

# Greenhouse Gas Reporting Program

## XML Reporting Instructions for Subpart C - General Stationary Fuel Combustion Sources

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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## Table of Contents

	<u>Page</u>
I. Introduction .....	1
II. Summary of Changes .....	8
III. Subpart C Overview .....	9
<b>1.0 Subpart C Total Emissions .....</b>	<b>11</b>
<b>2.0 Configuration Identification Information .....</b>	<b>13</b>
2.1 Configuration Type 1 Identification .....	16
2.2 Configuration Type 2 Identification .....	20
2.3 Configuration Type 3 Identification .....	24
2.4 Configuration Type 4 Identification .....	27
2.5 Configuration Type 5 Identification .....	30
2.6 Configuration Type 6 Identification .....	33
<b>3.0 Configuration Level Emissions Information.....</b>	<b>35</b>
3.1 Configuration Type 1 Configuration Level Emissions.....	35
3.2 Configuration Type 3 Configuration Level Emissions.....	36
3.3 Configuration Type 4 Configuration Level Emissions.....	37
3.4 Configuration Type 6 Configuration Level Emissions.....	39
<b>4.0 Fuel Level Emissions by Configuration Type .....</b>	<b>40</b>
4.1 Tier 1 Fuel Details .....	43
4.2 Tier 2 Fuel Details .....	47
4.3 Tier 3 Fuel Details .....	54
4.4 Tier 4 Fuel Details .....	60
4.5 Part 75 Fuel Details .....	62
<b>5.0 Additional Configuration Level Emission Reporting.....</b>	<b>64</b>
5.1 Tier 4 Details .....	64
5.2 Part 75 Details .....	71
<b>6.0 Facility Level Roll-up Emissions .....</b>	<b>76</b>
IV. Appendix A: Sample XML Document for Subpart C .....	78

## List of Tables

	<u>Page</u>
Table 1	Reporting Numbers..... 2
Table 2	Calculated Details Data Element Definitions ..... 5
Table 3	Measurement Details Data Element Definitions ..... 6
Table 4	Unit Identification Details Data Element Definitions..... 6
Table 5	Summary of Changes to the Schema for Subpart C ..... 8
Table 6	Greenhouse Gas Information Details Data Element Definitions ..... 12
Table 7	Configuration Type 1 Unit Identification Data Element Definitions ..... 17
Table 8	Configuration Type 1 Individual Unit Details Data Element Definitions ..... 19
Table 9	Configuration Type 2 Unit Identification Data Element Definitions ..... 21
Table 10	Configuration Type 2 Individual Unit Details Data Element Definitions ..... 23
Table 11	Configuration Type 3 Unit Identification Data Element Definitions ..... 25
Table 12	Small Unit Aggregation Details Data Element Definitions ..... 26
Table 13	Configuration Type 4 Unit Identification Data Element Definitions ..... 28
Table 14	Common Pipe Details Data Element Definitions ..... 29
Table 15	Configuration Type 5 Unit Identification Data Element Definitions ..... 31
Table 16	Common Stack Details Data Element Definitions ..... 32
Table 17	Configuration Type 6 Unit Identification Data Element Definitions ..... 34
Table 18	Sorbent CO <sub>2</sub> Emissions Quantity and CO <sub>2</sub> Emissions All Biomass Fuels Combined Data Element Definitions ..... 35
Table 19	Sorbent CO <sub>2</sub> Emissions Quantity, CO <sub>2</sub> Emissions All Biomass Fuels Combined and CO <sub>2</sub> Emissions All Fossil Fuels Combined ..... 37
Table 20	CO <sub>2</sub> Emissions All Biomass Fuels Combined and CO <sub>2</sub> Emissions All Fossil Fuels Combined Data Element Definitions ..... 38
Table 21	CO <sub>2</sub> Emissions All Biomass Fuels Combined Data Element Definitions ..... 39
Table 22	Tier Fuel Details Data Element Definitions ..... 41
Table 23	Tier 1 Fuel Details Data Element Definitions ..... 44
Table 24	Tier 1 Emissions Details Node Data Element Definitions ..... 45
Table 25	Tier 2 Fuel Details Data Element Definitions ..... 48
Table 26	Tier 2 Monthly HHV Details Data Element Definitions ..... 49
Table 27	Tier 2 Monthly HHV Details Emissions Details Node Data Element Definitions ..... 52
Table 28	Tier 3 Fuel Details Data Element Definitions ..... 55
Table 29	Tier 3 Fuel Details Emissions Details Node Data Element Definitions ..... 57
Table 30	Tier 4 Fuel Details Data Element Definitions ..... 60
Table 31	Part 75 Fuel Details Data Element Definitions..... 62
Table 32	Tier 4 Details Data Element Definitions..... 65
Table 33	Operating Hours Details Data Element Definitions ..... 68
Table 34	Biogenic Portion Details Data Element Definitions ..... 70
Table 35	Part 75 Details Data Element Definitions ..... 72
Table 36	Appendix D and G Calculation Method Details Data Element Definitions ..... 73
Table 37	CEMS Details Data Element Definitions ..... 74
Table 38	Facility Level Roll-up Emissions Data Element Definitions..... 77

## List of Figures

	<u>Page</u>
Figure 1 Example of an XML Tree.....	3
Figure 2 Calculated Details Data Type Schema Diagram.....	5
Figure 3 Measurement Details Data Type Schema Diagram.....	5
Figure 4 Unit Identification Details Data Type Schema Diagram.....	6
Figure 5 “Unbounded” Symbol in Schema Diagram.....	7
Figure 6 Logical “Or” Symbol in Schema Diagram.....	7
Figure 7 Subpart C Reporting Diagram.....	9
Figure 8 Subpart C Schema Diagram.....	10
Figure 9 Greenhouse Gas Information Details Schema Diagram.....	11
Figure 10 Units C Details for Configuration Type 1 Schema Diagram.....	16
Figure 11 Configuration Type 1 Unit Identification Schema Diagram.....	17
Figure 12 Configuration Type 1 Individual Unit Details Schema Diagram.....	19
Figure 13 Units C Details for Configuration Type 2 Schema Diagram.....	20
Figure 14 Configuration Type 2 Unit Identification Schema Diagram.....	21
Figure 15 Configuration Type 2 Individual Unit Details Schema Diagram.....	23
Figure 16 Units C Details for Configuration Type 3 Schema Diagram.....	24
Figure 17 Configuration Type 3 Unit Identification Schema Diagram.....	25
Figure 18 Small Unit Aggregation Details Schema Diagram.....	26
Figure 19 Units C Details for Configuration Type 4 Schema Diagram.....	27
Figure 20 Configuration Type 4 Unit Identification Schema Diagram.....	28
Figure 21 Common Pipe Details Schema Diagram.....	29
Figure 22 Units C Details for Configuration Type 5 Schema Diagram.....	30
Figure 23 Configuration Type 5 Unit Identification Schema Diagram.....	31
Figure 24 Common Stack Details Schema Diagram.....	32
Figure 25 Units C Details for Configuration Type 6 Schema Diagram.....	33
Figure 26 Configuration Type 6 Unit Identification Schema Diagram.....	34
Figure 27 Sorbent CO <sub>2</sub> Emissions Quantity and CO <sub>2</sub> Emissions All Biomass Fuels Combined Schema Diagram.....	35
Figure 28 Sorbent CO <sub>2</sub> Emissions Quantity, CO <sub>2</sub> Emissions All Biomass Fuels Combined and CO <sub>2</sub> Emissions All Fossil Fuels Combined.....	36
Figure 29 CO <sub>2</sub> Emissions All Biomass Fuels Combined and CO <sub>2</sub> Emissions All Fossil Fuels Combined.....	38
Figure 30 CO <sub>2</sub> Emissions All Biomass Fuels Combined Schema Diagram.....	39
Figure 31 Tier Fuel Details Schema Diagram.....	40
Figure 32 Tier 1 Fuel Details Schema Diagram.....	43
Figure 33 Tier 2 Fuel Details Schema Diagram.....	47
Figure 34 Tier 2 Monthly HHV Details Schema Diagram.....	48
Figure 35 Tier 2 Emissions Details Node Schema Diagram.....	51
Figure 36 Tier 3 Fuel Details Schema Diagram.....	54
Figure 37 Tier 3 Emissions Details Node Schema Diagram.....	56
Figure 38 Additional Tier 3 Fuel Details Schema Diagram.....	56

**List of Figures (Continued)**

	<b><u>Page</u></b>
Figure 39 Tier 4 Fuel Details Schema Diagram.....	60
Figure 40 Part 75 Fuel Details Schema Diagram.....	62
Figure 41 Tier 4 Details Schema Diagram.....	64
Figure 42 Tier 4 Quarter Details Schema Diagram.....	65
Figure 43 Operating Hours Details Schema Diagram.....	67
Figure 44 Biogenic Portion Details Schema Diagram .....	69
Figure 45 Part 75 Details Schema Diagram .....	71
Figure 46 Appendix D and G Calculation Method Details Schema Diagram .....	73
Figure 47 CEMS Details Schema Diagram .....	74
Figure 48 Facility Level Roll-up Emissions Schema Diagram.....	76

**List of XML Excerpts**

	<b><u>Page</u></b>
XML Excerpt 1	Example for “Unbounded” Parent Element ..... 7
XML Excerpt 2	Example for Greenhouse Gas Information Details ..... 12
XML Excerpt 3	Example for Configuration Type 1 Unit Identification..... 18
XML Excerpt 4	Example for Configuration Type 1 Individual Unit Details ..... 19
XML Excerpt 5	Example for Configuration Type 2 Unit Identification..... 22
XML Excerpt 6	Example for Configuration Type 2 Individual Unit Details ..... 23
XML Excerpt 7	Example for Configuration Type 3 Unit Identification..... 25
XML Excerpt 8	Example for Small Unit Aggregation Details ..... 26
XML Excerpt 9	Example for Configuration Type 4 Unit Identification..... 28
XML Excerpt 10	Example for Common Pipe Details ..... 29
XML Excerpt 11	Example for Configuration Type 5 Unit Identification..... 31
XML Excerpt 12	Example for Common Stack Details..... 33
XML Excerpt 13	Example for Configuration Type 6 Unit Identification..... 34
XML Excerpt 14	Example for Sorbent CO <sub>2</sub> Emissions Quantity and CO <sub>2</sub> Emissions All Biomass Fuels Combined ..... 36
XML Excerpt 15	Example for Sorbent CO <sub>2</sub> Emissions Quantity, CO <sub>2</sub> Emissions All Biomass Fuels Combined and CO <sub>2</sub> Emissions All Fossil Fuels Combined ..... 37
XML Excerpt 16	Example for CO <sub>2</sub> Emissions All Biomass Fuels Combined and CO <sub>2</sub> Emissions All Fossil Fuels Combined..... 38
XML Excerpt 17	Example for CO <sub>2</sub> Emissions All Biomass Fuels Combined ..... 39
XML Excerpt 18	Example for Tier Fuel Details..... 42
XML Excerpt 19	Example for Tier 1 Fuel Details..... 44
XML Excerpt 20	Example for Tier 1 Emissions Details Node..... 46
XML Excerpt 21	Example for Tier 2 Fuel Details..... 48
XML Excerpt 22	Example for Tier 2 Monthly HHV Details ..... 50
XML Excerpt 23	Example for Tier 2 Monthly HHV Details Emissions Details Node ..... 53
XML Excerpt 24	Example for Tier 3 Fuel Details..... 55
XML Excerpt 25	Example for Tier 3 Fuel Details Emissions Details Node ..... 59
XML Excerpt 26	Example for Tier 4 Fuel Details..... 61
XML Excerpt 27	Example for Part 75 Fuel Details..... 63
XML Excerpt 28	Example for Tier 4 Details..... 66
XML Excerpt 29	Example for Operating Hours Details..... 69
XML Excerpt 30	Example for Biogenic Portion Details ..... 70
XML Excerpt 31	Example for Part 75 Details ..... 72
XML Excerpt 32	Example for Appendix D and G Calculation Method Details ..... 73
XML Excerpt 33	Example for CEMS Details ..... 75
XML Excerpt 34	Example for Facility Level Roll-up Emissions..... 77

## 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 (GHG) 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 data elements are related to each other in parent-child relationships. The root data element is the parent of the entire schema. Complex data 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 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 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 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**

Number Format	Description
Rounding	<ul style="list-style-type: none"> <li>• CO<sub>2</sub>e and CO<sub>2</sub> emissions 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.</li> <li>• CH<sub>4</sub> emissions data expressed in metric tons should be rounded to two decimal places.</li> <li>• N<sub>2</sub>O emissions data expressed in metric tons should be rounded to three decimal places.</li> <li>• Emissions data for all GHGs other than CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub> 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.).</li> <li>• 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.</li> <li>• In the case of aggregation/roll-ups, those calculations should be performed on the rounded values.</li> </ul>
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

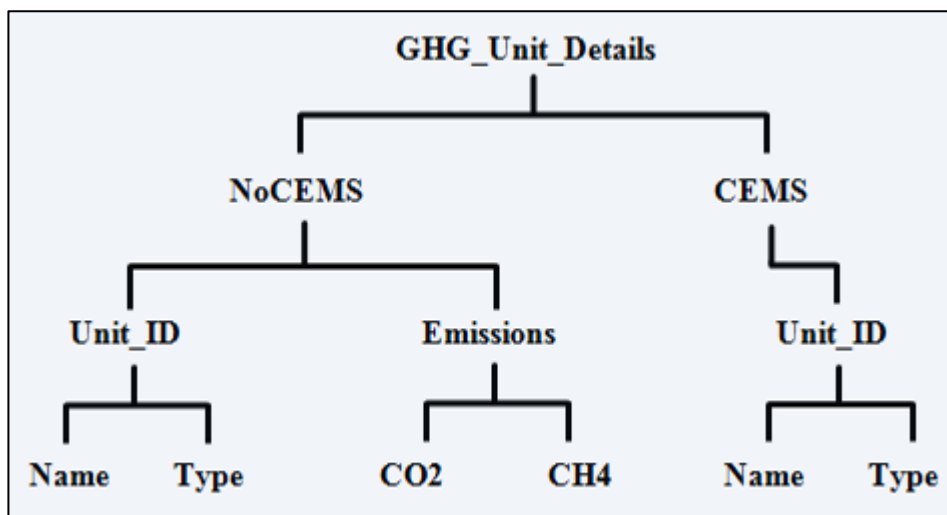
</elementName>. The following example shows how to report the facility's identification number: <FacilitySiteIdentifier>23222</FacilitySiteIdentifier>. The information shaded in blue represents the data element's value.

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 as 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**



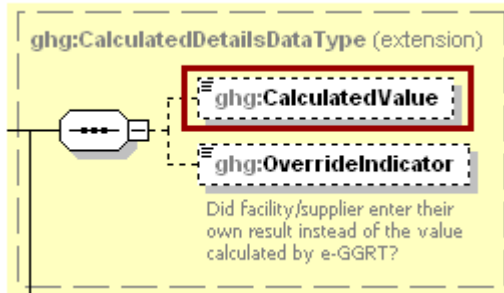
This document provides a step-by-step description of how to report emissions data using the XML schema. Please note the following:

- **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:
  - Calculated Details
  - Measurement Details
  - 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 to 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**

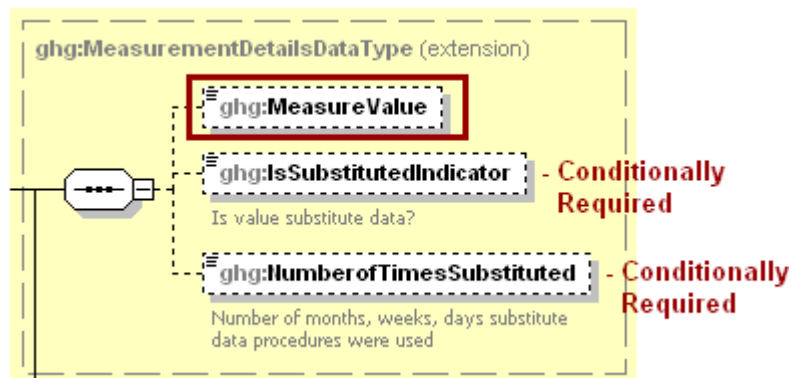


**Note:** Data elements boxed in red are required.

**Table 2**  
**Calculated Details Data Element Definitions**

Data Element Name	Description
<b>CalculatedDetailsDataType</b>	
CalculatedValue	Calculated value (decimal).
OverrideIndicator	<b>Note:</b> 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**

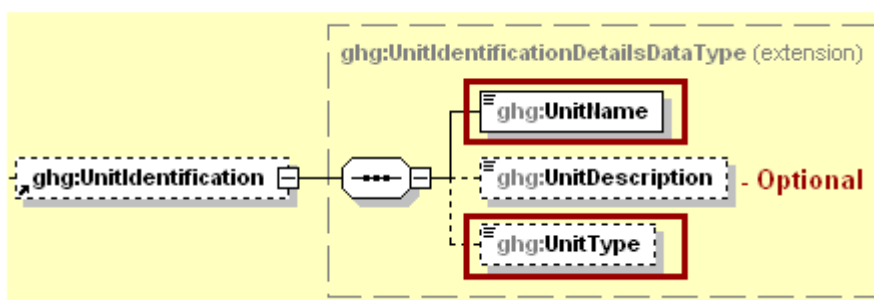


**Note:** Data elements boxed in red are required. Please see page 4 of this document for more information on conditionally required elements.

**Table 3  
Measurement Details Data Element Definitions**

Data Element Name	Description
<b>MeasurementDetailsDataType</b>	
MeasureValue	Measured value (decimal).
IsSubstitutedIndicator	An indication (Y/N) that the measure value contains substituted data.  <b>Note:</b> 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.  <b>Note:</b> 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**



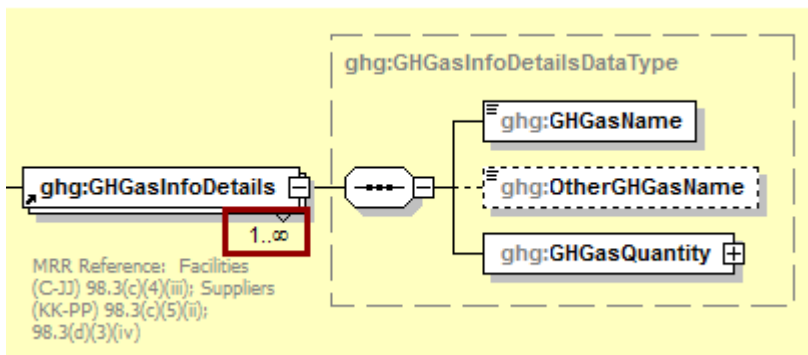
**Note:** Data elements boxed in red are required.

**Table 4  
Unit Identification Details Data Element Definitions**

Data Element Name	Description
<b>UnitIdentificationDetails</b>	
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**



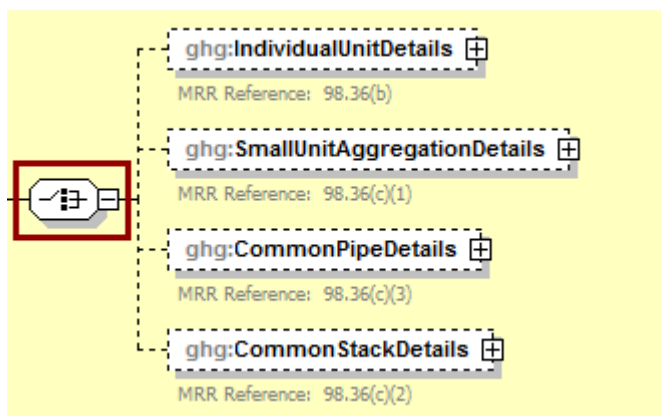
**XML Excerpt 1**  
**Example for “Unbounded” Parent Element**

```

<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 C (GHG\_SubPartC\_v2.0.xsd) for reporting year 2011.

**Table 5**  
**Summary of Changes to the Schema for Subpart C**

No.	Change Description
1	Removed the "heatUOM" attribute from data element "HighHeatValue". (XPath = UnitsCDetails/TierFuelDetails/Tier2FuelDetails/Tier2MonthlyHHVDetails/HighHeatValue)

### Document Changes:

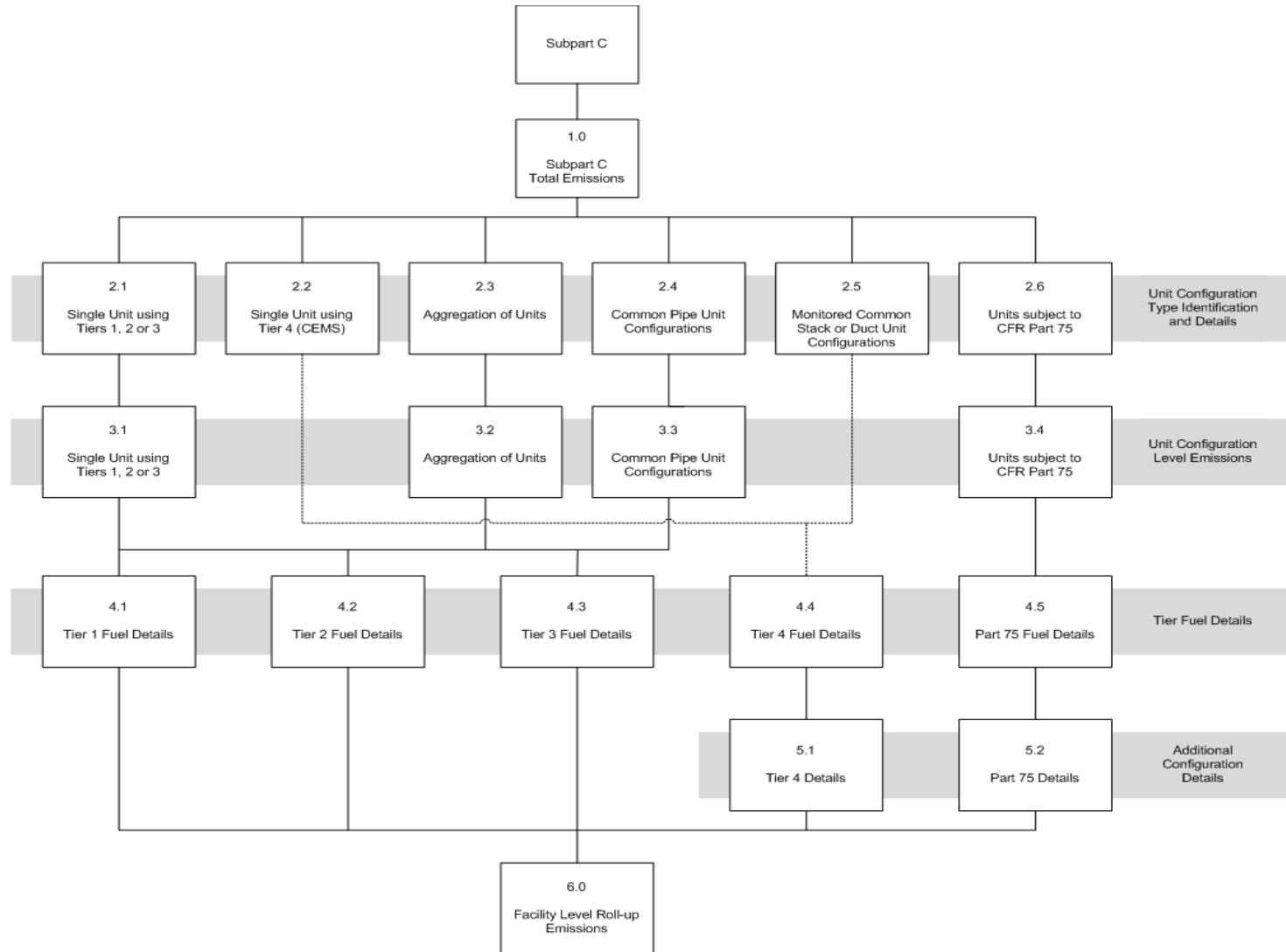
3-9-2012 – Modified some of the emissions values within the XML excerpts to emphasize the rounding rules, see [Table 1](#).

3-15-2012 – Modified some of the emissions values within the XML excerpts to emphasize the rounding rules. Added ParentCompanyDetails to sample XML document.

### III. Subpart C Overview

This section provides a step-by-step description of how to report emissions data from general stationary fuel combustion sources as required by Subpart C of the GHGRP using the XML schema.

**Figure 7  
Subpart C Reporting Diagram**



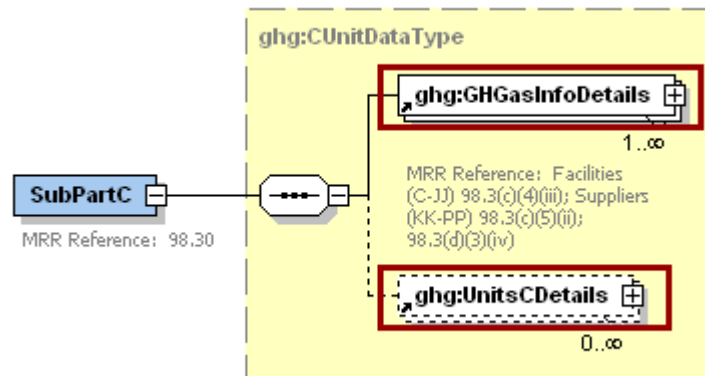


Stationary fuel combustion sources are devices that combust solid, liquid, or gaseous fuel, generally for the purposes of producing electricity, generating steam or providing useful heat or energy for industrial, commercial or institutional use, or reducing the volume of waste by removing combustible matter. Stationary fuel combustion sources include, but are not limited to, boilers, simple and combined-cycle combustion turbines, engines, incinerators and process heaters. This source category does not include portable equipment, emergency equipment or emergency generators, as defined in §98.6.

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

- 1.0 Subpart C Total Emissions: includes the total greenhouse gas emissions required to be reported for Subpart C.
- 2.0 Configuration Identification Information: includes unit configuration type identification and details.
- 3.0 Unit Configuration Level Emissions: includes information on how to report emissions based on configuration type.
- 4.0 Tier Fuel Details: includes how to report fuel information based on the tier methodology used.
- 5.0 Additional Configuration Details: includes additional information to report for Tier 4 and Part 75 methodologies.
- 6.0 Facility Level Roll-up Emissions: includes information on how to report total emissions for CO<sub>2e</sub> (excluding biogenic CO<sub>2</sub>) and biogenic CO<sub>2</sub> from Subpart C at the facility level.

**Figure 8  
Subpart C Schema Diagram**

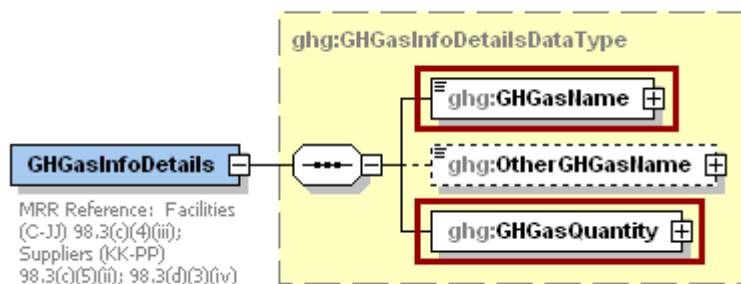


**Note:** Data elements boxed in red are required.

## 1.0 Subpart C 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 C, expressed in metric tons.

**Figure 9**  
**Greenhouse Gas Information Details Schema Diagram**



**Note:** Data elements boxed in red are required.

For Subpart C, report total emissions for biogenic carbon dioxide (CO<sub>2</sub>), CO<sub>2</sub> (excluding biogenic CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). For greenhouse gas quantity, report the calculated value and mass unit of measure (Metric Tons) only according to the following guidelines:

- 1) Total CO<sub>2</sub> emissions (excluding biogenic CO<sub>2</sub>):
  - For Configuration Types 1 and 3, add the CO<sub>2</sub> emissions (include both biogenic and non-biogenic CO<sub>2</sub>) for each fuel and for each configuration in metric tons, add the CO<sub>2</sub> emissions from sorbent use for each configuration in metric tons and subtract the total biogenic CO<sub>2</sub> emissions for each configuration in metric tons.
  - For Configuration Types 2, 5 and 6, add the CO<sub>2</sub> emissions (include both biogenic and non-biogenic CO<sub>2</sub>) measured by the CEMS or applicable Part 75 methodology for each configuration in metric tons and subtract the total biogenic CO<sub>2</sub> emissions for each configuration in metric tons.
  - For Configuration Type 4, add the CO<sub>2</sub> emission (include both biogenic and non-biogenic CO<sub>2</sub>) for each fuel and for each configuration in metric tons and subtract the total biogenic CO<sub>2</sub> emissions for each configuration in metric tons.
- 2) Total biogenic CO<sub>2</sub> emissions:
  - Add the total annual biogenic CO<sub>2</sub> emissions for each configuration in metric tons. This includes CO<sub>2</sub> emissions from biomass fuels and the biogenic portion of CO<sub>2</sub> emissions from mixed biomass and fossil fuels (i.e. MSW and tires).
- 3) Total CH<sub>4</sub> emissions:
  - For Configuration Types 1 through 5, add the values reported for CH<sub>4</sub> emissions for each fuel and for each configuration in metric tons.
  - For Configuration Type 6, divide the values reported for CH<sub>4</sub> emissions in CO<sub>2</sub>e by the Global Warming Potential for CH<sub>4</sub> (21) and add the result.

4) Total N<sub>2</sub>O emissions:

- For Configuration Types 1 through 5, add the values reported for N<sub>2</sub>O emissions for each fuel and for each configuration in metric tons.
- For Configuration Type 6, divide the values reported for N<sub>2</sub>O emissions in CO<sub>2</sub>e by the Global Warming Potential for N<sub>2</sub>O (310) and add the result.

**Note:** You must follow the rounding rules found in [Table 1](#).

**Table 6  
Greenhouse Gas Information Details Data Element Definitions**

Data Element Name	Description
<b>GHGasInfoDetails</b>	<b>Parent Element:</b> 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 Methane Nitrous Oxide
GHGasQuantity	A collection of data elements that quantify the annual emissions from this source category. Report the value in the child data element <b>CalculatedValue</b> using the guidelines above. Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .

**XML Excerpt 2  
Example for Greenhouse Gas Information Details**

```

<ghg:SubPartC>
  <ghg:GHGasInfoDetails>
    <ghg:GHGasName>Biogenic Carbon dioxide</ghg:GHGasName>
    <ghg:GHGasQuantity massUOM="Metric Tons">
      <ghg:CalculatedValue>14700.3</ghg:CalculatedValue>
    </ghg:GHGasQuantity>
  </ghg:GHGasInfoDetails>
  <ghg:GHGasInfoDetails>
    <ghg:GHGasName>Methane</ghg:GHGasName>
    <ghg:GHGasQuantity massUOM="Metric Tons">
      <ghg:CalculatedValue>4065.72</ghg:CalculatedValue>
    </ghg:GHGasQuantity>
  </ghg:GHGasInfoDetails>
  <ghg:GHGasInfoDetails>
    <ghg:GHGasName>Nitrous Oxide</ghg:GHGasName>
    <ghg:GHGasQuantity massUOM="Metric Tons">
      <ghg:CalculatedValue>398.581</ghg:CalculatedValue>
    </ghg:GHGasQuantity>
  </ghg:GHGasInfoDetails>
  <ghg:GHGasInfoDetails>
    <ghg:GHGasName>Carbon Dioxide</ghg:GHGasName>
    <ghg:GHGasQuantity massUOM="Metric Tons">
      <ghg:CalculatedValue>518460.9</ghg:CalculatedValue>
    </ghg:GHGasQuantity>
  </ghg:GHGasInfoDetails>
</ahq:GHGasInfoDetails>

```

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

## 2.0 Configuration Identification Information







For stationary combustion sources required to report under Subpart C, e-GGRT requires you to identify which reporting option each unit or group of units will be using to report emissions. The different Subpart C reporting options are referred to as Configurations in e-GGRT. The individual configurations are designed to match the reporting options made available by the rule in 40 CFR 98.36. As specified in part 98, each configuration has slightly different reporting requirements. Emissions information to be reported is either aggregated at the configuration level or is to be reported for a specific fuel combusted in the configuration. A facility may have multiple configuration types and/or multiple configurations of any given type.

To create a valid XML file, complete data must be reported for one configuration at the facility before reporting data for another configuration at the facility.



*Which configuration type(s) will you use to report emissions?*

The unit or group configuration types are as follows:

-  [Configuration Type 1](#) – A single unit using Tiers 1, 2 or 3 to calculate emissions [98.36(b)]
-  [Configuration Type 2](#) – A single unit using Tier 4 (CEMS) to calculate emissions [98.36(b)]
-  [Configuration Type 3](#) – A group of units using the aggregation of units reporting alternative [98.36(c)(1)]
-  [Configuration Type 4](#) – A group of units using the common pipe configurations reporting alternative [98.36(c)(3)]
-  [Configuration Type 5](#) – A group of units using Tier 4 (CEMS) to calculate emissions and reporting under the monitored common stack or duct configurations reporting alternative [98.36(c)(2)]
-  [Configuration Type 6](#) – Part 75 units using the alternative CO<sub>2</sub> mass emissions calculation methods provided in 98.33(a)(5) [98.36(d)(2)]

The configuration types are described in further detail below. For more information on the different reporting options, please refer to the applicable paragraphs in 40 CFR 98.36.

### **Configuration Type 1 - Single Unit Using Tiers 1, 2 or 3 [98.36(b)]**

The single unit reporting configuration is the most basic configuration type. Any unit may be reported individually in e-GGRT. If the unit uses Tiers 1, 2 or 3 to calculate CO<sub>2</sub> emissions, it must be reported as a configuration of Type 1. If the use of Tier 4 is required or elected, Configuration Type 2 or 5 must be used.

A unit under Configuration Type 1 may combust multiple fuels, and it is possible for the different fuels to be reported using different tiers. For example, a unit with a maximum rated heat input capacity of 500 mmBtu/hr may be required to use Tier 3 for coal, but only Tier 2 for natural gas or fuel oil.

Facilities with numerous units should investigate if Configuration Type 3 (aggregation of units) or Type 4 (common pipe) may be used.



*See [Section 2.1](#) for instructions on how to report for Configuration Type 1.*

### **Configuration Type 2 – Single Unit Using Tier 4 [98.36(b)]**

Configuration Type 2 is the reporting option for single units that are either required or elect to use Tier 4 (CEMS). CO<sub>2</sub> emissions will be reported for all fuels combined, but CH<sub>4</sub> and N<sub>2</sub>O emissions will still need to be reported on a fuel by fuel basis.

Should a unit change methodology from Tiers 1-3 to Tier 4 during the year, the unit will need to be added as two separate configurations in e-GGRT with different configuration names.

If a single CEMS is used to monitor multiple units (multiple combustion, or one combustion and one or more process units), Configuration Type 5 should be used instead.

➡ See [Section 2.2](#) for instructions on how to report for Configuration Type 2.

### **Configuration Type 3 – Aggregation of Units [98.36(c)(1)]**

The *aggregation of units* option is a reporting configuration that allows multiple units to be reported as a single entity provided that certain conditions are met. If this reporting option is selected, emissions from all units grouped in this configuration will be reported as combined emissions in e-GGRT.

If a facility contains two or more units, each of which has a maximum rated heat input capacity of 250 mmBtu/hr or less, you may report these units as a single reporting configuration of Type 3 in e-GGRT, provided that only Tiers 1-3 are used and the units use the same tier for any common fuels combusted. Fuels of different types may use different tiers, as permitted. There is no limit on the number of units that may be included in this configuration provided the previous criteria are met.

While the use of Tier 3 is permitted to be used in an *aggregation of units* configuration, it is generally not required for configurations of this type as Tier 3 is only required for certain units larger than 250 mmBtu/hr. Units of that size may not be included in the *aggregation of units* configuration.

➡ See [Section 2.3](#) for instructions on how to report for Configuration Type 3.

### **Configuration Type 4 – Common Pipe [98.36(c)(3)]**

The *common pipe* reporting configuration is another alternative reporting option that allows for multiple units to be reported as a single group entry.

This configuration is different from the *aggregation of units* configuration in that there is no size constraint. The *common pipe* configuration may only be used if two or more stationary combustion units at a facility combust the same type of liquid or gaseous fuel and the fuel is fed to the individual units through a common supply line or pipe.

The *common pipe* configuration may only be used if the units only combust the liquid or gaseous fuel supplied by the common pipe. Units that combust fuel other than the fuel supplied by the common pipe must be accounted for under a separate configuration. For example, a unit that burns coal and natural gas may not be included in a *common pipe* configuration for units that only combust natural gas. In such a situation, you may report the units that only combust natural gas as a common pipe configuration. To calculate emissions for the common pipe, you would subtract the quantity of diverted gas (i.e. gas combusted at a coal unit) from the quantity of gas measured for the common pipe by using company records. The diverted gas would need to be accounted for in a separate configuration (unless not combusted or combusted in an exempt unit).

The tier required for the common pipe configuration is based on the maximum rated heat input capacity of the largest unit served by the common pipe.

➡ See [Section 2.4](#) for instructions on how to report for Configuration Type 4.

**Configuration Type 5 – Common Stack [98.36(c)(2)]**

If multiple units vent to a common stack or duct and Tier 4 is used to calculate the CO<sub>2</sub> emissions for those units, the *common stack* configuration must be used. If only a single combustion unit vents to the stack and no process units are vented to the stack, then Configuration Type 2 (single unit using Tier 4) must be used.

 See [Section 2.5](#) for instructions on how to report for Configuration Type 5.

**Configuration Type 6 – Alternative Part 75 Reporters [98.36(d)(2)]**

This configuration represents the alternative calculation and reporting requirements available to certain units that report heat input year-round to EPA according to part 75. Units subject to Subpart D (electricity generating units that are subject to the Acid Rain Program or EGUs that are otherwise required to monitor and report to EPA CO<sub>2</sub> emissions year-round according to Part 75) would not be eligible to report under this option. Units subject to Subpart D should report following the instructions for Subpart D.

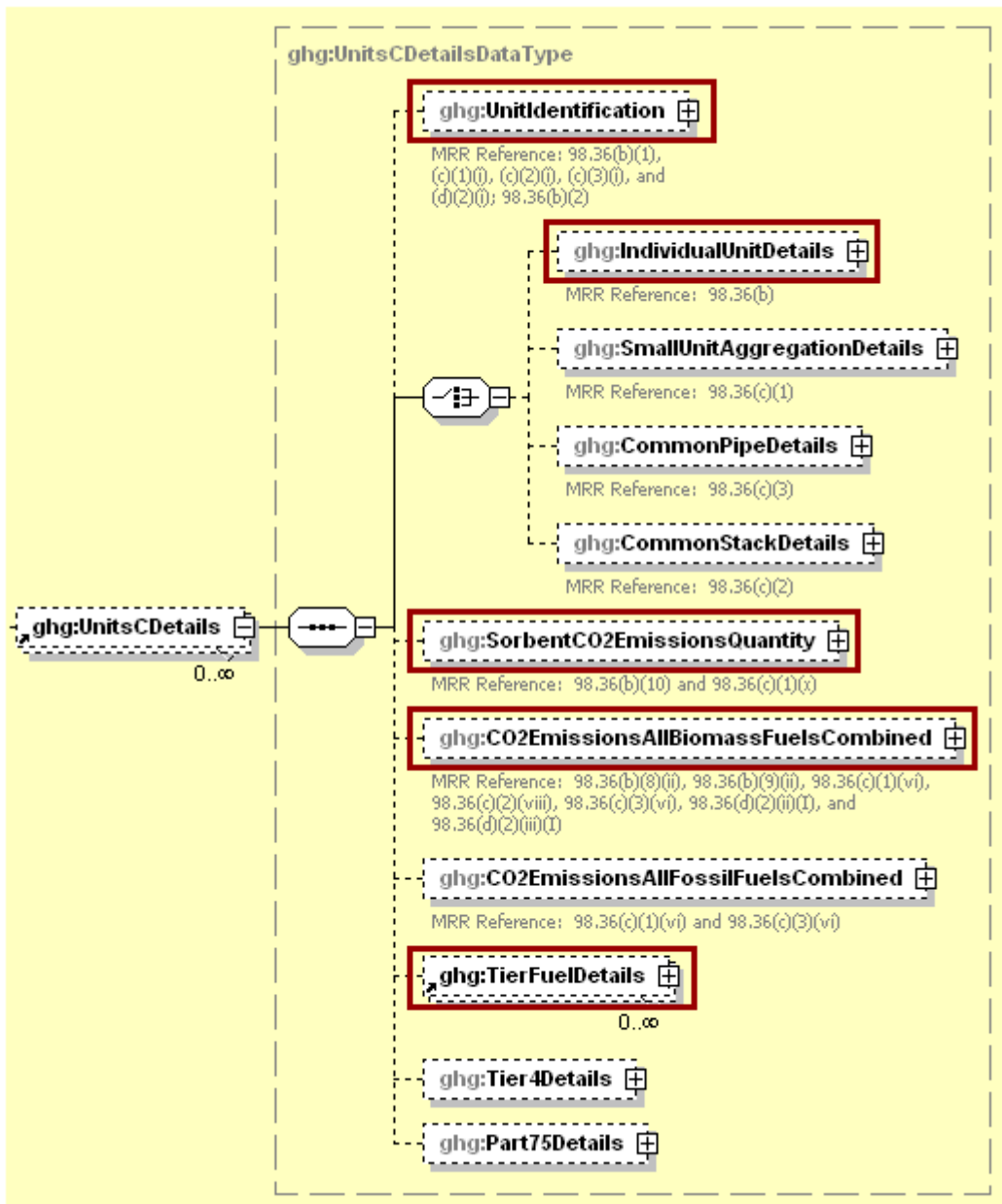
If this option is selected in place of using one of the four tiers, the applicable calculation methodology specified in 98.33(a)(5) must be used to calculate CO<sub>2</sub> emissions and the reporting requirements specified in 98.36(d)(2) replace the requirements specified in 98.36(a)-(b).

 See [Section 2.6](#) for instructions on how to report for Configuration Type 6.

## 2.1 Configuration Type 1 Identification

Specific data components are required for Configuration Type 1. See the relevant components boxed in red in the figure below.

**Figure 10**  
**Units C Details for Configuration Type 1 Schema Diagram**



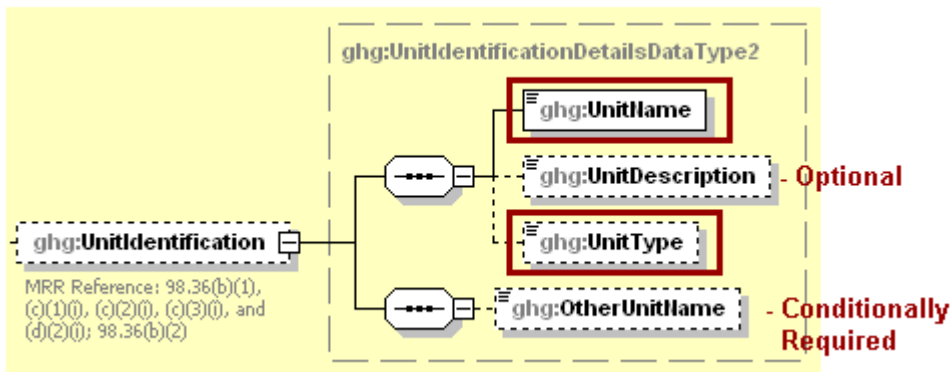
**Note:** Data elements boxed in red are required.

Each single unit using Tiers 1, 2 or 3 to calculate emissions must be identified separately so that emissions information can be reported for a specific unit.

If a single units switches from using Tiers 1-3 to Tier 4 during the year, a new configuration of Configuration Type 2 must be added to represent the period in which Tier 4 was used. Different unit

names would need to be used for the two configurations even though the configurations are representing the same unit.

**Figure 11**  
**Configuration Type 1 Unit Identification 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 configurations of **Type 1 (single unit using Tiers 1, 2 or 3)**, Subpart C requires the following identification information for each configuration:

- A unique unit name or identifier (e.g., a unit ID number) [98.36(b)(1)]
- An optional unit description or label [optional]
- A code representing the type of unit [98.36(b)(2)]

**Table 7**  
**Configuration Type 1 Unit Identification Data Element Definitions**

Data Element Name	Description
<b>UnitsCDetails</b>	<b>Parent Element:</b> A collection of data elements containing details regarding each stationary fuel combustion unit configuration.
<b>UnitIdentification</b>	<b>Parent Element:</b> A collection of data elements containing the identity of each Subpart C reporting configuration.
UnitName	A user-defined identifier for this unit. Each unit or configuration must have a unique UnitName.
UnitDescription	An optional description or label.
UnitType	A code representing the type of unit. See the list of allowable unit type codes below. If the unit type is not provided in the list, report “OCS (Other combustion source)” and report the unit type using the OtherUnitName element.  PCWD (Pulverized coal, wall-fired, dry bottom) PCWW (Pulverized coal, wall-fired, wet bottom) PCT (Pulverized coal, tangentially-fired) PCO (Pulverized coal, other)



Data Element Name	Description
	CF (Cyclone Furnace) S (Stoker Boiler) BFB (Boiler, bubbling fluidized bed) CFB (Boiler, circulating fluidized bed) PFB (Boiler, pressurized fluidized bed) OFB (Fluidized bed, other) OB (Boiler, other) FLR (Flare) II (Incinerator, institutional) ICI (Incinerator, commercial and industrial) IGCC (Integrated gasification combined cycle) RICE (Reciprocating internal combustion engine) MWC (Municipal waste combustor) PRH (Process Heater) TODF (Thermal oxidizer, direct fired, no heat recovery) RTO (Regenerative thermal oxidizer) RCO (Regenerative catalytic oxidizer) CCCT (CC (Turbine, combined cycle)) SCCT (CT (Turbine, simple cycle combustion)) CH (Comfort heater) PD (Product or intermediate product dryer) K (Kiln) F (Furnace) C (Calciner) O (Oven) HWH (Heater, hot water) IFCE (Direct fired industrial food cooking equipment) NGLH (Heater, natural gas line) CatH (Heater, catalytic) HMH (Heater, heat medium for heat exchange) COB (By-product recovery coke oven battery combustion stacks (§98.172)) FeFS (Subpart Q - flame suppression) FeFL (Subpart Q - ladle reheater) Q (Other Subpart Q combustion sources not otherwise listed.) HPPU (hydrogen production process units) OCS (Other combustion source)
OtherUnitName	<b>Conditionally Required:</b> Enter the unit type if "OCS (Other combustion source)" was entered for UnitType. Otherwise, do not report this element.

### XML Excerpt 3 Example for Configuration Type 1 Unit Identification

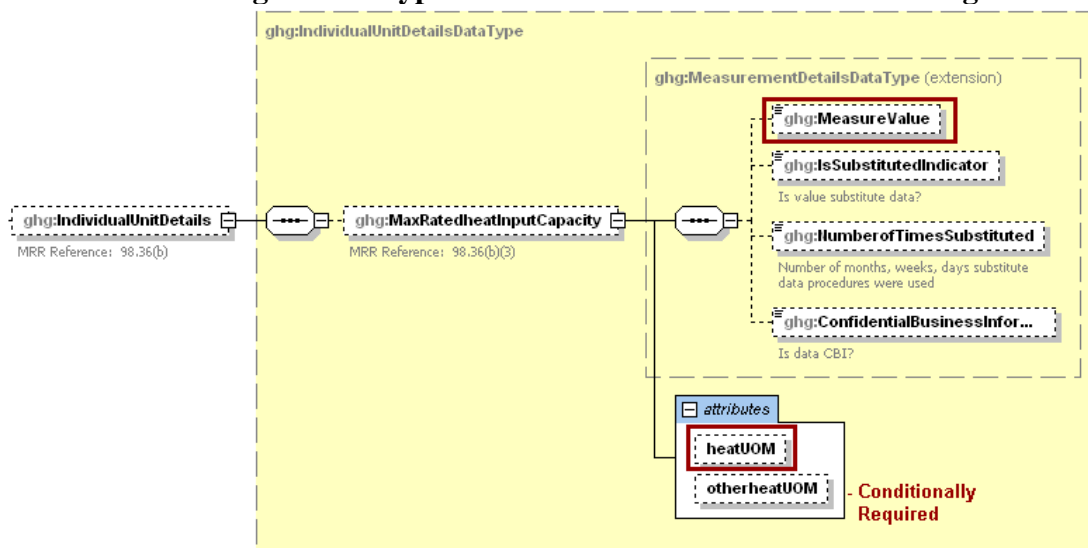
```

<ghg:UnitsCDetails>
  <ghg:UnitIdentification>
    <ghg:UnitName>CT 1- Tier 1</ghg:UnitName>
    <ghg:UnitDescription>Tier 1 unit</ghg:UnitDescription>
    <ghg:UnitType>OCS (Other combustion source)</ghg:UnitType>
    <ghg:OtherUnitName>Unit Type A</ghg:OtherUnitName>
  </ghg:UnitIdentification>
</ghg:UnitsCDetails>
```

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

For individual unit details, the value of the maximum rated heat input capacity of the unit must be reported.

**Figure 12**  
**Configuration Type 1 Individual Unit 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.

Report the measured value and heat unit of measure only. For heatUOM, use mmBtu/hr for boilers, process heaters and other combustion units as appropriate. Enter "Other" if there is another relevant unit of measure for other combustion sources, and enter the unit of measure for otherheatUOM. [98.36(b)(3)]

**Table 8**  
**Configuration Type 1 Individual Unit Details Data Element Definitions**

Data Element Name	Description
<b>IndividualUnitDetails</b>	<b>Parent Element:</b> A collection of data elements containing details about each individual stationary combustion unit that uses one of the four tiers and that is reporting as an individual unit under 98.36(b).
MaxRatedheatInputCapacity	Maximum rated heat input capacity of the unit. Report the value in the child data element <b>MeasureValue</b> . For boilers and process heaters, set the units of measure to "mmBtu/hr" only in the attribute <b>heatUOM</b> . For other combustion sources, use "mmBtu/hr" in the attribute <b>heatUOM</b> or use "Other" if there is another relevant unit of measure.  <b>Conditionally Required:</b> Report the actual unit of measure in the attribute <b>otherheatUOM</b> if "Other" was entered in the attribute <b>heatUOM</b> . Otherwise, do not report this attribute.

**XML Excerpt 4**  
**Example for Configuration Type 1 Individual Unit Details**

```
<ghg:IndividualUnitDetails>
  <ghg:MaxRatedheatInputCapacity heatUOM="Other" otherheatUOM="BTU per hour">
    <ghg:MeasureValue>1000</ghg:MeasureValue>
  </ghg:MaxRatedheatInputCapacity>
</ghg:IndividualUnitDetails>
```

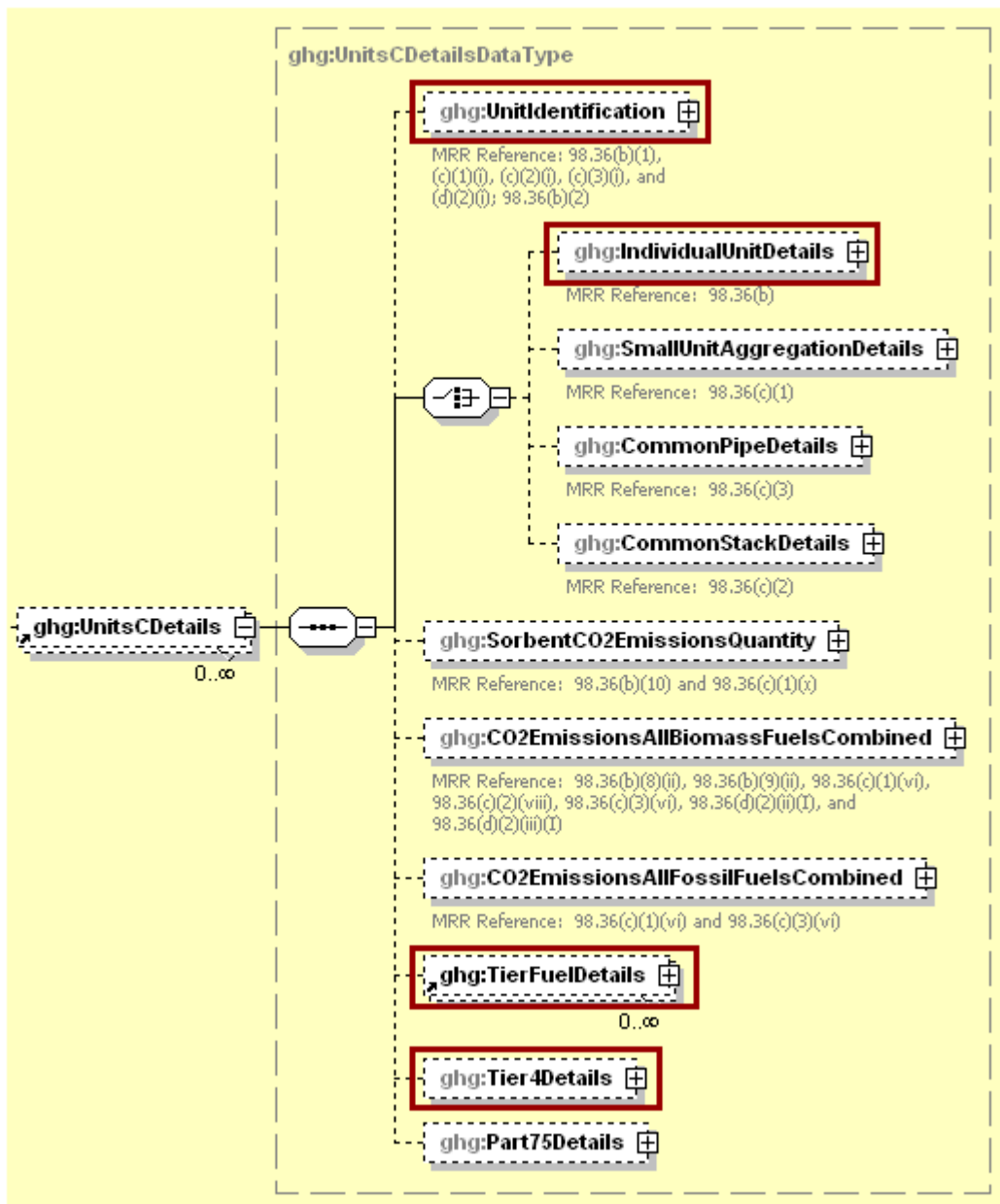
**Note:** The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.

➔ See [Section 3.1](#) for instructions on how to report emissions data for the configuration identified.

## 2.2 Configuration Type 2 Identification

Specific data components are required for Configuration Type 2. See the relevant components boxed in red in the figure below.

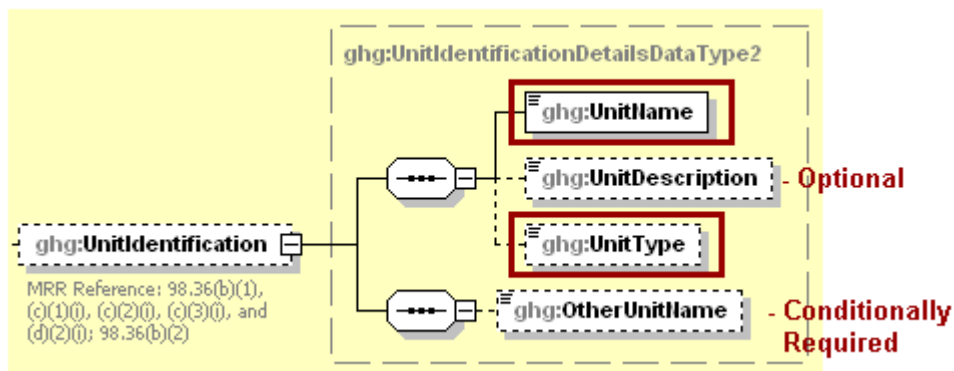
**Figure 13**  
**Units C Details for Configuration Type 2 Schema Diagram**



**Note:** Data elements boxed in red are required.

Each single unit using Tier 4 (CEMS) to calculate emissions must be identified separately so that emissions information can be reported for a specific unit.

**Figure 14**  
**Configuration Type 2 Unit Identification 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 configurations of **Type 2 (single unit using Tier 4)**, Subpart C requires the following identification information for each configuration:

- A unique unit name or identifier (e.g., a unit ID number) [98.36(b)(1)]
- An optional unit description or label [optional]
- A code representing the type of unit [98.36(b)(2)]

**Table 9**  
**Configuration Type 2 Unit Identification Data Element Definitions**

Data Element Name	Description
<b>UnitsCDetails</b>	<b>Parent Element:</b> A collection of data elements containing details regarding each stationary fuel combustion unit configuration.
<b>UnitIdentification</b>	<b>Parent Element:</b> A collection of data elements containing the identity of each Subpart C reporting configuration.
UnitName	A user-defined identifier for this unit. Each unit or configuration must have a unique UnitName.
UnitDescription	An optional description or label.
UnitType	A code representing the type of unit. See the list of allowable unit type codes below. If the unit type is not on the list, report “OCS (Other combustion source) and then report the unit type using the OtherUnitName element.  PCWD (Pulverized coal, wall-fired, dry bottom) PCWW (Pulverized coal, wall-fired, wet bottom) PCT (Pulverized coal, tangentially-fired) PCO (Pulverized coal, other) CF (Cyclone Furnace) S (Stoker Boiler) BFB (Boiler, bubbling fluidized bed) CFB (Boiler, circulating fluidized bed) PFB (Boiler, pressurized fluidized bed)

Data Element Name	Description
	OFB (Fluidized bed, other) OB (Boiler, other) FLR (Flare) II (Incinerator, institutional) ICI (Incinerator, commercial and industrial) IGCC (Integrated gasification combined cycle) RICE (Reciprocating internal combustion engine) MWC (Municipal waste combustor) PRH (Process Heater) TODF (Thermal oxidizer, direct fired, no heat recovery) RTO (Regenerative thermal oxidizer) RCO (Regenerative catalytic oxidizer) CCCT (CC (Turbine, combined cycle)) SCCT (CT (Turbine, simple cycle combustion)) CH (Comfort heater) PD (Product or intermediate product dryer) K (Kiln) F (Furnace) C (Calcliner) O (Oven) HWH (Heater, hot water) IFCE (Direct fired industrial food cooking equipment) NGLH (Heater, natural gas line) CatH (Heater, catalytic) HMH (Heater, heat medium for heat exchange) COB (By-product recovery coke oven battery combustion stacks (§98.172)) FeFS (Subpart Q - flame suppression) FeFL (Subpart Q - ladle reheater) Q (Other Subpart Q combustion sources not otherwise listed.) HPPU (hydrogen production process units) OCS (Other combustion source)
OtherUnitName	<b>Conditionally Required:</b> Enter the unit type if "OCS (Other combustion source)" was entered for UnitType. Otherwise, do not report this attribute.

### XML Excerpt 5 Example for Configuration Type 2 Unit Identification

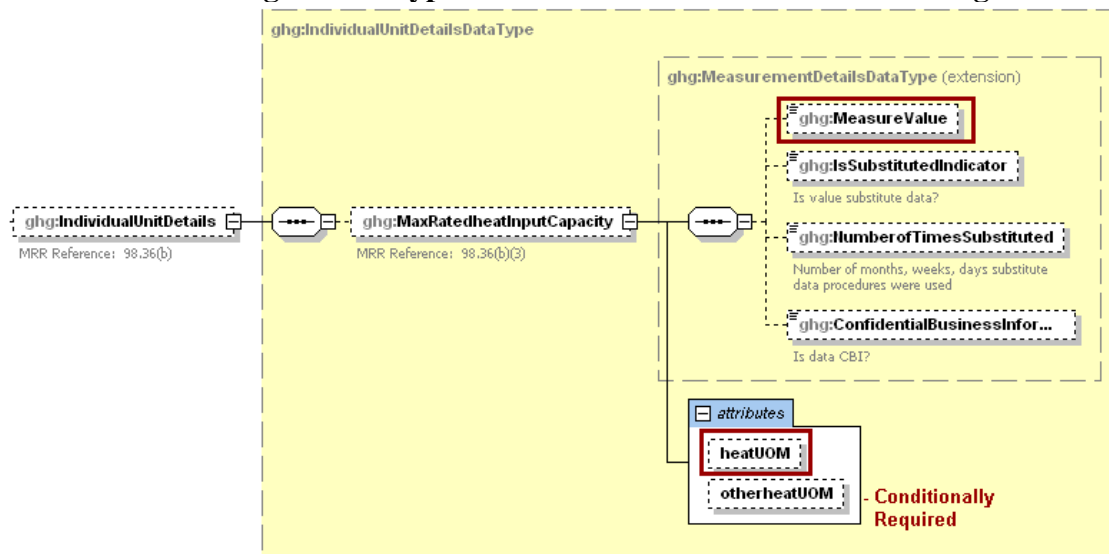
```

<ghg:UnitsCDetails>
  <ghg:UnitIdentification>
    <ghg:UnitName>CT 2- Tier 4</ghg:UnitName>
    <ghg:UnitDescription>Tier 4 unit</ghg:UnitDescription>
    <ghg:UnitType>F (Furnace)</ghg:UnitType>
  </ghg:UnitIdentification>
  
```

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

For individual unit details, the value of the maximum rated heat input capacity of the unit must be reported.

**Figure 15**  
**Configuration Type 2 Individual Unit 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.

Report the measured value and heat unit of measure only. For heatUOM, use mmBtu/hr for boilers, process heaters and other combustion units as appropriate. Enter "Other" if there is another relevant unit of measure for other combustion sources, and enter the unit of measure for otherheatUOM. [98.36(b)(3)]

**Table 10**  
**Configuration Type 2 Individual Unit Details Data Element Definitions**

Data Element Name	Description
<b>IndividualUnitDetails</b>	<b>Parent Element:</b> A collection of data elements containing details about each individual stationary combustion unit that uses one of the four tiers and that are reporting under 98.36(b).
MaxRatedheatInputCapacity	Maximum rated heat input capacity of the unit. Report the value in the child data element <b>MeasureValue</b> . For boilers and process heaters, set the units of measure to “mmBtu/hr” only in the attribute <b>heatUOM</b> . For other combustion sources, use “mmBtu/hr” in the attribute <b>heatUOM</b> or use "Other" if there is another relevant unit of measure.  <b>Conditionally Required:</b> Report the actual unit of measure in the attribute <b>otherheatUOM</b> if "Other" was entered in the attribute <b>heatUOM</b> . Otherwise, do not report this attribute.

**XML Excerpt 6**  
**Example for Configuration Type 2 Individual Unit Details**

```

<ghg:IndividualUnitDetails>
  <ghg:MaxRatedheatInputCapacity heatUOM="mmBtu/hr">
    <ghg:MeasureValue>4000</ghg:MeasureValue>
  </ghg:MaxRatedheatInputCapacity>
</ghg:IndividualUnitDetails>
    
```

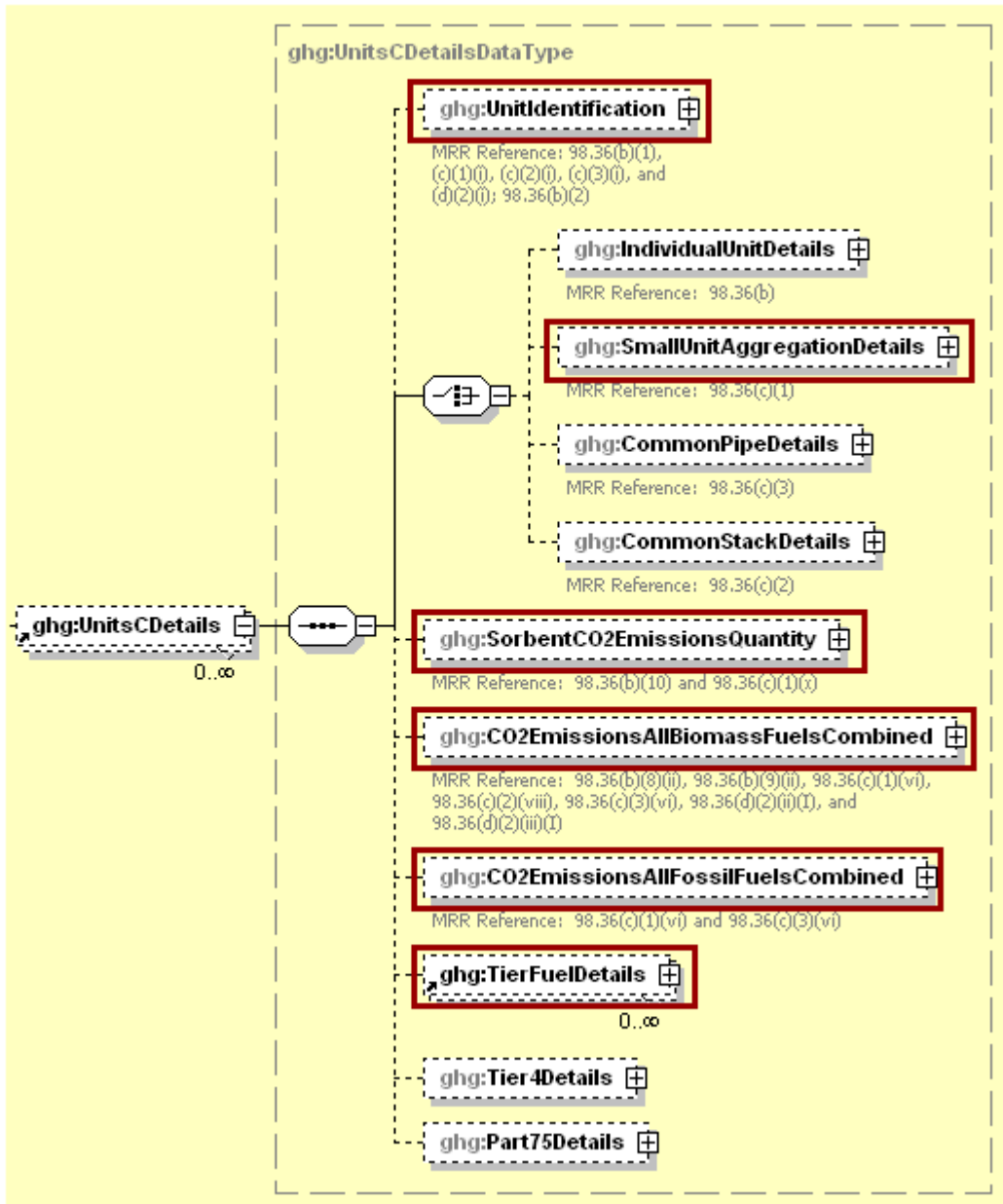
**Note:** The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.

➔ See [Section 4.0](#) for instructions on how to report fuel data for the configuration identified.

### 2.3 Configuration Type 3 Identification

Specific data components are required for Configuration Type 3. See the relevant components boxed in red in the figure below.

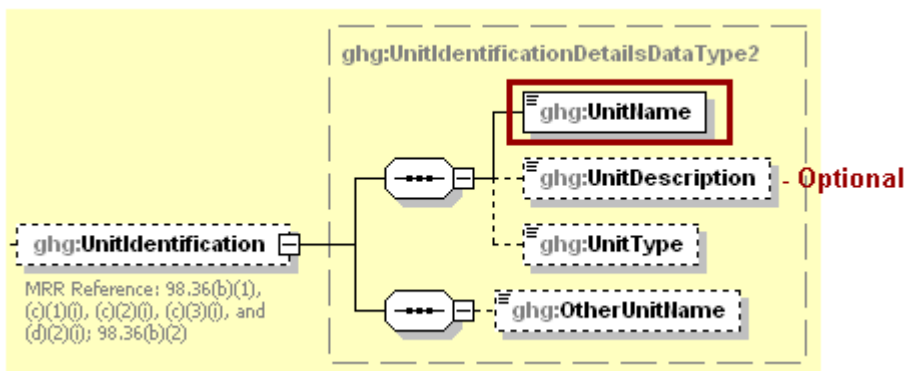
**Figure 16**  
**Units C Details for Configuration Type 3 Schema Diagram**



**Note:** Data elements boxed in red are required.

Each group of units using the aggregation of units reporting alternative must be identified separately so that emissions information can be reported for a specific aggregation of units.

**Figure 17**  
**Configuration Type 3 Unit Identification Schema Diagram**



**Note:** Data elements boxed in red are required.

For configurations of **Type 3 (aggregation of units)**, Subpart C requires the following identification information for each configuration:

- A unique name or identifier that begins with the prefix “GP” [98.36(c)(1)(i)]
- An optional description or label [optional]

**Table 11**  
**Configuration Type 3 Unit Identification Data Element Definitions**

Data Element Name	Description
UnitsCDetails	<b>Parent Element:</b> A collection of data elements containing details regarding each stationary fuel combustion unit configuration.
UnitIdentification	<b>Parent Element:</b> A collection of data elements containing the identity of each Subpart C reporting configuration.
UnitName	A user-defined identifier for this configuration. Each unit or configuration must have a unique UnitName. For an aggregation of units configuration, report the group name/ID beginning with the prefix "GP".
UnitDescription	An optional description or label. For example, the scope of units included in this configuration may be reported here.

**XML Excerpt 7**  
**Example for Configuration Type 3 Unit Identification**

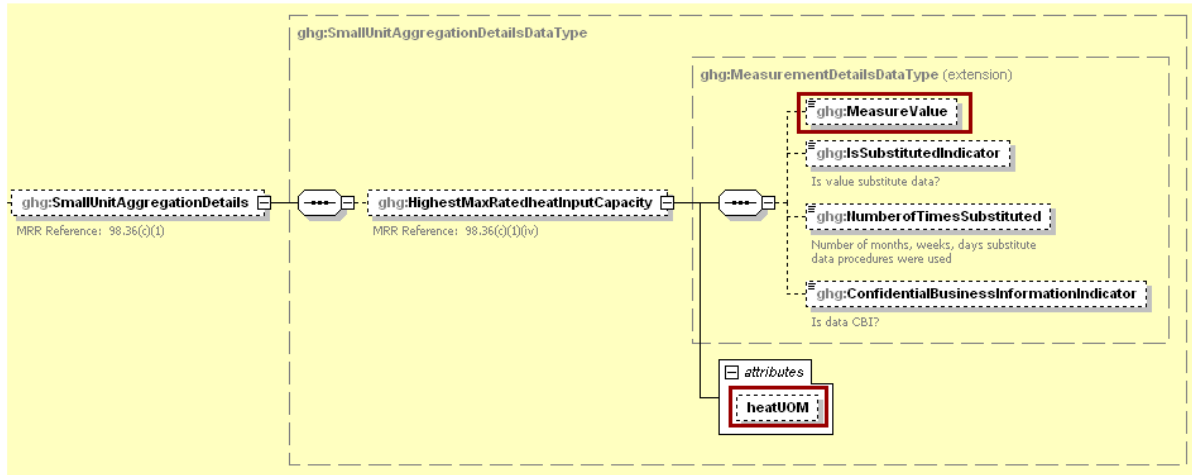
```
<ghg:UnitsCDetails>
  <ghg:UnitIdentification>
    <ghg:UnitName>GP-CT3- Tier 1</ghg:UnitName>
    <ghg:UnitDescription>Tier 1 units</ghg:UnitDescription>
  </ghg:UnitIdentification>
</ghg:UnitsCDetails>
```

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



For small unit aggregation details, the value of the highest maximum rated heat input capacity of any unit of the group must be reported.

**Figure 18**  
**Small Unit Aggregation Details Schema Diagram**



**Note:** Data elements boxed in red are required.

Report the measured value and heat unit of measure in mmBtu/hr only. [98.36(c)(1)(iv)]

**Table 12**  
**Small Unit Aggregation Details Data Element Definitions**

Data Element Name	Description
<b>SmallUnitAggregationDetails</b>	<b>Parent Element:</b> A collection of data elements containing details about an aggregation of units reporting under 98.36(c)(1) as an aggregation of units configuration.
HighestMaxRatedheatInputCapacity	The highest maximum rated heat input capacity of any unit in the group (aggregation of units configuration). Report the value in the child data element <b>MeasureValue</b> . Set the units of measure to “mmBtu/hr” in the attribute <b>heatUOM</b> .

**XML Excerpt 8**  
**Example for Small Unit Aggregation Details**

```
<ghg:SmallUnitAggregationDetails>
  <ghg:HighestMaxRatedheatInputCapacity heatUOM="mmBtu/hr">
    <ghg:MeasureValue>5000</ghg:MeasureValue>
  </ghg:HighestMaxRatedheatInputCapacity>
</ghg:SmallUnitAggregationDetails>
```

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

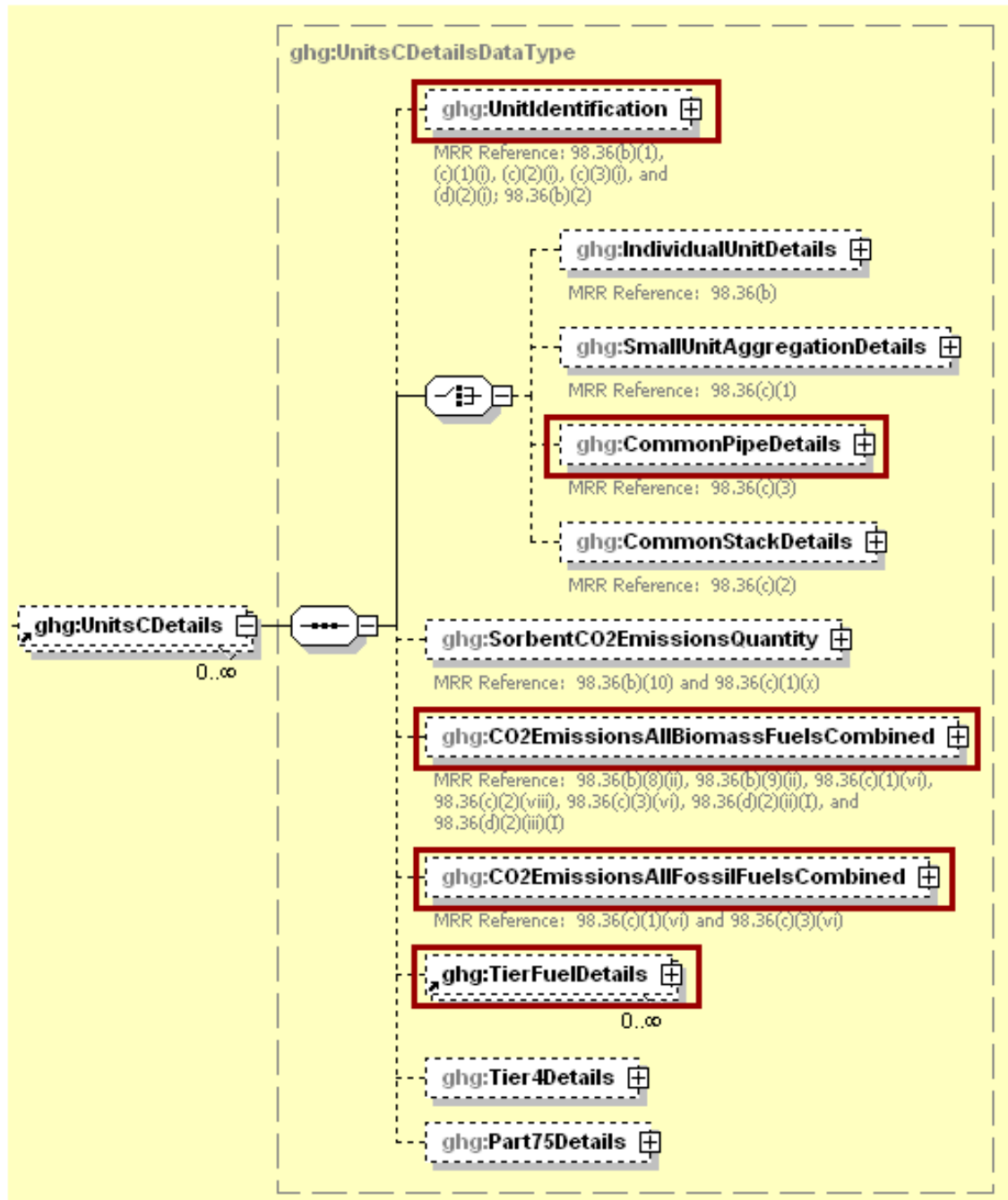
The next step is to report emissions data for the configuration identified by referring to Section 3.2.

➔ See [Section 3.2](#) for instructions on how to report emissions data for the configuration identified.

## 2.4 Configuration Type 4 Identification

Specific data components are required for Configuration Type 4. See the relevant components boxed in red in the figure below.

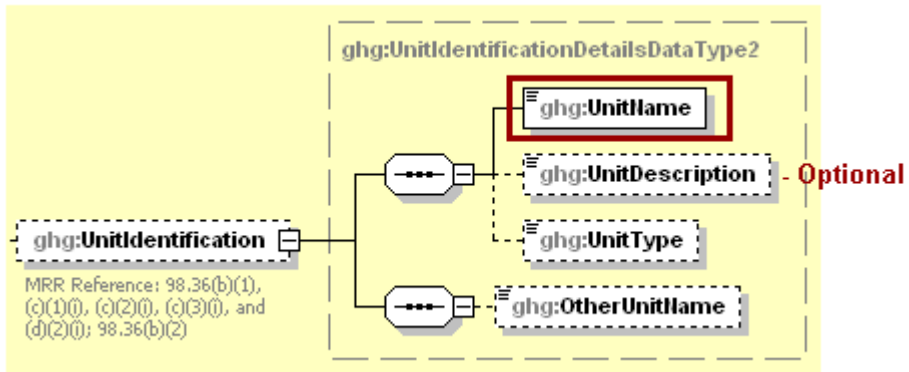
**Figure 19**  
**Units C Details for Configuration Type 4 Schema Diagram**



**Note:** Data elements boxed in red are required.

Each group of units using the common pipe configuration reporting alternative must be identified separately so that emissions information can be reported for a specific group of units.

**Figure 20**  
**Configuration Type 4 Unit Identification Schema Diagram**



**Note:** Data elements boxed in red are required.

For configurations of **Type 4 (common pipe configurations)**, Subpart C requires the following identification information for each configuration:

- A unique name or identifier that begins with the prefix “CP” [98.36(c)(3)(i)]
- An optional description or label [optional]

**Table 13**  
**Configuration Type 4 Unit Identification Data Element Definitions**

Data Element Name	Description
<b>UnitsCDetails</b>	<b>Parent Element:</b> A collection of data elements containing details regarding each stationary fuel combustion unit configuration.
<b>UnitIdentification</b>	<b>Parent Element:</b> A collection of data elements containing the identity of each Subpart C reporting configuration.
UnitName	A user-defined identifier for this configuration. Each configuration must have a unique UnitName. For common pipe configurations, report the common pipe name/ID beginning with the prefix "CP".
UnitDescription	An optional description or label. For example, the scope of units included in this configuration may be reported here.

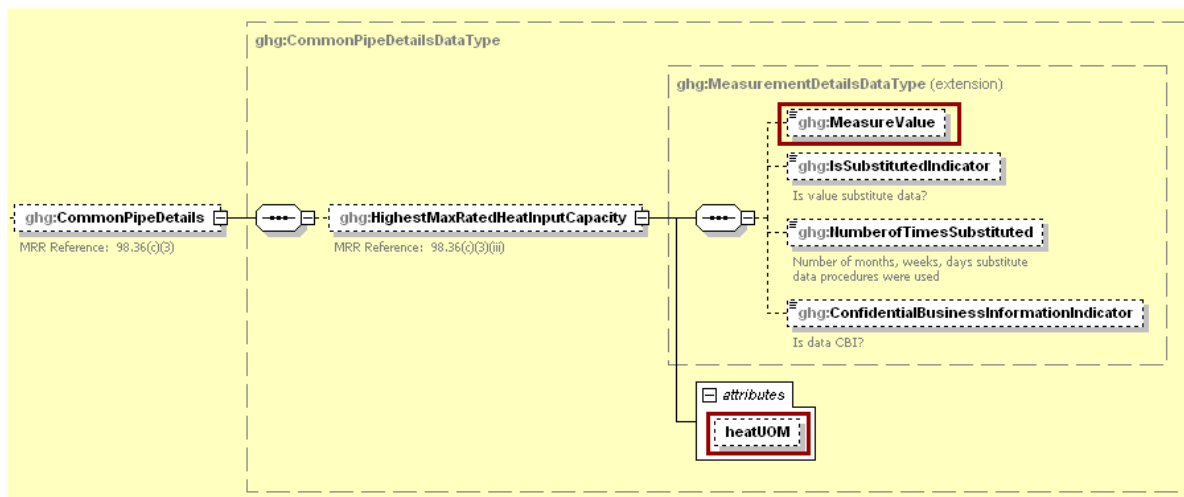
**XML Excerpt 9**  
**Example for Configuration Type 4 Unit Identification**

```
<ghg:UnitsCDetails>
  <ghg:UnitIdentification>
    <ghg:UnitName>CP-CT 4- Tier 2</ghg:UnitName>
    <ghg:UnitDescription>Tier 2 unit</ghg:UnitDescription>
  </ghg:UnitIdentification>
</ghg:UnitsCDetails>
```

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

For common pipe details, the value of the highest maximum rated heat input capacity of any unit served by the common pipe must be reported.

**Figure 21**  
**Common Pipe Details Schema Diagram**



**Note:** Data elements boxed in red are required.

Report the measured value and heat unit of measure in mmBtu/hr only. [98.36(c)(3)(iii)]

**Table 14**  
**Common Pipe Details Data Element Definitions**

Data Element Name	Description
<b>CommonPipeDetails</b>	<b>Parent Element:</b> A collection of data elements containing details about units reporting under 98.36(c)(3) as a common pipe configuration.
HighestMaxRatedHeatInputCapacity	The highest maximum rated heat input capacity of any unit served by the common pipe (common pipe unit configuration). Report the value in the child data element <b>MeasureValue</b> . Set the units of measure to “mmBtu/hr” in the attribute <b>heatUOM</b> .

**XML Excerpt 10**  
**Example for Common Pipe Details**

```
<ghg:CommonPipeDetails>
  <ghg:HighestMaxRatedHeatInputCapacity heatUOM="mmBtu/hr">
    <ghg:MeasureValue>6000</ghg:MeasureValue>
  </ghg:HighestMaxRatedHeatInputCapacity>
</ghg:CommonPipeDetails>
```

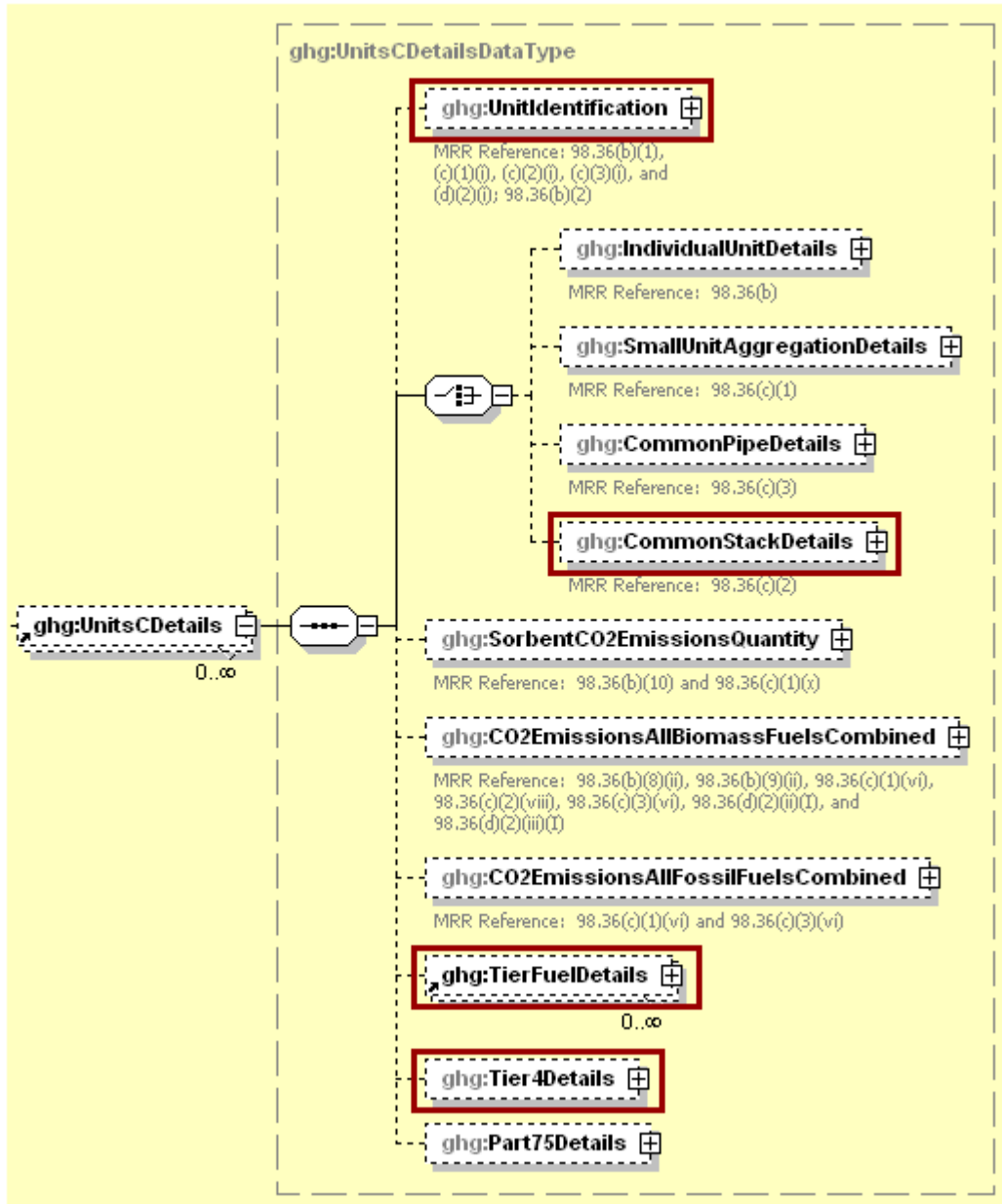
**Note:** The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.

➔ See [Section 3.3](#) for instructions on how to report emissions data for the configuration identified.

## 2.5 Configuration Type 5 Identification

Specific data components are required for Configuration Type 5. See the relevant components boxed in red in the figure below.

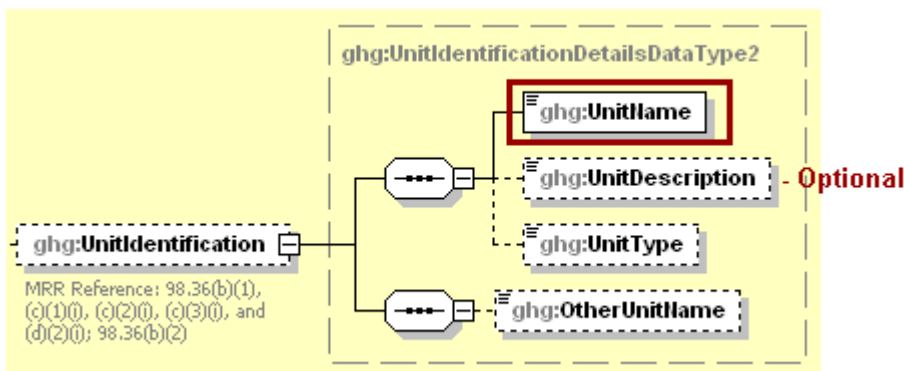
**Figure 22**  
**Units C Details for Configuration Type 5 Schema Diagram**



**Note:** Data elements boxed in red are required.

Each group of units using Tier 4 (CEMS) to calculate emissions and reporting under the monitored common stack or duct configurations reporting alternative must be identified separately so that emissions information can be reported for a specific group of units.

**Figure 23**  
**Configuration Type 5 Unit Identification Schema Diagram**



**Note:** Data elements boxed in red are required.

For configurations of **Type 5 (monitored common stack or duct configurations)**, Subpart C requires the following identification information for each configuration:

- A unique name or identifier that begins with the prefix “CS” [98.36(c)(2)(i)]
- An optional description or label [optional]

**Table 15**  
**Configuration Type 5 Unit Identification Data Element Definitions**

Data Element Name	Description
<b>UnitsCDetails</b>	<b>Parent Element:</b> A collection of data elements containing details regarding each stationary fuel combustion unit configuration.
<b>UnitIdentification</b>	<b>Parent Element:</b> A collection of data elements containing the identity of each Subpart C reporting configuration.
UnitName	A user-defined identifier for this configuration. Each configuration must have a unique UnitName. For common stack configurations, report the common stack name/ID beginning with the prefix "CS".
UnitDescription	An optional description or label. For example, the scope of units included in this configuration may be reported here.

**XML Excerpt 11**  
**Example for Configuration Type 5 Unit Identification**

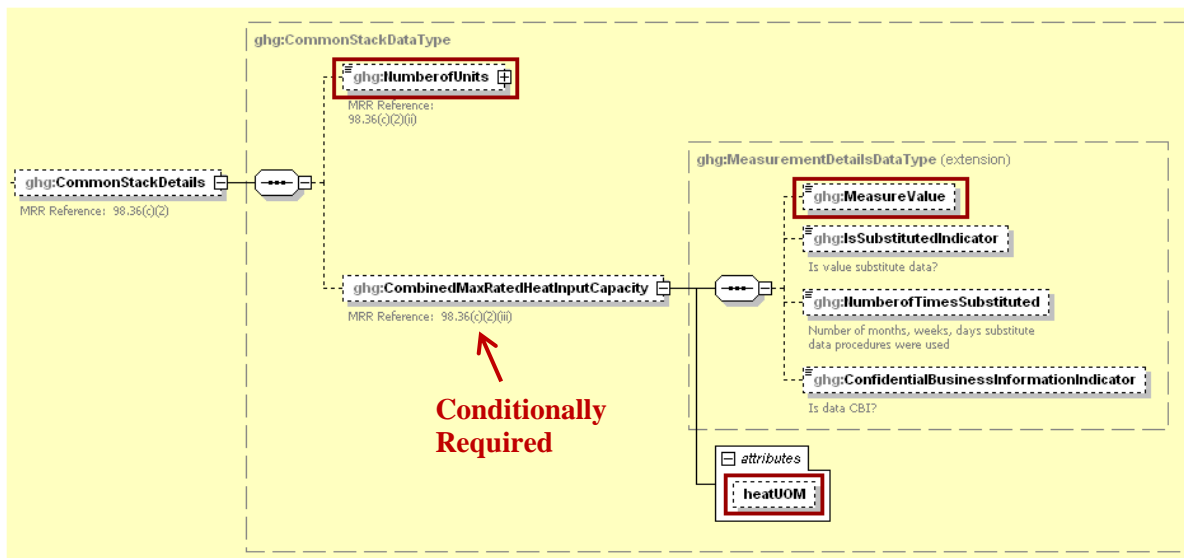
```
<ghg:UnitsCDetails>
  <ghg:UnitIdentification>
    <ghg:UnitName>CS-CT 5- Tier 4</ghg:UnitName>
    <ghg:UnitDescription>Tier 4 unit</ghg:UnitDescription>
  </ghg:UnitIdentification>
</ghg:UnitsCDetails>
```

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

For common stack details, the following information must be reported:

- The number of units sharing the common stack [98.36(c)(2)(ii)]
- The combined maximum rated heat input capacity of the units sharing the common stack in mmBtu/hr [98.36(c)(2)(iii)]

**Figure 24**  
**Common Stack 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 the combined maximum rated heat input capacity, report the measured value and heat unit of measure in mmBtu/hr only.

**Table 16**  
**Common Stack Details Data Element Definitions**

Data Element Name	Description
<b>CommonStackDetails</b>	<b>Parent Element:</b> A collection of data elements containing details about units reporting under 98.36(c)(2) as a common stack or duct configuration.
NumberofUnits	Number of units sharing the common stack or duct. Report “1” when the flue gas flowing through the stack includes combustion products and/or process off-gases and all of the effluent comes from a single unit.
CombinedMaxRatedHeatInputCapacity	Combined maximum rated heat input capacity of the units sharing the common stack or duct. <b>Conditionally Required:</b> This data element is required only when all of the units sharing the common stack are stationary fuel combustion units (monitored common stack or duct configuration). Report the value in the child data element <b>MeasureValue</b> . Set the units of measure to “mmBtu/hr” in the attribute <b>heatUOM</b> .

### XML Excerpt 12 Example for Common Stack Details

```

<ghg:CommonStackDetails>
  <ghg:NumberOfUnits>7</ghg:NumberOfUnits>
  <ghg:CombinedMaxRatedHeatInputCapacity heatUOM="mmBtu/hr">
    <ghg:MeasureValue>7000</ghg:MeasureValue>
  </ghg:CombinedMaxRatedHeatInputCapacity>
</ghg:CommonStackDetails>
    
```

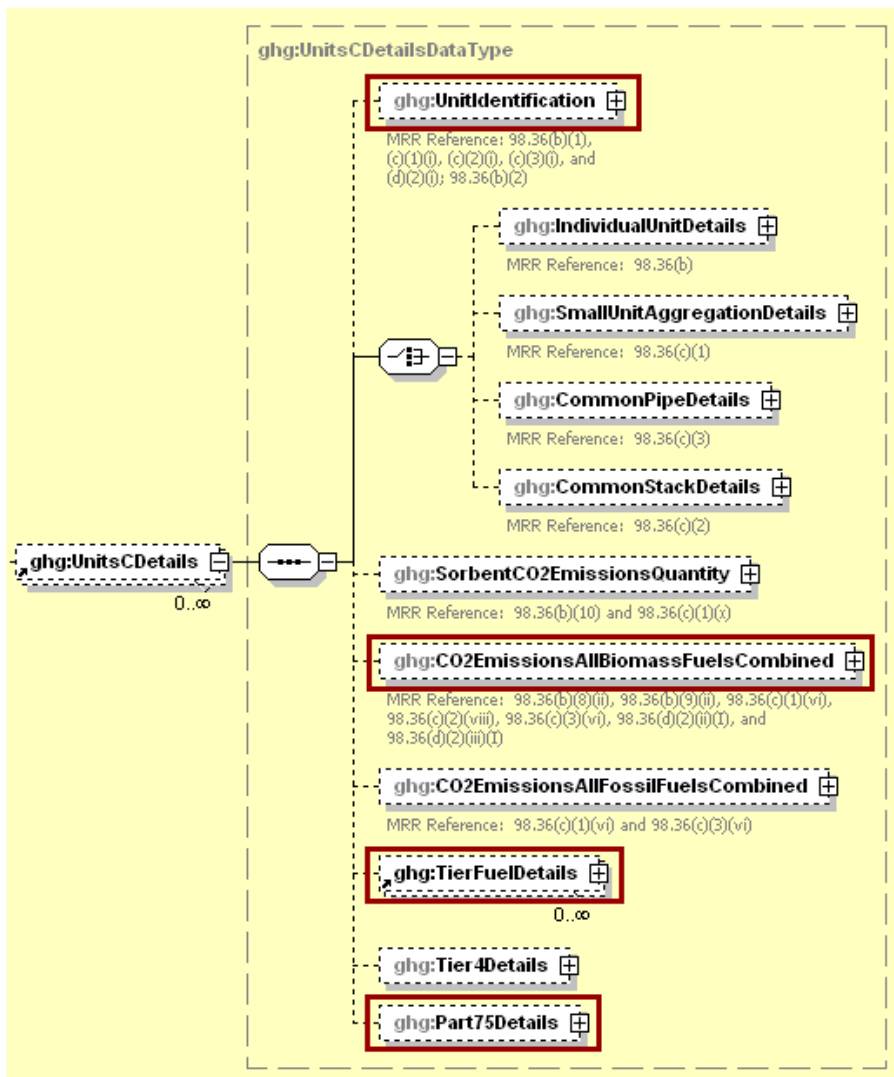
**Note:** The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.

See [Section 4.0](#) for instructions on how to report fuel data for the configuration identified.

### 2.6 Configuration Type 6 Identification

Specific data components are required for Configuration Type 6. See the relevant components boxed in red in the figure below.

**Figure 25  
Units C Details for Configuration Type 6 Schema Diagram**

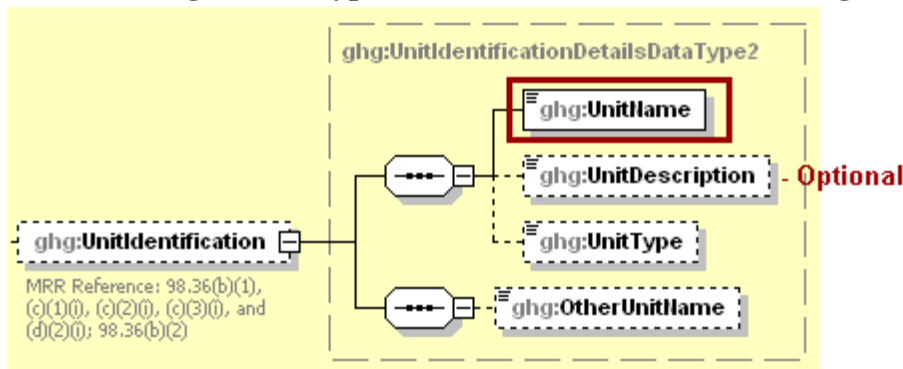


**Note:** Data elements boxed in red are required.



Each unit, stack or pipe using the alternative CO<sub>2</sub> mass emissions calculation methods provided in 98.33(a)(5) must be identified separately so that emissions information can be reported for the respective unit, stack or pipe.

**Figure 26**  
**Configuration Type 6 Unit Identification Schema Diagram**



**Note:** Data elements boxed in red are required.

For configurations of **Type 6 (year-round Part 75 heat input reporters)**, Subpart C requires the following identification information for each configuration:

- Unit, stack or pipe ID numbers. Use the exact same unit, common stack, common pipe or multiple stack identification numbers that represent the monitored locations ( e.g., 1, 2, CS001, MS1A, CP001, etc. ) that are reported under 40 CFR 75.64 [98.36(d)(2)(i)]
- An optional description or label [optional]

**Table 17**  
**Configuration Type 6 Unit Identification Data Element Definitions**

Data Element Name	Description
<b>UnitsCDetails</b>	<b>Parent Element:</b> A collection of data elements containing details regarding each stationary fuel combustion unit configuration.
<b>UnitIdentification</b>	<b>Parent Element:</b> A collection of data elements containing the identity of each Subpart C reporting configuration.
UnitName	For part 75 units, use exactly the same name/ID that is reported under §75.64 and that represents the monitored location.
UnitDescription	An optional description or label. For example, the scope of units included in this configuration may be reported here.

**XML Excerpt 13**  
**Example for Configuration Type 6 Unit Identification**

```
<ghg:UnitsCDetails>
  <ghg:UnitIdentification>
    <ghg:UnitName>CT 6- CEMS</ghg:UnitName>
    <ghg:UnitDescription>Part 75 unit</ghg:UnitDescription>
  </ghg:UnitIdentification>
</ghg:UnitsCDetails>
```

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

➔ See [Section 3.4](#) for instructions on how to report emissions data for the configuration identified.

### 3.0 Configuration Level Emissions Information

This section of the Subpart C XML reporting instructions covers the requirements for reporting the total sorbent emissions, total biogenic emissions and total fossil fuel emissions at each configuration.

Configurations using either Tier 4 (Configuration Types 2 and 5) or the Part 75 methodologies specified in 98.33(a)(5) (Configuration Type 6) have additional configuration-level requirements specified in Section 5 of these instructions.

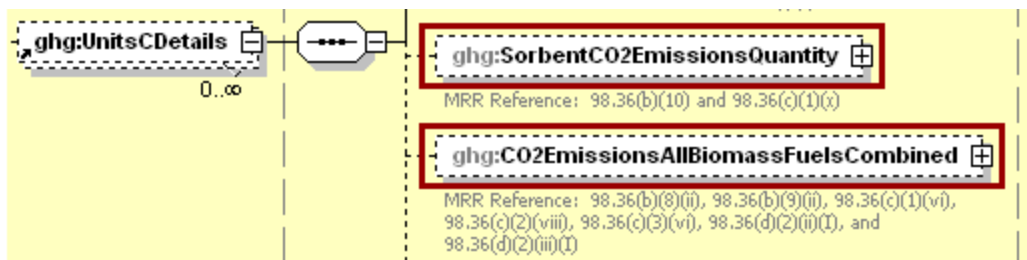
The requirements for reporting fuel-specific emissions are specified in Section 4 of these instructions. Note that the reporting of both configuration-level and fuel-specific emissions are required for all configurations types. Also, as with the identification information, each configuration has unique reporting requirements for emissions information.

### 3.1 Configuration Type 1 Configuration Level Emissions

For configurations of **Type 1 (single unit using Tiers 1, 2 or 3)**, Subpart C requires the following additional information aggregated at the configuration-level:

- The total annual CO<sub>2</sub> mass emissions from sorbent [98.36(b)(10)]
- The total annual biogenic CO<sub>2</sub> mass emissions from the combustion of biomass fuels and the biogenic fraction of CO<sub>2</sub> emissions from fuels with a mixed biogenic and fossil component [98.36(b)(8)(ii)]

**Figure 27**  
**Sorbent CO<sub>2</sub> Emissions Quantity and CO<sub>2</sub> Emissions All Biomass Fuels Combined Schema Diagram**



**Note:** Data elements boxed in red are required.

**Table 18**  
**Sorbent CO<sub>2</sub> Emissions Quantity and CO<sub>2</sub> Emissions All Biomass Fuels Combined Data Element Definitions**

Data Element Name	Description
SorbentCO2EmissionsQuantity	The calculated annual CO <sub>2</sub> emissions from sorbent. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .

Data Element Name	Description
CO2EmissionsAllBiomassFuelsCombined	Total annual biogenic CO <sub>2</sub> mass emissions for a configuration. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .

**XML Excerpt 14**  
**Example for Sorbent CO<sub>2</sub> Emissions Quantity and CO<sub>2</sub> Emissions All Biomass Fuels Combined**

```

<ghg:SorbentCO2EmissionsQuantity massUOM="Metric Tons">
  <ghg:CalculatedValue>10.1</ghg:CalculatedValue>
</ghg:SorbentCO2EmissionsQuantity>
<ghg:CO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
  <ghg:CalculatedValue>100.2</ghg:CalculatedValue>
</ghg:CO2EmissionsAllBiomassFuelsCombined>
    
```

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

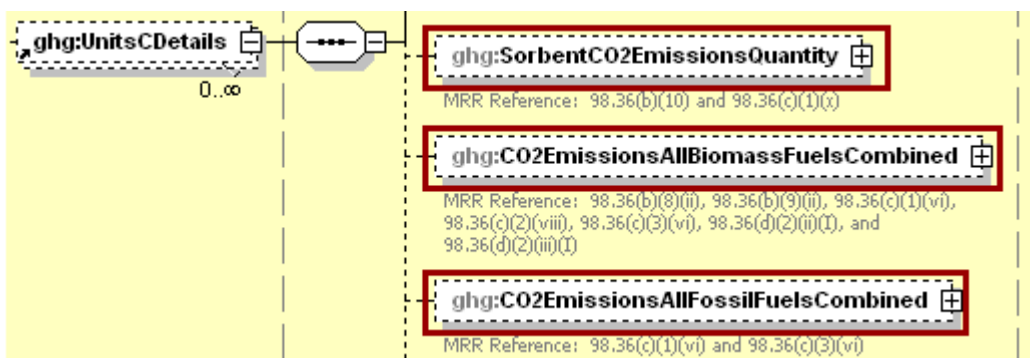
➔ See [Section 4.0](#) for instructions on how to report fuel data for the configuration identified.

**3.2 Configuration Type 3 Configuration Level Emissions**

For configurations of **Type 3 (aggregation of units)**, Subpart C requires the following additional information aggregated at the configuration-level:

- The total annual CO<sub>2</sub> mass emissions from sorbent [98.36(c)(1)(x)]
- The total annual biogenic CO<sub>2</sub> mass emissions from the combustion of biomass fuels and the biogenic fraction of CO<sub>2</sub> emissions from fuels with a mixed biogenic and fossil component [98.36(c)(1)(vi)]
- The total annual CO<sub>2</sub> mass emissions from the combustion of fossil fuels and the fossil fraction of CO<sub>2</sub> emissions from fuels with a mixed biogenic and fossil component [98.36(c)(1)(vi)]

**Figure 28**  
**Sorbent CO<sub>2</sub> Emissions Quantity, CO<sub>2</sub> Emissions All Biomass Fuels Combined and CO<sub>2</sub> Emissions All Fossil Fuels Combined**



**Note:** Data elements boxed in red are required.

**Table 19**  
**Sorbent CO<sub>2</sub> Emissions Quantity, CO<sub>2</sub> Emissions All Biomass Fuels Combined**  
**and CO<sub>2</sub> Emissions All Fossil Fuels Combined**

Data Element Name	Description
SorbentCO2EmissionsQuantity	The calculated annual CO <sub>2</sub> emissions from sorbent. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
CO2EmissionsAllBiomassFuelsCombined	Total annual biogenic CO <sub>2</sub> mass emissions for a configuration. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
CO2EmissionsAllFossilFuelsCombined	The calculated annual CO <sub>2</sub> mass emissions from the combustion of all fossil fuels for a configuration. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .


**XML Excerpt 15**  
**Example for Sorbent CO<sub>2</sub> Emissions Quantity,**  
**CO<sub>2</sub> Emissions All Biomass Fuels Combined and**  
**CO<sub>2</sub> Emissions All Fossil Fuels Combined**

```

<ghg:SorbentCO2EmissionsQuantity massUOM="Metric Tons">
  <ghg:CalculatedValue>50.3</ghg:CalculatedValue>
</ghg:SorbentCO2EmissionsQuantity>
<ghg:CO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
  <ghg:CalculatedValue>500.6</ghg:CalculatedValue>
</ghg:CO2EmissionsAllBiomassFuelsCombined>
<ghg:CO2EmissionsAllFossilFuelsCombined massUOM="Metric Tons">
  <ghg:CalculatedValue>50000.8</ghg:CalculatedValue>
</ghg:CO2EmissionsAllFossilFuelsCombined>

```

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

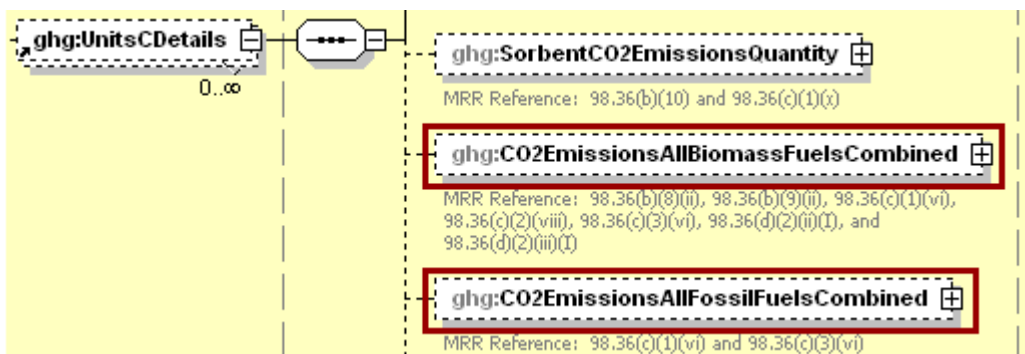
 See [Section 4.0](#) for instructions on how to report fuel data for the configuration identified.

### 3.3 Configuration Type 4 Configuration Level Emissions

For configurations of **Type 4 (non-CEMS group of units sharing common fuel supply pipe)**, Subpart C requires the following additional information aggregated at the configuration-level:

- The total annual biogenic CO<sub>2</sub> mass emissions from the combustion of biomass fuels and the biogenic fraction of CO<sub>2</sub> emissions from fuels with a mixed biogenic and fossil component [98.36(c)(3)(vi)]
- The total annual CO<sub>2</sub> mass emissions from the combustion of fossil fuels and the fossil fraction of CO<sub>2</sub> emissions from fuels with a mixed biogenic and fossil component [98.36(c)(3)(vi)]

**Figure 29**  
**CO<sub>2</sub> Emissions All Biomass Fuels Combined and CO<sub>2</sub> Emissions All Fossil Fuels Combined**



Note: Data elements boxed in red are required.

**Table 20**  
**CO<sub>2</sub> Emissions All Biomass Fuels Combined and CO<sub>2</sub> Emissions All Fossil Fuels Combined Data Element Definitions**

Data Element Name	Description
CO2EmissionsAllBiomassFuelsCombined	Total annual biogenic CO <sub>2</sub> mass emissions for a configuration. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
CO2EmissionsAllFossilFuelsCombined	The calculated annual CO <sub>2</sub> mass emissions from the combustion of all fossil fuels for a configuration. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .

**XML Excerpt 16**  
**Example for CO<sub>2</sub> Emissions All Biomass Fuels Combined and CO<sub>2</sub> Emissions All Fossil Fuels Combined**

```

<ghg:CO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
  <ghg:CalculatedValue>600.8</ghg:CalculatedValue>
</ghg:CO2EmissionsAllBiomassFuelsCombined>
<ghg:CO2EmissionsAllFossilFuelsCombined massUOM="Metric Tons">
  <ghg:CalculatedValue>60000.9</ghg:CalculatedValue>
</ghg:CO2EmissionsAllFossilFuelsCombined>
    
```

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

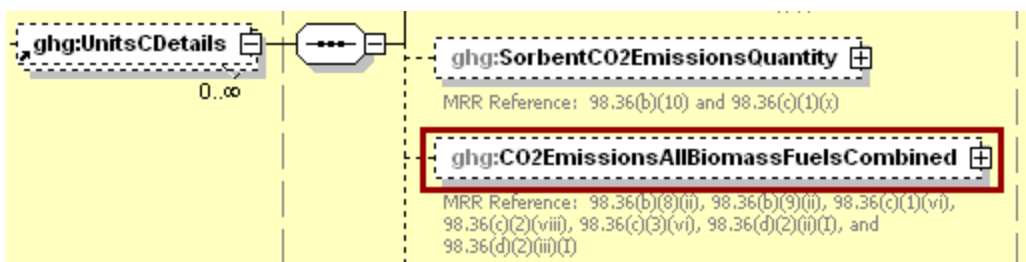
➔ See [Section 4.0](#) for instructions on how to report fuel data for the configuration identified.

### 3.4 Configuration Type 6 Configuration Level Emissions

For configurations of **Type 6 (year-round Part 75 heat input reporters)**, Subpart C requires the following additional information aggregated at the configuration-level:

- The total annual biogenic CO<sub>2</sub> mass emissions from the combustion of biomass fuels and the biogenic fraction of CO<sub>2</sub> emissions from fuels with a mixed biogenic and fossil component [98.36(d)(2)(ii)(I), 98.36(d)(2)(iii)(I)]

**Figure 30**  
**CO<sub>2</sub> Emissions All Biomass Fuels Combined Schema Diagram**



**Note:** Data elements boxed in red are required.

**Table 21**  
**CO<sub>2</sub> Emissions All Biomass Fuels Combined Data Element Definitions**

Data Element Name	Description
CO2EmissionsAllBiomassFuelsCombined	Total annual biogenic CO <sub>2</sub> mass emissions for a configuration. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .

**XML Excerpt 17**  
**Example for CO<sub>2</sub> Emissions All Biomass Fuels Combined**

```
<ghg:CO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
  <ghg:CalculatedValue>1000.5</ghg:CalculatedValue>
</ghg:CO2EmissionsAllBiomassFuelsCombined >
```

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

➔ See [Section 4.0](#) for instructions on how to report fuel data for the configuration identified.

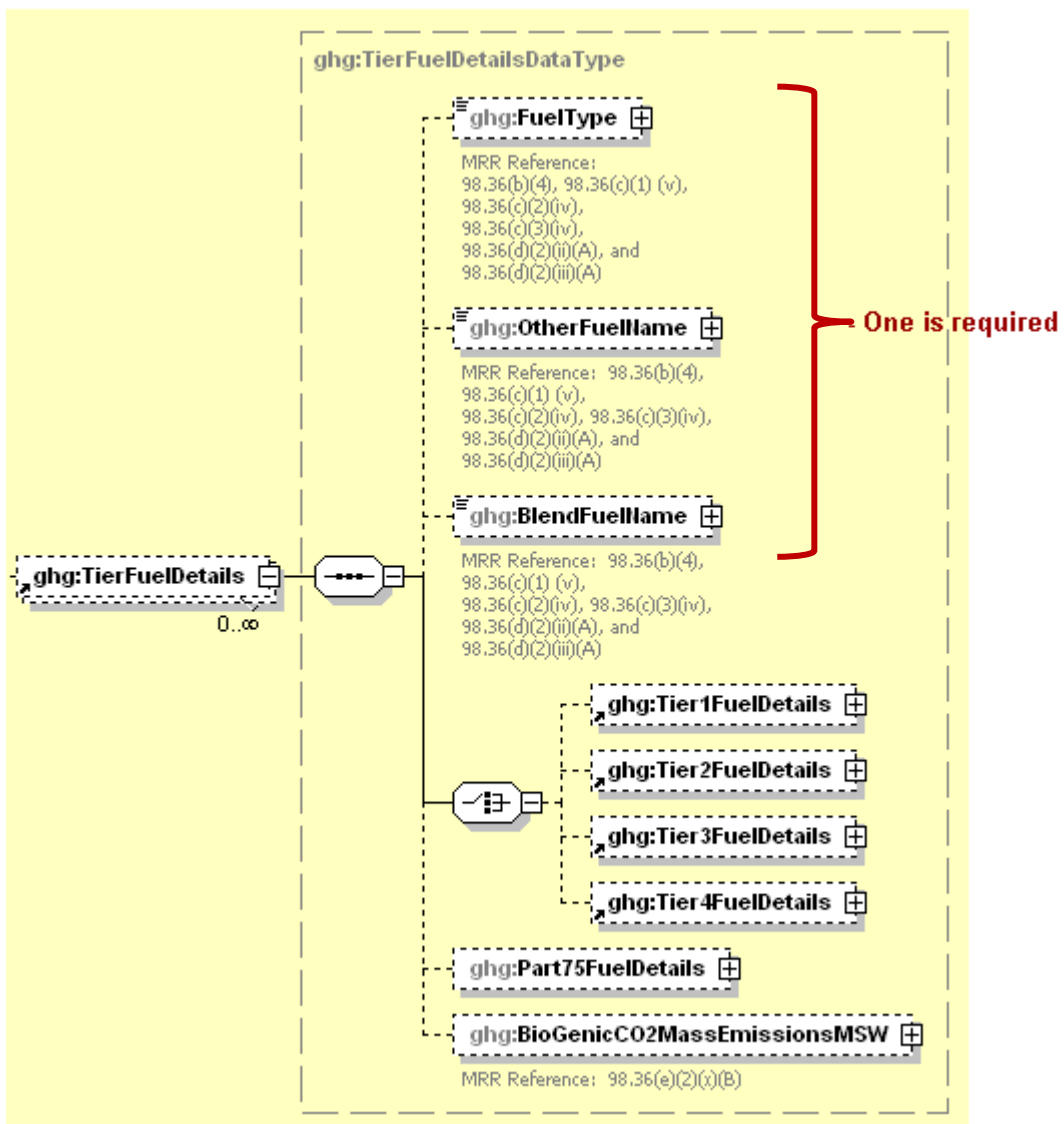
### 4.0 Fuel Level Emissions by Configuration Type

For configurations of all types, Subpart C requires you to identify the following for **each configuration**:

- The fuel types combusted during the reporting year [98.36(b)(4), 98.36(c)(1)(v), 98.36(c)(2)(iv), 98.36(c)(3)(iv), 98.36(d)(2)(ii)(A) and 98.36(d)(2)(iii)(A)]

Separately report each fuel combusted in the configuration during the report year along with the associated emissions information. The required information for each fuel will depend on which tier was used to calculate CO<sub>2</sub> emissions.

**Figure 31  
Tier Fuel Details Schema Diagram**



**Note:** Please see page 4 of this document for more information on conditionally required elements.

Report the fuel type. (See list of allowable fuel types.) If the fuel type does not appear in the list and the use of Tier 3 is required, then specify its name using the "OtherFuelName" element. If a blend of fuels was combusted and the fuels cannot be reported individually, report the blend name using "BlendFuelName".

The user should refer to 98.33(b) to determine which Tier is required for each fuel type at the configuration.

Note that Tiers 1-3 could only apply to Configurations of **Type 1 (single unit using Tiers 1, 2 or 3)**, **Type 3 (aggregation of units)** and **Type 4 (common pipe)**. For each fuel in a configuration, the user will specify which tier is used and which equation was used for that fuel.

For Configurations of **Type 2 (single unit Using Tier 4)** or **Type 5 (common stack or duct)**, the user will report the applicable information for each fuel under the Tier4FuelDetails node.

For Configurations of **Type 6 (Part 75 heat input reporters)**, the user will report the applicable information for each fuel under the Part75FuelDetails node.

**Table 22**  
**Tier Fuel Details Data Element Definitions**

Data Element Name	Description
<b>TierFuelDetails</b>	<b>Parent Element:</b> A collection of data elements containing information regarding the types of fuels combusted in the reporting configuration and broken out by CO <sub>2</sub> calculation methodology.
FuelType	<p><b>Conditionally Required:</b> If the fuel type is on the list of allowable values, then specify the type of fuel combusted in the reporting configuration during the report year. See list of allowable fuel types below. If reporting a fuel not on the list or a blended fuel, then specify its name using one of the following data elements, "OtherFuelName" or "BlendFuelName" as appropriate, and do not report this data element.</p> <ul style="list-style-type: none"> <li>Anthracite</li> <li>Bituminous</li> <li>Subbituminous</li> <li>Lignite</li> <li>Coke</li> <li>Mixed (Commercial sector)</li> <li>Mixed (Industrial coking)</li> <li>Mixed (Industrial sector)</li> <li>Mixed (Electric Power sector)</li> <li>Mixed (Electric Power sector)</li> <li>Plastics</li> <li>Petroleum Coke</li> <li>Municipal Solid Waste</li> <li>Tires</li> <li>Wood and Wood Residuals</li> <li>Agricultural Byproducts</li> <li>Peat</li> <li>Distillate Fuel Oil No. 1</li> <li>Distillate Fuel Oil No. 2</li> <li>Distillate Fuel Oil No. 4</li> <li>Residual Fuel Oil No. 5</li> <li>Residual Fuel Oil No. 6</li> <li>Used Oil</li> <li>Kerosene</li> <li>Liquefied petroleum gases (LPG)</li> <li>Propylene</li> <li>Ethane</li> </ul>



Data Element Name	Description
	Ethanol (100%) Ethylene Isobutane Isobutylene Butane Butylene Naphtha (&lt;401 deg F) Natural Gasoline Other Oil (&gt;401 deg F) Pentanes Plus Petrochemical Feedstocks Petroleum Coke Special Naphtha Unfinished Oils Heavy Gas Oils Lubricants Motor Gasoline Aviation Gasoline Kerosene-Type Jet Fuel Asphalt and Road Oil Crude Oil Propane Ethanol Biodiesel Rendered Animal Fat Vegetable Oil Natural Gas (Weighted U.S. Average) Blast Furnace Gas Coke Oven Gas Propane Gas Fuel Gas Biogas (Captured methane) Solid Byproducts
OtherFuelName	<b>Conditionally Required:</b> Name of the specific fuel if not found in the list of allowable values and the use of Tier 3 is required. Otherwise, do not report this element.
BlendFuelName	<b>Conditionally Required:</b> Name of the specific fuel blend if the blended fuels cannot be reported individually. Otherwise, do not report this element.

### XML Excerpt 18 Example for Tier Fuel Details

```






<ghg:TierFuelDetails>
  <ghg:FuelType>Natural Gas (Weighted U.S. Average)</ghg:FuelType>

```

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

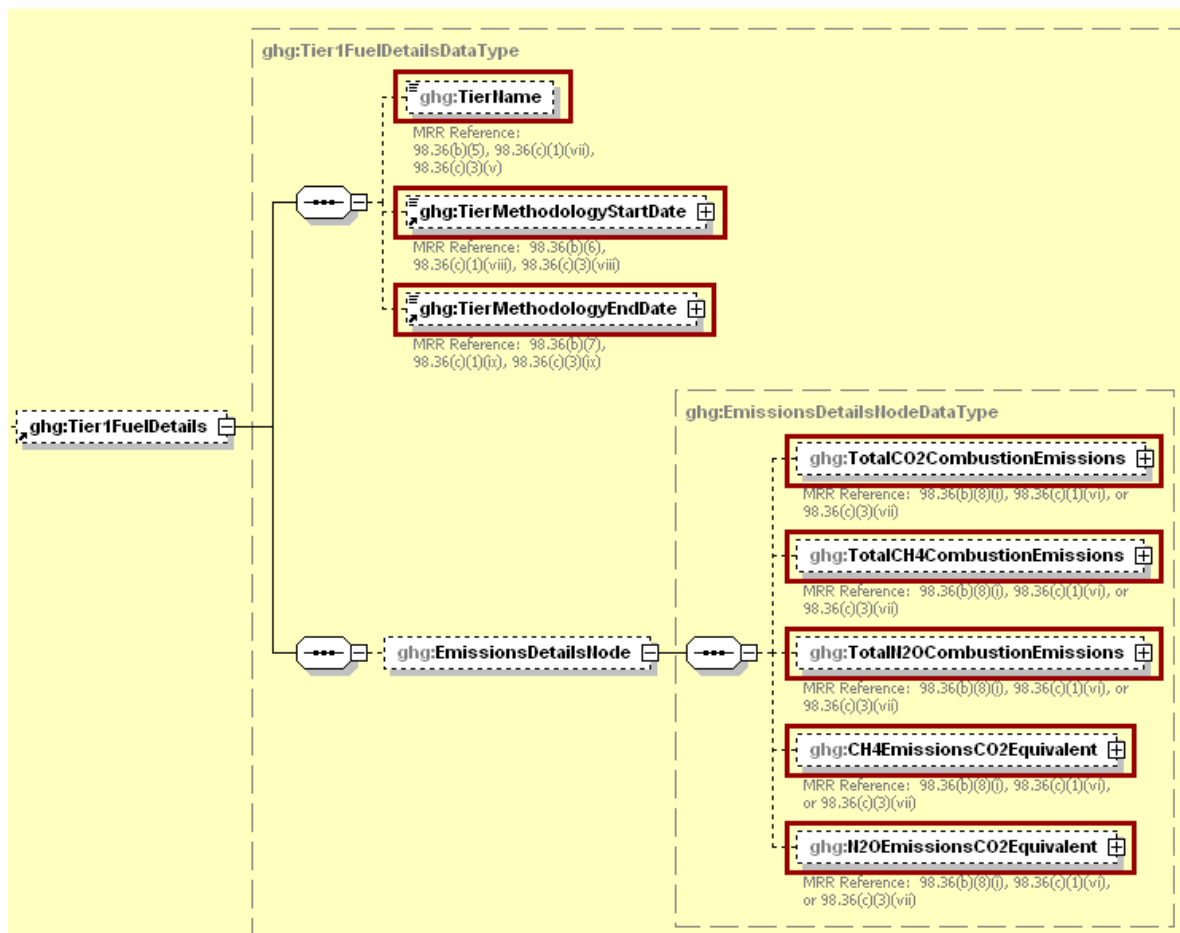
## ? Which calculation methodology will you use to calculate fuel emissions?

The calculation methodologies are as follows:

-  [Tier 1](#) – includes Equation C-1, Equation C-1a and Equation C-1b [98.33(a)(1)]
-  [Tier 2](#) – includes Equation C-2a and Equation C-2c [98.33(a)(2)]
-  [Tier 3](#) – includes Equation C-3, Equation C-4 and Equation C-5 [98.33(a)(3)]
-  [Tier 4](#) – by using quality-assured data from CEMS [98.33(a)(4)]
-  [Part 75 alternative methods](#) – for certain units subject to Part 75 [98.33(a)(5)]

#### 4.1 Tier 1 Fuel Details

**Figure 32**  
**Tier 1 Fuel Details Schema Diagram**



**Note:** Data elements boxed in red are required.

For each fuel type (including biomass fuel(s)) in a configuration that uses **Tier 1**, you will be required to specify which Tier 1 equation is used to calculate CO<sub>2</sub> emissions.

The following information is required for each fuel type combusted in the unit:

- Calculation methodology used for the emissions calculation period specified, for each fuel type [98.36(b)(5), 98.36(c)(1)(vii), 98.36(c)(3)(v)]:
  - Tier 1/Equation C-1 - Annual fuel combusted, default heating value and default CO<sub>2</sub> emission factor
  - Tier 1/Equation C-1a - Annual natural gas usage from billing records (therms) and default CO<sub>2</sub> emission factor
  - Tier 1/Equation C-1b - Annual natural gas usage from billing records (mmBtu) and default CO<sub>2</sub> emission factor
- Calculation methodology start date and end date for each fuel type [98.36(b)(6)-(7), 98.36(c)(1)(viii)-(ix), 98.36(c)(3)(viii)-(ix)]

**Table 23  
Tier 1 Fuel Details Data Element Definitions**

Data Element Name	Description
<b>Tier1FuelDetails</b>	<b>Parent Element (Conditionally Required):</b> Collection of data elements containing details about tier 1 fuel usage
TierName	The name of the Tier 1 methodology used to calculate emissions for the specified reporting configuration and specified fuel. For example, "Tier 1 (Equation C-1)". See list of allowable values:  Tier 1 (Equation C-1) Tier 1 (Equation C-1a, natural gas billing in therms) Tier 1 (Equation C-1b, natural gas billing in mmBtu)
TierMethodologyStartDate	The methodology start date for the specified fuel type (YYYY-MM-DD).
TierMethodologyEndDate	The methodology end date for the specified fuel type (YYYY-MM-DD).

**XML Excerpt 19  
Example for Tier 1 Fuel Details**

```

<ghg:Tier1FuelDetails>
  <ghg:TierName>Tier 1 (Equation C-1b, natural gas billing in mmBtu)</ghg:TierName>
  <ghg:TierMethodologyStartDate>2011-01-01</ghg:TierMethodologyStartDate>
  <ghg:TierMethodologyEndDate>2011-12-31</ghg:TierMethodologyEndDate>

```

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

Once the fuel type and CO<sub>2</sub> calculation method are specified, fuel specific emission information must be reported.

For each fuel type (including biomass fuel(s)) for which you have elected to use a **Tier 1 (Equation C-1, C-1a or C-1b)** methodology, Subpart C requires you to report the following information by fuel type:

- The total annual CO<sub>2</sub> mass emissions derived from Equation C-1, Equation C-1a or Equation C-1b, in metric tons CO<sub>2</sub> (this value will include both non-biogenic and biogenic CO<sub>2</sub> as applicable) [98.36(b)(8)(i), 98.36(c)(1)(vi), 98.36(c)(3)(vii)]
- The total annual CH<sub>4</sub> mass emissions derived from Equation C-8, Equation C-8a or Equation C-8b in metric tons CH<sub>4</sub> and in metric tons CO<sub>2</sub>e (for Table C-2 fuels only) [98.36(b)(8)(i), 98.36(c)(1)(vi), 98.36(c)(3)(vii)]
- The total annual N<sub>2</sub>O mass emissions derived from Equation C-8, Equation C-8a or Equation C-8b in metric tons N<sub>2</sub>O and in metric tons CO<sub>2</sub>e (for Table C-2 fuels only) [98.36(b)(8)(i), 98.36(c)(1)(vi), 98.36(c)(3)(vii)]

**Table 24**  
**Tier 1 Emissions Details Node Data Element Definitions**

Data Element Name	Description
<b>EmissionsDetailsNode</b>	<b>Parent Element</b>
TotalCO2CombustionEmissions	The total annual CO <sub>2</sub> mass emissions (including biogenic and non-biogenic CO <sub>2</sub> ) for the specified fuel combusted in the reporting configuration, calculated using Equation C-1, C-1a or C-1b. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
TotalCH4CombustionEmissions	The total annual CH <sub>4</sub> mass emissions for the specified fuel combusted in the reporting configuration, calculated using Equation C-8, C-8a or C-8b. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
TotalN2OCombustionEmissions	The annual N <sub>2</sub> O mass emissions for the specified fuel combusted in the reporting configuration, calculated using Equation C-8, C-8a or C-8b. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
CH4EmissionsCO2Equivalent	The annual CH <sub>4</sub> mass emissions for the specified fuel combusted in the reporting configuration, expressed in CO <sub>2</sub> e. Multiply the calculated value for CH <sub>4</sub> emissions by the Global Warming Potential of 21 to arrive at the CO <sub>2</sub> e of the CH <sub>4</sub> emissions. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
N2OEmissionsCO2Equivalent	The annual N <sub>2</sub> O mass emissions for the specified fuel combusted in the reporting configuration, expressed in CO <sub>2</sub> e. Multiply the calculated value for N <sub>2</sub> O emissions by the Global Warming Potential of 310 to arrive at the CO <sub>2</sub> e of the N <sub>2</sub> O emissions. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .

## XML Excerpt 20

### Example for Tier 1 Emissions Details Node

```
<ghg:EmissionsDetailsNode>
  <ghg:TotalCO2CombustionEmissions massUOM="Metric Tons">
    <ghg:CalculatedValue>1300.3</ghg:CalculatedValue>
  </ghg:TotalCO2CombustionEmissions>
  <ghg:TotalCH4CombustionEmissions massUOM="Metric Tons">
    <ghg:CalculatedValue>130.78</ghg:CalculatedValue>
  </ghg:TotalCH4CombustionEmissions>
  <ghg:TotalN2OCombustionEmissions massUOM="Metric Tons">
    <ghg:CalculatedValue>13.598</ghg:CalculatedValue>
  </ghg:TotalN2OCombustionEmissions>
  <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
    <ghg:CalculatedValue>2730.5</ghg:CalculatedValue>
  </ghg:CH4EmissionsCO2Equivalent>
  <ghg:N2OEmissionsCO2Equivalent massUOM="Metric Tons">
    <ghg:CalculatedValue>4030.2</ghg:CalculatedValue>
  </ghg:N2OEmissionsCO2Equivalent>
</ghg:EmissionsDetailsNode>
</ghg:Tier1FuelDetails>
</ghg:TierFuelDetails>
```

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



See [Section 6.0](#) for instructions on how to report facility level roll-up emissions or see [Section 2.0](#) for instructions on how to report for a different configuration.

## 4.2 Tier 2 Fuel Details

**Figure 33**  
**Tier 2 Fuel 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 fuel type (including biomass fuel(s)) in a configuration that uses **Tier 2**, you will be required to specify which Tier 2 equation is used to calculate CO<sub>2</sub> emissions.

The following information is required for each fuel type combusted in the unit:

- Calculation methodology used for the emissions calculation period specified, for each fuel type [98.36(b)(5), 98.36(c)(1)(vii), 98.36(c)(3)(v)]:
  - Tier 2/Equation C-2a - Annual fuel combusted, measured heating value and default CO<sub>2</sub> emission factor
  - Tier 2/Equation C-2c – Steam generation, ratio of maximum rated heat input capacity to design rated steam output capacity and default CO<sub>2</sub> emission factor (for MSW and solid fuels listed in Table C-1))
- Calculation methodology start date and end date for each fuel type [98.36(b)(6)-(7), 98.36(c)(1)(viii)-(ix), 98.36(c)(3)(viii)-(ix)]

**Table 25  
Tier 2 Fuel Details Data Element Definitions**

Data Element Name	Description
<b>Tier2FuelDetails</b>	<b>Parent Element (Conditionally Required):</b> Collection of data elements containing details about tier 2 fuel usage.
TierName	The name of the Tier 2 methodology used to calculate emissions for the specified reporting configuration. See list of allowable values:  Tier 2 (Equation C-2a) Tier 2 (Equation C-2c, steam generation)
TierMethodologyStartDate	The methodology start date for the specified fuel type (YYYY-MM-DD).
TierMethodologyEndDate	The methodology end date for the specified fuel type (YYYY-MM-DD).

**XML Excerpt 21  
Example for Tier 2 Fuel Details**

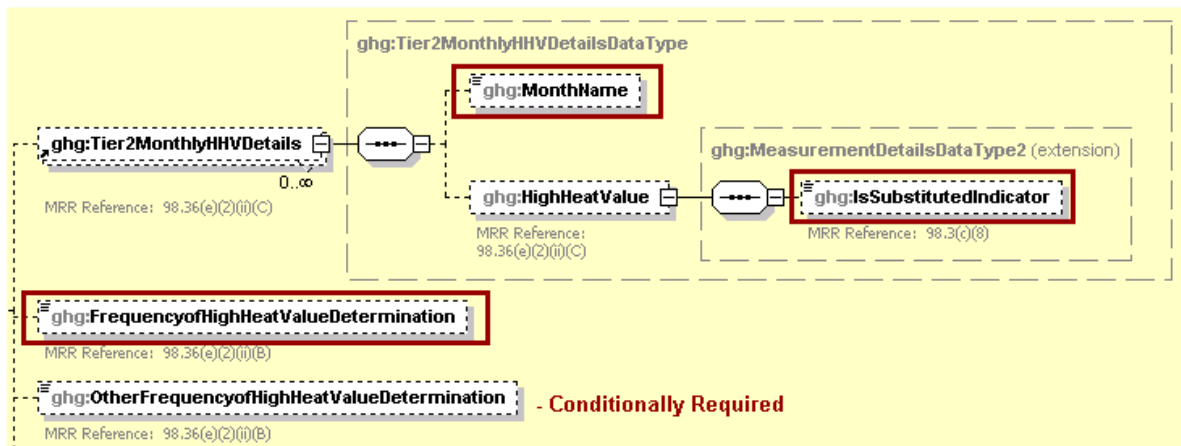
```

<ghg:Tier2FuelDetails>
  <ghg:TierName>Tier 2 (Equation C-2a)</ghg:TierName>
  <ghg:TierMethodologyStartDate>2011-01-01</ghg:TierMethodologyStartDate>
  <ghg:TierMethodologyEndDate>2011-12-31</ghg:TierMethodologyEndDate>

```

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

**Figure 34  
Tier 2 Monthly HHV 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 fuel type (including biomass fuel(s)) for which you have elected to use the **Tier 2/Equation C-2a** methodology, Subpart C requires you to report the following information by fuel type:

- Identification of each month for which HHVs were calculated using one or more substitute data values [98.36(e)(2)(ii)(C)]

- The frequency of the HHV determinations [98.36(e)(2)(ii)(B)]
  - Hourly
  - Daily
  - Weekly
  - Monthly
  - Semiannually
  - Quarterly
  - Once per fuel lot
  - Upon addition of oil to the storage tank
  - Other (specify)

**Table 26**  
**Tier 2 Monthly HHV Details Data Element Definitions**

Data Element Name	Description
<b>Tier2MonthlyHHVDetails</b>	<b>Parent Element</b>
MonthName	<p>Specify the name of each month. See list of allowable values:</p> <p>January February March April May June July August September October November December</p>
HighHeatValue	<p>For the child data element <b>IsSubstitutedIndicator</b>, indicate (Y/N) whether the HHV value for the specified month was calculated from one or more substitute data values.</p>
FrequencyofHighHeatValueDetermination	<p>The frequency of the HHV determinations. See list of allowable values below. If the frequency you are reporting does not appear in the list, then report "Other (specify)" and then specify the frequency in the OtherFrequencyofHighHeatValueDetermination data element.</p> <p>Hourly Daily Weekly Monthly Semiannually Quarterly Once per fuel lot Upon addition of oil to the storage tank Other (specify)</p>
OtherFrequencyofHighHeatValueDetermination	<p><b>Conditionally Required:</b> The frequency of the HHV determinations if "Other (specify)" is reported. Otherwise do not report this data element.</p>



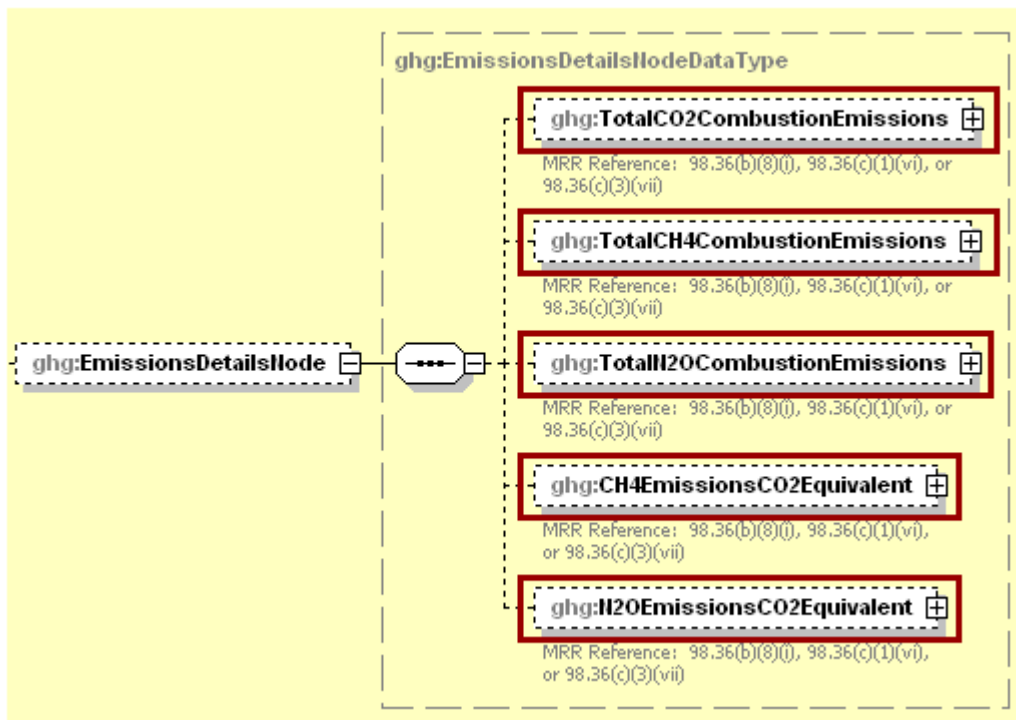
## XML Excerpt 22

### Example for Tier 2 Monthly HHV Details

```
<ghg:Tier2MonthlyHHVDetails>
  <ghg:MonthName>January</ghg:MonthName>
  <ghg:HighHeatValue>
    <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndicator>
  </ghg:HighHeatValue>
</ghg:Tier2MonthlyHHVDetails>
<ghg:Tier2MonthlyHHVDetails>
  <ghg:MonthName>February</ghg:MonthName>
  <ghg:HighHeatValue>
    <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
  </ghg:HighHeatValue>
</ghg:Tier2MonthlyHHVDetails>
<ghg:FrequencyofHighHeatValueDetermination>Monthly</ghg:FrequencyofHighHeatValueDetermination>
```

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

**Figure 35**  
**Tier 2 Emissions Details Node Schema Diagram**



**Note:** Data elements boxed in red are required.

For each fuel type (including biomass fuel(s)) for which you have elected to use the **Tier 2/Equation C-2a** methodology, Subpart C requires you to report the following information by fuel type:

- The total annual CO<sub>2</sub> mass emissions derived from Equation C-2a, in metric tons CO<sub>2</sub> (this value will include both non-biogenic and biogenic CO<sub>2</sub> as applicable) [98.36(b)(8)(i), 98.36(c)(1)(vi), 98.36(c)(3)(vii)]
- The total annual CH<sub>4</sub> mass emissions derived from Equation C-9a, in metric tons CH<sub>4</sub> and in metric tons CO<sub>2</sub>e (for Table C-2 fuels only) [98.36(b)(8)(i), 98.36(c)(1)(vi), 98.36(c)(3)(vii)]
- The total annual N<sub>2</sub>O mass emissions derived from Equation C-9a, in metric tons N<sub>2</sub>O and in metric tons CO<sub>2</sub>e (for Table C-2 fuels only) [98.36(b)(8)(i), 98.36(c)(1)(vi), 98.36(c)(3)(vii)]

For each fuel type (including biomass fuel(s)) for which you have elected to use the **Tier 2/Equation C-2c** methodology, Subpart C requires you to report the following information by fuel type:

- The total annual CO<sub>2</sub> mass emissions derived from Equation C-2c, in metric tons CO<sub>2</sub> (this value will include both non-biogenic and biogenic CO<sub>2</sub> as applicable) [98.36(b)(8)(i), 98.36(c)(1)(vi), 98.36(c)(3)(vii)]
- The total annual CH<sub>4</sub> mass emissions derived from Equation C-9b, in metric tons CH<sub>4</sub> and in metric tons CO<sub>2</sub>e (for Table C-2 fuels only) [98.36(b)(8)(i), 98.36(c)(1)(vi), 98.36(c)(3)(vii)]
- The total annual N<sub>2</sub>O mass emissions derived from Equation C-9b, in metric tons N<sub>2</sub>O and in metric tons CO<sub>2</sub>e (for Table C-2 fuels only) [98.36(b)(8)(i), 98.36(c)(1)(vi), 98.36(c)(3)(vii)]

**Table 27**  
**Tier 2 Monthly HHV Details Emissions Details Node Data Element Definitions**

Data Element Name	Description
<b>EmissionsDetailsNode</b>	<b>Parent Element:</b> A collection of data element containing the annual CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O mass emissions from combustion of the specific fuel type in the unit configuration. Express in metric tons of the specific gas and in metric tons of CO <sub>2</sub> e.
TotalCO2CombustionEmissions	The total annual CO <sub>2</sub> mass emissions (including biogenic and non-biogenic CO <sub>2</sub> ) for the specified fuel combusted in the reporting configuration, calculated using Equation C-2a or C-2c Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
TotalCH4CombustionEmissions	The total annual CH <sub>4</sub> mass emissions for the specified fuel combusted in the reporting configuration, calculated using Equation C-9a or C-9b. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
TotalN2OCombustionEmissions	The total annual N <sub>2</sub> O mass emissions for the specified fuel combusted in the reporting configuration, calculated using Equation C-9a or C-9b expressed in mass of N <sub>2</sub> O. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
CH4EmissionsCO2Equivalent	The annual CH <sub>4</sub> mass emissions for the specified fuel combusted in the reporting configuration, expressed in CO <sub>2</sub> e. Multiply the calculated value for CH <sub>4</sub> emissions by the Global Warming Potential of 21 to arrive at the CO <sub>2</sub> e of the CH <sub>4</sub> emissions. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
N2OEmissionsCO2Equivalent	The annual N <sub>2</sub> O mass emissions for the specified fuel combusted in the reporting configuration, expressed in CO <sub>2</sub> e. Multiply the calculated value for N <sub>2</sub> O emissions by the Global Warming Potential of 310 to arrive at the CO <sub>2</sub> e of the N <sub>2</sub> O emissions. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .

### XML Excerpt 23

#### Example for Tier 2 Monthly HHV Details Emissions Details Node

```
<ghg:EmissionsDetailsNode>
  <ghg:TotalCO2CombustionEmissions massUOM="Metric Tons">
    <ghg:CalculatedValue>2200.4</ghg:CalculatedValue>
  </ghg:TotalCO2CombustionEmissions>
  <ghg:TotalCH4CombustionEmissions massUOM="Metric Tons">
    <ghg:CalculatedValue>220.73</ghg:CalculatedValue>
  </ghg:TotalCH4CombustionEmissions>
  <ghg:TotalN2OCombustionEmissions massUOM="Metric Tons">
    <ghg:CalculatedValue>22.576</ghg:CalculatedValue>
  </ghg:TotalN2OCombustionEmissions>
  <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
    <ghg:CalculatedValue>4620.8</ghg:CalculatedValue>
  </ghg:CH4EmissionsCO2Equivalent>
  <ghg:N2OEmissionsCO2Equivalent massUOM="Metric Tons">
    <ghg:CalculatedValue>6820.1</ghg:CalculatedValue>
  </ghg:N2OEmissionsCO2Equivalent>
</ghg:EmissionsDetailsNode>
</ghg:Tier2FuelDetails></ghg:Tier2FuelDetails>
</ghg:UnitsCDetails>
```

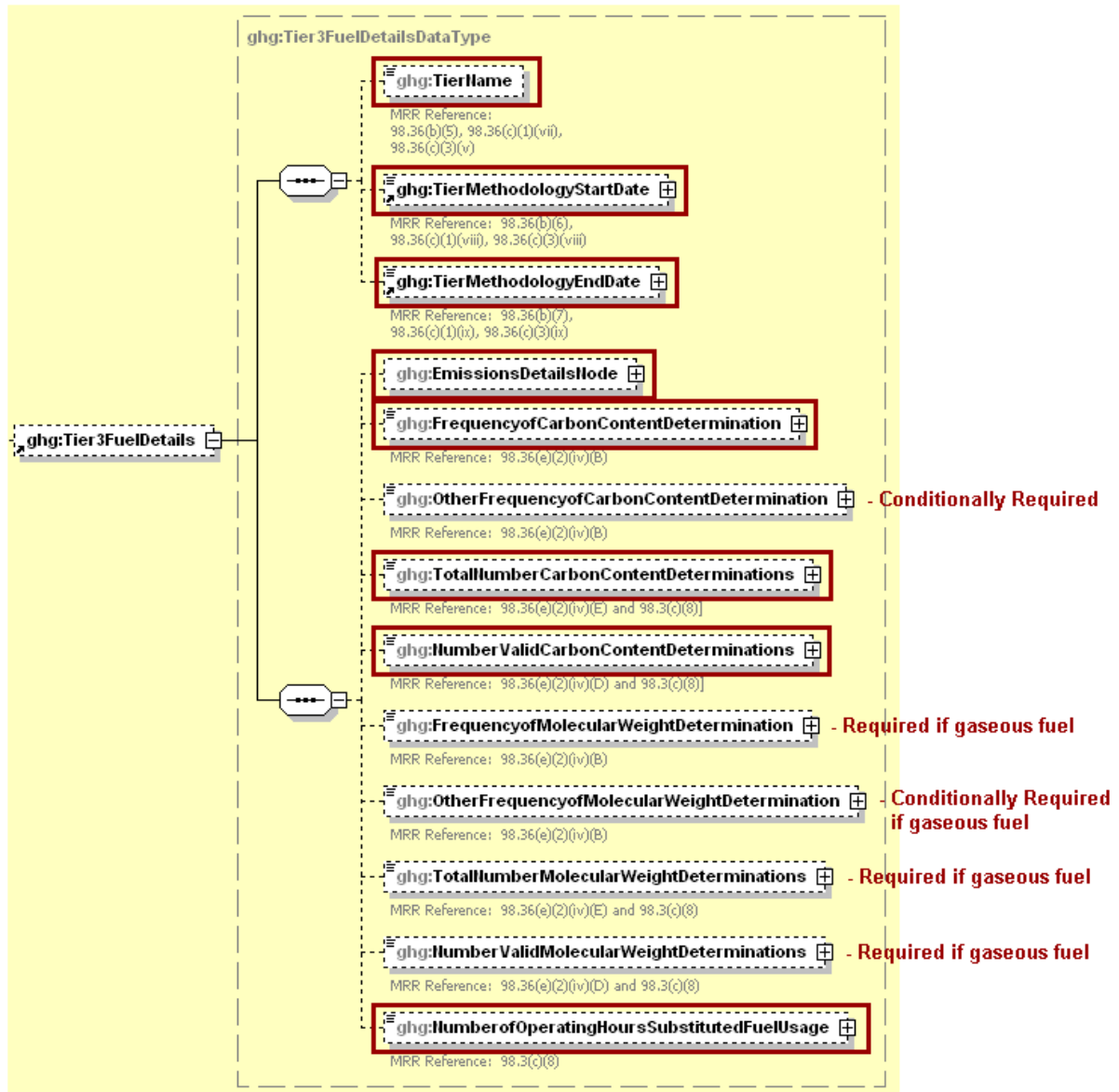
**Note:** The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.



See [Section 6.0](#) for instructions on how to report facility level roll-up emissions or see [Section 2.0](#) for instructions on how to report for a different configuration.

### 4.3 Tier 3 Fuel Details

**Figure 36**  
**Tier 3 Fuel 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 fuel type (including biomass fuel(s)) in a configuration that uses **Tier 3**, you will be required to specify which Tier 3 equation is used to calculate CO<sub>2</sub> emissions.

The following information is required for each fuel type combusted in the unit:

- Calculation methodology used for the emissions calculation period specified, for each fuel type [98.36(b)(5), 98.36(c)(1)(vii), 98.36(c)(3)(v)]:
  - Tier 3/Equation C-3 – Annual mass of solid fuel combusted and average carbon content of the solid fuel
  - Tier 3/Equation C-4 – Annual mass of liquid fuel combusted and average carbon content of the liquid fuel
  - Tier 3/Equation C-5 – Annual volume of gaseous fuel combusted, average carbon content of the gaseous fuel and average molecular weight of the gaseous fuel
- Calculation methodology start date and end date, for each fuel type [98.36(b)(6)-(7), 98.36(c)(1)(viii)-(ix), 98.36(c)(3)(viii)-(ix)]

**Table 28**  
**Tier 3 Fuel Details Data Element Definitions**

Data Element Name	Description
<b>Tier3FuelDetails</b>	<b>Parent Element (Conditionally Required):</b> Collection of data elements containing details about tier 3 fuel usage.
TierName	The name of the Tier 3 methodology used to calculate emissions for the specified unit or unit configuration. See list of allowable values:  Tier 3 (Equation C-3, solid fuel) Tier 3 (Equation C-4, liquid fuel) Tier 3 (Equation C-5, gaseous fuel)
TierMethodologyStartDate	The methodology start date for the specified fuel type (YYYY-MM-DD).
TierMethodologyEndDate	The methodology end date for the specified fuel type (YYYY-MM-DD).

**XML Excerpt 24**  
**Example for Tier 3 Fuel Details**

```

<ghg:Tier3FuelDetails>
  <ghg:TierName>Tier 3 (Equation C-5, gaseous fuel)</ghg:TierName>
  <ghg:TierMethodologyStartDate>2011-01-01</ghg:TierMethodologyStartDate>
  <ghg:TierMethodologyEndDate>2011-12-31</ghg:TierMethodologyEndDate>

```

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

**Figure 37**  
**Tier 3 Emissions Details Node Schema Diagram**



**Note:** Data elements boxed in red are required.

**Figure 38**  
**Additional Tier 3 Fuel 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 fuel type (including biomass fuel(s)) for which you have elected to use a **Tier 3 (Equation C-3, C-4 or C-5)** methodology, Subpart C requires you to report the following information by fuel type:

- The total annual CO<sub>2</sub> mass emissions derived from Equation C-3 for solid fuels, Equation C-4 for liquid fuels or Equation C-5 for gaseous fuels, in metric tons CO<sub>2</sub> (this value will include both non-biogenic and biogenic CO<sub>2</sub> as applicable) [98.36(b)(8)(i), 98.36(c)(1)(vi), 98.36(c)(3)(vii)]
- The total annual CH<sub>4</sub> mass emissions derived from Equation C-8, in metric tons CH<sub>4</sub> and in metric tons CO<sub>2</sub>e (for Table C-2 fuels only) [98.36(b)(8)(i), 98.36(c)(1)(vi), 98.36(c)(3)(vii)]
- The total annual N<sub>2</sub>O mass emissions derived from Equation C-8, in metric tons N<sub>2</sub>O and in metric tons CO<sub>2</sub>e (for Table C-2 fuels only) [98.36(b)(8)(i), 98.36(c)(1)(vi), 98.36(c)(3)(vii)]
- The frequency of carbon content determinations [98.36(e)(2)(iv)(B)]
  - Hourly
  - Daily
  - Weekly
  - Monthly
  - Semiannually
  - Quarterly
  - Once per fuel lot
  - Upon addition of oil to the storage tank
  - Other (specify)
- The total number of carbon content substitute data values [98.36(e)(2)(iv)(E)]
- The total number of valid carbon content determinations [98.36(e)(2)(iv)(D)]
- The total number of operating hours in the reporting year for which missing data substitution was used for fuel usage [98.3(c)(8)]

**Conditionally Required:** For each gaseous fuel at each configuration for which you have elected to use the **Tier 3/Equation C-5 methodology**, Subpart C also requires you to report the following additional information:

- Frequency of molecular weight determinations [98.36(e)(2)(iv)(B)]
  - Hourly
  - Daily
  - Weekly
  - Monthly
  - Semiannually
  - Quarterly
  - Other (specify)
- Total number of molecular weight substitute data values [98.36(e)(2)(iv)(E)]
- Total number of valid molecular weight determinations [98.36(e)(2)(iv)(D)]

**Table 29**  
**Tier 3 Fuel Details Emissions Details Node Data Element Definitions**

Data Element Name	Description
<b>EmissionsDetailsNode</b>	<b>Parent Element</b>
TotalCO2CombustionEmissions	The total annual CO <sub>2</sub> mass emissions (including biogenic and non-biogenic CO <sub>2</sub> ) for the specified fuel combusted in the reporting configuration, calculated using Equation C-3, C-4 or C-5. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .



Data Element Name	Description
TotalCH4CombustionEmissions	The total annual CH <sub>4</sub> mass emissions for the specified fuel combusted in the reporting configuration, calculated using Equation C-8. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
TotalN2OCombustionEmissions	The total annual N <sub>2</sub> O mass emissions for the specified fuel combusted in the reporting configuration, calculated using Equation C-8. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
CH4EmissionsCO2Equivalent	The annual CH <sub>4</sub> mass emissions for the specified fuel combusted in the reporting configuration, expressed in CO <sub>2</sub> e. Multiply the calculated value for CH <sub>4</sub> emissions by the Global Warming Potential of 21 to arrive at the CO <sub>2</sub> e of the CH <sub>4</sub> emissions. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
N2OEmissionsCO2Equivalent	The annual N <sub>2</sub> O mass emissions for the specified fuel combusted in the reporting configuration, expressed in CO <sub>2</sub> e. Multiply the calculated value for N <sub>2</sub> O emissions by the Global Warming Potential of 310 to arrive at the CO <sub>2</sub> e of the N <sub>2</sub> O emissions. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
FrequencyofCarbonContentDetermination	<p>The frequency of carbon content determinations for the specified fuel for the reporting year. See the list of allowable values below. If the frequency you are reporting does not appear in the list, then report "Other (specify)" and then specify the frequency in the "OtherFrequencyofCarbonContentDetermination" data element.</p> <ul style="list-style-type: none"> <li>Hourly</li> <li>Daily</li> <li>Weekly</li> <li>Monthly</li> <li>Semiannually</li> <li>Quarterly</li> <li>Once per fuel lot</li> <li>Upon addition of oil to the storage tank</li> <li>Other (specify)</li> </ul>
OtherFrequencyofCarbonContentDetermination	<b>Conditionally Required:</b> The frequency of the carbon content determinations if "Other (specify)" is reported. Otherwise, do not report this element.
TotalNumberCarbonContentDeterminations	The total number of substitute data values used for carbon content in the annual GHG emissions calculations.
NumberValidCarbonContentDeterminations	The total number of valid carbon content determinations made during the reporting year for the specified fuel type.
FrequencyofMolecularWeightDetermination	<b>Conditionally Required:</b> For gaseous fuels only, the frequency of molecular weight determinations for the specified fuel during the reporting year. See list of allowable values below. If the frequency you are reporting does not appear in the list, then report "Other (specify)" and then specify the frequency in the "OtherFrequencyofMolecularWeightDetermination" data element.

Data Element Name	Description
	Hourly Daily Weekly Monthly Semiannually Quarterly Once per fuel lot Upon addition of oil to the storage tank Other (specify)
OtherFrequencyofMolecularWeightDetermination	<b>Conditionally Required:</b> For gaseous fuels only, the frequency of the molecular weight determinations if "Other (specify)" is reported.
TotalNumberMolecularWeightDeterminations	<b>Conditionally Required:</b> For gaseous fuels only, the number of substitute data values used for molecular weight used in the annual GHG emissions calculations.
NumberValidMolecularWeightDeterminations	<b>Conditionally Required:</b> For gaseous fuels only, the total number of valid molecular weight determinations made during the reporting year for the specified fuel type.
NumberofOperatingHoursSubstitutedFuelUsage	For all fuels, the total number of operating hours in the year for which missing data substitution was used for fuel usage. Set the units of measure to "Hours" in the attribute <b>timeUOM</b> .

### XML Excerpt 25 Example for Tier 3 Fuel Details Emissions Details Node

```

<ghg:EmissionsDetailsNode>
  <ghg:TotalCO2CombustionEmissions massUOM="Metric Tons">
    <ghg:CalculatedValue>3300.3</ghg:CalculatedValue>
  </ghg:TotalCO2CombustionEmissions>
  <ghg:TotalCH4CombustionEmissions massUOM="Metric Tons">
    <ghg:CalculatedValue>330.69</ghg:CalculatedValue>
  </ghg:TotalCH4CombustionEmissions>
  <ghg:TotalN2OCombustionEmissions massUOM="Metric Tons">
    <ghg:CalculatedValue>33.807</ghg:CalculatedValue>
  </ghg:TotalN2OCombustionEmissions>
  <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
    <ghg:CalculatedValue>6930.1</ghg:CalculatedValue>
  </ghg:CH4EmissionsCO2Equivalent>
  <ghg:N2OEmissionsCO2Equivalent massUOM="Metric Tons">
    <ghg:CalculatedValue>10230.6</ghg:CalculatedValue>
  </ghg:N2OEmissionsCO2Equivalent>
</ghg:EmissionsDetailsNode>
<ghg:FrequencyofCarbonContentDetermination>Weekly</ghg:FrequencyofCarbonContentDetermination>
<ghg:TotalNumberCarbonContentDeterminations>4</ghg:TotalNumberCarbonContentDeterminations>
<ghg:NumberValidCarbonContentDeterminations>48</ghg:NumberValidCarbonContentDeterminations>
<ghg:FrequencyofMolecularWeightDetermination>Weekly</ghg:FrequencyofMolecularWeightDetermination>
<ghg:TotalNumberMolecularWeightDeterminations>22</ghg:TotalNumberMolecularWeightDeterminations>
<ghg:NumberValidMolecularWeightDeterminations>30</ghg:NumberValidMolecularWeightDeterminations>
<ghg:NumberofOperatingHoursSubstitutedFuelUsage
timeUOM="Hours">50</ghg:NumberofOperatingHoursSubstitutedFuelUsage>
</ghg:Tier3FuelDetails>
</ghg:TierFuelDetails>

```

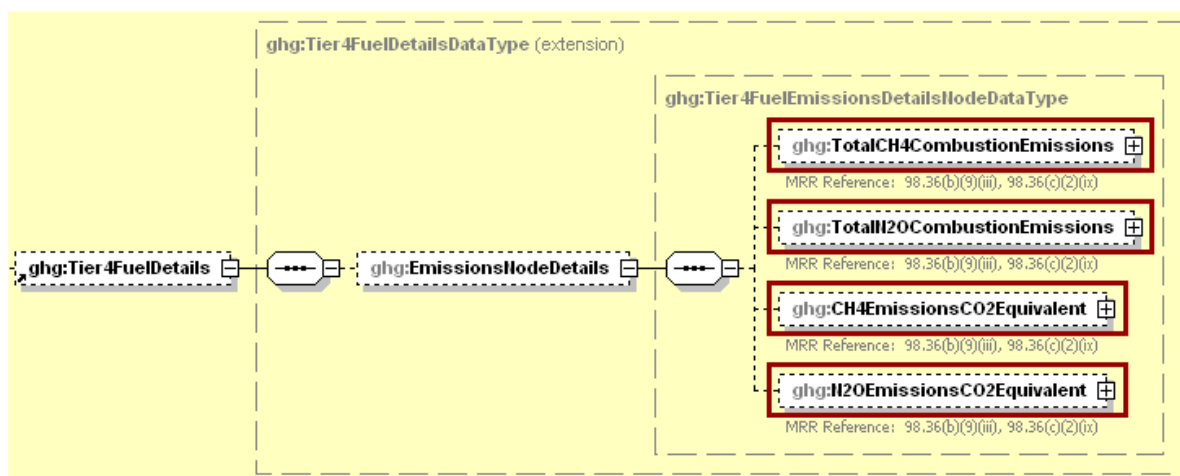
**Note:** The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.



See [Section 6.0](#) for instructions on how to report facility level roll-up emissions or see [Section 2.0](#) for instructions on how to report for a different configuration.

4.4 Tier 4 Fuel Details

**Figure 39**  
**Tier 4 Fuel Details Schema Diagram**



**Note:** Data elements boxed in red are required.

When a **Tier 4 (CEMS)** configuration is used, you are required to report the following information for each fuel type listed in Table C-2 (including biomass fuel(s)):

- The total annual CH<sub>4</sub> mass emissions derived from Equation C-10, in metric tons CH<sub>4</sub> and in metric tons CO<sub>2e</sub> [98.36(b)(9)(iii), 98.36(c)(2)(ix)]
- The total annual N<sub>2</sub>O mass emissions derived from Equation C-10, in metric tons N<sub>2</sub>O and in metric tons CO<sub>2e</sub> [98.36(b)(9)(iii), 98.36(c)(2)(ix)]

**Table 30**  
**Tier 4 Fuel Details Data Element Definitions**

Data Element Name	Description
<b>Tier4FuelDetails</b>	<b>Parent Element (Conditionally Required):</b> A collection of data elements containing information for fuels that are combusted in configurations that use Tier 4.
<b>EmissionsDetailsNode</b>	<b>Parent Element:</b> The annual emissions by type of fuel.
TotalCH4CombustionEmissions	The total annual CH <sub>4</sub> mass emissions for the specified fuel combusted in the reporting configuration, calculated using Equation C-10. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
TotalN2OCombustionEmissions	The total annual N <sub>2</sub> O mass emissions for the specified fuel combusted in the reporting configuration, calculated using Equation C-10. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .

Data Element Name	Description
CH4EmissionsCO2Equivalent	The total annual CH <sub>4</sub> mass emissions for the specified fuel combusted in the reporting configuration. Multiply the calculated value for CH <sub>4</sub> emissions by the Global Warming Potential of 21 to arrive at the CO <sub>2</sub> e of the CH <sub>4</sub> emissions. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
N2OEmissionsCO2Equivalent	The total annual N <sub>2</sub> O mass emissions for the specified fuel combusted in the reporting configuration. Multiply the calculated value for N <sub>2</sub> O emissions by the Global Warming Potential of 310 to arrive at the CO <sub>2</sub> e of the N <sub>2</sub> O emissions. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .

### XML Excerpt 26 Example for Tier 4 Fuel Details

```

<ghg:Tier4FuelDetails>
  <ghg:EmissionsNodeDetails>
    <ghg:TotalCH4CombustionEmissions massUOM="Metric Tons">
      <ghg:CalculatedValue>400.33</ghg:CalculatedValue>
    </ghg:TotalCH4CombustionEmissions>
    <ghg:TotalN2OCombustionEmissions massUOM="Metric Tons">
      <ghg:CalculatedValue>40.111</ghg:CalculatedValue>
    </ghg:TotalN2OCombustionEmissions>
    <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
      <ghg:CalculatedValue>8400.9</ghg:CalculatedValue>
    </ghg:CH4EmissionsCO2Equivalent>
    <ghg:N2OEmissionsCO2Equivalent massUOM="Metric Tons">
      <ghg:CalculatedValue>12400.5</ghg:CalculatedValue>
    </ghg:N2OEmissionsCO2Equivalent>
  </ghg:EmissionsNodeDetails>
</ghg:Tier4FuelDetails>
</ghg:TierFuelDetails>

```

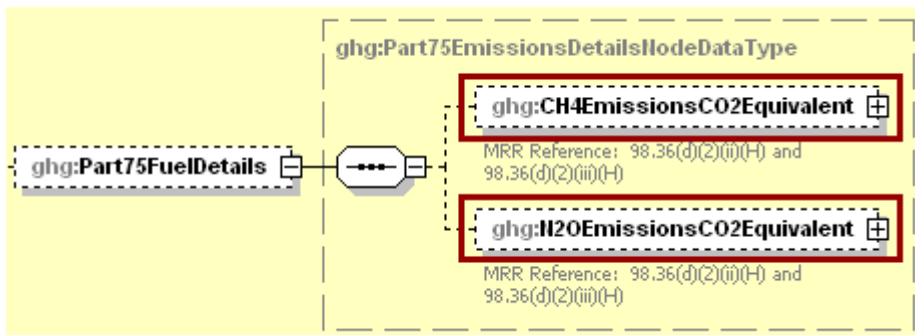
**Note:** The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.



See [Section 5.1](#) for instructions on how to report additional Tier 4 details.

4.5 Part 75 Fuel Details

**Figure 40**  
**Part 75 Fuel Details Schema Diagram**



**Note:** Data elements boxed in red are required.

For configurations using the alternative CO<sub>2</sub> mass emissions calculation methods provided in **98.33(a)(5) (Year-round Part 75 heat input reporters)**, Subpart C requires the following information for each fuel type listed in Table C-2 (including biomass fuel(s)) except as otherwise provided in 98.33(c)(4)(ii)(D):

- The total annual CH<sub>4</sub> mass emissions derived from Equation C-10, in metric tons CO<sub>2</sub>e [98.36(d)(2)(ii)(H), 98.36(d)(2)(iii)(H)]
- The total annual N<sub>2</sub>O mass emissions derived from Equation C-10, in metric tons CO<sub>2</sub>e [98.36(d)(2)(ii)(H), 98.36(d)(2)(iii)(H)]

For each fuel, CH<sub>4</sub> and N<sub>2</sub>O emissions should be reported at the same level (i.e. monitoring location) as CO<sub>2</sub> emissions are reported.

**Table 31**  
**Part 75 Fuel Details Data Element Definitions**

Data Element Name	Description
<b>Part75FuelDetails</b>	<b>Parent Element (Conditionally Required):</b> Collection of data elements pertaining to annual CH <sub>4</sub> and N <sub>2</sub> O emissions from certain Part 75 units that calculate CO <sub>2</sub> emissions according to 98.33(a)(5).
CH4EmissionsCO2Equivalent	The total annual CH <sub>4</sub> mass emissions for the specified fuel combusted at each monitored location in metric tons CO <sub>2</sub> e, calculated using Equation C-10. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
N2OEmissionsCO2Equivalent	The total annual N <sub>2</sub> O mass emissions for the specified fuel combusted at each monitored location in metric tons CO <sub>2</sub> e, calculated using Equation C-10. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .

### XML Excerpt 27 Example for Part 75 Fuel Details

```
<ghg:Part75FuelDetails>  
  <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">  
    <ghg:CalculatedValue>100.7</ghg:CalculatedValue>  
  </ghg:CH4EmissionsCO2Equivalent>  
  <ghg:N2OEmissionsCO2Equivalent massUOM="Metric Tons">  
    <ghg:CalculatedValue>10.5</ghg:CalculatedValue>  
  </ghg:N2OEmissionsCO2Equivalent>  
</ghg:Part75FuelDetails>
```

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

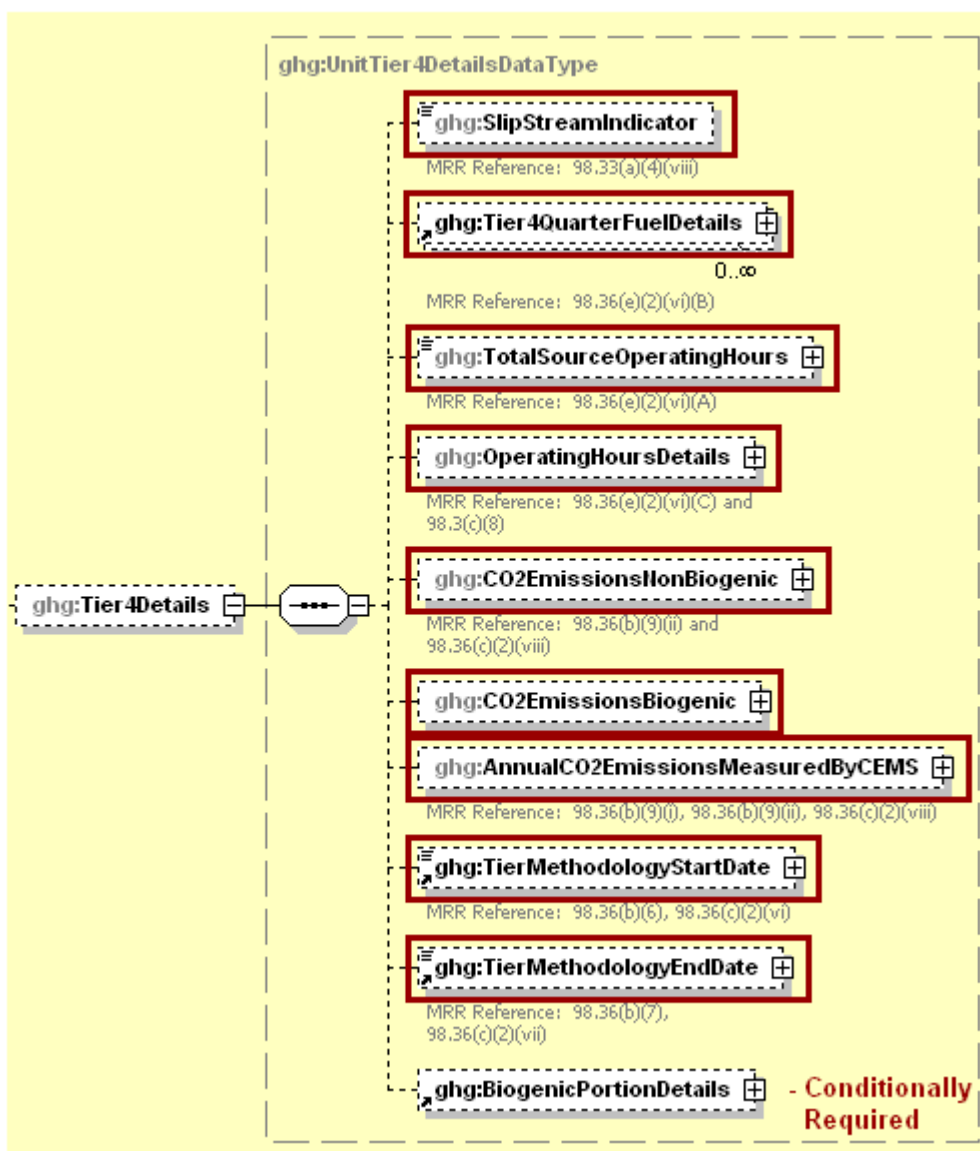
 See [Section 5.2](#) for instructions on how to report additional Part 75 details.

## 5.0 Additional Configuration Level Emission Reporting

### 5.1 Tier 4 Details

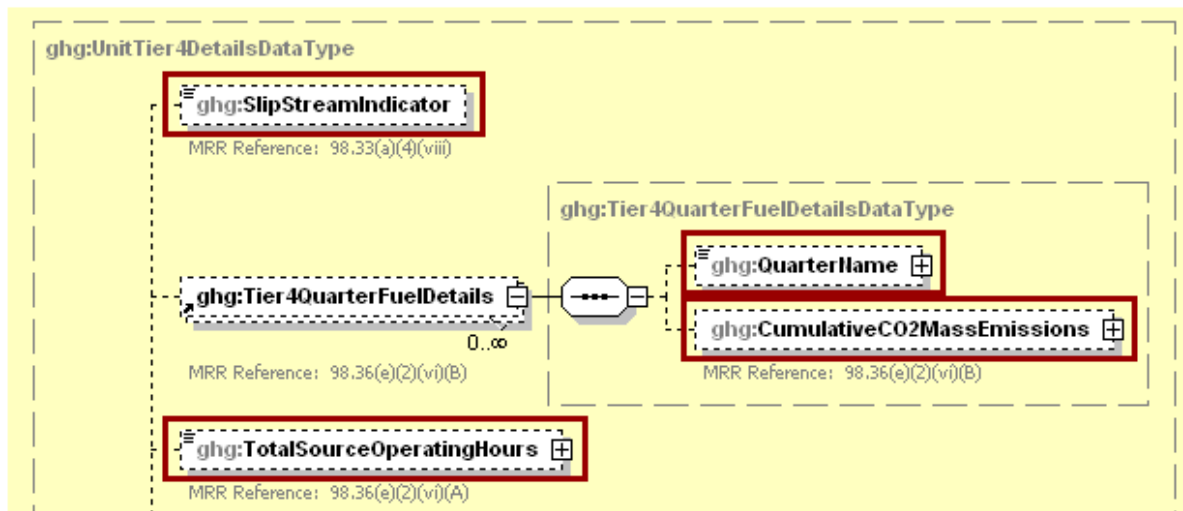
For configurations of Type 2 and Type 5, Subpart C requires additional information aggregated at the configuration-level.

**Figure 41**  
**Tier 4 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.

**Figure 42  
Tier 4 Quarter Details Schema Diagram**



**Note:** Data elements boxed in red are required.

For configurations of Type 2 and Type 5, report the following information:

- 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)]
- The cumulative CO<sub>2</sub> mass emissions for each quarter during the reporting year [98.36(e)(2)(vi)(B)]
- The total number of source operating hours in the reporting year [98.36(e)(2)(vi)(A)]

**Table 32  
Tier 4 Details Data Element Definitions**

Data Element Name	Description
<b>Tier4Details</b>	<b>Parent Element (Conditionally Required):</b> A collection of data elements containing information regarding units that use Tier 4 only.
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.
<b>Tier4QuarterFuelDetails</b>	<b>Parent Element</b>
QuarterName	The name of the quarter. See list of allowable values:  First Quarter Second Quarter Third Quarter Fourth Quarter



Data Element Name	Description
CumulativeCO2MassEmissions	The cumulative CO <sub>2</sub> mass emissions for the specified quarter of the reporting year. The cumulative value is the sum of hourly emissions for the respective quarter only (for example, for the fourth quarter, the emissions will be summed for the fourth quarter only, not from all four quarters in the year). Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
TotalSourceOperatingHours	The total number of source operating hours in the reporting year.

### XML Excerpt 28 Example for Tier 4 Details

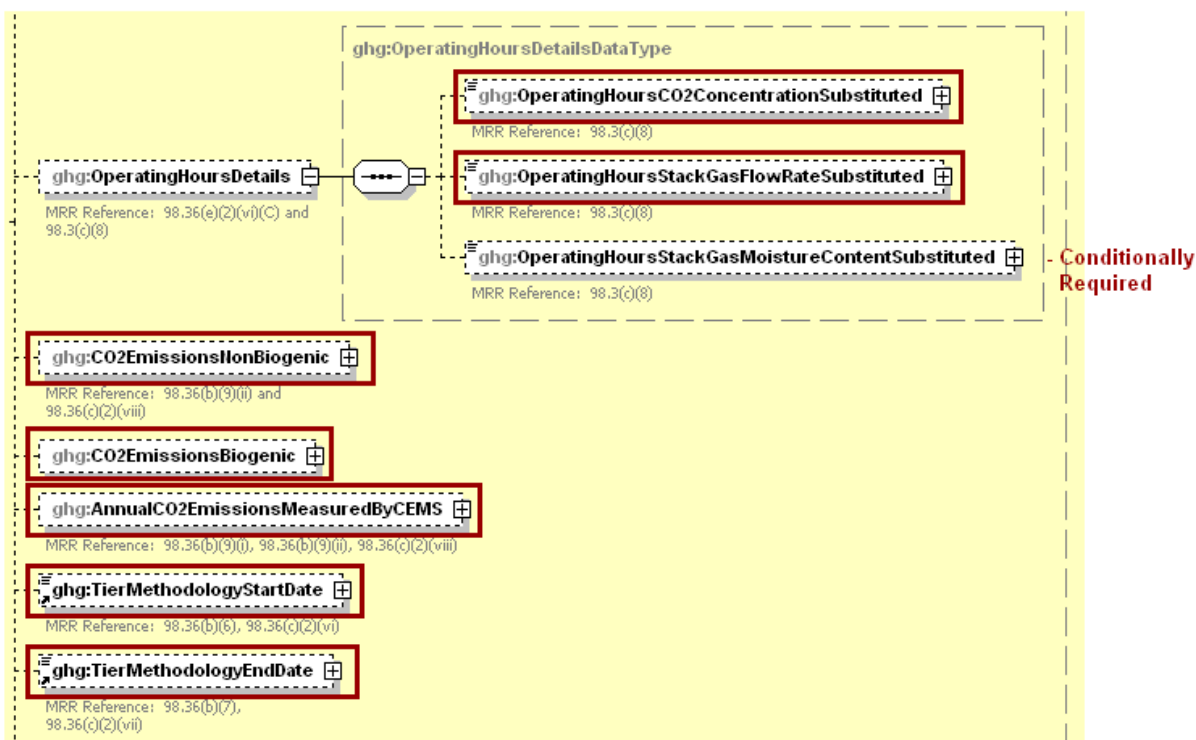
```

<ghg:Tier4Details>
  <ghg:SlipStreamIndicator>Y</ghg:SlipStreamIndicator>
  <ghg:Tier4QuarterFuelDetails>
    <ghg:QuarterName>First Quarter</ghg:QuarterName>
    <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
      <ghg:CalculatedValue>4100.2</ghg:CalculatedValue>
    </ghg:CumulativeCO2MassEmissions>
  </ghg:Tier4QuarterFuelDetails>
  <ghg:Tier4QuarterFuelDetails>
    <ghg:QuarterName>Second Quarter</ghg:QuarterName>
    <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
      <ghg:CalculatedValue>4200.4</ghg:CalculatedValue>
    </ghg:CumulativeCO2MassEmissions>
  </ghg:Tier4QuarterFuelDetails>
  <ghg:Tier4QuarterFuelDetails>
    <ghg:QuarterName>Third Quarter</ghg:QuarterName>
    <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
      <ghg:CalculatedValue>4300.6</ghg:CalculatedValue>
    </ghg:CumulativeCO2MassEmissions>
  </ghg:Tier4QuarterFuelDetails>
  <ghg:Tier4QuarterFuelDetails>
    <ghg:QuarterName>Fourth Quarter</ghg:QuarterName>
    <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
      <ghg:CalculatedValue>4400.8</ghg:CalculatedValue>
    </ghg:CumulativeCO2MassEmissions>
  </ghg:Tier4QuarterFuelDetails>
  <ghg>TotalSourceOperatingHours>4000</ghg>TotalSourceOperatingHours>

```

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

**Figure 43**  
**Operating Hours Details Schema Diagram**



**Note:** Data elements boxed in red are required.

For configurations of Type 2 and Type 5, report the following information:

- The total operating hours in which a substitute data value was used in the emissions calculations for the CO<sub>2</sub> 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:** The total operating hours in which a substitute data value was used in the emissions calculations for the stack gas moisture content parameter (if moisture correction is required and a continuous moisture monitor is used) [98.36(e)(2)(vi)(C), 98.3(c)(8)]
- The total annual non-biogenic CO<sub>2</sub> mass emissions (i.e. CO<sub>2</sub> mass emissions from fossil fuels, sorbent use and process emissions) [98.36(b)(9)(ii), 98.36(c)(2)(viii)]
- The total annual biogenic CO<sub>2</sub> mass emissions [98.36(b)(9)(ii), 98.36(c)(2)(viii)]
- The total annual CO<sub>2</sub> mass emissions measured by the CEMS (this includes both biogenic and non-biogenic CO<sub>2</sub>) [98.36(b)(9)(i)-(ii), 98.36(c)(2)(viii)]
- The methodology start date and end date for the configuration [98.36(b)(6)-(7), 98.36(c)(2)(vi)-(vii)]

**Table 33**  
**Operating Hours Details Data Element Definitions**

Data Element Name	Description
<b>OperatingHoursDetails</b>	<b>Parent Element:</b> A collection of data elements containing details about the percentage of source operating hours in which a substitute data value was in the emissions calculations.
OperatingHoursCO2ConcentrationSubstituted	The total operating hours in which a substitute data value was used in the emissions calculations for the CO <sub>2</sub> concentration parameter (if an O <sub>2</sub> monitor is used to calculate CO <sub>2</sub> concentration, report missing data for the O <sub>2</sub> monitor here).
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	<b>Conditionally Required:</b> 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. Otherwise, do not report this element.
CO2EmissionsNonBiogenic	Total annual non-biogenic CO <sub>2</sub> mass emissions (includes fossil fuel, sorbent, process CO <sub>2</sub> emissions and fossil CO <sub>2</sub> from fuels with mixed fossil and biogenic components). Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
CO2EmissionsBiogenic	Total annual biogenic CO <sub>2</sub> mass emissions from biomass fuels and the biogenic CO <sub>2</sub> from fuels with mixed fossil and biogenic components (i.e. MSW or tires). Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
AnnualCO2EmissionsMeasuredByCEMS	The total annual CO <sub>2</sub> mass emissions measured by the CEMS (this includes both biogenic and non-biogenic CO <sub>2</sub> ). Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
TierMethodologyStartDate	The tier methodology start date for the specified reporting configuration (YYYY-MM-DD).
TierMethodologyEndDate	The tier methodology end date for the specified reporting configuration (YYYY-MM-DD).

## XML Excerpt 29 Example for Operating Hours Details

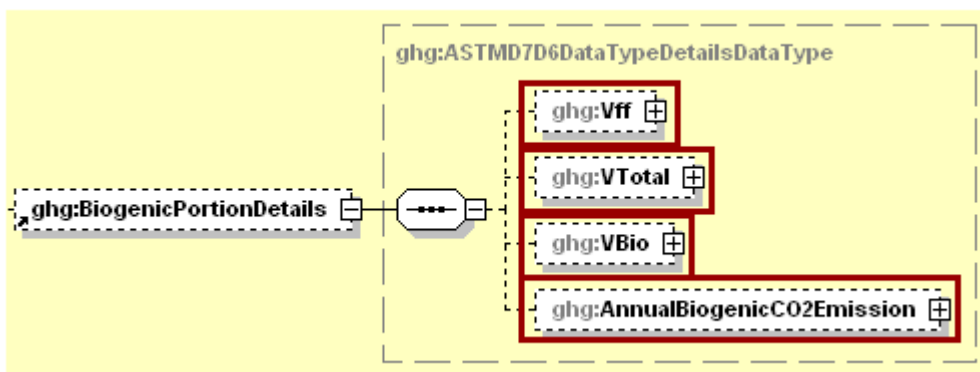
```

<ghg:OperatingHoursDetails>
  <ghg:OperatingHoursCO2ConcentrationSubstituted>400</ghg:OperatingHoursCO2ConcentrationSubstituted>
  <ghg:OperatingHoursStackGasFlowRateSubstituted>40</ghg:OperatingHoursStackGasFlowRateSubstituted>
  <ghg:OperatingHoursStackGasMoistureContentSubstituted>4</ghg:OperatingHoursStackGasMoistureContentSubstituted>
</ghg:OperatingHoursDetails>
<ghg:CO2EmissionsNonBiogenic massUOM="Metric Tons">
  <ghg:CalculatedValue>30000.3</ghg:CalculatedValue>
</ghg:CO2EmissionsNonBiogenic>
<ghg:CO2EmissionsBiogenic massUOM="Metric Tons">
  <ghg:CalculatedValue>400.1</ghg:CalculatedValue>
</ghg:CO2EmissionsBiogenic>
<ghg:AnnualCO2EmissionsMeasuredByCEMS massUOM="Metric Tons">
  <ghg:CalculatedValue>40000.7</ghg:CalculatedValue>
</ghg:AnnualCO2EmissionsMeasuredByCEMS>
<ghg:TierMethodologyStartDate>2011-01-01</ghg:TierMethodologyStartDate>
<ghg:TierMethodologyEndDate>2011-12-31</ghg:TierMethodologyEndDate>

```

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

**Figure 44  
Biogenic Portion Details Schema Diagram**



**Note:** Data elements boxed in red are required.



**Were biogenic CO<sub>2</sub> emissions estimated using the methodology described by Equations C-12, C-13 and C-14?**

If biogenic CO<sub>2</sub> emissions were estimated using the methodology described by Equations C-12, C-13 and C-14 (see section 98.33(e)(2)), then the following addition information is also required by Subpart C for configurations of Type 2 and 5:

- The total annual volume of CO<sub>2</sub> emitted from the combustion of all fossil fuels, Vff [98.36(e)(2)(ix)(B)]
- The total annual volume of CO<sub>2</sub> emitted from the combustion of all fuels, Vtotal [98.36(e)(2)(ix)(A)]
- The total annual volume of CO<sub>2</sub> emitted from the combustion of all biomass fuels, Vbio [98.36(e)(2)(ix)(C)]
- The total annual biogenic CO<sub>2</sub> mass emissions calculated using the procedures in 98.33(e)(2) [98.36(e)(2)(ix)(G)]

Please note that the BiogenicPortionDetails parent element is not related to the ASTM biogenic fraction [98.36(e)(2)(x)(A)] reporting requirement which was deferred.

**Table 34  
Biogenic Portion Details Data Element Definitions**


Data Element Name	Description
<b>BiogenicPortionDetails</b>	<b>Parent Element (Conditionally Required):</b> A collection of data elements to report if biogenic CO <sub>2</sub> emissions were estimated using the methodology described by Equations C-12, C-13 and C-14. Otherwise, do not report these elements.
Vff	The annual volume of CO <sub>2</sub> emitted from the combustion of all fossil fuels. (Equation C-13) Report the value in the child data element <b>MeasureValue</b> . Set the units of measure to “scf” in the attribute <b>volUOM</b> .
VTotall	The total annual volume of CO <sub>2</sub> emitted from the combustion of all fuels. Sum of all hourly volume of CO <sub>2</sub> values (VCO <sub>2</sub> h) for the reporting year (Equation C-12). Report the value in the child data element <b>MeasureValue</b> . Set the units of measure to “scf” in the attribute <b>volUOM</b> .
VBio	The annual volume of CO <sub>2</sub> from the combustion of all biomass fuels. Subtract Vff from Vtotal (and any process emissions from a unit that is subject to another Subpart of part 98). Report the value in the child data element <b>MeasureValue</b> . Set the units of measure to “scf” in the attribute <b>volUOM</b> .
AnnualBiogenicCO2Emission	The total annual biogenic CO <sub>2</sub> mass emissions. This value should be the same as reported for the data element CO <sub>2</sub> EmissionsBiogenic. Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .

**XML Excerpt 30  
Example for Biogenic Portion Details**

```

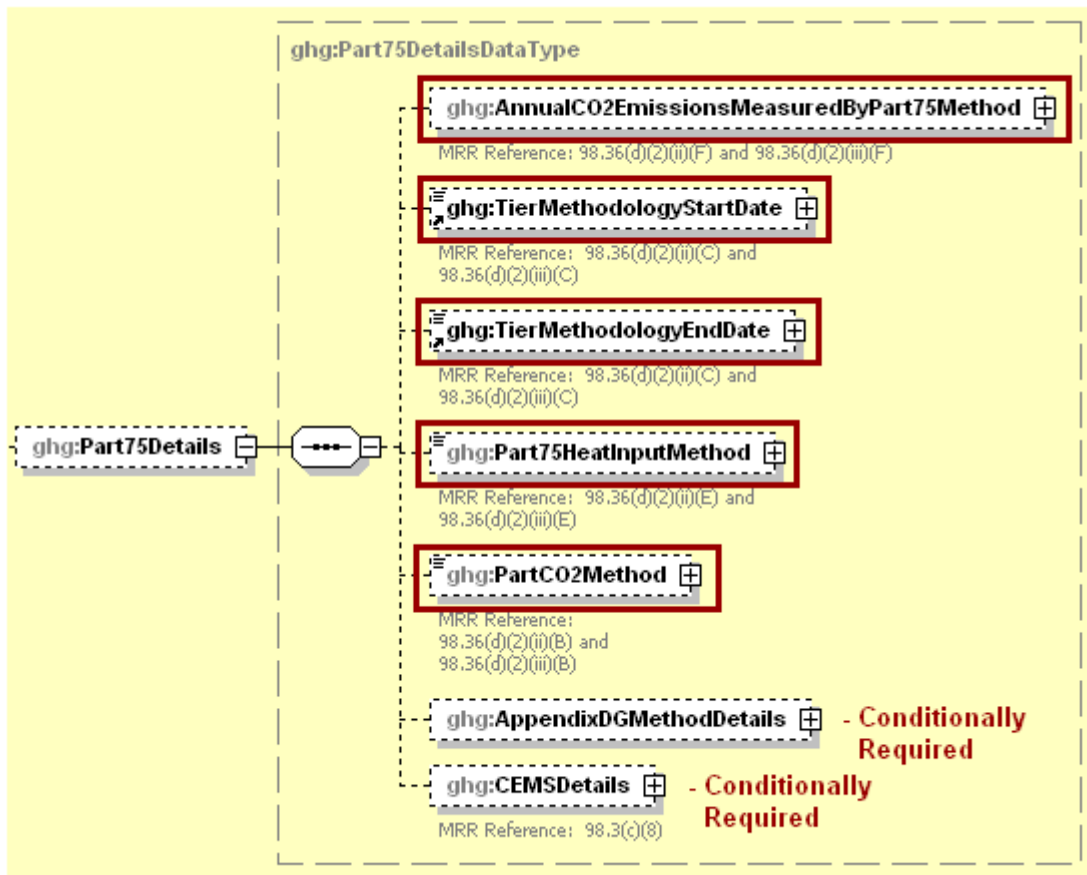
<ghg:BiogenicPortionDetails>
  <ghg:Vff volUOM="scf">
    <ghg:MeasureValue>4000.1</ghg:MeasureValue>
  </ghg:Vff>
  <ghg:VTotall volUOM="scf">
    <ghg:MeasureValue>4444.2</ghg:MeasureValue>
  </ghg:VTotall>
  <ghg:VBio volUOM="scf">
    <ghg:MeasureValue>444.6</ghg:MeasureValue>
  </ghg:VBio>
  <ghg:AnnualBiogenicCO2Emission massUOM="Metric Tons">
    <ghg:CalculatedValue>400.9</ghg:CalculatedValue>
  </ghg:AnnualBiogenicCO2Emission>
</ghg:BiogenicPortionDetails>
    
```

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

 See [Section 6.0](#) for instructions on how to report facility level roll-up emissions or see [Section 2.0](#) for instructions on how to report for a different configuration.

## 5.2 Part 75 Details

**Figure 45**  
**Part 75 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 configurations of **Type 6 (year-round Part 75 heat input reporters)**, Subpart C requires the following additional information aggregated at the configuration-level:

- The total annual CO<sub>2</sub> mass emissions at the monitored location [98.36(d)(2)(ii)(F), 98.36(d)(2)(iii)(F)]
- The methodology start date and end date [98.36(d)(ii)(C)-(D), 98.36(d)(iii)(C)-(D)]
- An indication of the Part 75 heat input method used (Appendix D method, Low Mass Emissions calculation method in 40 CFR 75.19 or CEMS calculation method) [98.36(d)(2)(ii)(E), 98.36(d)(2)(iii)(E)]
- The Part 75 methodology used to calculate the CO<sub>2</sub> mass emissions (Appendix D and G calculation method, Low Mass Emissions calculation method in 40 CFR 75.19 or CEMS calculation method) [98.36(d)(2)(ii)(B), 98.36(d)(2)(iii)(B)].

**Table 35  
Part 75 Details Data Element Definitions**

Data Element Name	Description
<b>Part75Details</b>	<b>Parent Element (Conditionally Required):</b> A collection of data elements containing information for certain Part 75 units that use the alternative calculation methods in 98.33(a)(5).
AnnualCO2EmissionsMeasuredByPart75Method	The total annual CO <sub>2</sub> emissions measured at the monitored location using the applicable Part 75 methodology (include both biogenic and non-biogenic CO <sub>2</sub> ). Report the value in the child data element <b>CalculatedValue</b> . Set the units of measure to "Metric Tons" in the attribute <b>massUOM</b> .
TierMethodologyStartDate	The methodology start date for the specified reporting configuration (YYYY-MM-DD).
TierMethodologyEndDate	The methodology end date for the specified reporting configuration (YYYY-MM-DD).
Part75HeatInputMethod	The method used to measure the Part 75 heat input. See list of allowable values:  Appendix D LME---40 CFR 75.19 CEMS
PartCO2Method	The Part 75 method used to calculate the CO <sub>2</sub> emissions. See list of allowable values:  Appendix D and G calculation method--- § 98.33(a)(5)(i) LME calculation method in 40 CFR 75.19--- § 98.33(a)(5)(ii) CEMS calculation method--- § 98.33(a)(5)(iii)

**XML Excerpt 31  
Example for Part 75 Details**

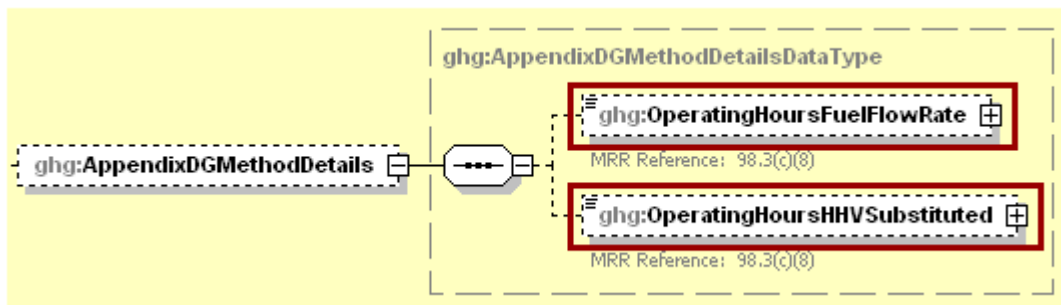
```

<ghg:Part75Details>
  <ghg:AnnualCO2EmissionsMeasuredByPart75Method massUOM="Metric Tons">
    <ghg:CalculatedValue>80000.6</ghg:CalculatedValue>
  </ghg:AnnualCO2EmissionsMeasuredByPart75Method>
  <ghg:TierMethodologyStartDate>2011-01-01</ghg:TierMethodologyStartDate>
  <ghg:TierMethodologyEndDate>2011-12-31</ghg:TierMethodologyEndDate>
  <ghg:Part75HeatInputMethod>Appendix D</ghg:Part75HeatInputMethod>
  <ghg:PartCO2Method>Appendix D and G calculation method--- § 98.33(a)(5)(i)</ghg:PartCO2Method>

```

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

**Figure 46**  
**Appendix D and G Calculation Method Details Schema Diagram**



**Note:** Data elements boxed in red are required.

**?** *Is the Appendix D and G calculation method the Part 75 methodology used to calculate CO<sub>2</sub> emissions?*

If the Part 75 methodology used to calculate the CO<sub>2</sub> mass emissions is Appendix D and G calculation method, then the following information is required:

- Total number of operating hours during the year that fuel flow rate data was missing [98.3(c)(8)]
- Total number of operating hours during the year that high heating value data was missing [98.3(c)(8)]

**Table 36**  
**Appendix D and G Calculation Method Details Data Element Definitions**

Data Element Name	Description
AppendixDGMethodDetails	<b>Parent Element (Conditionally Required):</b> A collection of data elements to report for each unit or stack for which the facility selects "Appendix D & G Calculation Method" as the Part 75 methodology used to determine CO <sub>2</sub> mass emissions
OperatingHoursFuelFlowRate	Total number of operating hours during the year that fuel flow rate data was missing.
OperatingHoursHHVSubstituted	Total number of operating hours during the year that high heating value data was missing.

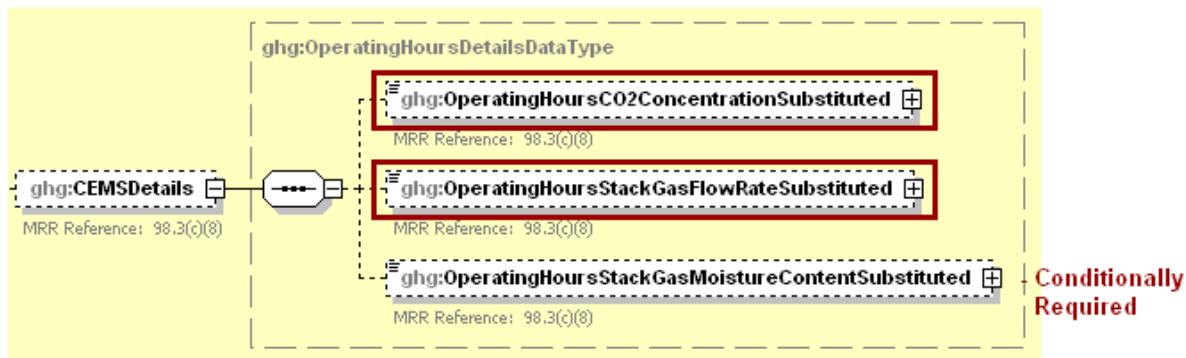
**XML Excerpt 32**  
**Example for Appendix D and G Calculation Method Details**

```
<ghg:AppendixDGMethodDetails>
  <ghg:OperatingHoursFuelFlowRate>80</ghg:OperatingHoursFuelFlowRate>
  <ghg:OperatingHoursHHVSubstituted>8</ghg:OperatingHoursHHVSubstituted>
</ghg:AppendixDGMethodDetails>
</ghg:Part75Details>
```

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



**Figure 47  
CEMS 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.

**? Is the CEMS calculation method the Part 75 methodology used to calculate CO<sub>2</sub> emissions?**

If the Part 75 methodology used to calculate the CO<sub>2</sub> mass emissions is CEMS calculation method, then for configurations of **Type 6 (year-round Part 75 heat input reporters)**, Subpart C requires the following additional information aggregated at the configuration-level:

- The total number of source operating hours in the reporting year that the CO<sub>2</sub> concentration parameter was missing (if an O<sub>2</sub> monitor is used to calculate CO<sub>2</sub> concentration, report missing data for the O<sub>2</sub> monitor here) [98.36(e)(2)(vi)(C), 98.3(c)(8)]
- The total number of source operating hours in the reporting year that the stack gas flow rate parameter was missing [98.36(e)(2)(vi)(C), 98.3(c)(8)]
- The total number of source operating hours in the reporting year that the moisture content parameter was missing (if a continuous monitor is in use) [98.36(e)(2)(vi)(C), 98.3(c)(8)]

**Table 37  
CEMS Details Data Element Definitions**

Data Element Name	Description
CEMSDetails	<b>Parent Element (Conditionally Required):</b> A collection of data elements pertaining to the number of hours missing data procedures were for each unit or stack in which the facility selects "CEMS" as the Part 75 methodology used to determine CO <sub>2</sub> mass emissions
OperatingHoursCO2ConcentrationSubstituted	The total operating hours in which a substitute data value was used in the emissions calculations for the CO <sub>2</sub> 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.


Data Element Name	Description
OperatingHoursStackGasMoistureContentSubstituted	<b>Conditionally Required:</b> 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. Otherwise, do not report this element.

### XML Excerpt 33 Example for CEMS Details

```

<ghg:CEMSDetails>
  <ghg:OperatingHoursCO2ConcentrationSubstituted>1000</ghg:OperatingHoursCO2ConcentrationSubstituted>
  <ghg:OperatingHoursStackGasFlowRateSubstituted>10</ghg:OperatingHoursStackGasFlowRateSubstituted>
  <ghg:OperatingHoursStackGasMoistureContentSubstituted>1</ghg:OperatingHoursStackGasMoistureContentSubstituted>
</ghg:CEMSDetails>
</ghg:Part75Details>
```

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

 See [Section 6.0](#) for instructions on how to report facility level roll-up emissions or see [Section 2.0](#) for instructions on how to report for a different configuration.

### 6.0 Facility Level Roll-up Emissions

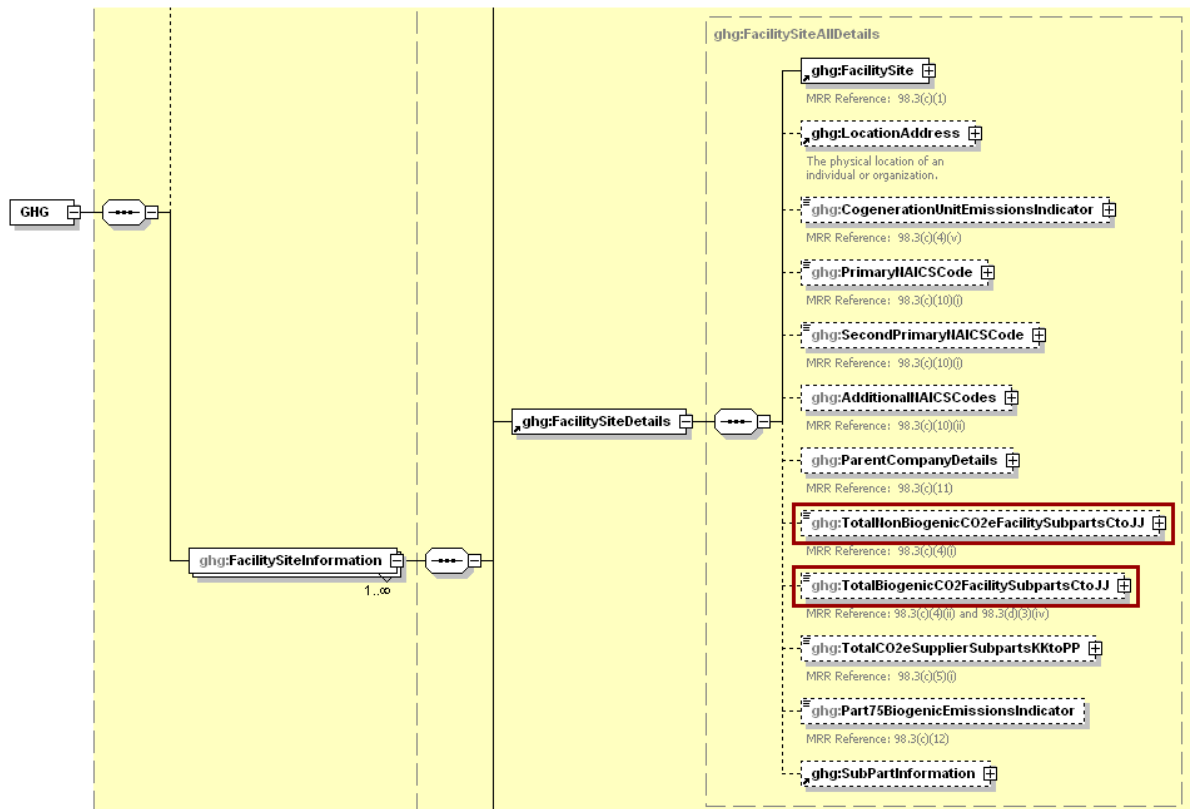
Each facility must report the following facility-level emission totals:

- Total CO<sub>2</sub> equivalent (CO<sub>2</sub>e) emissions (excluding biogenic CO<sub>2</sub>) aggregated across all direct emitter source categories (Subparts C-HH) associated with the facility.
- Total biogenic CO<sub>2</sub> 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<sub>2</sub>e 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 48**  
**Facility Level Roll-up Emissions Schema Diagram**



**Note:** Data elements boxed in red are required.

For Subpart C, report total emissions for CO<sub>2</sub>e (excluding biogenic CO<sub>2</sub>) and biogenic CO<sub>2</sub> using the following guidelines.

- 1) Add the total CO<sub>2</sub>e value for Subpart C in metric tons to the total CO<sub>2</sub>e emissions (excluding biogenic CO<sub>2</sub>) aggregated across all direct emitter source categories (Subparts C-HH) associated with the facility as follows:
  - Add the value reported under Subpart C for CO<sub>2</sub> (excluding biogenic CO<sub>2</sub>).

- Multiply the value reported under Subpart C for CH<sub>4</sub> by the Global Warming Potential for CH<sub>4</sub> (21) and add the result.
  - Multiply the value reported under Subpart C for N<sub>2</sub>O by the Global Warming Potential for N<sub>2</sub>O (310) and add the result.
- 2) Add the total annual biogenic CO<sub>2</sub> mass emissions reported under Subpart C to the total biogenic CO<sub>2</sub> aggregated across all direct emitter source categories (Subparts C-HH) associated with the facility.

**Note:** You must follow the rounding rules found in [Table 1](#).

**Table 38**  
**Facility Level Roll-up Emissions Data Element Definitions**

Data Element Name	Description
TotalNonBiogenicCO2eFacilitySubpartsCtoJJ	Add the total CO <sub>2</sub> e value for Subpart C in metric tons to the total CO <sub>2</sub> e emissions (excluding biogenic CO <sub>2</sub> ) aggregated across all direct emitter source categories (Subparts C-HH) associated with the facility according to the guidelines above. Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .
TotalBiogenicCO2FacilitySubpartsCtoJJ	Add the total annual biogenic CO <sub>2</sub> mass emissions reported under Subpart C to the total biogenic CO <sub>2</sub> aggregated across all direct emitter source categories (Subparts C-HH) associated with the facility according to the guideline above. Set the units of measure to “Metric Tons” in the attribute <b>massUOM</b> .

**XML Excerpt 34**  
**Example for Facility Level Roll-up Emissions**

```
<ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ massUOM="Metric Tons">727399.9</ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>
<ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ massUOM="Metric Tons">14700.2</ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ>
```

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

## IV. Appendix A: Sample XML Document for Subpart C

*(Note: Data values do not reflect an actual facility's emissions. Additional sample XML files for Subpart C are posted on the e-GGRT help site.*

*<http://www.ccdsupport.com/confluence/display/help/Additional+XML+Examples>* )

```

<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>524257</ghg:FacilitySiteIdentifier>
        <ghg:FacilitySiteName>Test Facility C</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>334515</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">727399.9</ghg>TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>
      <ghg>TotalBiogenicCO2FacilitySubpartsCtoJJ massUOM="Metric Tons">14700.1</ghg>TotalBiogenicCO2FacilitySubpartsCtoJJ>
      <ghg>TotalCO2eSupplierSubpartsKKtoPP massUOM="Metric Tons">0</ghg>TotalCO2eSupplierSubpartsKKtoPP>
    </ghg:SubPartInformation>
    <ghg:SubPartC>
      <ghg:GHGasInfoDetails>
        <ghg:GHGasName>Biogenic Carbon dioxide</ghg:GHGasName>
        <ghg:GHGasQuantity massUOM="Metric Tons">
          <ghg:CalculatedValue>14700.5</ghg:CalculatedValue>
        </ghg:GHGasQuantity>
      </ghg:GHGasInfoDetails>
      <ghg:GHGasInfoDetails>
        <ghg:GHGasName>Methane</ghg:GHGasName>

```

```

    <ghg:GHGasQuantity massUOM="Metric Tons">
    <ghg:CalculatedValue>4065.72</ghg:CalculatedValue>
    </ghg:GHGasQuantity>
  </ghg:GHGasInfoDetails>
  <ghg:GHGasInfoDetails>
    <ghg:GHGasName>Nitrous Oxide</ghg:GHGasName>
    <ghg:GHGasQuantity massUOM="Metric Tons">
      <ghg:CalculatedValue>398.588</ghg:CalculatedValue>
    </ghg:GHGasQuantity>
  </ghg:GHGasInfoDetails>
  <ghg:GHGasInfoDetails>
    <ghg:GHGasName>Carbon Dioxide</ghg:GHGasName>
    <ghg:GHGasQuantity massUOM="Metric Tons">
      <ghg:CalculatedValue>518460.6</ghg:CalculatedValue>
    </ghg:GHGasQuantity>
  </ghg:GHGasInfoDetails>
  <ghg:UnitsCDetails>
    <ghg:UnitIdentification>
      <ghg:UnitName>CT 1- Tier 2</ghg:UnitName>
      <ghg:UnitDescription>Tier 2 unit</ghg:UnitDescription>
      <ghg:UnitType>F (Furnace)</ghg:UnitType>
    </ghg:UnitIdentification>
    <ghg:IndividualUnitDetails>
      <ghg:MaxRatedheatInputCapacity heatUOM="mmBtu/hr">
        <ghg:MeasureValue>2000</ghg:MeasureValue>
      </ghg:MaxRatedheatInputCapacity>
    </ghg:IndividualUnitDetails>
    <ghg:SorbentCO2EmissionsQuantity massUOM="Metric Tons">
      <ghg:CalculatedValue>200.1</ghg:CalculatedValue>
    </ghg:SorbentCO2EmissionsQuantity>
    <ghg:CO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
      <ghg:CalculatedValue>2000.3</ghg:CalculatedValue>
    </ghg:CO2EmissionsAllBiomassFuelsCombined>
    <ghg:TierFuelDetails>
      <ghg:FuelType>Coke</ghg:FuelType>
      <ghg:Tier2FuelDetails>
        <ghg:TierName>Tier 2 (Equation C-2a)</ghg:TierName>
        <ghg:TierMethodologyStartDate>2011-01-01</ghg:TierMethodologyStartDate>
        <ghg:TierMethodologyEndDate>2011-12-31</ghg:TierMethodologyEndDate>
        <ghg:Tier2MonthlyHHVDetails>
          <ghg:MonthName>January</ghg:MonthName>
          <ghg:HighHeatValue>
            <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndicator>
          </ghg:HighHeatValue>
        </ghg:Tier2MonthlyHHVDetails>
        <ghg:Tier2MonthlyHHVDetails>
          <ghg:MonthName>February</ghg:MonthName>
          <ghg:HighHeatValue>
            <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
          </ghg:HighHeatValue>
        </ghg:Tier2MonthlyHHVDetails>
        <ghg:Tier2MonthlyHHVDetails>
          <ghg:MonthName>March</ghg:MonthName>
        </ghg:Tier2MonthlyHHVDetails>
      </ghg:Tier2FuelDetails>
    </ghg:TierFuelDetails>
  </ghg:UnitsCDetails>

```

```
        <ghg:HighHeatValue>
          <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:HighHeatValue>
      </ghg:Tier2MonthlyHHVDetails>
    <ghg:Tier2MonthlyHHVDetails>
      <ghg:MonthName>April</ghg:MonthName>
      <ghg:HighHeatValue>
        <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
      </ghg:HighHeatValue>
    </ghg:Tier2MonthlyHHVDetails>
    <ghg:Tier2MonthlyHHVDetails>
      <ghg:MonthName>May</ghg:MonthName>
      <ghg:HighHeatValue>
        <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndicator>
      </ghg:HighHeatValue>
    </ghg:Tier2MonthlyHHVDetails>
    <ghg:Tier2MonthlyHHVDetails>
      <ghg:MonthName>June</ghg:MonthName>
      <ghg:HighHeatValue>
        <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
      </ghg:HighHeatValue>
    </ghg:Tier2MonthlyHHVDetails>
    <ghg:Tier2MonthlyHHVDetails>
      <ghg:MonthName>July</ghg:MonthName>
      <ghg:HighHeatValue>
        <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
      </ghg:HighHeatValue>
    </ghg:Tier2MonthlyHHVDetails>
    <ghg:Tier2MonthlyHHVDetails>
      <ghg:MonthName>August</ghg:MonthName>
      <ghg:HighHeatValue>
        <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
      </ghg:HighHeatValue>
    </ghg:Tier2MonthlyHHVDetails>
    <ghg:Tier2MonthlyHHVDetails>
      <ghg:MonthName>September</ghg:MonthName>
      <ghg:HighHeatValue>
        <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndicator>
      </ghg:HighHeatValue>
    </ghg:Tier2MonthlyHHVDetails>
    <ghg:Tier2MonthlyHHVDetails>
      <ghg:MonthName>October</ghg:MonthName>
      <ghg:HighHeatValue>
        <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
      </ghg:HighHeatValue>
    </ghg:Tier2MonthlyHHVDetails>
    <ghg:Tier2MonthlyHHVDetails>
      <ghg:MonthName>November</ghg:MonthName>
      <ghg:HighHeatValue>
        <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndicator>
      </ghg:HighHeatValue>
    </ghg:Tier2MonthlyHHVDetails>
  </ghg:Tier2MonthlyHHVDetails>
```

```

    <ghg:MonthName>December</ghg:MonthName>
    <ghg:HighHeatValue>
      <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
    </ghg:HighHeatValue>
  </ghg:Tier2MonthlyHHVDetails>
  <ghg:FrequencyofHighHeatValueDetermination>Monthly</ghg:FrequencyofHighHeatValueDetermination>
  <ghg:EmissionsDetailsNode>
    <ghg:TotalCO2CombustionEmissions massUOM="Metric Tons">
      <ghg:CalculatedValue>2000.4</ghg:CalculatedValue>
    </ghg:TotalCO2CombustionEmissions>
    <ghg:TotalCH4CombustionEmissions massUOM="Metric Tons">
      <ghg:CalculatedValue>200.13</ghg:CalculatedValue>
    </ghg:TotalCH4CombustionEmissions>
    <ghg:TotalN2OCombustionEmissions massUOM="Metric Tons">
      <ghg:CalculatedValue>20.444</ghg:CalculatedValue>
    </ghg:TotalN2OCombustionEmissions>
    <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
      <ghg:CalculatedValue>4200.7</ghg:CalculatedValue>
    </ghg:CH4EmissionsCO2Equivalent>
    <ghg:N2OEmissionsCO2Equivalent massUOM="Metric Tons">
      <ghg:CalculatedValue>6200.4</ghg:CalculatedValue>
    </ghg:N2OEmissionsCO2Equivalent>
  </ghg:EmissionsDetailsNode>
</ghg:Tier2FuelDetails>
</ghg:TierFuelDetails>
<ghg:TierFuelDetails>
  <ghg:FuelType>Mixed (Industrial coking)</ghg:FuelType>
  <ghg:Tier2FuelDetails>
    <ghg:TierName>Tier 2 (Equation C-2c, steam generation)</ghg:TierName>
    <ghg:TierMethodologyStartDate>2011-01-01</ghg:TierMethodologyStartDate>
    <ghg:TierMethodologyEndDate>2011-12-31</ghg:TierMethodologyEndDate>
    <ghg:EmissionsDetailsNode>
      <ghg:TotalCO2CombustionEmissions massUOM="Metric Tons">
        <ghg:CalculatedValue>2200.8</ghg:CalculatedValue>
      </ghg:TotalCO2CombustionEmissions>
      <ghg:TotalCH4CombustionEmissions massUOM="Metric Tons">
        <ghg:CalculatedValue>220.99</ghg:CalculatedValue>
      </ghg:TotalCH4CombustionEmissions>
      <ghg:TotalN2OCombustionEmissions massUOM="Metric Tons">
        <ghg:CalculatedValue>22.554</ghg:CalculatedValue>
      </ghg:TotalN2OCombustionEmissions>
      <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
        <ghg:CalculatedValue>4620.9</ghg:CalculatedValue>
      </ghg:CH4EmissionsCO2Equivalent>
      <ghg:N2OEmissionsCO2Equivalent massUOM="Metric Tons">
        <ghg:CalculatedValue>6820.6</ghg:CalculatedValue>
      </ghg:N2OEmissionsCO2Equivalent>
    </ghg:EmissionsDetailsNode>
  </ghg:Tier2FuelDetails>
</ghg:TierFuelDetails>
</ghg:UnitsCDetails>
<ghg:UnitsCDetails>
  <ghg:UnitIdentification>

```



```

    <ghg:UnitName>CT 1- Tier 1</ghg:UnitName>
    <ghg:UnitDescription>Tier 1 unit</ghg:UnitDescription>
    <ghg:UnitType>OCS (Other combustion source)</ghg:UnitType>
    <ghg:OtherUnitName>Unit Type A</ghg:OtherUnitName>
  </ghg:UnitIdentification>
  <ghg:IndividualUnitDetails>
    <ghg:MaxRatedheatInputCapacity heatUOM="Other" otherheatUOM="BTU per hour">
      <ghg:MeasureValue>1000</ghg:MeasureValue>
    </ghg:MaxRatedheatInputCapacity>
  </ghg:IndividualUnitDetails>
  <ghg:SorbentCO2EmissionsQuantity massUOM="Metric Tons">
    <ghg:CalculatedValue>10.3</ghg:CalculatedValue>
  </ghg:SorbentCO2EmissionsQuantity>
  <ghg:CO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
    <ghg:CalculatedValue>100.1</ghg:CalculatedValue>
  </ghg:CO2EmissionsAllBiomassFuelsCombined>
  <ghg:TierFuelDetails>
    <ghg:FuelType>Natural Gas (Weighted U.S. Average)</ghg:FuelType>
    <ghg:Tier1FuelDetails>
      <ghg:TierName>Tier 1 (Equation C-1b, natural gas billing in mmBtu)</ghg:TierName>
      <ghg:TierMethodologyStartDate>2011-01-01</ghg:TierMethodologyStartDate>
      <ghg:TierMethodologyEndDate>2011-12-31</ghg:TierMethodologyEndDate>
      <ghg:EmissionsDetailsNode>
        <ghg>TotalCO2CombustionEmissions massUOM="Metric Tons">
          <ghg:CalculatedValue>1300.5</ghg:CalculatedValue>
        </ghg>TotalCO2CombustionEmissions>
        <ghg>TotalCH4CombustionEmissions massUOM="Metric Tons">
          <ghg:CalculatedValue>130.57</ghg:CalculatedValue>
        </ghg>TotalCH4CombustionEmissions>
        <ghg>TotalN2OCombustionEmissions massUOM="Metric Tons">
          <ghg:CalculatedValue>13.877</ghg:CalculatedValue>
        </ghg>TotalN2OCombustionEmissions>
        <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
          <ghg:CalculatedValue>2730.4</ghg:CalculatedValue>
        </ghg:CH4EmissionsCO2Equivalent>
        <ghg:N2OEmissionsCO2Equivalent massUOM="Metric Tons">
          <ghg:CalculatedValue>4030.7</ghg:CalculatedValue>
        </ghg:N2OEmissionsCO2Equivalent>
      </ghg:EmissionsDetailsNode>
    </ghg:Tier1FuelDetails>
  </ghg:TierFuelDetails>
  <ghg:TierFuelDetails>
    <ghg:FuelType>Mixed (Electric Power sector)</ghg:FuelType>
    <ghg:Tier1FuelDetails>
      <ghg:TierName>Tier 1 (Equation C-1)</ghg:TierName>
      <ghg:TierMethodologyStartDate>2011-01-01</ghg:TierMethodologyStartDate>
      <ghg:TierMethodologyEndDate>2011-12-31</ghg:TierMethodologyEndDate>
      <ghg:EmissionsDetailsNode>
        <ghg>TotalCO2CombustionEmissions massUOM="Metric Tons">
          <ghg:CalculatedValue>10000.4</ghg:CalculatedValue>
        </ghg>TotalCO2CombustionEmissions>
        <ghg>TotalCH4CombustionEmissions massUOM="Metric Tons">
          <ghg:CalculatedValue>100.33</ghg:CalculatedValue>

```

```

        </ghg:TotalCH4CombustionEmissions>
        <ghg:TotalN2OCombustionEmissions massUOM="Metric Tons">
          <ghg:CalculatedValue>10.228</ghg:CalculatedValue>
        </ghg:TotalN2OCombustionEmissions>
        <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
          <ghg:CalculatedValue>2100.2</ghg:CalculatedValue>
        </ghg:CH4EmissionsCO2Equivalent>
        <ghg:N2OEmissionsCO2Equivalent massUOM="Metric Tons">
          <ghg:CalculatedValue>3100.1</ghg:CalculatedValue>
        </ghg:N2OEmissionsCO2Equivalent>
      </ghg:EmissionsDetailsNode>
    </ghg:Tier1FuelDetails>
  </ghg:TierFuelDetails>
</ghg:UnitsCDetails>
<ghg:UnitsCDetails>
  <ghg:UnitIdentification>
    <ghg:FuelType>Natural Gas (Weighted U.S. Average)</ghg:FuelType>
    <ghg:Tier1FuelDetails>
      <ghg:TierName>Tier 1 (Equation C-1a, natural gas billing in therms)</ghg:TierName>
      <ghg:TierMethodologyStartDate>2011-01-01</ghg:TierMethodologyStartDate>
      <ghg:TierMethodologyEndDate>2011-12-31</ghg:TierMethodologyEndDate>
      <ghg:EmissionsDetailsNode>
        <ghg:TotalCO2CombustionEmissions massUOM="Metric Tons">
          <ghg:CalculatedValue>12000.8</ghg:CalculatedValue>
        </ghg:TotalCO2CombustionEmissions>
        <ghg:TotalCH4CombustionEmissions massUOM="Metric Tons">
          <ghg:CalculatedValue>120.67</ghg:CalculatedValue>
        </ghg:TotalCH4CombustionEmissions>
        <ghg:TotalN2OCombustionEmissions massUOM="Metric Tons">
          <ghg:CalculatedValue>12.454</ghg:CalculatedValue>
        </ghg:TotalN2OCombustionEmissions>
        <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
          <ghg:CalculatedValue>2520.7</ghg:CalculatedValue>
        </ghg:CH4EmissionsCO2Equivalent>
        <ghg:N2OEmissionsCO2Equivalent massUOM="Metric Tons">
          <ghg:CalculatedValue>3720.8</ghg:CalculatedValue>
        </ghg:N2OEmissionsCO2Equivalent>
      </ghg:EmissionsDetailsNode>
    </ghg:Tier1FuelDetails>
  </ghg:UnitIdentification>
  <ghg:IndividualUnitDetails>
    <ghg:UnitName>CT 2- Tier 4</ghg:UnitName>
    <ghg:UnitDescription>Tier 4 unit</ghg:UnitDescription>
    <ghg:UnitType>F (Furnace)</ghg:UnitType>
  </ghg:IndividualUnitDetails>
  <ghg:IndividualUnitDetails>
    <ghg:MaxRatedheatInputCapacity heatUOM="mmBtu/hr">
      <ghg:MeasureValue>4000</ghg:MeasureValue>
    </ghg:MaxRatedheatInputCapacity>
  </ghg:IndividualUnitDetails>
  <ghg:TierFuelDetails>
    <ghg:FuelType>Petroleum Coke</ghg:FuelType>
  </ghg:TierFuelDetails>
</ghg:UnitsCDetails>

```

```

    <ghg:EmissionsNodeDetails>
      <ghg:TotalCH4CombustionEmissions massUOM="Metric Tons">
        <ghg:CalculatedValue>400.77</ghg:CalculatedValue>
      </ghg:TotalCH4CombustionEmissions>
      <ghg:TotalN2OCombustionEmissions massUOM="Metric Tons">
        <ghg:CalculatedValue>40.222</ghg:CalculatedValue>
      </ghg:TotalN2OCombustionEmissions>
      <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
        <ghg:CalculatedValue>8400.9</ghg:CalculatedValue>
      </ghg:CH4EmissionsCO2Equivalent>
      <ghg:N2OEmissionsCO2Equivalent massUOM="Metric Tons">
        <ghg:CalculatedValue>12400.7</ghg:CalculatedValue>
      </ghg:N2OEmissionsCO2Equivalent>
    </ghg:EmissionsNodeDetails>
  </ghg:Tier4FuelDetails>
</ghg:TierFuelDetails>
<ghg:Tier4Details>
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