**
**Greenhouse Gas Information Details XML Data Elements**

| Data Element Name | Description |
| --- | --- |
| GHGasInfoDetails | A collection of data elements containing the total annual emissions of each greenhouse gas (GHG) listed in Table A-1 of the Mandatory Reporting of GHG, Part 98 reported under this subpart, expressed in metric tons. |
| GHGasName | Specify the name of the greenhouse gas.  See list of allowable values:<br><br>  Carbon Dioxide<br>  Biogenic Carbon dioxide<br>  Methane<br>  Nitrous Oxide |
| GHGasQuantity | A collection of data elements that quantify the annual emissions from this source category.  Report the calculated value only according to the guidelines above.. |
| GHGasQuantity.massUOM | Metric Tons |

**Figure 6**
**Sample XML Excerpt for Greenhouse Gas Information Details**

```
<ghg:SubPartG>
    <ghg:GHGasInfoDetails>
        <ghg:GHGasName>Biogenic Carbon dioxide</ghg:GHGasName>
        <ghg:GHGasQuantity massUOM="Metric Tons">
            <ghg:CalculatedValue>500.8</ghg:CalculatedValue>
        </ghg:GHGasQuantity>
    </ghg:GHGasInfoDetails>
    <ghg:GHGasInfoDetails>
        <ghg:GHGasName>Methane</ghg:GHGasName>
        <ghg:GHGasQuantity massUOM="Metric Tons">
            <ghg:CalculatedValue>400.88</ghg:CalculatedValue>
        </ghg:GHGasQuantity>
    </ghg:GHGasInfoDetails>
    <ghg:GHGasInfoDetails>
        <ghg:GHGasName>Nitrous Oxide</ghg:GHGasName>
        <ghg:GHGasQuantity massUOM="Metric Tons">
            <ghg:CalculatedValue>40.888</ghg:CalculatedValue>
        </ghg:GHGasQuantity>
    </ghg:GHGasInfoDetails>
    <ghg:GHGasInfoDetails>
        <ghg:GHGasName>Carbon Dioxide</ghg:GHGasName>
        <ghg:GHGasQuantity massUOM="Metric Tons">
            <ghg:CalculatedValue>49867.5</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 Tier 4 CEMS Emissions Details

This section provides a description of how to report Subpart G information for CEMS monitoring locations.

**Figure 7**
**Tier 4 CEMS Details Schema Diagram**
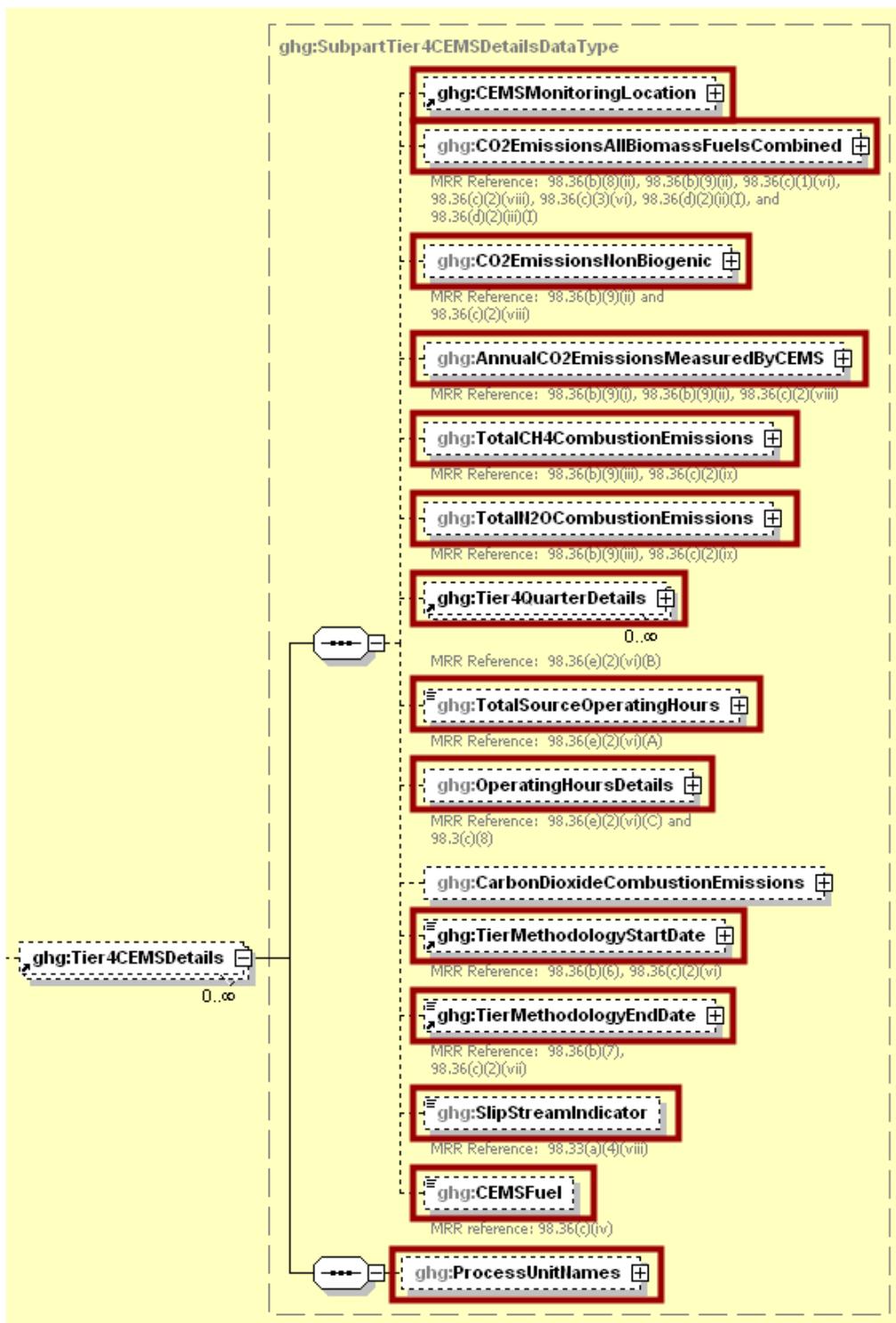
For subpart G, information on each CEMS monitoring location (CML) is required including:

- A unique unit name or identifier for the CML.
- An optional description or label for the CML.
- The configuration of processes or process units that are monitored by the CML from the following list:

  o Single industrial process or process unit that exhausts to a dedicated stack.
  o Multiple industrial processes or process units which share a common stack.
  o Industrial process or process unit which shares a common stack with one or more stationary fuel combustion units.

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

- The total annual $CO_2$ emissions from the combustion of all biomass fuels combined if biomass fuels are combusted in the configuration [98.36(b)(8)(ii)].
- The total annual non-biogenic $CO_2$ emissions (i.e. $CO_2$ emissions from fossil fuels, sorbent use, and process $CO_2$ emissions) [98.36(b)(9)(ii)].
- The total annual $CO_2$ emissions measured by the CEMS [98.36(b)(9)(i)-(ii)].
- The total annual $CH_4$ 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 [98.36(b)(9)(iii), 98.36(c)(2)(ix)].
- The total annual $N_2O$ 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 [98.36(b)(9)(iii), 98.36(c)(2)(ix)].

**Figure 8**
**Tier 4 CML and Emissions Details Schema Diagram**

**Table 2**
**Tier 4 CML and Emissions Details XML Data Elements**

| Data Element Name | Description |
|---|---|
| Tier4CEMSDetails | A collection of data elements containing information on emissions from combustion sources monitored with Tier 4 CEMS methodology. |
| CEMSMonitoringLocation | A collection of data elements containing information on each CEMS monitoring location (CML).  It includes the name, an optional description, and the configuration type. See the list of allowable configuration types:<br><br>Single process/process unit exhausts to dedicated stack Multiple processes/process units share common stack Process/stationary combustion units share common stack |
| CO2EmissionsAllBiomassFuelsCombined | A collection of data elements containing information on the total annual biogenic $CO_2$ mass emissions for the CML. Report the calculated value and mass unit of measure only. |
| CO2EmissionsAllBiomassFuelsCombined.massUOM | Metric Tons |
| CO2EmissionsNonBiogenic | A collection of data elements containing information on the total annual non-biogenic $CO_2$ mass emissions for the CML.  Report the calculated value and mass unit of measure only. |
| CO2EmissionsNonBiogenic.massUOM | Metric Tons |
| AnnualCO2EmissionsMeasuredByCEMS | A collection of data elements containing information on the total annual $CO_2$ mass emissions measured by the CEMS at the monitoring location.  Report the calculated value and mass unit of measure only. |
| AnnualCO2EmissionsMeasuredByCEMS.massUOM | Metric Tons |
| TotalCH4CombustionEmissions | A collection of data elements containing information on the annual $CH_4$ mass emissions for the specified fuel combusted in the CML configuration during the reporting year calculated using Equation C-10 expressed in mass of $CH_4$.  Report the calculated value and mass unit of measure only. |
| TotalCH4CombustionEmissions.massUOM | Metric Tons |
| TotalN2OCombustionEmissions | A collection of data elements containing information on the annual $N_2O$ mass emissions for the specified fuel combusted in the CML configuration during the reporting year calculated using Equation C-10 expressed in mass of $N_2O$.  Report the calculated value and mass unit of measure only. |
| TotalN2OCombustionEmissions.massUOM | Metric Tons |

**Figure 9**
**Sample XML Excerpt for Tier 4 CML and Emissions Details**

```xml
<ghg:Tier4CEMSDetails>
    <ghg:CEMSMonitoringLocation>
        <ghg:Name>CML-A</ghg:Name>
        <ghg:Description>CEMS Monitoring Location A</ghg:Description>
        <ghg:Type>Process/stationary combustion units share common stack</ghg:Type>
    </ghg:CEMSMonitoringLocation>
    <ghg:CO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
        <ghg:CalculatedValue>500.5</ghg:CalculatedValue>
    </ghg:CO2EmissionsAllBiomassFuelsCombined>
    <ghg:CO2EmissionsNonBiogenic massUOM="Metric Tons">
        <ghg:CalculatedValue>10610.1</ghg:CalculatedValue>
    </ghg:CO2EmissionsNonBiogenic>
    <ghg:AnnualCO2EmissionsMeasuredByCEMS massUOM="Metric Tons">
        <ghg:CalculatedValue>11110.1</ghg:CalculatedValue>
    </ghg:AnnualCO2EmissionsMeasuredByCEMS>
    <ghg:TotalCH4CombustionEmissions massUOM="Metric Tons">
        <ghg:CalculatedValue>400.44</ghg:CalculatedValue>
    </ghg:TotalCH4CombustionEmissions>
    <ghg:TotalN2OCombustionEmissions massUOM="Metric Tons">
        <ghg:CalculatedValue>40.444</ghg:CalculatedValue>
    </ghg:TotalN2OCombustionEmissions>
```

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

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) and 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) and 98.3(c)(8)].
- 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) and 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(c)(1)(v)].
- An indication of the process units monitored by the CML.

**Figure 10**
**Tier 4 CML Quarter and Additional Details Schema Diagram**
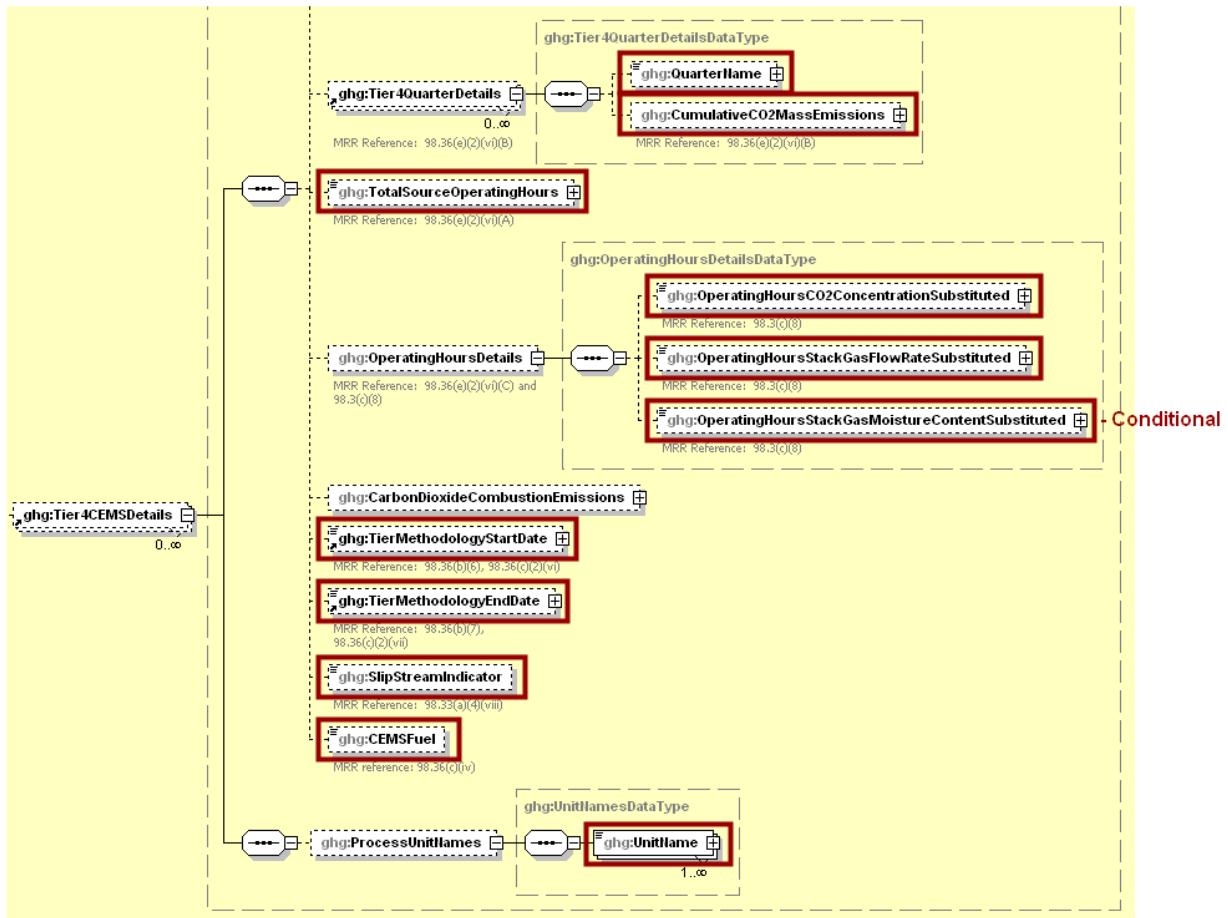


**Table 3**
**Tier 4 CML Quarter and Additional Details XML Data Elements**

| Data Element Name | Description |
|---|---|
| Tier4QuarterDetails | A collection of data elements containing Tier 4 quarterly information. |
| QuarterName | The name of the quarter.  See list of allowable values:<br><br>First Quarter<br>Second Quarter<br>Third Quarter<br>Fourth Quarter |
| CumulativeCO2MassEmissions | A collection of data elements containing information on the cumulative $CO_2$ mass emissions for the specified quarter of the reporting year.  Report the calculated value only. |
| CumulativeCO2MassEmissions.massUOM | Metric Tons |

| Data Element Name | Description |
|---|---|
| TotalSourceOperatingHours | The total number of source operating hours in the reporting year. |
| OperatingHoursDetails | A collection of data elements containing information on the number of operating hours in which substitute data values were used. |
| OperatingHoursCO2ConcentrationSubstituted | The total operating hours in which a substitute data value was used in the emissions calculations for the $CO_2$ concentration parameter. |
| OperatingHoursStackGasFlowRateSubstituted | The total operating hours in which a substitute data value was used in the emissions calculations for the stack gas flow rate parameter. |
| OperatingHoursStackGasMoistureContentSubstituted | 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. |
| TierMethodologyStartDate | The tier methodology start date for the specified CEMS monitoring location. |
| TierMethodologyEndDate | The tier methodology end date for the specified CEMS monitoring location. |
| 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. |
| CEMSFuel | Each type of fuel combusted in the group of units during the reporting year. |
| ProcessUnitNames | A collection of data elements identifying each ammonia manufacturing process unit which was monitored at the specified CEMS monitoring location. |
| UnitName | The unit ID for each ammonia manufacturing process unit which was monitored at the specified CEMS monitoring location. |

**Figure 11**
**Sample XML Excerpt for Tier 4 CML Quarter and Additional Details**

```xml
<ghg:Tier4QuarterDetails>
        <ghg:QuarterName>First Quarter</ghg:QuarterName>
        <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>1111.1</ghg:CalculatedValue>
        </ghg:CumulativeCO2MassEmissions>
</ghg:Tier4QuarterDetails>
<ghg:Tier4QuarterDetails>
        <ghg:QuarterName>Second Quarter</ghg:QuarterName>
        <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>2222.2</ghg:CalculatedValue>
        </ghg:CumulativeCO2MassEmissions>
</ghg:Tier4QuarterDetails>
<ghg:Tier4QuarterDetails>
        <ghg:QuarterName>Third Quarter</ghg:QuarterName>
        <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>3333.3</ghg:CalculatedValue>
        </ghg:CumulativeCO2MassEmissions>
</ghg:Tier4QuarterDetails>
<ghg:Tier4QuarterDetails>
        <ghg:QuarterName>Fourth Quarter</ghg:QuarterName>
        <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>4444.4</ghg:CalculatedValue>
        </ghg:CumulativeCO2MassEmissions>
</ghg:Tier4QuarterDetails>
<ghg:TotalSourceOperatingHours>7300</ghg:TotalSourceOperatingHours>
<ghg:OperatingHoursDetails>
        <ghg:OperatingHoursCO2ConcentrationSubstituted>50</ghg:OperatingHoursCO2ConcentrationSubstituted>
        <ghg:OperatingHoursStackGasFlowRateSubstituted>60</ghg:OperatingHoursStackGasFlowRateSubstituted>
        <ghg:OperatingHoursStackGasMoistureContentSubstituted>70</ghg:OperatingHoursStackGasMoistureContentSubstituted>
</ghg:OperatingHoursDetails>
<ghg:TierMethodologyStartDate>2010-01-01</ghg:TierMethodologyStartDate>
<ghg:TierMethodologyEndDate>2010-12-31</ghg:TierMethodologyEndDate>
<ghg:SlipStreamIndicator>Y</ghg:SlipStreamIndicator>
<ghg:CEMSFuel>coal, coke, natural gas</ghg:CEMSFuel>
<ghg:ProcessUnitNames>
        <ghg:UnitName>004- CEMS</ghg:UnitName>
        <ghg:UnitName>005- CEMS</ghg:UnitName>
        <ghg:UnitName>006- CEMS</ghg:UnitName>
</ghg:ProcessUnitNames>
</ghg:Tier4CEMSDetails>
```

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

## 3.0 CEMS Unit Details

This section describes unit information that must be reported for ammonia manufacturing process units if a continuous emissions monitoring system (CEMS) was in use during the reporting year.

**Figure 12**
**CEMS Unit Details Schema Diagram**
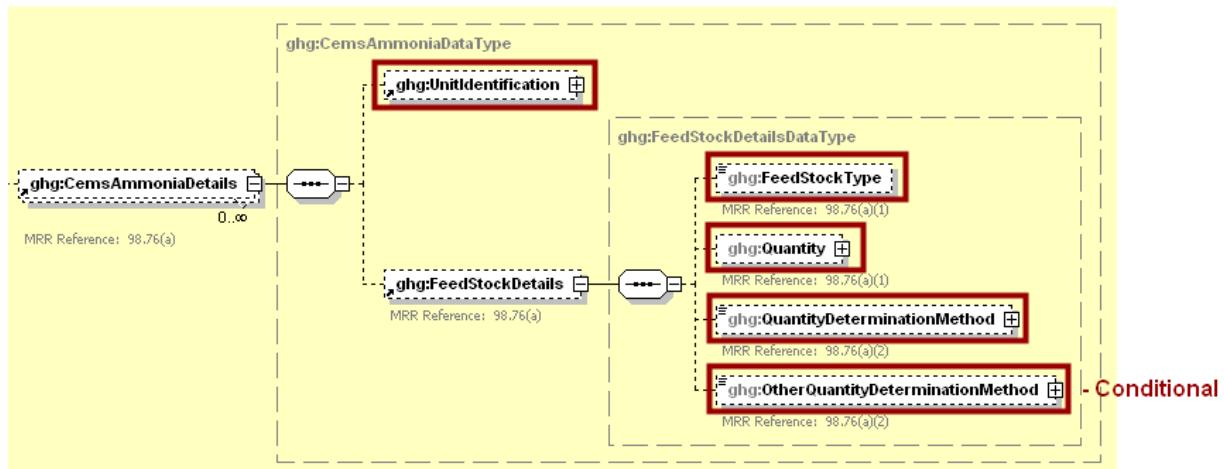


Subpart G requires the following identification information for each ammonia manufacturing process unit that had emissions monitored using a CEMS:

- A unique unit name or identifier (e.g., a unit ID number).
- An optional unit description or label.
- The type of unit:  "Ammonia Manufacturing Process Unit".

For each ammonia manufacturing process unit monitored by CEMS in your facility, Subpart G requires you to report the following information:

- The feedstock type used by the unit (gaseous, liquid, or solid).
- The quantity of feedstock consumed in the reporting year for the ammonia manufacturing unit [98.76(a)(1)].
- The method used for determining the quantity of feedstock consumed [98.76(a)(2)].

**Table 4**
**CEMS Unit Details XML Data Elements**

| Data Element Name | Description |
|---|---|
| CemsAmmoniaDetails | A collection of data elements containing information on ammonia manufacturing process units monitored using CEMS. |
| UnitIdentification | A collection of data elements that identify a specific ammonia manufacturing process unit. It includes the unit ID, an optional description, and the type of unit: "Ammonia Manufacturing Process Unit". (Use the same unit ID as was used for UnitName in ProcessUnitNames.) |
| FeedStockDetails | A collection of data elements containing information on the type of feedstock used by the specified unit.<br><br>**Note:** If the specified unit consumed more than one type of feedstock in the 2010 reporting year, then report the first type using the data elements described below. Report details regarding additional feedstock types consumed using data element "UnitDescription". This is the only location where this information can be reported. Please specify each additional type of feedstock consumed, the quantity (and unit of measure), and the quantity determination method used. |
| FeedStockType | Type of ammonia manufacturing feedstock consumed by the specified unit. See list of allowable values:<br><br>Gas<br>Liquid<br>Solid |
| Quantity | A collection of data elements containing information on the annual quantity of the specified feedstock consumed. Report the measured value and mass (for solid feedstock) or volume (for gaseous or liquid feedstock) unit of measure only. |
| Quantity.massUOM | Kilograms |
| Quantity.volUOM | scf (if reporting for gaseous feedstock) or Gallons (if reporting for liquid feedstock) |
| QuantityDeterminationMethod | The method used for determining quantity of feedstock. See list of allowable values:<br><br>Flow meter<br>Other |
| OtherQuantityDeterminationMethod | The method used for determining quantity of feedstock if not on the list for QuantityDeterminationMethod. |

**Figure 13**
**Sample XML Excerpt for CEMS Unit Details**

```xml
<ghg:CemsAmmoniaDetails>
        <ghg:UnitIdentification>
                <ghg:UnitName>006- CEMS</ghg:UnitName>
                <ghg:UnitDescription>Unit monitored by CEMS</ghg:UnitDescription>
                <ghg:UnitType>Ammonia Manufacturing Process Unit</ghg:UnitType>
        </ghg:UnitIdentification>
        <ghg:FeedStockDetails>
                <ghg:FeedStockType>Solid</ghg:FeedStockType>
                <ghg:Quantity massUOM="Kilograms">
                        <ghg:MeasureValue>33333</ghg:MeasureValue>
                </ghg:Quantity>
                <ghg:QuantityDeterminationMethod>Other</ghg:QuantityDeterminationMethod>
                <ghg:OtherQuantityDeterminationMethod>mass determination method A
                </ghg:OtherQuantityDeterminationMethod>
        </ghg:FeedStockDetails>
</ghg:CemsAmmoniaDetails>
```

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

## 4.0 Non-CEMS Unit and Emissions Details

This section describes information that must be reported for units which were not monitored by CEMS during the reporting year.

**Figure 14**
**Non-CEMS Unit Details Schema Diagram**
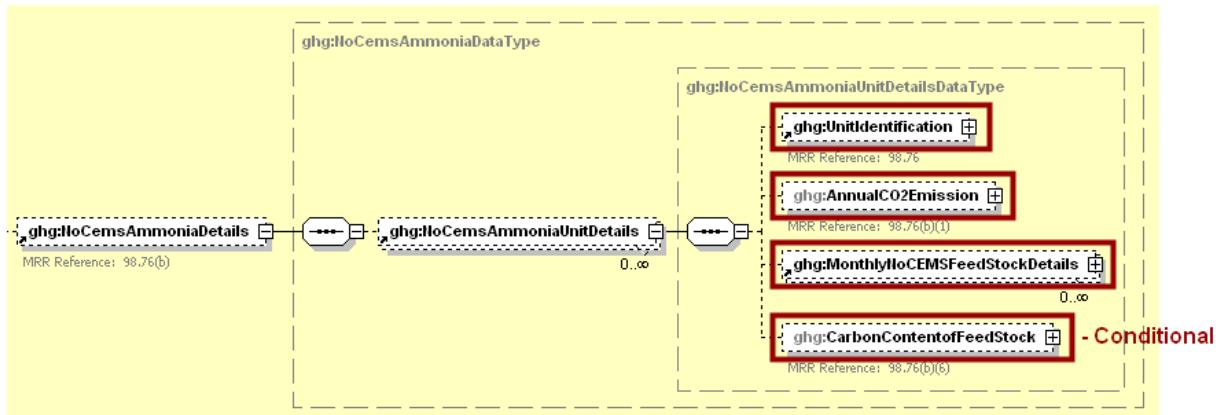


Subpart G requires the following identification information for each ammonia manufacturing process unit which was not monitored by CEMS:

- A unique unit name or identifier (e.g., a unit ID number).
- An optional unit description or label.
- The type of unit: "Ammonia Manufacturing Process Unit".

Subpart G requires a facility to report annual $CO_2$ process emissions from each process unit used to produce ammonia. To calculate the annual $CO_2$ emissions from each process unit, use one of the following equations based on the type of unit feedstock:

- Equation G-1 for gaseous feedstock [98.73(b)(1)].
- Equation G-2 for liquid feedstock [98.73(b)(2)].
- Equation G-3 for solid feedstock [98.73(b)(3)].

Users may use different equations for different process units as required by the feedstock type for each unit and may use more than one equation for a process unit if the unit has more than one type of feedstock.

**Figure 15**
**Non-CEMS Unit Identification and Emissions Schema Diagram**
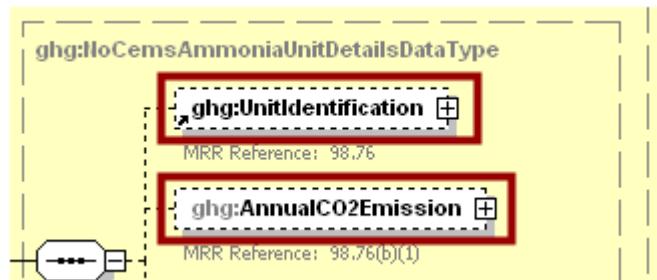


**Table 5**
**Non-CEMS Unit Identification and Emissions Details XML Data Elements**

| Data Element Name | Description |
|---|---|
| NoCemsAmmoniaDetails | A collection of data elements containing information on emissions from combustion sources that are not monitored with CEMS methodology. |
| NoCemsAmmoniaUnitDetails | A collection of data elements containing information on each ammonia manufacturing process unit that is not monitored using a CEMS. |
| UnitIdentification | A collection of data elements that identify a specific ammonia manufacturing process unit that is not monitored using a CEMS. It includes the unit ID, an optional description, and the type of unit: "Ammonia Manufacturing Process Unit". |
| AnnualCO2Emission | A collection of data elements containing information on annual $CO_2$ process emissions.  Report the calculated value only. |
| AnnualCO2Emission.massUOM | Metric Tons |

**Figure 16**
**Sample XML Excerpt for Non-CEMS Unit Identification and Emissions**

```
<ghg:NoCemsAmmoniaDetails>
        <ghg:NoCemsAmmoniaUnitDetails>
            <ghg:UnitIdentification>
                    <ghg:UnitName>001- Non-CEMS</ghg:UnitName>
                    <ghg:UnitDescription>Unit not monitored by CEMS</ghg:UnitDescription>
                    <ghg:UnitType>Ammonia Manufacturing Process Unit</ghg:UnitType>
            </ghg:UnitIdentification>
            <ghg:AnnualCO2Emission massUOM="Metric Tons">
                    <ghg:CalculatedValue>12345.1</ghg:CalculatedValue>
            </ghg:AnnualCO2Emission>
```

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

**Figure 17**
**Non-CEMS Monthly Feedstock Details Schema Diagram**
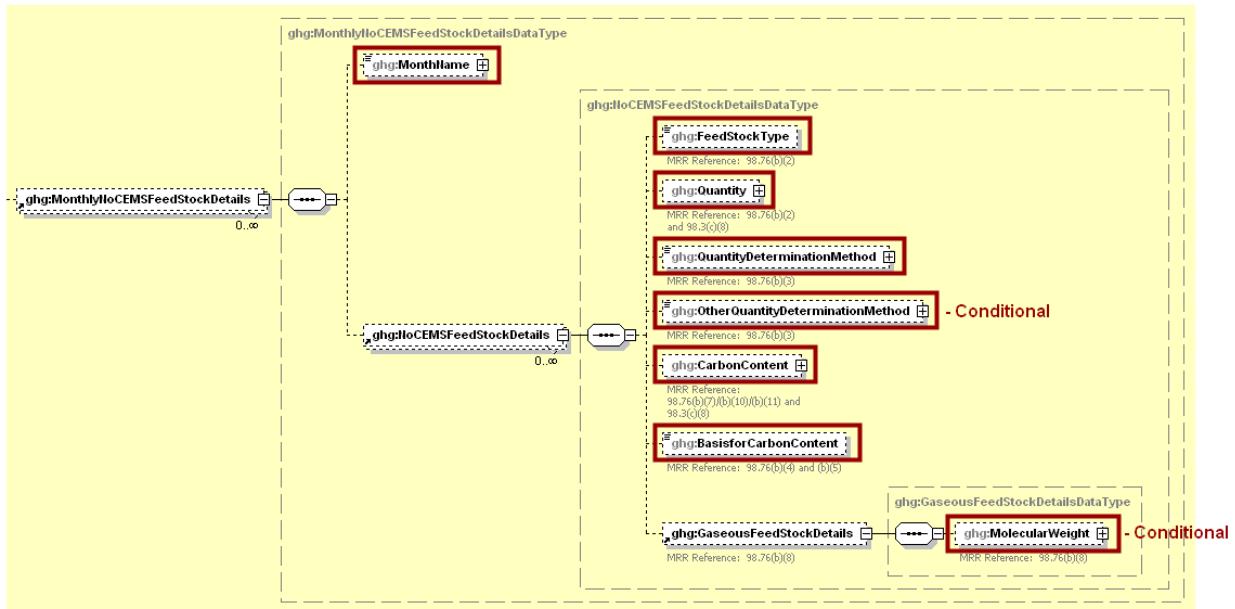


Subpart G requires that the following information be reported for each calendar month and each ammonia manufacturing process unit:

- The feedstock type used by the unit (gaseous, liquid, or solid).
- Indicate if a substitute value was used for that month to determine the volume or mass of feedstock if monitoring and quality assurance procedures could not be followed [98.3(c)(8)].
- The method used for determining the monthly quantity of feedstock used [98.76(b)(3)].
- Indicate if a substitute value was used for that month to determine the carbon content [98.3(c)(8)].
- The basis for determining the carbon content: supplier reports or carbon content analysis [98.76(b)(5)].
- If the feedstock is gaseous, an indication if molecular weight of the gaseous feedstock is a substitute data value [98.3(c)(8)].

**Table 6**
**Non-CEMS Monthly Feedstock Details XML Data Elements**

| Data Element Name | Description |
|---|---|
| MonthlyNoCEMSFeedStockDetails | A collection of data elements containing details of each type of feedstock consumed at the specified unit. |
| MonthName | Month name.  See list of allowable values:<br><br>January<br>February<br>March<br>April<br>May<br>June<br>July<br>August<br>September<br>October<br>November<br>December |
| NoCEMSFeedStockDetails | A collection of data elements containing detailed data for each type of feedstock reported for the month. |
| FeedStockType | Type of feedstock used for the month specified. See list of allowable values:<br><br>Gas<br>Liquid<br>Solid |
| Quantity | An indication (Y/N) that the quantity of feedstock reported contains a substituted value.  Report the substitute data indicator only. |
| QuantityDeterminationMethod | Method used to determine feedstock quantity for the month specified.  Report one of the following allowable values for gaseous or liquid feedstock:<br><br>Flow meter<br>Other<br><br>Report one of the following allowable values for solid feedstock:<br><br>Company records<br>Other |
| OtherQuantityDeterminationMethod | Method used to determine feedstock quantity for the month specified if "Other" was specified. |
| CarbonContent | An indication (Y/N) that the carbon content of feedstock reported for the month specified contains a substituted value.  Report the substitute data indicator and carbon content unit of measure only.<br><br>Note:  The measured value for carbon content is not required to be reported until March 31, 2015, however the UOM attribute is required by the schema design.  If you do not report a UOM value, then your XML submission file will be ill-formed and |

| Data Element Name | Description |
|---|---|
|  | will not validate. |
| CarbonContent.carboncontentUOM | kgC/gallon for liquid feedstock<br>kgC/kg for gaseous or solid feedstock |
| BasisforCarbonContent | Indicate the basis for the carbon content value reported.  See list of allowable values:<br><br>Supplier records<br>ASTM D1945-03<br>ASTM D1946-90 (Reapproved 2006)<br>ASTM D2502-04 (Reapproved 2002)<br>ASTM D2503-92 (Reapproved 2007)<br>ASTM D3238-95 (Reapproved 2005)<br>ASTM D5291-02 (Reapproved 2007)<br>ASTM D3176-89 (Reapproved 2002)<br>ASTM D5373-08 |
| GaseousFeedStockDetails | A collection of data elements to report only if the specified feedstock is gaseous. |
| MolecularWeight | An indication (Y/N) if the molecular weight of the feedstock, if gaseous, for the month specified is a substitute data value.  Report the substitute data indicator and molecular weight unit of measure only.<br><br>Note:  The measured value for molecular weight is not required to be reported until March 31, 2015, however the UOM attribute is required by the schema design.  If you do not report a UOM value, then your XML submission file will be ill-formed and will not validate. |
| MolecularWeight.molewtUOM | kg/kg-mole |

**Figure 18**
**Sample XML Excerpt for Non-CEMS Monthly Feedstock Details**

```
<ghg:MonthlyNoCEMSFeedStockDetails>
    <ghg:MonthName>January</ghg:MonthName>
    <ghg:NoCEMSFeedStockDetails>
        <ghg:FeedStockType>Gas</ghg:FeedStockType>
        <ghg:Quantity>
            <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndic
ator>
        </ghg:Quantity>
        <ghg:QuantityDeterminationMethod>Flow
meter</ghg:QuantityDeterminationMethod>
        <ghg:CarbonContent carboncontentUOM="kgC/kg">
            <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndic
ator>
        </ghg:CarbonContent>
        <ghg:BasisforCarbonContent>Supplier
records</ghg:BasisforCarbonContent>
        <ghg:GaseousFeedStockDetails>
            <ghg:MolecularWeight molewtUOM="kg/kg-mole">
                <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstit
utedIndicator>
            </ghg:MolecularWeight>
        </ghg:GaseousFeedStockDetails>
    </ghg:NoCEMSFeedStockDetails>
</ghg:MonthlyNoCEMSFeedStockDetails>
```

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

**Figure 19**
**Carbon Content of Feedstock Schema Diagram**



For quality assurance and quality control of the supplier data, you must measure the carbon contents of a representative sample of the feedstock consumed.  If any of the carbon content data is based on supplier records (see "BasisforCarbonContent" above), you must report an annual value determined from this analysis [98.76(b)(6)].

**Table 7**
**Carbon Content of Feedstock XML Data Elements**

| Data Element Name | Description |
|---|---|
| CarbonContentofFeedStock | A collection of data elements containing information on the measured carbon content of feedstock (from sample analysis). Required if any carbon content data is based on supplier records.  Report the resulting measured carbon content on an annual basis.  Report the measured value and appropriate carbon content unit of measure only. |
| CarbonContentofFeedStock.carboncontentUOM | kgC/gallon if reporting for liquid feedstock<br>kgC/kg if reporting for solid or gaseous feedstock |

**Figure 20**
**Sample XML Excerpt for Carbon Content of Feedstock**

```
<ghg:CarbonContentofFeedStock carboncontentUOM="kgC/kg">
        <ghg:MeasureValue>0.25</ghg:MeasureValue>
</ghg:CarbonContentofFeedStock>
</ghg:NoCemsAmmoniaUnitDetails>
```

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

## 5.0 Urea Production and CO₂ Consumed Details

Subpart G requires that the following data be reported:

- The annual urea production by the facility in metric tons [98.76(b)(12)].
- The method used to determine that annual production [98.76(b)(12)].
- The quantity of $CO_2$ consumed in urea production (from the steam reforming of a hydrocarbon or the gasification of solid and liquid raw material at the ammonia manufacturing process unit used to produce urea) by the facility in metric tons [98.76(b)(13)].
- The method used to determine the annual quantity of $CO_2$ consumed in urea production [98.76(b)(13)].

**Figure 21**
**Urea Production and CO₂ Consumed Details Schema Diagram**
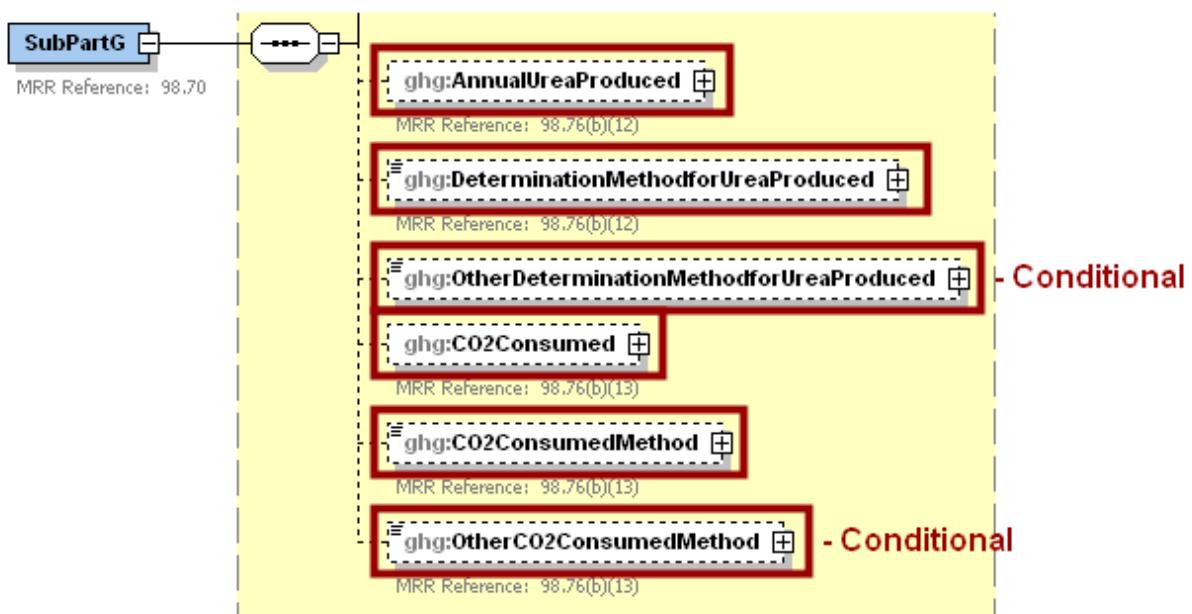


**Table 8**
**Urea Production and CO₂ Consumed Details XML Data Elements**

| Data Element Name | Description |
|---|---|
| AnnualUreaProduced | A collection of data elements containing information on the annual quantity of urea produced.  Report the measured value only. |
| AnnualUreaProduced.massUOM | Metric Tons |

| Data Element Name | Description |
|---|---|
| DeterminationMethodforUreaProduced | Method used to determine urea production.  See list of allowable values:<br><br>Direct weight measurement<br>Company records<br>Other |
| OtherDeterminationMethodforUreaProduced | Method used to determine urea production if "Other" was specified. |
| CO2Consumed | A collection of data elements containing information on the annual quantity of $CO_2$ consumed in urea production from the steam reforming of a hydrocarbon or the gasification of solid and liquid raw material at the ammonia manufacturing process unit used to produce urea.  Report the measured value only. |
| CO2Consumed.massUOM | Metric Tons |
| CO2ConsumedMethod | The method used to determine the annual quantity of $CO_2$ consumed in urea production. See list of allowable values:<br><br>Continuous measurement of concentration and flow<br>Company records<br>Other |
| OtherCO2ConsumedMethod | The method used to determine the $CO_2$ consumed in urea production if "Other" was specified. |

**Figure 22**
**Sample XML Excerpt for Urea Production and CO₂ Consumed Details**

```
<ghg:AnnualUreaProduced massUOM="Metric Tons">
        <ghg:MeasureValue>11111</ghg:MeasureValue>
</ghg:AnnualUreaProduced>
<ghg:DeterminationMethodforUreaProduced>Direct weight
measurement</ghg:DeterminationMethodforUreaProduced>
<ghg:CO2Consumed massUOM="Metric Tons">
        <ghg:MeasureValue>2222.2</ghg:MeasureValue>
</ghg:CO2Consumed>
<ghg:CO2ConsumedMethod>Company records</ghg:CO2ConsumedMethod>
</ghg:SubPartG>
```

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

## 6.0 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). Do not include subpart LL and MM totals in this data element as these values are not being collected in e-GGRT.

**Figure 23**
**Facility-Level Roll-up Emissions Schema Diagram**
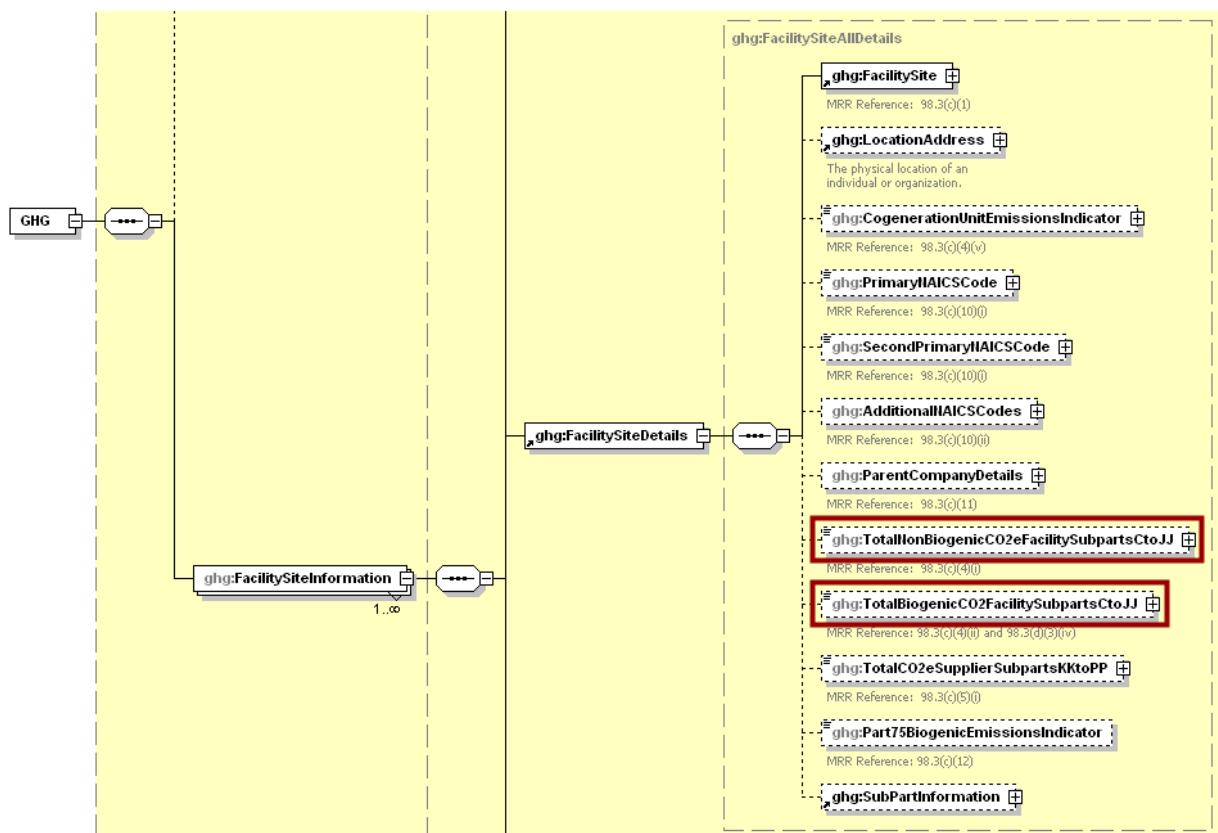


1) Add the total $CO_2e$ value for Subpart G in metric tons to the total $CO_2e$ emissions (excluding biogenic $CO_2$) aggregated across all source category subparts associated with the facility according to the following guidelines:

- Add the total annual $CO_2$ emissions from gaseous, liquid and solid feedstock consumption in metric tons rounded to one decimal place for each non-CEMS unit.
- Add the total annual $CO_2$ mass emissions measured by the CEMS in metric tons rounded to one decimal place minus the total annual biogenic $CO_2$ mass emissions for the CML in

metric tons rounded to one decimal place (the difference of the total $CO_2$ monitored by the CEMS and the total biogenic $CO_2$) for each CML.

- Multiply the total $CH_4$ emissions in metric tons rounded to two decimal places by the Global Warming Potential for $CH_4$ (21) for each CML and add the resulting value.
- Multiply the total $N_2O$ emissions in metric tons rounded to three decimal places by the Global Warming Potential for $N_2O$ (310) for each CML and add the resulting value.

2) Add the total annual biogenic $CO_2$ mass emissions in metric tons rounded to one decimal place for each CML to the total biogenic $CO_2$ aggregated across all source category subparts associated with the facility.

**Table 9**
**Facility Level Roll-up Emissions XML Data Elements**

| Data Element Name | Description |
|---|---|
| TotalNonBiogenicCO2eFacilitySubpartsCtoJJ | Add the total $CO_2e$ value for Subpart G 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. |
| TotalNonBiogenicCO2eFacilitySubpartsCtoJJ.massUOM | Metric Tons |
| TotalBiogenicCO2FacilitySubpartsCtoJJ | Add the total annual biogenic $CO_2$ value for Subpart G 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. |
| TotalBiogenicCO2FacilitySubpartsCtoJJ.massUOM | Metric Tons |

**Figure 24**
**Sample XML Excerpt for Facility Level Roll-up Emissions**

```
    <ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ massUOM="Metric
Tons">70667</ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>
    <ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ massUOM="Metric Tons">500.1</ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ>
    <ghg:TotalCO2eSupplierSubpartsKKtoPP massUOM="Metric Tons">0.0</ghg:TotalCO2eSupplierSubpartsKKtoPP>
```

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

## Appendix A

**Legend for Tables**

Blue = parent element

**Legend for XML Schema Diagrams**

Red box = relevant for reporting

The following XML symbol "0..∞" means that multiple occurrences for the parent element can be reported:
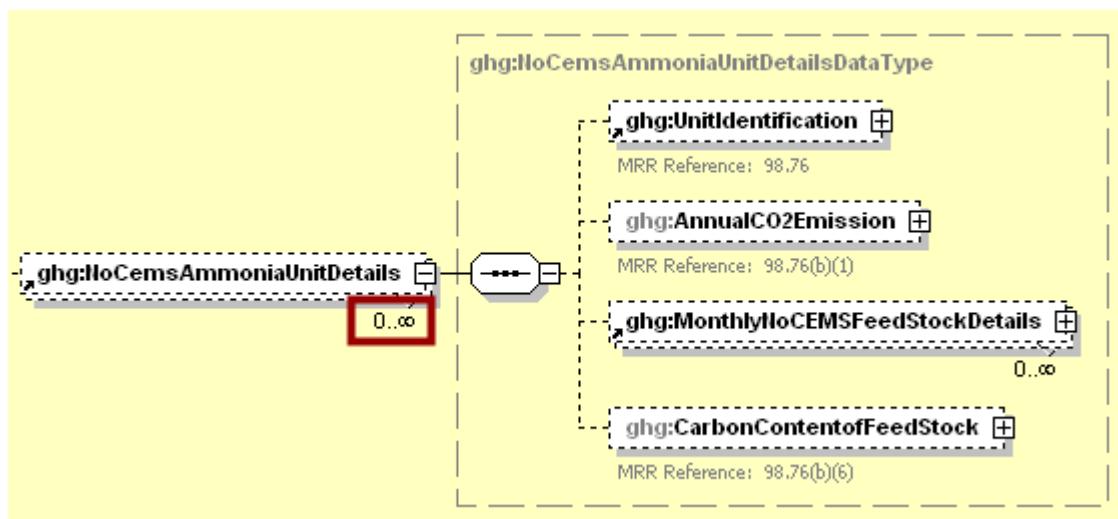


The following XML symbol for "or" means that only one of the data elements following the sign can be reported for the current instance of the parent element:
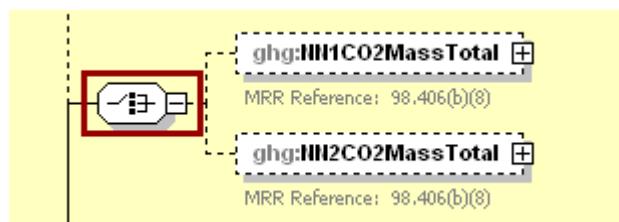
# Appendix B

## Sample XML Document for Subpart G

*(Note: Data values do not reflect an actual facility's emissions.)*

```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>2010</ghg:ReportingYear>
    <ghg:FacilitySiteDetails>
      <ghg:FacilitySite>
        <ghg:FacilitySiteIdentifier>523997</ghg:FacilitySiteIdentifier>
        <ghg:FacilitySiteName>Test Facility G</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>325311</ghg:PrimaryNAICSCode>
      <ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ massUOM="Metric
Tons">70667.7</ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>
      <ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ massUOM="Metric Tons">500.1</ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ>
      <ghg:TotalCO2eSupplierSubpartsKKtoPP massUOM="Metric Tons">0.0</ghg:TotalCO2eSupplierSubpartsKKtoPP>
      <ghg:SubPartInformation>
        <ghg:SubPartG>
          <ghg:GHGasInfoDetails>
            <ghg:GHGasName>Biogenic Carbon dioxide</ghg:GHGasName>
            <ghg:GHGasQuantity massUOM="Metric Tons">
              <ghg:CalculatedValue>500.1</ghg:CalculatedValue>
            </ghg:GHGasQuantity>
          </ghg:GHGasInfoDetails>
          <ghg:GHGasInfoDetails>
            <ghg:GHGasName>Methane</ghg:GHGasName>
            <ghg:GHGasQuantity massUOM="Metric Tons">
              <ghg:CalculatedValue>400.02</ghg:CalculatedValue>
            </ghg:GHGasQuantity>
          </ghg:GHGasInfoDetails>
          <ghg:GHGasInfoDetails>
            <ghg:GHGasName>Nitrous Oxide</ghg:GHGasName>
            <ghg:GHGasQuantity massUOM="Metric Tons">
              <ghg:CalculatedValue>40.002</ghg:CalculatedValue>
            </ghg:GHGasQuantity>
          </ghg:GHGasInfoDetails>
          <ghg:GHGasInfoDetails>
            <ghg:GHGasName>Carbon Dioxide</ghg:GHGasName>
            <ghg:GHGasQuantity massUOM="Metric Tons">
              <ghg:CalculatedValue>49867.1</ghg:CalculatedValue>
            </ghg:GHGasQuantity>
          </ghg:GHGasInfoDetails>
          <ghg:Tier4CEMSDetails>
            <ghg:CEMSMonitoringLocation>
              <ghg:Name>CML-A</ghg:Name>
              <ghg:Description>CEMS Monitoring Location A</ghg:Description>
              <ghg:Type>Process/stationary combustion units share common stack</ghg:Type>
            </ghg:CEMSMonitoringLocation>
            <ghg:CO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
              <ghg:CalculatedValue>500.1</ghg:CalculatedValue>
            </ghg:CO2EmissionsAllBiomassFuelsCombined>
            <ghg:CO2EmissionsNonBiogenic massUOM="Metric Tons">
              <ghg:CalculatedValue>10610.1</ghg:CalculatedValue>
            </ghg:CO2EmissionsNonBiogenic>
            <ghg:AnnualCO2EmissionsMeasuredByCEMS massUOM="Metric Tons">
              <ghg:CalculatedValue>11110.1</ghg:CalculatedValue>
            </ghg:AnnualCO2EmissionsMeasuredByCEMS>
            <ghg:TotalCH4CombustionEmissions massUOM="Metric Tons">
              <ghg:CalculatedValue>400.02</ghg:CalculatedValue>
```

```
                            </ghg:TotalCH4CombustionEmissions>
                            <ghg:TotalN2OCombustionEmissions massUOM="Metric Tons">
                                    <ghg:CalculatedValue>40.002</ghg:CalculatedValue>
                            </ghg:TotalN2OCombustionEmissions>
                            <ghg:Tier4QuarterDetails>
                                    <ghg:QuarterName>First Quarter</ghg:QuarterName>
                                    <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                                            <ghg:CalculatedValue>1111.1</ghg:CalculatedValue>
                                    </ghg:CumulativeCO2MassEmissions>
                            </ghg:Tier4QuarterDetails>
                            <ghg:Tier4QuarterDetails>
                                    <ghg:QuarterName>Second Quarter</ghg:QuarterName>
                                    <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                                            <ghg:CalculatedValue>2222.2</ghg:CalculatedValue>
                                    </ghg:CumulativeCO2MassEmissions>
                            </ghg:Tier4QuarterDetails>
                            <ghg:Tier4QuarterDetails>
                                    <ghg:QuarterName>Third Quarter</ghg:QuarterName>
                                    <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                                            <ghg:CalculatedValue>3333.3</ghg:CalculatedValue>
                                    </ghg:CumulativeCO2MassEmissions>
                            </ghg:Tier4QuarterDetails>
                            <ghg:Tier4QuarterDetails>
                                    <ghg:QuarterName>Fourth Quarter</ghg:QuarterName>
                                    <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                                            <ghg:CalculatedValue>4444.4</ghg:CalculatedValue>
                                    </ghg:CumulativeCO2MassEmissions>
                            </ghg:Tier4QuarterDetails>
                            <ghg:TotalSourceOperatingHours>7300</ghg:TotalSourceOperatingHours>
                            <ghg:OperatingHoursDetails>
                                    <ghg:OperatingHoursCO2ConcentrationSubstituted>50</ghg:OperatingHoursCO2Concent
                                    rationSubstituted>
                                    <ghg:OperatingHoursStackGasFlowRateSubstituted>60</ghg:OperatingHoursStackGasFlo
                                    wRateSubstituted>
                                    <ghg:OperatingHoursStackGasMoistureContentSubstituted>70</ghg:OperatingHoursStac
                                    kGasMoistureContentSubstituted>
                            </ghg:OperatingHoursDetails>
                            <ghg:TierMethodologyStartDate>2010-01-01</ghg:TierMethodologyStartDate>
                            <ghg:TierMethodologyEndDate>2010-12-31</ghg:TierMethodologyEndDate>
                            <ghg:SlipStreamIndicator>Y</ghg:SlipStreamIndicator>
                            <ghg:CEMSFuel>coal, coke, natural gas</ghg:CEMSFuel>
                            <ghg:ProcessUnitNames>
                                    <ghg:UnitName>004-CEMS</ghg:UnitName>
                                    <ghg:UnitName>005-CEMS</ghg:UnitName>
                                    <ghg:UnitName>006-CEMS</ghg:UnitName>
                            </ghg:ProcessUnitNames>
                    </ghg:Tier4CEMSDetails>
                    <ghg:CemsAmmoniaDetails>
                            <ghg:UnitIdentification>
                                    <ghg:UnitName>006-CEMS</ghg:UnitName>
                                    <ghg:UnitDescription>The CEMS unit also consumed 4345 gallons of liquid feedstock –
                                    the quantity of feedstock consumed was determined using supplier
                                    records.</ghg:UnitDescription>
                                    <ghg:UnitType>Ammonia Manufacturing Process Unit</ghg:UnitType>
                            </ghg:UnitIdentification>
                            <ghg:FeedStockDetails>
                                    <ghg:FeedStockType>Solid</ghg:FeedStockType>
                                    <ghg:Quantity massUOM="Kilograms">
                                            <ghg:MeasureValue>33333</ghg:MeasureValue>
                                    </ghg:Quantity>
                                    <ghg:QuantityDeterminationMethod>Other</ghg:QuantityDeterminationMethod>
                                    <ghg:OtherQuantityDeterminationMethod>mass determination method A
                                    </ghg:OtherQuantityDeterminationMethod>
                            </ghg:FeedStockDetails>
                    </ghg:CemsAmmoniaDetails>
                    <ghg:CemsAmmoniaDetails>
                            <ghg:UnitIdentification>
                                    <ghg:UnitName>004-CEMS</ghg:UnitName>
                                    <ghg:UnitDescription>Unit monitored by CEMS</ghg:UnitDescription>
                                    <ghg:UnitType>Ammonia Manufacturing Process Unit</ghg:UnitType>
                            </ghg:UnitIdentification>
                            <ghg:FeedStockDetails>
                                    <ghg:FeedStockType>Gas</ghg:FeedStockType>
                                    <ghg:Quantity volUOM="scf">
                                            <ghg:MeasureValue>44444</ghg:MeasureValue>
                                    </ghg:Quantity>
                                    <ghg:QuantityDeterminationMethod>Flow meter</ghg:QuantityDeterminationMethod>
                            </ghg:FeedStockDetails>
                    </ghg:CemsAmmoniaDetails>
                    <ghg:CemsAmmoniaDetails>
                            <ghg:UnitIdentification>
                                    <ghg:UnitName>005-CEMS</ghg:UnitName>
```

```
                <ghg:UnitType>Ammonia Manufacturing Process Unit</ghg:UnitType>
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