Greenhouse Gas Reporting Program

XML Reporting Instructions for Subpart A – General Provisions

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These instructions explain how to report the required data. Reporters should refer to the applicable regulations for information about what data are required to be reported.

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I. Introduction

This document provides a step-by-step description of how to report emissions data to the EPA electronic greenhouse gas reporting tool (e-GGRT) using the Greenhouse Gas (GHG) XML schema. The GHG XML schema contains all of the data elements needed to comply with the Greenhouse Gas Reporting Program (GHGRP). The schema defines expected data elements and attributes, allowable data formats for each data element, and the hierarchical structure and sequence in which data elements are placed within the XML file.

The GHG XML schema's root data element is "GHG". The data elements within the schema are related to each other in parent-child relationships. The root data element is the parent of the entire schema.

The e-GGRT XML upload method may be used for reporting a facility or supplier's annual GHG data. However, the following actions must be performed using only 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

Every XML file submitted to e-GGRT must be well-formed and conform to the current version of the GHG schema. Every XML file must contain GHG data only for a single facility or supplier. Reporters are required to submit a single XML file containing all emissions data for a facility or supplier as a complete report. The XML file must include all of the relevant Subparts. Reporters cannot submit a portion of a facility's data to add, delete, correct or update. To make any modification to previously submitted emissions data, a reporter must resubmit the entire set of emissions data. Each subsequent submission for the same facility replaces all of the previously submitted data.

The 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 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	• CO_2e and CO_2 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. **Important Note:** EPA has changed many of the global warming potentials (GWPs) that XML submitters must use to prepare their annual reports for 2013 and later years. For a complete list of all GWPs and the years they apply to, see: http://www.ccdsupport.com/confluence/display/help/Table+A-1+of+Subpart+A+of+Part+98+-+Global+Warming+Potentials • CH_4 emissions data expressed in metric tons should be rounded to two decimal places. • N_2O emissions data expressed in metric tons should be rounded to three decimal places. • Emissions data for all GHGs other than CO_2, N_2O and CH_4 expressed in metric tons should be rounded to the fourth digit to the right of the decimal (one tenth of a kilogram, or 1 ten thousandth of a metric ton). This rounding should be applied regardless of the level of data collection (unit, facility, etc.). • Other (non-emissions) quantitative data reported by the user (e.g., a monthly HHV sample result, an annual production quantity) will not need to be rounded. • In the case of aggregation/roll-ups, those calculations should be performed on the rounded values.
Percentages	If a value is reported as a percentage, then the number should be within the range of 0 to 100 (percent). For example, 85.5% is 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

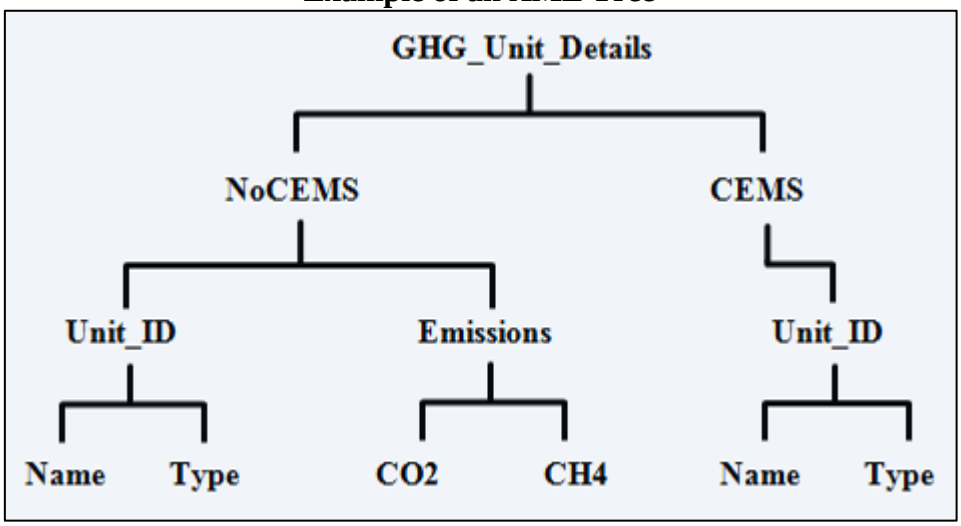
- **MRR:** Greenhouse Gas Reporting Rule reference.
- **XML:** A markup language for documents containing structured information. The XML specification defines a standard way to add markup to documents. Its primary purpose is to facilitate the sharing of structured data across different information systems, 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 is like 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, such as in a parent-to-child relationship. 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 seven tips on preparing your XML file:

- **Do not include non-applicable data elements in your 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 the instructions (definition tables) do not reference a particular data element, then **do not** report or include it in your facility's XML file.

- **Sequence data elements in the order specified by the schema.** The figures and tables in this document depict the proper sequence in which data elements are arranged in the XML file 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. Report values for enumerations exactly as they are defined within the schema, including punctuation marks. 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.

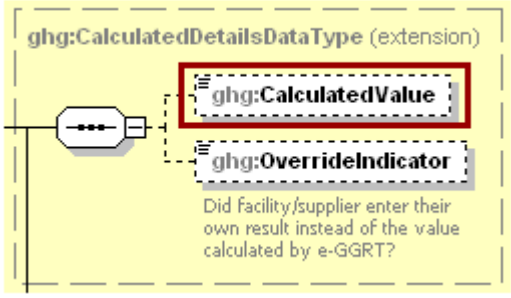
- **The schema diagrams do not depict commonly used data types.** The schema diagrams display almost every data element in the schema except the data elements that are associated with the three most commonly occurring data types:

    - Calculated Details
    - Measurement Details
    - Unit Identification Details

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

- **Conditionally required data elements.** Conditionally required data elements 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 include it in your 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. **Do not** include a parent element that is not required, nor include any of its child data elements in your facility's XML file.

Figure 2
Calculated Details Data Type Schema Diagram

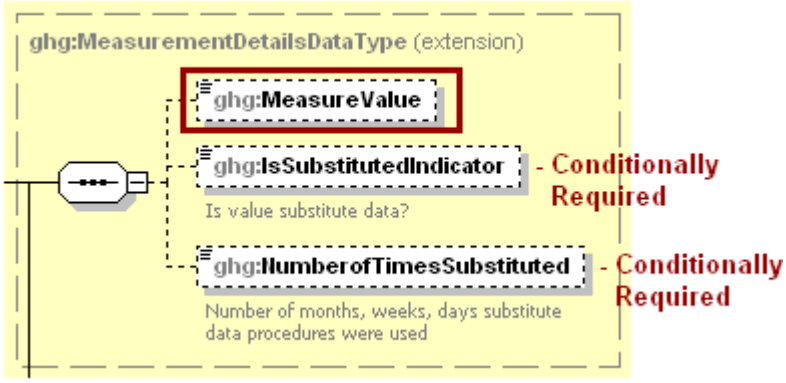


Note: Data elements boxed in red are required.

Table 2
Calculated Details Data Element Definitions

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

Figure 3
Measurement Details Data Type Schema Diagram

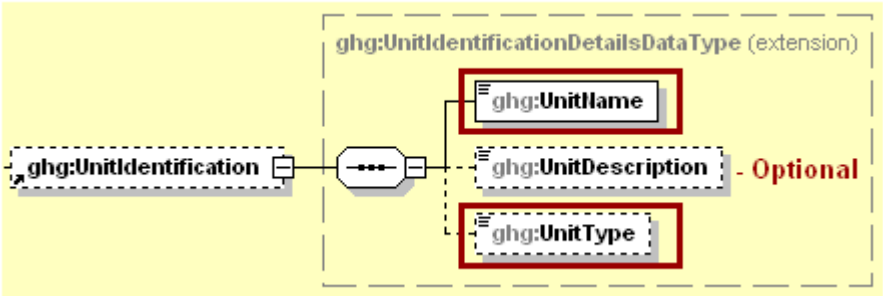


Note: Data elements boxed in red are required. Please see page 4 of this document for more information on conditionally required elements.

Table 3
Measurement Details Data Element Definitions

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

Figure 4
Unit Identification Details Data Type Schema Diagram



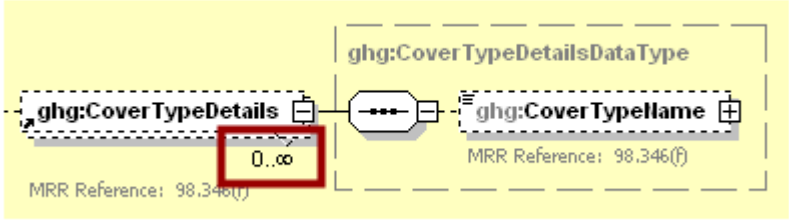
Note: Data elements boxed in red are required.

Table 4
Unit Identification Details Data Element Definitions

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

The XML symbol "0..∞" 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

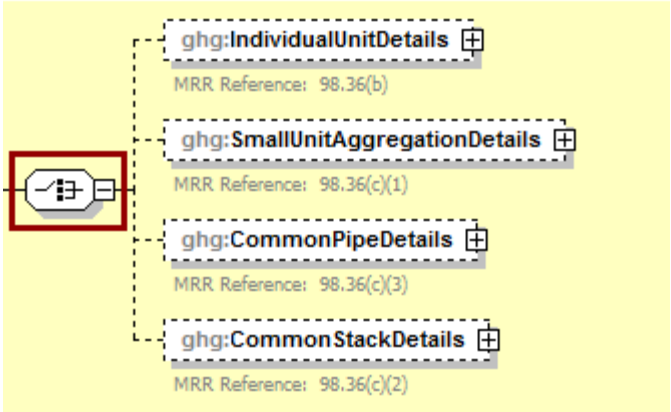


XML Excerpt 1
Example for "Unbounded" Parent Element

```
<ghg:CoverTypeDetails>
        <ghg:CoverTypeName>Organic cover</ghg:CoverTypeName>
</ghg:CoverTypeDetails>
<ghg:CoverTypeDetails>
        <ghg:CoverTypeName>Clay cover</ghg:CoverTypeName>
</ghg:CoverTypeDetails>
<ghg:CoverTypeDetails>
        <ghg:CoverTypeName>Sand cover</ghg:CoverTypeName>
</ghg:CoverTypeDetails>
```

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



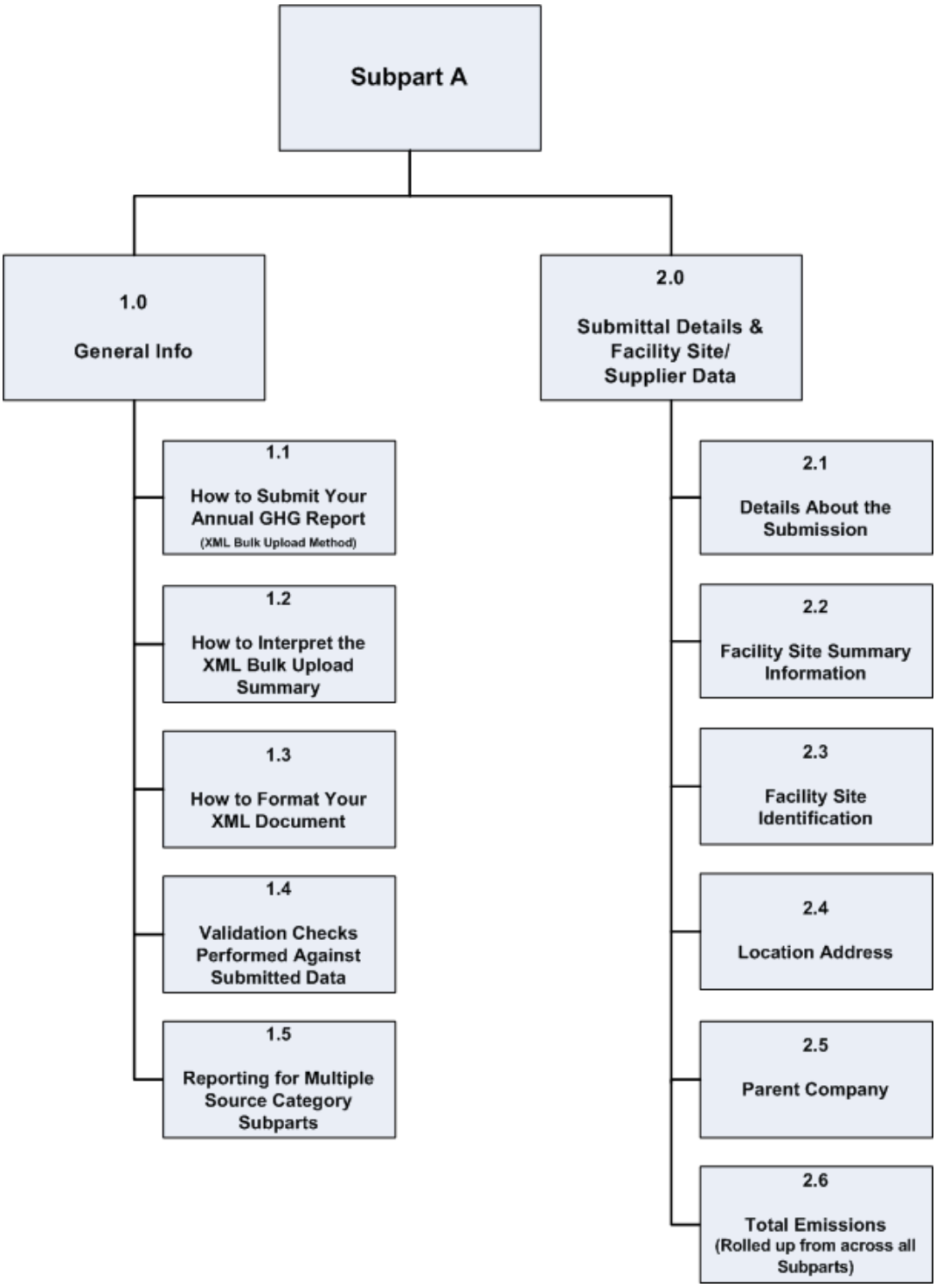
II. Summary of Changes

Document Changes For the RY2015:

Section 2.5 was modified to clarify that entities owned by the Federal Government report "US GOVERNMENT" for ParentCompanyLegalName and do not report StreetAddress, City, State, Zip, or ParentOwnershipInterest.

III. Subpart A Overview

Figure 7
Subpart A Reporting Diagram



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

1.0 General Information: includes basic information about the GHG submittal process and includes tips to ensure the completeness and quality of your reporting data.

1.1. How to submit your annual GHG report

1.2. How to interpret the XML bulk upload summary

1.3. How to format your XML document

1.4. Validation checks performed against submitted GHG data

1.5. Reporting for multiple source category Subparts

2.0 Submittal Details and Facility or Supplier Site Data: includes information on how to report general information about your annual GHG report and the facility or supplier, such as the facility or supplier name, street address, U.S. parent company information and the total emissions (or quantities) for CO_2e. For facilities, CO_2e (excluding biogenic CO_2) and biogenic CO_2 are reported separately. These are aggregated across all source category Subparts associated with the facility or the supplier.

2.1. Details About the Submission

2.2. Facility Site Summary Information[†]

2.3. Facility Site Identification[†]

2.4. Location Address

2.5. Parent Company

2.6. Total Emissions for the Facility (Quantities for Suppliers)

[†] The “Facility Site Information” and “Facility Site Details” sections in the schema apply to both facility and supplier. In general, where XML instructions refer to "facility" it means "facility or supplier".

1.0 General Information

1.1 How to Submit Your Annual Report (XML Bulk Upload)

This section provides step-by-step instruction on how to upload and submit your annual GHG data in XML format. All annual GHG reports must be submitted to the EPA through e-GGRT.

In order to submit an annual GHG report in XML format, you must switch the facility or supplier's default reporting method to "Data upload via XML". Follow the steps outlined below.

Step 1: Create an XML file containing the required data for Subpart A and every source category Subpart associated with your facility or supplier.

Step 2: Log into e-GGRT and click the **Data Reporting** tab.

Step 3: Open the facility or supplier for which you are submitting an XML report.

Step 4: Click **Change** next to the Facility or Supplier's GHG Reporting Method.

Step 5: Click "Bulk upload of XML" and then **Save**.

Step 6: Click **OK** at the warning prompt.

> Changing your GHG Reporting Method will result in the loss of any previously entered GHG Data for the current reporting year.

The system displays the message highlighted in yellow above. It warns that if you proceed with changing the reporting method, all previously entered web form data will be lost (removed from e-GGRT). This does not include the data that was previously submitted. You will always be able to view all previously submitted reports in HTML or XML format.

After following the steps above, you can proceed with uploading your XML data – just browse to your zipped or unzipped XML document and click **Upload**. e-GGRT will then begin processing the document.

If critical errors are encountered during this stage, then processing is halted. e-GGRT will not generate a report for your review, and you will not be allowed to submit your annual GHG data until the errors are corrected. For more information, see Section 1.4, Validation Checks.

Frequently Asked Questions

Q: If I report via web forms this year, can I change to XML next year?

A: Yes, however, when you switch from web form reporting to XML upload, we recommend saving a backup copy of your data by generating your annual GHG report and saving both the XML and HTML versions locally on your computer.

Q: Will reporters be able to upload an XML file and then edit the data via web forms?

A: No, reporters must choose either web form data entry or XML upload. Once an XML file has been uploaded, you may review the e-GGRT summary of that file; however, you may not edit it using the web forms data entry pages. If after uploading an XML file you determine that the

data must be changed, you must edit the XML file outside of e-GGRT and upload the new version.

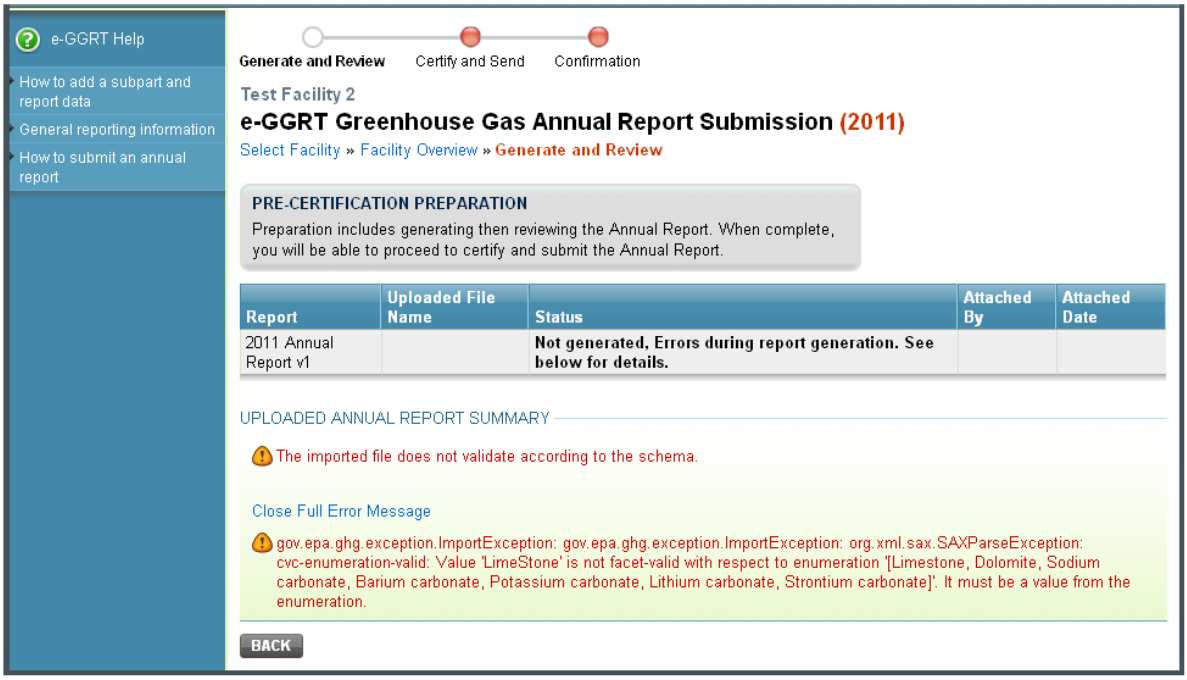
Q: After I use the 'Data upload via XML' option for a facility or supplier can I switch to the 'Data entry via e-GGRT web-forms' option?

A: Yes, however, switching between reporting methods deletes already entered data. This is presented to the user through a pop-up confirmation warning.

1.2 How to Interpret the Uploaded Annual Report Summary

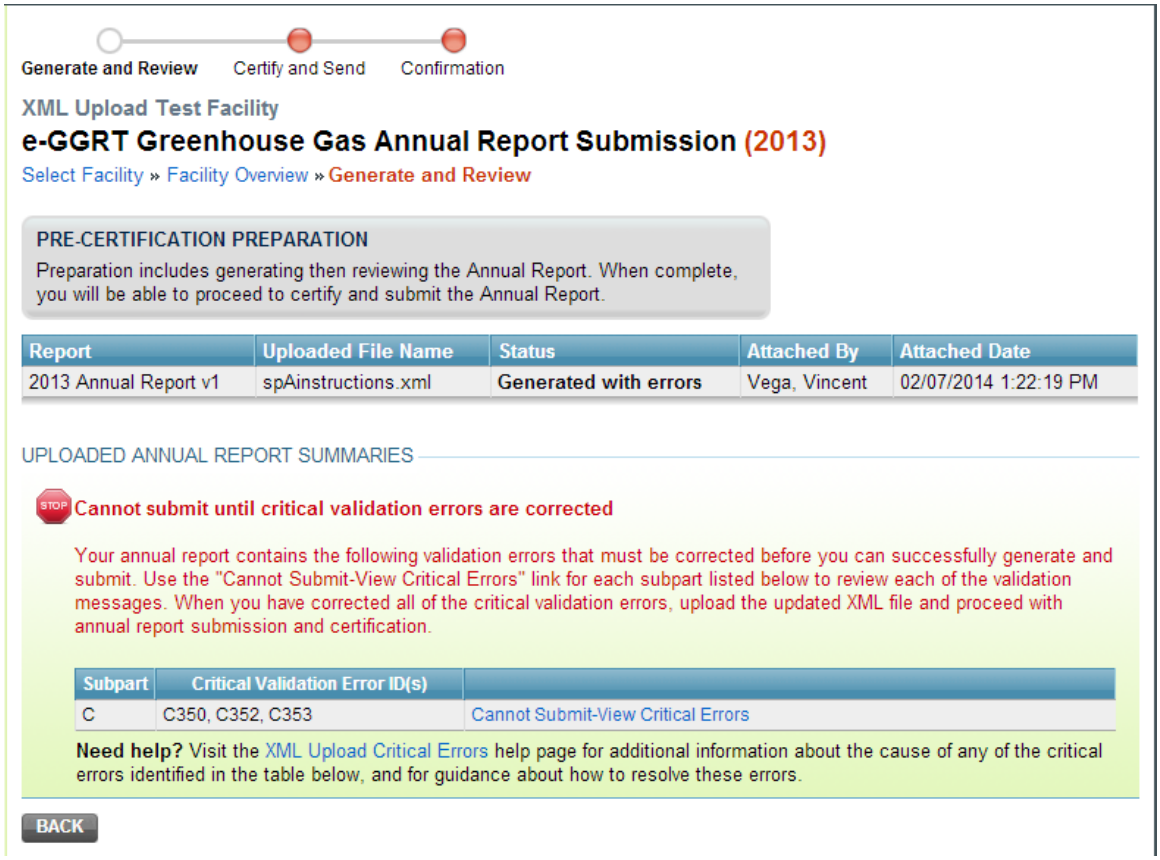
This section provides guidance in interpreting the Uploaded Annual Report Summary. Every time your XML document is uploaded into e-GGRT, the system will begin processing it. If your upload fails initial parsing then the upload status will be "*Not generated, Errors during report generation. See below for details*." To view a complete description of the parsing error, click the blue link, **Show Full Error Message**. You will need to upload a corrected XML file in order to continue. The figure below displays a page with a parser error message.

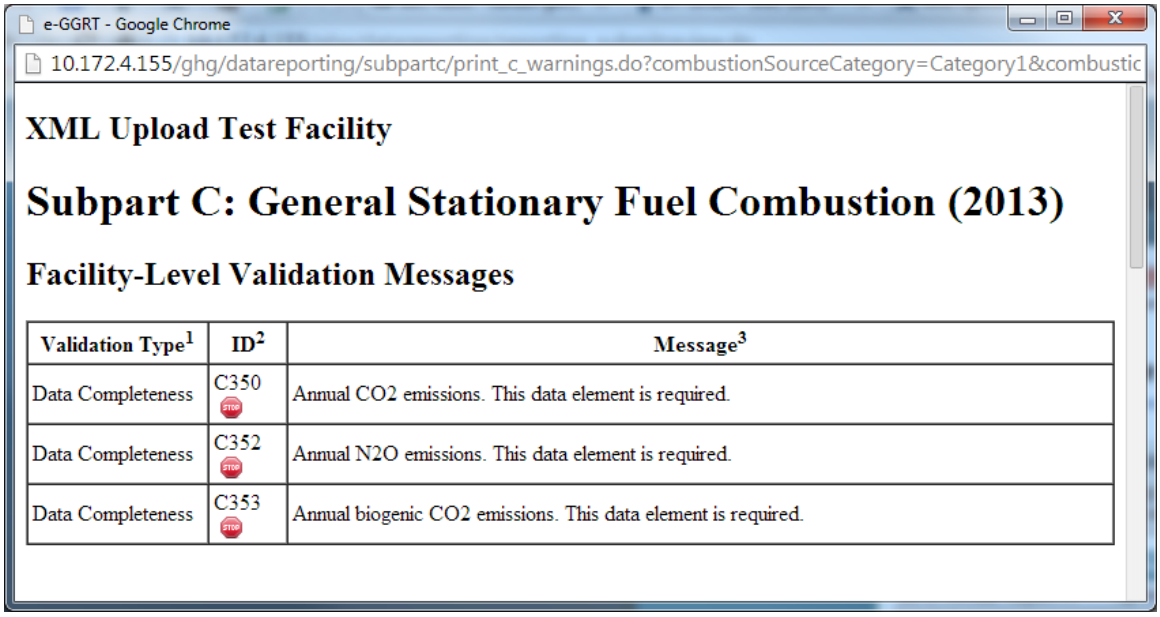
Figure 8
XML Validation Error Messages



If your XML file passes the initial checks to ensure it is valid and well-formed, the system will then apply a number of validation algorithms to the data contained in the annual report XML file. If any critical errors are discovered (e.g., omission of a required data element), you will receive an error message indicating that your report contains a critical error that must be resolved before the XML file can be submitted, as shown in Figure 9. The e-GGRT page includes a link to a validation report in PDF format that lists all errors, including critical errors, for your facility. The e-GGRT page also includes a link, "XML Upload Critical Errors", to a Help page with instructions to help you resolve any critical errors. More information about Critical Errors can be found here: http://www.ccdsupport.com/confluence/display/help/XML+Upload+Critical+Errors.

Figure 9
Critical Validation Errors

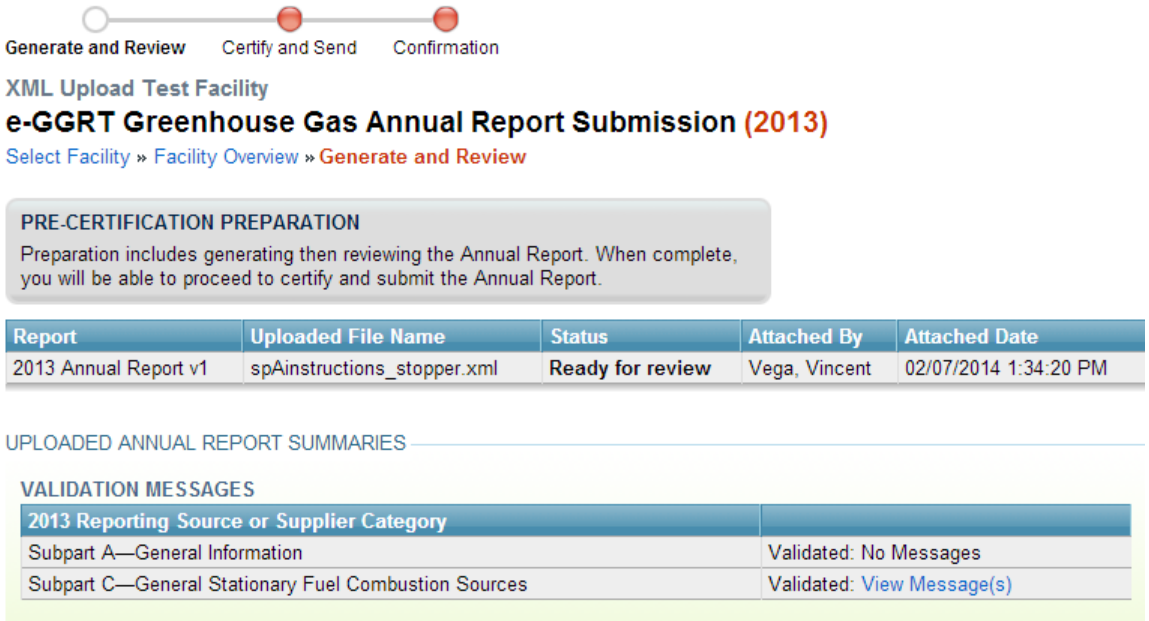




If your XML file does not contain any Critical Errors, the system will display a **Validation Messages** table that will show you any validation issues e-GGRT was able to identify within your annual report

XML file. Use the **View Message(s)** link provided to review the details of each message, as shown in Figure 10. After correcting any necessary issues, upload your corrected file.

Figure 10
Validation Messages Table



In addition to the validation report, an **XML Comparisons** table will be presented, as shown in Figure 11. The values displayed in the **XML Value** column are parsed out of your XML document. The values displayed in the **e-GGRT Value** column are expected based on data in the e-GGRT database or, in the case of the facility-level CO_2e values, as calculated by e-GGRT. If the system detects a discrepancy between the facility/supplier CO_2e values contained in your XML file and the expected CO_2e values based on the data contained within each subpart of your XML file, an error message will be displayed, as shown in Figure 11.

The **GHG Details** table (shown at the bottom of Figure 11) includes a breakdown of GHGs by Subpart parsed from your uploaded file. It also displays the GWP that should be used to calculate CO_2e for the reporting year at issue. Examine this table closely to ensure that you agree with the results.

Figure 11
XML Comparisons Table

XML COMPARISONS (values in XML compared against e-GGRT stored or calculated values)

Field Name	XML Value	e-GGRT Value
Reporting Facility	XML Upload Test Facility	XML Upload Test Facility
Physical Address	1 SAIC STREET Herndon, VA 20171	3172 Stratford Court Oakton, VA 22124
Reporting Year	2013	2013
GHGRP ID	514428	514428
Biogenic CO_2 emissions from Facility Subparts C-II, SS, and TT (metric tons)	55	55
CO_{2e} emissions (excluding biogenic) from Facility Subparts C-II, SS, and TT (metric tons) The value uploaded in your XML file does not match the value calculated by e-GGRT. **Note: You may have used the wrong GWP to calculate this value. The GWPs of many gases changed from those used in reporting years 2010, 2011 and 2012 and those used for the following years.** The GHG Details table below shows the subpart level values contained in your XML file and the GWPs that should be used to calculate CO2e for this reporting year. Please check your calculations before you submit your report.	19967.2	17820
CO_{2e} quantity from Supplier Subparts LL-QQ (metric tons)	0	0

The physical address of the facility in the uploaded XML file does not exactly match the physical address of the facility registered in e-GGRT. You may still submit this report, however if you wish to formally change this facility's physical address, you must do so by entering the FACILITY MANAGEMENT tab, selecting this facility, and then selecting the EDIT button next to the facility name and address.

GHG DETAILS (facility subparts C-II, SS, and TT)

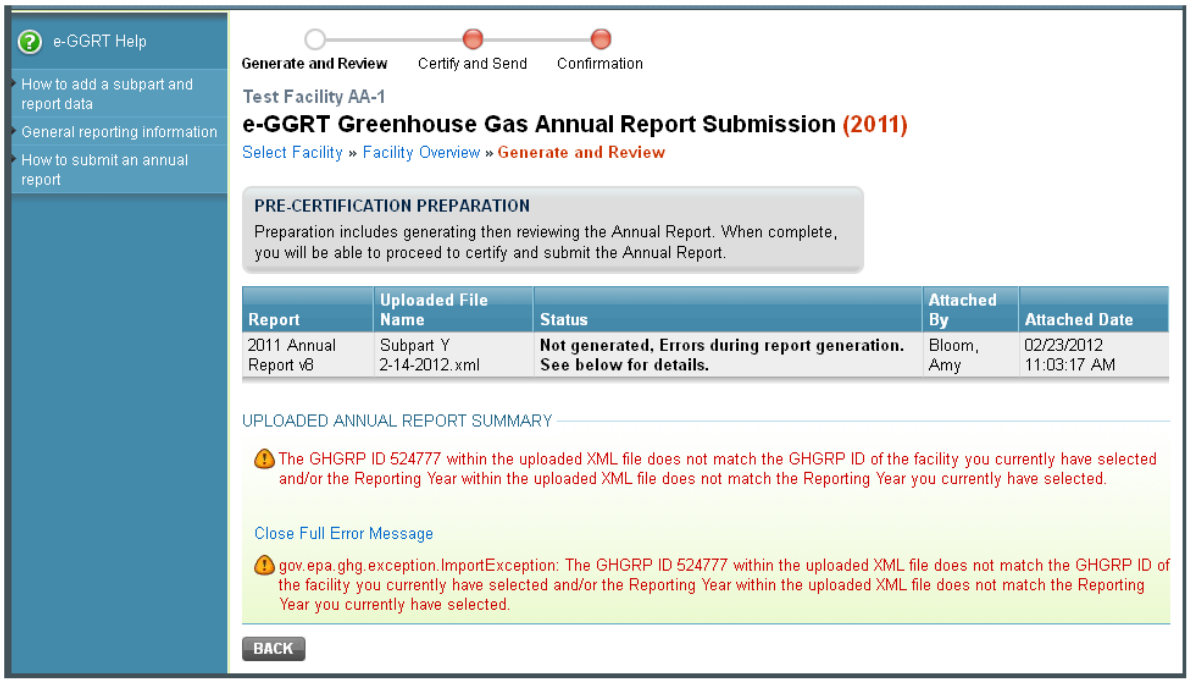
Subpart	Greenhouse Gas	GWP for RY 2013	Amount (metric tons)
C	CO_2 (biogenic)		55
C	CH_4	25	55
C	N_2O	298	55
C	CO_2 (excluding biogenic)		55

GHG DETAILS (supplier subparts LL-QQ)

Subpart	Greenhouse Gas	GWP for RY 2013	Amount (metric tons)
none			

It is also important to note that three items (**Reporting Facility**, **Reporting Year** and **GHGRP ID**) should always match exactly. If there is a difference between these values, then the upload will fail initial parsing and e-GGRT will display an error message as depicted in Figure 12 below.

Figure 12
Error Message for Mismatched Facility ID and/or Reporting Year



<u>Frequently Asked Question</u>

Q: Where do I find my facility ID?

A: The "GHGRP ID" is system assigned and is displayed on both the Data Reporting and Facility Management tabs.

1.3 How to Format Your XML Document

This section explains how to create a conformant XML document. It includes advice on best practices for reporting your data as well as general information on how to construct your XML document.

Creating the XML file using Microsoft Applications

Many Microsoft applications have the capability to export data and create XML files. However, these files will not be compatible with the GHG schema structure. In particular, you cannot use MS Access to export your data and use the built-in functionality to create an XML document. You cannot use MS Excel to either export your data or create the XML document. These applications will create an XML document that is not in compliance with EPA's guidelines and will not validate against GHG_Final.xsd.

Data Types

Most data types in the GHG schema are one of the following: strings, decimal, count (Integer), year or date. When a data element is identified as a string but appears to be storing numeric values, you are expected to provide the correct numeric format as indicated in the reporting instructions for your specific source category Subpart. E-GGRT will convert the string values into the formats defined and apply checks for these data types. Data which are not consistent with the formats defined will be rejected.

Dates and Years

All date and year data elements should be formatted as follows:

Date If a data element name contains the word "date," the data element is for a specific day. These should be represented as an eight digit sequence of numeric characters in a string format of YYYY-MM-DD and should include leading zeroes between the representative elements containing only one digit.

Year If a data element name contains the word "year," the data element is for a calendar year. This data should be reported as a four digit sequence of numeric characters in a string format of YYYY.

Reporting Numbers

There are several different reporting formats for numbers. Please refer to Table 1 in the introductory section of this document.

Figure 13
GHG XML File Structure

```
<ghg:GHG xmlns=http://www.ccdsupport.com/schema/ghg

    <ghg:SubmittalComment>This report was prepared by John Blue of ADC Inc.</ghg:SubmittalComment>

    <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>2012</ghg:ReportingYear>

        <ghg:FacilitySiteDetails>

            <ghg:FacilitySite>
                <ghg:FacilitySiteIdentifier>509316</ghg:FacilitySiteIdentifier>
                <ghg:FacilitySiteName>Domingo Chemicals Supplies Inc.</ghg:FacilitySiteName>
            </ghg:FacilitySite>
            <ghg:LocationAddress/>
            <ghg:PrimaryNAICSCode>311111</ghg:PrimaryNAICSCode>
            <ghg:ParentCompanyDetails>
                <ghg:ParentCompany>
                    <ghg:ParentCompanyLegalName>Company X</ghg:ParentCompanyLegalName>
                    <ghg:StreetAddress>1 Main St.</ghg:StreetAddress>
                    <ghg:City>Charlottesville</ghg:City>
                    <ghg:State>VA</ghg:State>
                    <ghg:Zip>22911</ghg:Zip>
                    <ghg:PercentOwnershipInterest>100</ghg:PercentOwnershipInterest>
                </ghg:ParentCompany>
            </ghg:ParentCompanyDetails>
            <ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>0</ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>
            <ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ>0</ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ>
            <ghg:TotalCO2eSupplierSubpartsKKtoPP>6269.1</ghg:TotalCO2eSupplierSubpartsKKtoPP>

            <ghg:SubPartInformation>
                <ghg:SubPartC>
                ...
                </ghg:SubPartC>        Note: Report only the Subpart(s) associated with the facility.
                <ghg:SubPartH>
                ...
                </ghg:SubPartH>
            </ghg:SubPartInformation>

        </ghg:FacilitySiteDetails>

        <ghg:AbbreviatedReport>N</ghg:AbbreviatedReport>
        <ghg:CalculationMethodologyChangesDescription/>
        <ghg:BestAvailableMonitoringMethodsUsed/>
        <ghg:StartDate>2011-01-01</ghg:StartDate>
        <ghg:EndDate>2011-12-31</ghg:EndDate>
        <ghg:DateTimeReportGenerated>2013-02-23T11:17:23</ghg:DateTimeReportGenerated>
        <ghg:DateSubmitted/>
        <ghg:BAMMUseStartDate/>
        <ghg:BAMMUseEndDate/>

    </ghg:FacilitySiteInformation>

</ghg:GHG>
```

Legend

Green	Namespace declaration	Pink	General information about the facility
Blue	Submittal comment	Orange	Subpart GHG data
Gray	Certification Statement & Reporting year	Red	Additional information about your XML file

1.4 Validation Checks

This section identifies the quality checks that e-GGRT performs to ensure your XML submission file adheres to the basic specifications defined in the GHG schema. The initial checks performed on your XML file work at two levels:

- **Well-formedness**
  A well-formed XML document is one that matches the basic specifications for any XML file. This means that all tags starting with a < must have a matching >. Further, values for any attributes within the opening tag element must be quoted either with single or double quotes.

  Also, the open and closing elements must match. When a close tag is encountered, it must hold the same text value as the most recent start tag. XML is case sensitive, so open and close tags must be in the same case.

  A well-formed XML document contains code that is syntactically correct. Every data element referenced within the document is either

  - opened and subsequently closed,
  - an empty element, which in that case must be closed or
  - properly nested so that it does not overlap.

  For example, in XML: <GHGasName>Methane</GHGasName> is a well-formed data element, while <GHGasInfoDetails><GHGasName>Methane</GHGasInfoDetails> is not, since the *GHGasName* element is not closed. In XML, empty elements (elements that inherently have no content) should be closed by putting a slash at the end of the opening tag, e.g. <TestMethod/>.

  In a well-formed document, all data elements are well-formed and a single element, known as the root element, contains all of the other elements in the document.

  For example, the code below is not well-formed XML because the *ReportingYear* and *AbbreviatedReport* elements overlap:

```
<! - - WRONG!  NOT WELL-FORMED XML! - - >
<ReportingYear>2012<AbbreviatedReport>N</ReportingYear></AbbreviatedReport>


<! - - CORRECT: WELL-FORMED XML! - - >
    <FacilitySite>
        <FacilitySiteIdentifier>523937</FacilitySiteIdentifier>
        <FacilitySiteName>ABC Industries</FacilitySiteName>
    </FacilitySite>
```

- **Valid**
  A valid XML document complies with the restraints stated within the schema definition. Thus data elements must appear in the defined hierarchical structure and the content of the individual elements must conform to the declared data types specified in the schema. For more information, visit the following website: http://www.codeproject.com/KB/books/wrox_beginningxml2.aspx.

- **Complete and Correct**
  Once e-GGRT determines that an uploaded XML file is well-formed and valid, your XML submission will be subject to the same validation and quality assurance as a web form submission. E-GGRT will review the data contained within the XML file and determine if any of the following types of issues exist:
  - Critical Error: An issue that must be corrected before the XML file will be accepted (e.g., a critical data element that has been omitted from the report). More information about Critical Errors can be found here: http://www.ccdsupport.com/confluence/display/help/XML+Upload+Critical+Errors#
  - Data Completeness: An annual reporting requirement that has been omitted from the report, but that is not deemed critical enough to prevent upload.
  - Data Quality: A potential reporting error (e.g., a value being outside of a range of values expected by EPA).

The e-GGRT XML schema contains validation business rules regarding the content of the submission, and some data types are constrained. You will receive a validation report from EPA upon uploading your XML file. The following table identifies the basic set of schema validation checks that e-GGRT initially performs; however, it does not include the numerous business rules that are also validated.

Table 5
XML Validation upon Upload

Data Element Name	Check Type	Explanation
FacilitySiteInformation	Present	An XML submission can only contain GHG data for a single facility or supplier. Upon upload, e-GGRT will verify that your XML submission file contains one, and only one, 'FacilitySiteInformation' record.
ReportingYear	Present, Format and matches open submission window	Submissions will only be accepted for open submission windows. Upon upload, e-GGRT will verify that your XML submission file contains a properly formatted value in the 'ReportingYear' record and that it matches an open submission window. For example, if the current submission window is 2014, then submission files containing a ReportingYear of 2015 would not be accepted.
FacilitySiteDetails	Present	e-GGRT only accepts submissions containing a facility site details record. This record contains information about the facility and its emissions.
StartDate	Present and Format	A start date record must exist and be formatted as YYYY-MM-DD.
EndDate	Present and Format	An end date record must exist and be formatted as YYYY-MM-DD. It must also be later than the start date.

Data Element Name	Check Type	Explanation
DateTimeReportGenerated	If present, Format	e-GGRT verifies that if the submission contains a 'DateTimeReportGenerated' value, that is properly formatted as YYYY-MM-DDThh:mm:ss.
Data formats	Format	All data values must be formatted as specified in the schema.
Elements with enumerated values	Content	If an element has enumerated values, e-GGRT verifies that the reported value matches one of them.

Frequently Asked Questions

Q: What happens if I upload multiple XML files for a facility during the reporting period? Which one counts as the 'official' submission?

A: The last submitted, signed and certified annual GHG report supersedes any prior submissions for a given reporting year.

Q: Will e-GGRT provide an error message that references a specific tag or data element if an upload fails the schema validation check?

A: No, if your XML upload fails the schema validation check, e-GGRT will display a general message. The reporter can run it against a schema validation tool to get specific error messages.

Q: I understand that an XML file must cover one and only one facility. Will e-GGRT support uploading XML files for multiple facilities at one time?

A: This feature will not be supported for XML uploads in any Reporting Year in the RY2013 version of e-GGRT, but EPA has added this suggestion to the list of possible future enhancements.

1.5 Reporting for Multiple Source Category Subparts

This section describes how to report for multiple source categories. If a particular facility or supplier includes operations falling into multiple source categories, it must report for each source category applicable to the rule. Each source category must comply with category-specific methodologies and requirements regarding calculations, monitoring and quality assurance, missing data, record keeping and reporting. For instance, a pulp and paper mill with on-site stationary combustion units must report emissions covered by the pulp and paper manufacturing category as well as the stationary fuel combustion category.

The annual GHG report must consist of a single XML file containing GHG data for each of the relevant Subparts. The construction of the report is virtually the same as one for a single Subpart except that the **SubpartInformation** section contains multiple records.

The following example contains emissions data for a single source category, Subpart D.

Subpart D

```
<ghg:SubPartInformation>
    <ghg:SubPartD>
        <ghg:GHGasInfoDetails>
            <ghg:GHGasName>Methane</ghg:GHGasName>
            <ghg:GHGasQuantity massUOM="Metric Tons">
                <ghg:CalculatedValue>3.45</ghg:CalculatedValue>
            </ghg:GHGasQuantity>
        </ghg:GHGasInfoDetails>
        <ghg:GHGasInfoDetails>
                <ghg:GHGasName>Carbon Dioxide</ghg:GHGasName>
                <ghg:GHGasQuantity massUOM="Metric Tons">
                        <ghg:CalculatedValue>3588.2</ghg:CalculatedValue>
                </ghg:GHGasQuantity>
        </ghg:GHGasInfoDetails>
        <ghg:UnitDDetails>
            <ghg:UnitIdentification>
                <ghg:UnitName>3-Eq G-4</ghg:UnitName>
                <ghg:UnitType>Electricity Generator</ghg:UnitType>
            </ghg:UnitIdentification>
            <ghg:Part75Methodology>Appendix G, Equation G-4</ghg:Part75Methodology>
            <ghg:TierMethodologyStartDate>2012-01-01</ghg:TierMethodologyStartDate>
            <ghg:TierMethodologyEndDate>2012-12-31</ghg:TierMethodologyEndDate>
            <ghg:isAcidRainProgramIndicator>Y</ghg:isAcidRainProgramIndicator>
            <ghg:AnnualCO2EmissionsMonitoredLocationShortTons massUOM="Short Tons">
                <ghg:CalculatedValue>1000.6</ghg:CalculatedValue>
            </ghg:AnnualCO2EmissionsMonitoredLocationShortTons>
            <ghg:AnnualCO2EmissionsMonitoredLocationMetricTons massUOM="Metric Tons">
                <ghg:CalculatedValue>907.8</ghg:CalculatedValue>
            </ghg:AnnualCO2EmissionsMonitoredLocationMetricTons>
            <ghg:AnnualCO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
                <ghg:CalculatedValue>10.9</ghg:CalculatedValue>
            </ghg:AnnualCO2EmissionsAllBiomassFuelsCombined>
            <ghg:ElectricityFuelDetails>
                <ghg:FuelType>Mixed (Electric Power sector)</ghg:FuelType>
                <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
                    <ghg:CalculatedValue>10.4</ghg:CalculatedValue>
                </ghg:CH4EmissionsCO2Equivalent>
            </ghg:ElectricityFuelDetails>
            <ghg:AppendixGEquationG4>
                <ghg:OperatingHoursFuelFlowRate>7</ghg:OperatingHoursFuelFlowRate>
                <ghg:OperatingHoursHHVSubstituted>8</ghg:OperatingHoursHHVSubstituted>
            </ghg:AppendixGEquationG4>
        </ghg:UnitDDetails>
    </ghg:SubPartD>
</ghg:SubPartInformation>
```

The following example contains emissions information for Subparts C and D. In addition, Subpart C contains data for multiple units – each unit is highlighted in a different color.

Subpart C

1st Unit

```
<ghg:SubPartInformation>
  <ghg:SubPartC>
    <ghg:GHGasInfoDetails>
      <ghg:GHGasName>Biogenic Carbon dioxide</ghg:GHGasName>
      <ghg:GHGasQuantity massUOM="Metric Tons">
        <ghg:CalculatedValue>9200.2</ghg:CalculatedValue>
      </ghg:GHGasQuantity>
    </ghg:GHGasInfoDetails>
    <ghg:GHGasInfoDetails>
      <ghg:GHGasName>Methane</ghg:GHGasName>
      <ghg:GHGasQuantity massUOM="Metric Tons">
        <ghg:CalculatedValue>4015.72</ghg:CalculatedValue>
      </ghg:GHGasQuantity>
    </ghg:GHGasInfoDetails>
    <ghg:GHGasInfoDetails>
      <ghg:GHGasName>Nitrous Oxide</ghg:GHGasName>
      <ghg:GHGasQuantity massUOM="Metric Tons">
        <ghg:CalculatedValue>393.585</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 6- CEMS</ghg:UnitName>
        <ghg:UnitDescription>Part 75 unit</ghg:UnitDescription>
      </ghg:UnitIdentification>
      <ghg:CO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
        <ghg:CalculatedValue>1000.1</ghg:CalculatedValue>
      </ghg:CO2EmissionsAllBiomassFuelsCombined>
      <ghg:TierFuelDetails>
        <ghg:FuelType>Crude Oil</ghg:FuelType>
        <ghg:Part75FuelDetails>
          <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
                <ghg:CalculatedValue>100.2</ghg:CalculatedValue>
          </ghg:CH4EmissionsCO2Equivalent>
          <ghg:N2OEmissionsCO2Equivalent massUOM="Metric Tons">
                <ghg:CalculatedValue>10.4</ghg:CalculatedValue>
          </ghg:N2OEmissionsCO2Equivalent>
        </ghg:Part75FuelDetails>
      </ghg:TierFuelDetails>
      <ghg:Part75Details>
        <ghg:AnnualCO2EmissionsMeasuredByPart75Method massUOM="Metric Tons">
          <ghg:CalculatedValue>100000.7</ghg:CalculatedValue>
        </ghg:AnnualCO2EmissionsMeasuredByPart75Method>
        <ghg:TierMethodologyStartDate>2012-01-01</ghg:TierMethodologyStartDate>
        <ghg:TierMethodologyEndDate>2012-12-31</ghg:TierMethodologyEndDate>
        <ghg:Part75HeatInputMethod>CEMS</ghg:Part75HeatInputMethod>
        <ghg:PartCO2Method>CEMS calculation method--- § 98.33(a)(5)(iii)</ghg:PartCO2Method>
        <ghg:CEMSDetails>
          <ghg:OperatingHoursCO2ConcentrationSubstituted>1000</ghg:OperatingHoursCO2ConcentrationSubstituted>
          <ghg:OperatingHoursStackGasFlowRateSubstituted>10</ghg:OperatingHoursStackGasFlowRateSubstituted>
          <ghg:OperatingHoursStackGasMoistureContentSubstituted>1</ghg:OperatingHoursStackGasMoistureContentSubstit
          uted>
        </ghg:CEMSDetails>
      </ghg:Part75Details>
      </ghg:UnitsCDetails
```

Subpart C (cont'd)

2nd Unit

```
<ghg:UnitsCDetails>
    <ghg:UnitIdentification>
        <ghg:UnitName>CS-CT 5- Tier 4</ghg:UnitName>
    </ghg:UnitIdentification>
    <ghg:CommonStackDetails>
        <ghg:NumberofUnits>7</ghg:NumberofUnits>
        <ghg:CombinedMaxRatedHeatInputCapacity heatUOM="mmBtu/hr">
            <ghg:MeasureValue>7000</ghg:MeasureValue>
        </ghg:CombinedMaxRatedHeatInputCapacity>
    </ghg:CommonStackDetails>
    <ghg:TierFuelDetails>
        <ghg:FuelType>Blast Furnace Gas</ghg:FuelType>
        <ghg:Tier4FuelDetails>
            <ghg:EmissionsNodeDetails>
                <ghg:TotalCH4CombustionEmissions massUOM="Metric Tons">
                    <ghg:CalculatedValue>700.12</ghg:CalculatedValue>
                </ghg:TotalCH4CombustionEmissions>
                <ghg:TotalN2OCombustionEmissions massUOM="Metric Tons">
                    <ghg:CalculatedValue>70.345</ghg:CalculatedValue>
                </ghg:TotalN2OCombustionEmissions>
                <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
                    <ghg:CalculatedValue>14700.6</ghg:CalculatedValue>
                </ghg:CH4EmissionsCO2Equivalent>
                <ghg:N2OEmissionsCO2Equivalent massUOM="Metric Tons">
                    <ghg:CalculatedValue>21700.8</ghg:CalculatedValue>
                </ghg:N2OEmissionsCO2Equivalent>
            </ghg:EmissionsNodeDetails>
        </ghg:Tier4FuelDetails>
    </ghg:TierFuelDetails>
    <ghg:Tier4Details>
        <ghg:SlipStreamIndicator>N</ghg:SlipStreamIndicator>
        <ghg:Tier4QuarterFuelDetails>
            <ghg:QuarterName>First Quarter</ghg:QuarterName>
            <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>7000.5</ghg:CalculatedValue>
            </ghg:CumulativeCO2MassEmissions>
        </ghg:Tier4QuarterFuelDetails>
        <ghg:Tier4QuarterFuelDetails>
            <ghg:QuarterName>Second Quarter</ghg:QuarterName>
            <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>7100.7</ghg:CalculatedValue>
            </ghg:CumulativeCO2MassEmissions>
        </ghg:Tier4QuarterFuelDetails>
        <ghg:Tier4QuarterFuelDetails>
            <ghg:QuarterName>Third Quarter</ghg:QuarterName>
            <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>7200.6</ghg:CalculatedValue>
            </ghg:CumulativeCO2MassEmissions>
        </ghg:Tier4QuarterFuelDetails>
        <ghg:TotalSourceOperatingHours>7000</ghg:TotalSourceOperatingHours>
        <ghg:OperatingHoursDetails>
            <ghg:OperatingHoursCO2ConcentrationSubstituted>70</ghg:OperatingHoursCO2ConcentrationSubstituted>
            <ghg:OperatingHoursStackGasFlowRateSubstituted>7</ghg:OperatingHoursStackGasFlowRateSubstituted>
        </ghg:OperatingHoursDetails>
        <ghg:CO2EmissionsNonBiogenic massUOM="Metric Tons">
            <ghg:CalculatedValue>70000.2</ghg:CalculatedValue>
        </ghg:CO2EmissionsNonBiogenic>
        <ghg:CO2EmissionsBiogenic massUOM="Metric Tons">
            <ghg:CalculatedValue>700.4</ghg:CalculatedValue>
        </ghg:CO2EmissionsBiogenic>
        <ghg:AnnualCO2EmissionsMeasuredByCEMS massUOM="Metric Tons">
            <ghg:CalculatedValue>70000.5</ghg:CalculatedValue>
        </ghg:AnnualCO2EmissionsMeasuredByCEMS>
        <ghg:TierMethodologyStartDate>2012-01-01</ghg:TierMethodologyStartDate>
        <ghg:TierMethodologyEndDate>2012-09-30</ghg:TierMethodologyEndDate>
    </ghg:Tier4Details>
```

Subpart D

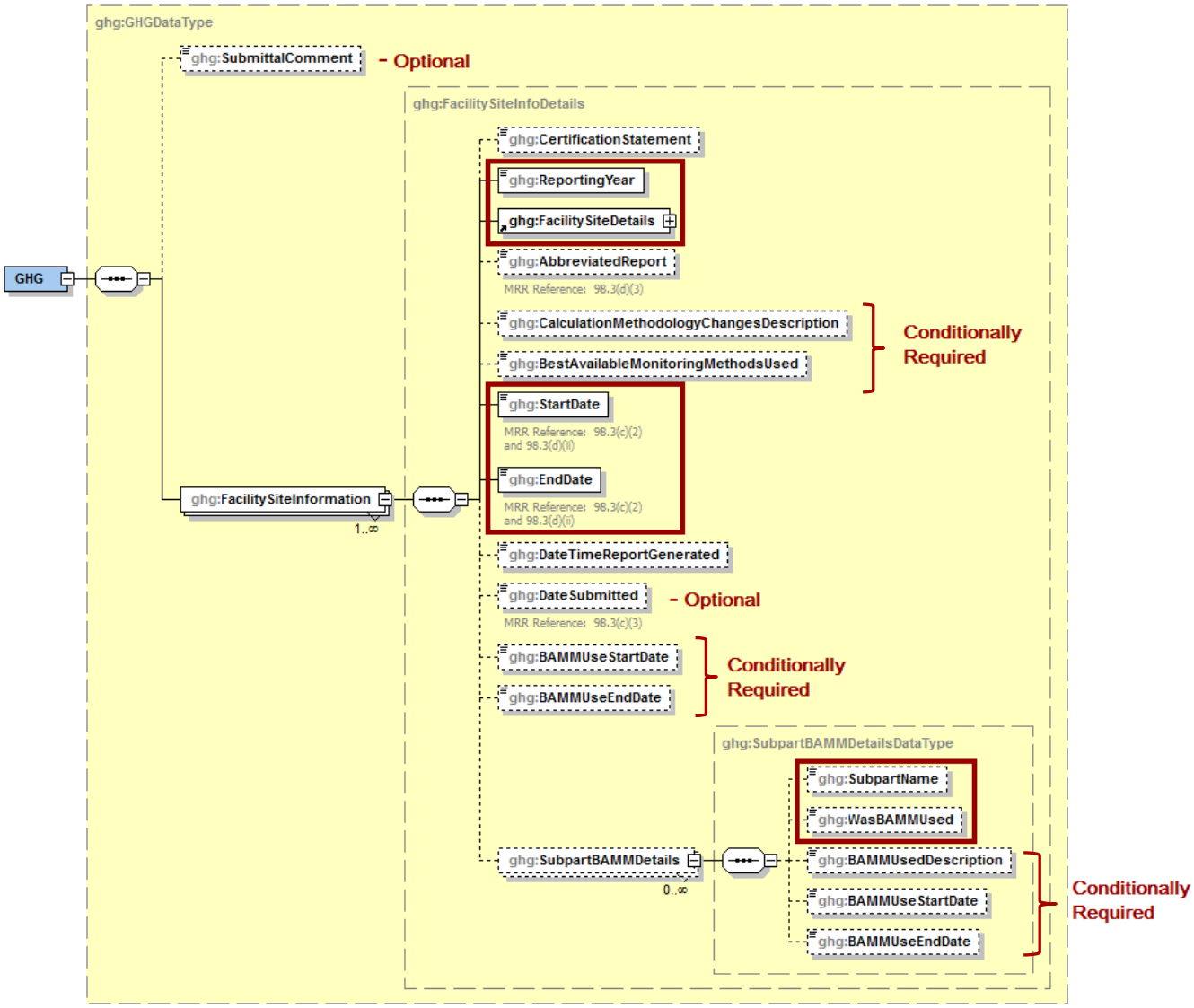
```
        </ghg:UnitsCDetails>
    </ghg:SubPartC>
    <ghg:SubPartD>
        <ghg:GHGasInfoDetails>
            <ghg:GHGasName>Methane</ghg:GHGasName>
            <ghg:GHGasQuantity massUOM="Metric Tons">
                <ghg:CalculatedValue>3.56</ghg:CalculatedValue>
            </ghg:GHGasQuantity>
        </ghg:GHGasInfoDetails>
        <ghg:GHGasInfoDetails>
                <ghg:GHGasName>Carbon Dioxide</ghg:GHGasName>
                <ghg:GHGasQuantity massUOM="Metric Tons">
                        <ghg:CalculatedValue>3588.4</ghg:CalculatedValue>
                </ghg:GHGasQuantity>
        </ghg:GHGasInfoDetails>
        <ghg:UnitDDetails>
            <ghg:UnitIdentification>
                <ghg:UnitName>3-Eq G-4</ghg:UnitName>
                <ghg:UnitType>Electricity Generator</ghg:UnitType>
            </ghg:UnitIdentification>
            <ghg:Part75Methodology>Appendix G, Equation G-4</ghg:Part75Methodology>
            <ghg:TierMethodologyStartDate>2012-01-01</ghg:TierMethodologyStartDate>
            <ghg:TierMethodologyEndDate>2012-12-31</ghg:TierMethodologyEndDate>
            <ghg:isAcidRainProgramIndicator>Y</ghg:isAcidRainProgramIndicator>
            <ghg:AnnualCO2EmissionsMonitoredLocationShortTons massUOM="Short Tons">
                <ghg:CalculatedValue>1000.5</ghg:CalculatedValue>
            </ghg:AnnualCO2EmissionsMonitoredLocationShortTons>
            <ghg:AnnualCO2EmissionsMonitoredLocationMetricTons massUOM="Metric Tons">
                <ghg:CalculatedValue>907.4</ghg:CalculatedValue>
            </ghg:AnnualCO2EmissionsMonitoredLocationMetricTons>
            <ghg:AnnualCO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
                <ghg:CalculatedValue>10.6</ghg:CalculatedValue>
            </ghg:AnnualCO2EmissionsAllBiomassFuelsCombined>
            <ghg:ElectricityFuelDetails>
                <ghg:FuelType>Mixed (Electric Power sector)</ghg:FuelType>
                <ghg:CH4EmissionsCO2Equivalent massUOM="Metric Tons">
                    <ghg:CalculatedValue>10.2</ghg:CalculatedValue>
                </ghg:CH4EmissionsCO2Equivalent>
            </ghg:ElectricityFuelDetails>
            <ghg:AppendixGEquationG4>
                <ghg:OperatingHoursFuelFlowRate>7</ghg:OperatingHoursFuelFlowRate>
                <ghg:OperatingHoursHHVSubstituted>8</ghg:OperatingHoursHHVSubstituted>
            </ghg:AppendixGEquationG4>
        </ghg:UnitDDetails>
    </ghg:SubPartD>
</ghg:SubPartInformation>
```

2.0 Submittal and Facility Site Data

2.1 Details about the Submittal File

This section contains the information that must be reported about the XML submission itself. These data elements appear at the root of the GHG XML schema.

Figure 14
GHG (Root) Schema Diagram



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

Subpart A collects the following data about your annual GHG report:

- An optional comment about the submittal such as the person or company who prepared the annual GHG report.
- The year covered by the annual GHG report.
- Details about the facility site. For more information, see Section 2.2, Facility Site Details.
- **Conditionally Required:** A written explanation of any calculation methodology changes during the reporting year, including an explanation of why a change in methodology was required.
- **Conditionally Required:** A brief description of each "best available monitoring method" (BAMM) used. **Note:** This data element should only be used in reporting years 2010 and 2011. For those years, only report this data element if your facility used BAMM in RY2010 or RY2011.
- The start date and end date of the GHG report.
- **Optional:** The date and time when your report was generated.
- **Optional:** The date and time when your report was submitted.
- **Conditionally Required:** The start and end dates of when the best available monitoring method, referenced above, was used. **Note:** This data element should only be used in reporting years 2010 and 2011. For those years, only report this data element if your facility used BAMM in RY2010 or RY2011.
- **Conditionally Required.** You can indicate if approved BAMM was used during RY2012 or later for any of the Subparts reported. If approved BAMM was used, then report the subpart for which BAMM was used, provide a brief description of each BAMM used during RY2013 for that Subpart, and report the start and end dates of when the BAMM was used. These data elements replace the BAMM-related data element referenced above starting with RY2012.

  Note: If your facility is subject to Subpart W and used approved BAMM for RY2013 or later, then report BAMM used (for Subpart W) using the data elements provided in the Subpart W schema.
- **Note:** You may not use BAMM for Subpart L in RY2013.

Table 6
GHG (Root) Data Element Definitions

Data Element Name	Description or Value to Report
GHG	**Parent Element**
SubmittalComment	An optional comment about the annual GHG report.
FacilitySiteInformation	**Parent Element:** A collection of data elements containing information about your annual GHG report submission. Please note that your XML submission can only contain GHG data for a single facility or supplier.
ReportingYear	2010, 2011, 2012, 2013, etc. (as appropriate)

Data Element Name	Description or Value to Report
FacilitySiteDetails	**Parent Element:** see Table 8, Facility Site Details.
CalculationMethodologyChangesDescription	**Conditionally Required:** Specify an explanation of all GHG calculation methodology changes made during the reporting year [98.3(c)(6)].
BestAvailableMonitoringMethodsUsed	**Conditionally Required:** Specify the best available monitoring methods (BAMM) used during the reporting year. **Note:** This data element should only be used in reporting years 2010 and 2011. For those years, only report this data element if your facility used BAMM in RY2010 or RY2011.
StartDate	The start date (YYYY-MM-DD) of the GHG report. The start of the timeframe covered by the report. [98.3(c)(2)].
EndDate	The end date (YYYY-MM-DD) of the GHG report. The end of the timeframe covered by the report. [98.3(c)(2)].
DateTimeReportGenerated	**Optional:** The date and time (YYYY-MM-DDThh:mm:ss) when your report was generated. Example: 2012-02-20T12:58:40
DateSubmitted	**Optional:** The date and time (YYYY-MM-DDThh:mm:ss) when your report was submitted. Example: 2012-02-20T12:58:40
BAMMUseStartDate	**Conditionally Required:** The start date for when the best available monitoring method was used. **Note:** This data element should only be used in reporting years 2010 and 2011. For those years, only report this data element if your facility used BAMM in RY2010 or RY2011.
BAMMUseEndDate	**Conditionally Required:** The end date for when the best available monitoring method was used. **Note:** This data element should only be used in reporting years 2010 and 2011. For those years, only report this data element if your facility used BAMM in RY2010 or RY2011.
Subpart BAMMDetails	**Parent Element:** A collection of data elements containing information on the use of best available monitoring methods for RY2012 or later. See instructions above for how to report for approved BAMM used in RY2010 or 2011.
SubpartName	**Conditionally Required:** Name of the Subpart. Report only if your facility used BAMM for the subject reporting period.

Data Element Name	Description or Value to Report
WasBAMMUsed	**Conditionally Required:** An indication (Y/N) that approved BAMM was used during RY2012 or later.
BAMMUsedDescription	**Conditionally Required:** Specify the best available monitoring methods (BAMM) used during the reporting year for which a parameter (e.g., fuel use, daily carbon content of feedstock by process line) could not be reasonably measured according to the QA/QC requirements of a relevant subpart. [98.3(c)(7)].
BAMMUseStartDate	**Conditionally Required:** The start date for when the best available monitoring method was used.
BAMMUseEndDate	**Conditionally Required:** The end date for when the best available monitoring method was used.

XML Excerpt 2
Example for the RY2012 GHG Schema Root Elements

```
<ghg:GHG><ghg:SubmittalComment>Report for Zippy Oil - prepared by Jim Doe of ABC
Inc.</ghg:SubmittalComment>
    <ghg:FacilitySiteInformation>
        <ghg:ReportingYear>2011</ghg:ReportingYear>
        <ghg:FacilitySiteDetails>

                ... (see section "Facility Site Details")

        </ghg:FacilitySiteDetails>
            <ghg:CalculationMethodologyChangesDescription>Started using CEMS on 6/2/2012.</ghg:Calculation
      MethodologyChangesDescription>
        <ghg:StartDate>2012-01-01</ghg:StartDate>
        <ghg:EndDate>2012-12-31</ghg:EndDate>
        <ghg:DateTimeReportGenerated>2012-02-20T12:58:40</ghg:DateTimeReportGenerated>
        <ghg:SubpartBAMMDetails>
            <ghg:SubpartName>I</ghg:SubpartName>
            <ghg:WasBAMMUsed>Y</ghg:WasBAMMUsed>
            <ghg:BAMMUsedDescription>Used BAMM for RY2012.</ghg:BAMMUsedDescription>
            <ghg:BAMMUseStartDate>2012-01-01</ghg:BAMMUseStartDate>
            <ghg:BAMMUseEndDate>2012-06-01</ghg:BAMMUseEndDate
        </ghg:SubpartBAMMDetails>
    </ghg:FacilitySiteInformation>
<ghg:GHG>
```

Note: The XML excerpt above is presented here to demonstrate the concept of reporting general information about the annual GHG report. The excerpt has not been updated for RY2013 and the v4.2 schema. The only change to this section of the schema in v4.2 is the addition of PlantCodeIndicator within FacilitySiteDetails (not shown).

XML Excerpt 3
Example for RY2011 Resubmission w/BAMM

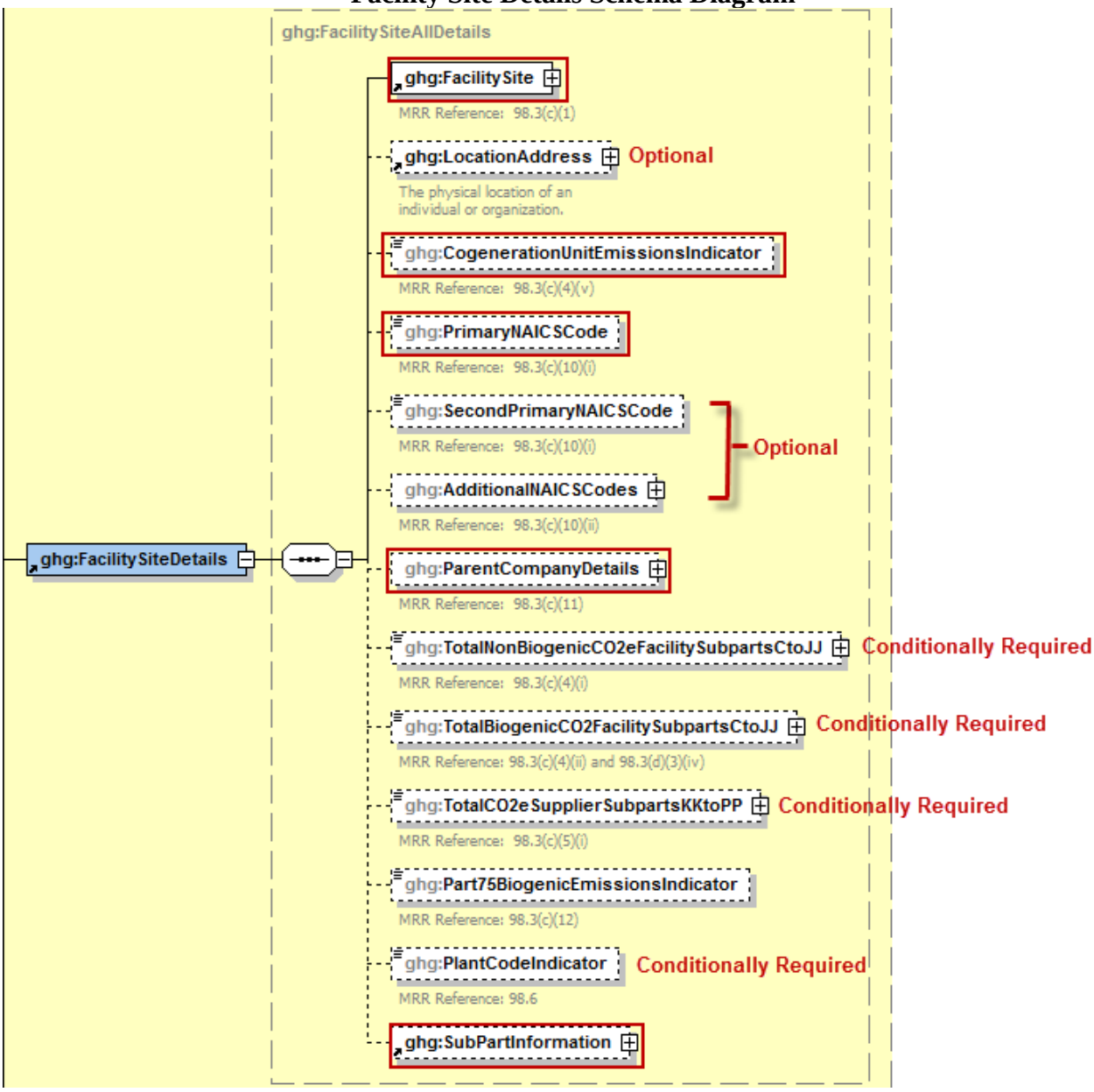
```
<ghg:GHG>
    <ghg:SubmittalComment>Report for Zippy Oil - prepared by Jim Doe of ABC Inc.</ghg:SubmittalComment>
    <ghg:FacilitySiteInformation>
        <ghg:ReportingYear>2011</ghg:ReportingYear>
        <ghg:FacilitySiteDetails>

                ... (see section "Facility Site Details")

        </ghg:FacilitySiteDetails>
            <ghg:CalculationMethodologyChangesDescription>Started using CEMS on 6/2/2011.</ghg:Calculation
      MethodologyChangesDescription>
            <ghg:BestAvailableMonitoringMethodsUsed>Used BAMM for Subpart Y </ghg:BestAvailable
      MonitoringMethodsUsed>
        <ghg:StartDate>2011-01-01</ghg:StartDate>
        <ghg:EndDate>2011-12-31</ghg:EndDate>
        <ghg:DateTimeReportGenerated>2013-02-20T12:58:40</ghg:DateTimeReportGenerated>
        <ghg:BAMMUseStartDate>2011-01-01</ghg:BAMMUseStartDate>
        <ghg:BAMMUseEndDate>2011-06-01</ghg:BAMMUseEndDate
    </ghg:FacilitySiteInformation>
<ghg:GHG>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting general information about the annual GHG report.

2.2 Facility Site Details

This section contains the summary information that must be reported regarding the details about your facility.

Figure 15
Facility Site 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.

You should report the following data:

- The unique identifier issued by EPA for your facility (or supplier) and the facility or supplier name. For more information, see Section 2.3, Facility Site Identification.
- **Optional:** The facility or supplier's street address including the city, state and postal code. This information is not required but should be reported for confirmation purposes. Please note that changes to the street address must be manually entered into e-GGRT on the Facility Management page, not via XML. For more information, see Section 2.4, Location Address Information.
- An indication (Y or N) that the reported emissions include emissions from a cogeneration unit. You would indicate NA (not applicable) if you are a supplier.
- The facility or supplier's primary North American Industry Classification System (NAICS) code representing the product/activity that is the principal source of revenue.
    - **Optional:** A second primary NAICS code if the entity has two distinct products/activities/services providing comparable revenue.
    - **Optional:** All other unique six-digit NAICS codes that describe the products/activities/services of the entity, but are not related to the principal source of revenue, if applicable.

  Note: If you do not know the six-digit NAICS code, use the search feature at http://www.census.gov/eos/www/naics/ to find the appropriate code. Please be sure to use the 2007 NAICS Search feature.
- The name and physical street address of every U.S. parent company and their respective percentages of ownership. For more information, see Section 2.5, Parent Company Details.
- Total GHG emissions for the facility or quantities for the supplier.
    - **Conditionally Required:** For facilities only, report the total non-biogenic CO_2e (in metric tons) and the biogenic CO_2 (in metric tons).
    - **Conditionally Required:** For suppliers only, report the total quantities of CO_2e (in metric tons).

      Reminder: EPA has changed many of the global warming potentials (GWPs) that XML submitters must use to calculate CO_2e values for 2013. For a complete list of all GWPs and the years they apply to, see: http://www.ccdsupport.com/confluence/display/help/Table+A-1+of+Subpart+A+of+Part+98+-+Global+Warming+Potentials
- **Note:** The "Part75BiogenicEmissionsIndicator" data element should only be included in your XML file upload if you are submitting an annual report for RY2010. The option to separately calculate biogenic CO_2 emissions from Part 75 units [i.e., units that are subject to Subpart D and/or units that use the methods in 40 CFR 75 to quantify mass emissions in accordance with 98.33(a)(5)] was only permitted for RY2010.
- **Conditionally Required.** For RY2013 and following years, your facility must indicate if it reports under Subpart C or D and has a plant code as defined in §98.6.
- Subpart information. For more information, refer to the applicable reporting instructions document.

Table 7
Facility Site Details Data Element Definitions

Data Element Name	Description
FacilitySiteDetails	**Parent Element**
FacilitySite	**Parent Element:** See Table 9, Facility Site Identification.
LocationAddress	**Parent Element:** See Table 10, Location Address Information.
CogenerationUnitEmissionsIndicator	Do reported emissions include emissions from a cogeneration unit? [98.3(c)(4)(v)] Below is a list of allowable values: Y N NA
PrimaryNAICSCode	The primary North American Industry Classification System (NAICS) code representing the product/activity/service that is the principal source of revenue for the entity as defined in "North American Industry Classification System Manual 2007" [98.3(c)(10)(i)].
SecondPrimaryNAICSCode	**Optional:** A second primary North American Industry Classification System (NAICS) code for the reporting year if the facility has two distinct products/activities/services providing comparable revenue [free text, validated against selection list of 2007 NAICS codes] [98.3(c)(10)(i)].
AdditionalNAICSCodes	**Parent Element (Optional):** A collection of data elements containing all additional NAICS codes, if applicable.
AdditionalNAICSCode	All additional unique NAICS codes that describe the reporter's products/activities/services but that are not related to the principal source of revenue [98.3(c)(10)(ii)]. Repeat this data element for each additional NAICS code.
ParentCompanyDetails	**Parent Element:** See Table 11, Parent Company Details.
TotalNonBiogenicCO2eFacilitySubpartsCtoJJ	**Conditionally Required:** For facilities only, report annual emissions (excluding biogenic CO_2) aggregated for all GHG from all applicable facility source categories, expressed in metric tons of CO_2e calculated using Equation A-1 of this Subpart. Set the units of measure to "Metric Tons" in the attribute **massUOM**. [98.3(c)(4)(i)]. (Also see Table 13, Facility Site Total Emissions.)

Data Element Name	Description
TotalBiogenicCO2FacilitySubpartsCtoJJ	**Conditionally Required:** For facilities only, report annual emissions of biogenic CO_2 aggregated for all applicable facility source categories, expressed in metric tons. Set the units of measure to "Metric Tons" in the attribute **massUOM**. [98.3(c)(4)(ii)]. (Also see Table 13, Facility Site Total Emissions.)
TotalCO2eSupplierSubpartsKKtoPP	**Conditionally Required:** For suppliers only, report annual GHG from all applicable supplier source categories, expressed in metric tons of CO_2e calculated using Equation A-1 of this Subpart. Set the units of measure to "Metric Tons" in the attribute **massUOM**. [98.3(c)(5)(i)]. (Also see Table 13, Facility Site Total Emissions.)
PlantCodeIndicator	**Conditionally Required:** If your facility reports under Subpart C or D, you must indicate whether the facility has a plant code as defined in §98.6. This data element should be included for reporting year 2013 and all following years. Allowed values are "Y" or "N".
SubPartInformation	**Parent Element:** Refer to the individual reporting instructions document related to applicable Subpart(s).

XML Excerpt 4
Example for Facility Site Details

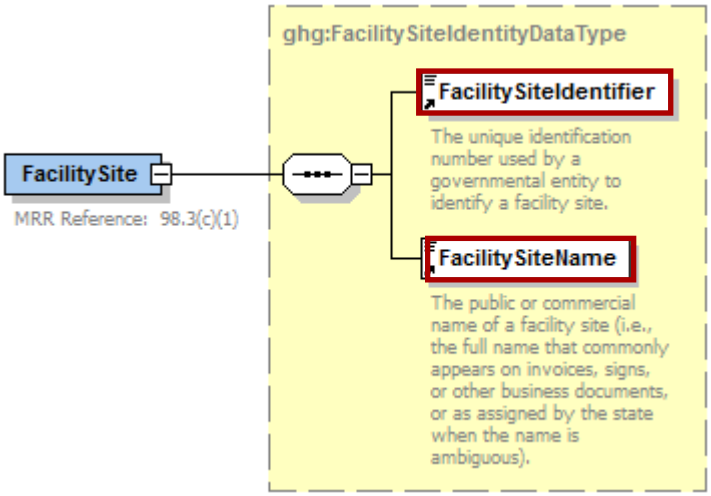
```
<ghg:FacilitySiteDetails>
    <ghg:FacilitySite>
        <ghg:FacilitySiteIdentifier>522948</ghg:FacilitySiteIdentifier>
        <ghg:FacilitySiteName>Gemco Industries</ghg:FacilitySiteName>
    </ghg:FacilitySite>
    <ghg:LocationAddress>

                ... (See section "Location Address" of this document for more information.)

    </ghg:LocationAddress>
    <ghg:CogenerationUnitEmissionsIndicator>N</ghg:CogenerationUnitEmissionsIndicator>
    <ghg:PrimaryNAICSCode>111110</ghg:PrimaryNAICSCode>
    <ghg:SecondPrimaryNAICSCode>111130</ghg:SecondPrimaryNAICSCode>
    <ghg:AdditionalNAICSCodes>
        <ghg:AdditionalNAICSCode>111411</ghg:AdditionalNAICSCode>
        <ghg:AdditionalNAICSCode>111920</ghg:AdditionalNAICSCode>
    </ghg:AdditionalNAICSCodes>
    <ghg:ParentCompanyDetails>

                ... (See section "Parent Company Details" of this document for more information.)

    </ghg:ParentCompanyDetails >
    <ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ massUOM='MetricTons'>511099.2</ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>
    <ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ massUOM='MetricTons'>6479.1</ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ>
    <ghg:SubPartInformation>

                ... (See individual reporting instructions document associated with the applicable Subpart(s).)

    <ghg:SubPartInformation>
</ghg:FacilitySiteDetails>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting details about the facility site. The excerpt has not been updated for RY2013 and the v4.2 schema. The only change to this section of the schema in v4.2 is the addition of PlantCodeIndicator within FacilitySiteDetails.

2.3 Facility Site Identification

This section contains the information that must be reported about the identity of your facility. Some of the data elements should not be reported for the 2011 data collection year.

Figure 16
Facility Site (Identification) Schema Diagram



Note: Data elements boxed in red are required.

Table 8
Facility Site (Identification) Data Element Definitions

Data Element Name	Description
FacilitySite	**Parent Element**
FacilitySiteIdentifier	The GHGRP ID identifier issued by EPA that uniquely describes the facility site or supplier.
FacilitySiteName	The facility site name or supplier name (as appropriate). It should match the name that is registered with e-GGRT.

XML Excerpt 5
Example for Facility Site (Identification)

```
<ghg:FacilitySite>
        <ghg:FacilitySiteIdentifier>524748</ghg:FacilitySiteIdentifier>
        <ghg:FacilitySiteName>Atlas Industries, Inc.</ghg:FacilitySiteName>
</ghg:FacilitySite>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting the facility identifier and name.

2.4 Location Address Information

This section contains the information that may be reported about the location of the facility or supplier. Please note that the location address information reported in your XML is for confirmation purposes only. The official address is stored in e-GGRT and all modifications to this information must be made in e-GGRT.

Figure 17
Location Address Schema Diagram

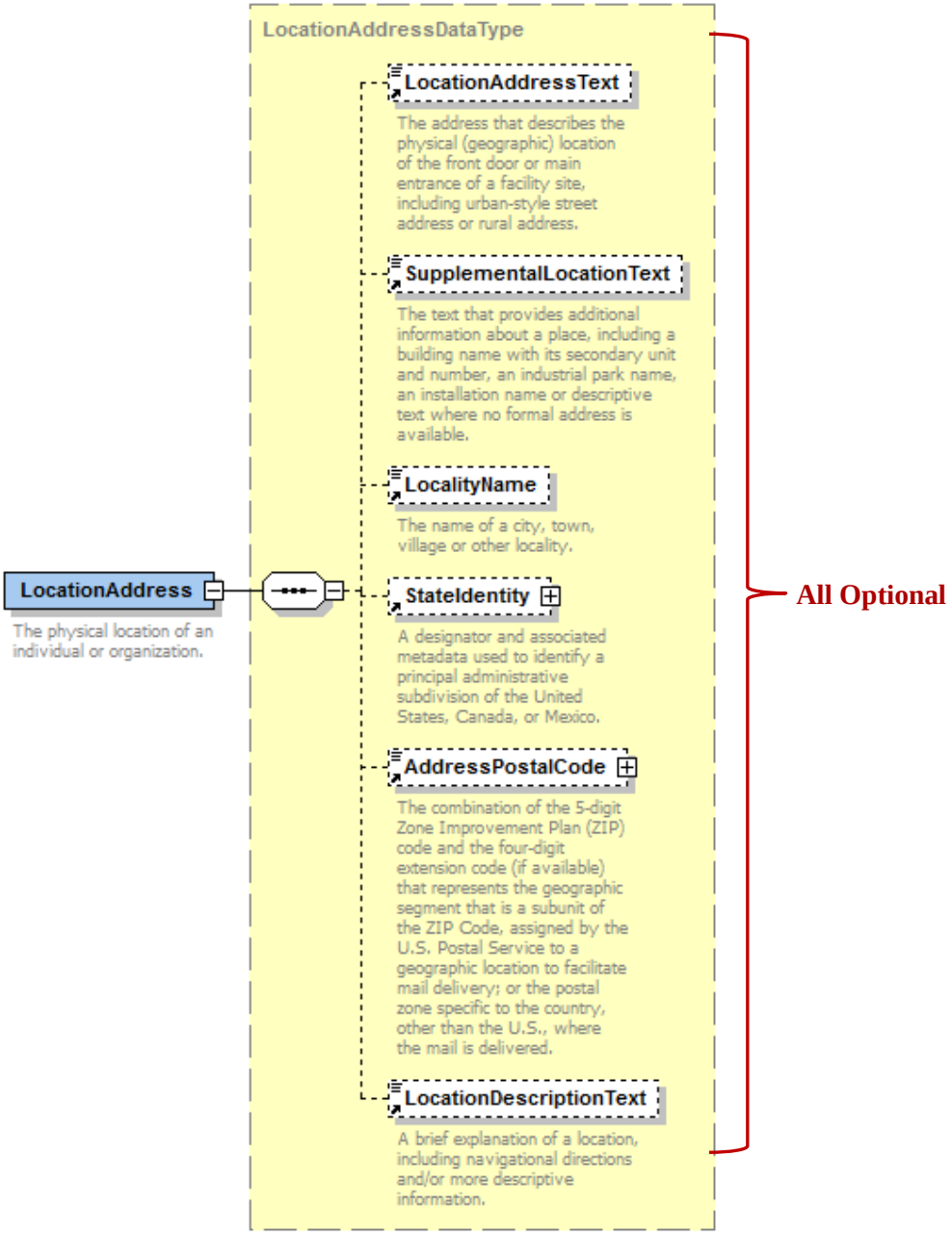


Table 9
Location Address Data Element Definitions

Data Element Name	Description
LocationAddress	**Parent Element (Optional)**
LocationAddressText	The address that describes the physical (geographic) location of the front door or main entrance of a facility site, including urban-style street address or rural address.
SupplementalLocationText	Additional information about the place, including a building name with its secondary unit and number, an industrial park name and installation name or descriptive text where no formal address is available.
LocalityName	The name of the city, town, village or other locality in which the facility is located.
StateIdentity	The name of the U.S. state or territory in which the facility or supplier is located. Please report one of the following values. AB FL MB ND OH SK AK GA MD NE OK TN AL GU ME NF ON TX AR HI MH NH OR UT AS IA MI NJ PA VA AZ ID MN NM PE VI BC IL MO NN PR VT CA IN MP NS PW WA CO KS MS NT QC WI CT KY MT NU RI WV DC LA NB NV SC WY DE MA NC NY SD YT XX
AddressPostalCode	The ZIP or postal code of the facility's physical street address.
LocationDescriptionText	A brief explanation of the location, including navigational directions and/or more descriptive information.

XML Excerpt 6
Example for Location Address

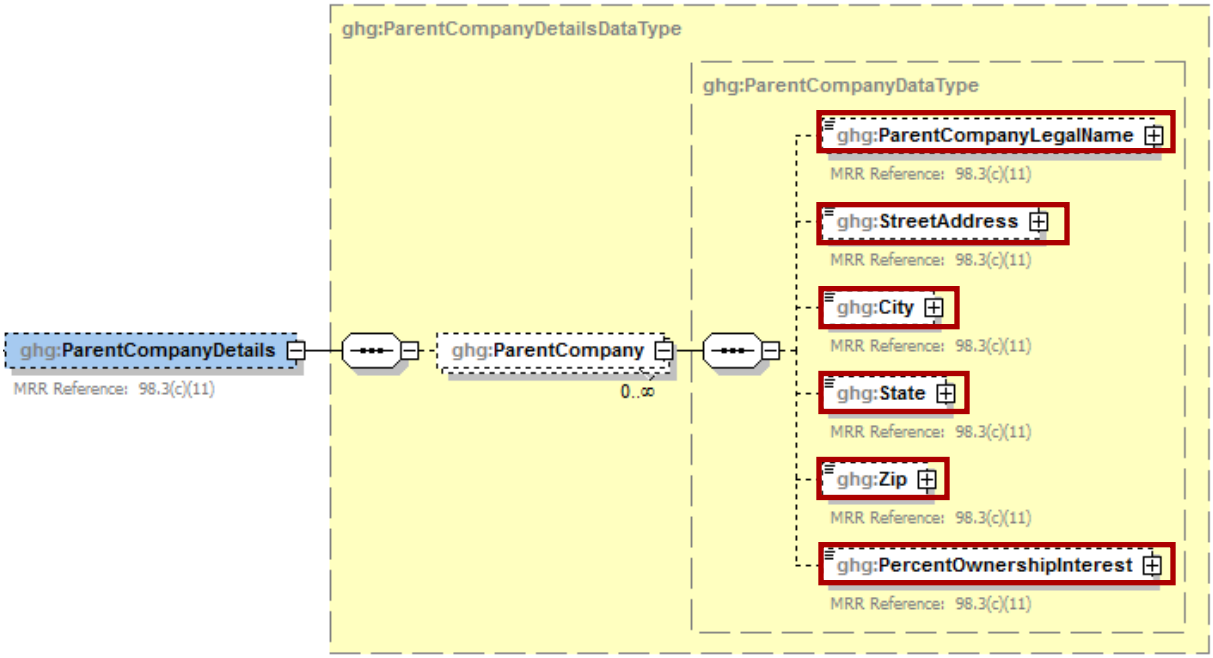
```
<ghg:LocationAddress>
    <ghg:LocationAddressText>899 North Rancho Highway</ghg:LocationAddressText>
    <ghg:SupplementalLocationText>Plant # 2</ghg:SupplementalLocationText >
    <ghg:LocalityName>Houston</ghg:LocalityName>
    <ghg:StateIdentity>
        <ghg:StateCode>TX</ghg:StateCode>
    </ghg:StateIdentity>
    <ghg:AddressPostalCode>77004</ghg:AddressPostalCode>
      <ghg:LocationDescriptionText>The facility is located at the corner of Main and Wabash  streets.</ghg:LocationDescriptionText>
</ghg:LocationAddress>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting the facility or street address.

2.5 Parent Company Details

This section contains the information that must be reported regarding corporate parent companies. Every facility or supplier that is subject to the GHGRP must report the legal names and physical street addresses of all of their U.S. parent companies and their respective percentages of ownership. A U.S. parent company is defined as the highest-level U.S. company with an ownership interest in the reporting entity as of December 31 of the year for which data are being reported. Facilities or suppliers owned by the Federal Government enter "US GOVERNMENT" for the parent company name and do not report the physical street address and percentage ownership.

Figure 18
Parent Company Schema Diagram



Note: Data elements boxed in red are required.

Table 10
Parent Company Details Data Element Definitions

Data Element Name	Description
ParentCompanyDetails	**Parent Element**
ParentCompany	**Parent Element**: A collection of data elements describing a single parent company. Repeat this set of data elements for each U.S. parent company.
ParentCompanyLegalName	Legal name of the U.S. parent company. A standardized list of common U.S. Parent Companies is available at: http://www.ccdsupport.com/confluence/display/help/Subpart+A+U.S.+Parent+Companies+-+Listing. If your parent company name is not already listed on the Standardized List of U.S. Parent Companies, please follow the guidelines in the Parent Company Name Style Guide available at http://www.ccdsupport.com/confluence/display/help/Standardization+of+Parent+Company+Names+-+Style+Guide. Entities owned by the Federal Government, report "US GOVERNMENT."
StreetAddress	Physical street address of the U.S. parent company (report the main corporate office location).
City	City in which the U.S. parent company resides.
State	State or territory in which the U.S. parent company resides. Below is a list of allowable values. AB FL MB ND OH SK AK GA MD NE OK TN AL GU ME NF ON TX AR HI MH NH OR UT AS IA MI NJ PA VA AZ ID MN NM PE VI BC IL MO NN PR VT CA IN MP NS PW WA CO KS MS NT QC WI CT KY MT NU RI WV DC LA NB NV SC WY DE MA NC NY SD YT XX
Zip	ZIP code for the U.S. parent company.
PercentOwnershipInterest	Percentage of ownership interest for the listed parent company. The value must be between 0.1 and 100.0.

XML Excerpt 7
Example for Parent Company Details

```
<ghg:ParentCompanyDetails>

    <ghg:ParentCompany>
        <ghg:ParentCompanyLegalName>CO A</ghg:ParentCompanyLegalName>
        <ghg:StreetAddress>301 S Maryland Avenue</ghg:StreetAddress>
        <ghg:City>Wilmington</ghg:City>
        <ghg:State>DE</ghg:State>
        <ghg:Zip>19803</ghg:Zip>
        <ghg:PercentOwnershipIntrest>40</ghg:PercentOwnershipIntrest>
    </ghg:ParentCompany>

    <ghg:ParentCompany>
        <ghg:ParentCompanyLegalName> CO B</ghg:ParentCompanyLegalName>
        <ghg:StreetAddress>9233 Durango Point</ghg:StreetAddress>
        <ghg:City>Houston</ghg:City>
        <ghg:State>TX</ghg:State>
        <ghg:Zip>77070</ghg:Zip>
        <ghg:PercentOwnershipIntrest>35</ghg:PercentOwnershipIntrest>
    </ghg:ParentCompany>

    <ghg:ParentCompany>
        <ghg:ParentCompanyLegalName> CO C</ghg:ParentCompanyLegalName>
        <ghg:StreetAddress>839 E Olive Street</ghg:StreetAddress>
        <ghg:City>Seattle</ghg:City>
        <ghg:State>WA</ghg:State>
        <ghg:Zip>98122</ghg:Zip>
        <ghg:PercentOwnershipIntrest>25</ghg:PercentOwnershipIntrest>
    </ghg:ParentCompany>

</ghg:ParentCompanyDetails>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting parent company data. In the example above, there are three U.S. parent companies – the combined sum of their percentage of ownership must total 100%. Extra lines were added for demonstration purposes only.

Table 11
Examples for Reporting Parent Company Information

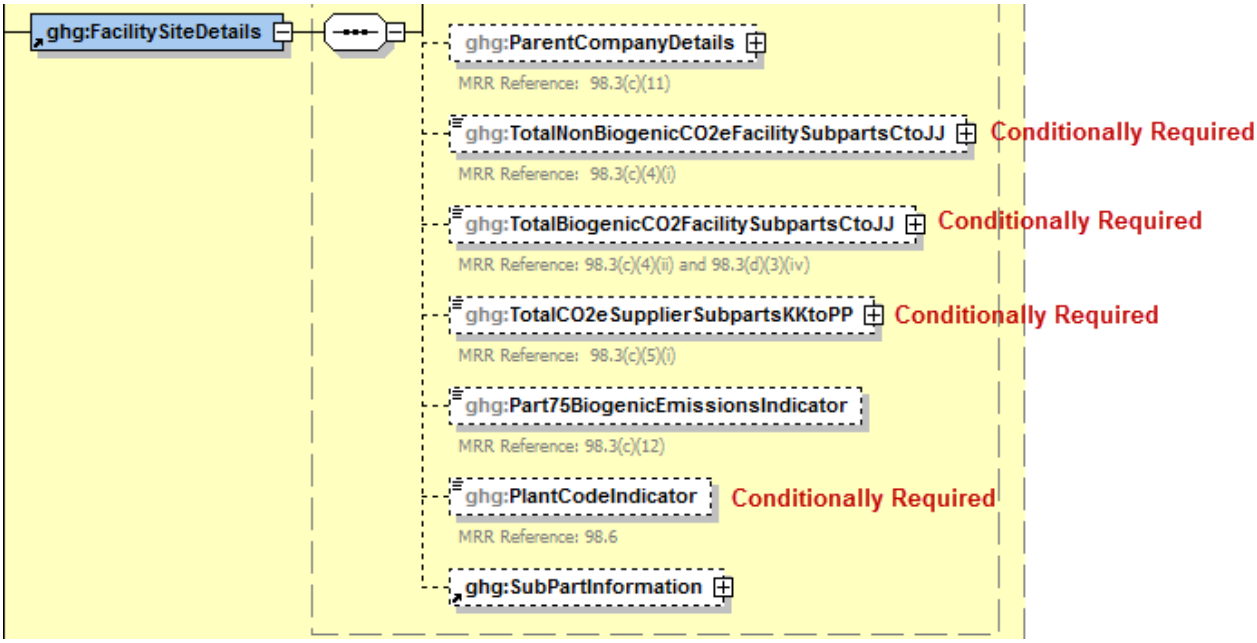
Reporting scenario	How to report U.S. parent company
The reporting entity is entirely owned by a single U.S. company that is not owned by any other company (e.g., it is not a subsidiary or division of another company).	Provide that company's legal name and physical address as the U.S. parent company and report 100 percent ownership.
The reporting entity is entirely owned by a single U.S. company which is, itself, owned by another company (e.g., it is a division or subsidiary of a higher-level company).	Provide the legal name and physical address of the highest-level company in the ownership hierarchy as the U.S. parent company and report 100 percent ownership.
The reporting entity is owned by more than one U.S. company (e.g., company A owns 40 percent, company B owns 35 percent and company C owns 25 percent). **Note:** The XML excerpt depicted above was based on this scenario.	Provide the legal names and physical addresses of all of the highest level companies with an ownership interest as U.S. parent companies and report the percent ownership of each company.

Reporting scenario	How to report U.S. parent company
The reporting entity is entirely owned by a foreign company.	Provide the legal name and physical address of the foreign company's highest-level company based in the U.S. as the U.S. parent company and report 100 percent ownership.
The reporting entity is partially owned by a foreign company and partially owned by one or more U.S. companies.	Provide the legal name and physical address of the foreign entity's highest-level company based in the U.S., along with the legal names and physical addresses of the other U.S. parent companies, and report the percent ownership of each company.
The reporting entity is owned by a joint venture or cooperative.	The joint venture or cooperative is its own U.S. parent company. Provide the joint venture or cooperative's legal name and physical address as the U.S. parent company and report 100 percent ownership.
The reporting entity is a federally owned facility.	Report "**US GOVERNTMENT"** as the parent company's name, and do not report physical address or percent ownership.

2.6 Facility Site Total Emissions

This section contains instructions for reporting the facility or supplier's total CO_2 emissions (or quantities).

Figure 19
Facility-Level Roll-up Emissions Schema Diagram



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

Conditionally Required: Each reporting facility must report the following:

- **Total non-biogenic CO_2e emissions for facility sources**.
  These are the fossil fuel related CO_2 emissions aggregated across all facility source category Subparts associated with the reporting entity.
- **Total biogenic CO_2 emissions for facility sources**.
  These are the biogenic CO_2 emissions aggregated across all facility source category Subparts associated with the reporting entity.

Conditionally Required: Each reporting supplier must report the following:

- **Total CO_2e quantity for supplier sources.**
  These are the sum total of CO_2e quantities aggregated across all supplier source categories associated with the reporting entity.

The calculations for CO_2e must be performed by applying the Global Warming Potential (GWP) factors as presented in Table A-1 of the Mandatory Greenhouse Reporting Rule and in conformance with Equation A-1 of the final rule. **Reminder:** EPA has changed many of the GWPs that XML submitters must use to prepare their annual reports for 2013. For a complete list of all GWPs and the years they apply to, see:

http://www.ccdsupport.com/confluence/display/help/Table+A-1+of+Subpart+A+of+Part+98+-+Global+Warming+Potentials.

For each source category Subpart applicable to the reporting entity, calculate the total metric tons of each greenhouse gas (GHG) aggregated across all units, products or other reporting divisions within the facility or supplier.

1) For facility source category Subparts, the list of individual GHGs that must be totaled for each Subpart is limited to:
    a. Biogenic CO_2
    b. CO_2 (excluding biogenic CO_2)
    c. CH_4
    d. N_2O
    e. Fluorinated GHGs identified in Table A-1.
2) For supplier source category Subparts, the list of individual GHGs that must be totaled for each Subpart is limited to:
    a. CO_2
    b. CH_4
    c. N_2O
    d. Fluorinated GHGs identified in Table A1.

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

Table 12
Facility Site Total Emissions (Rollup) Data Element Definitions

Data Element Name	Description
TotalNonBiogenicCO2eFacilitySubpartsCtoJJ	**Conditionally Required:** For facilities only, report the total CO_2e emissions (excluding biogenic CO_2) aggregated across all facility source category Subparts associated with the reporting entity. Set the units of measure to "Metric Tons" in the attribute **massUOM**.
TotalBiogenicCO2FacilitySubpartsCtoJJ	**Conditionally Required:** For facilities only, report the total biogenic CO_2e emissions aggregated across all facility source category Subparts associated with the reporting entity. Set the units of measure to "Metric Tons" in the attribute **massUOM**.
TotalCO2eSupplierSubpartsKKtoPP	**Conditionally Required:** For suppliers only, report the total CO_2e quantity aggregated across all supplier categories Subparts associated with the reporting entity. Set the units of measure to "Metric Tons" in the attribute **massUOM**.

XML Excerpt 8
Example for Facility Site Total Emissions (Rollup)

```
<ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ massUOM="Metric Tons">23457.8</ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>
<ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ massUOM="Metric Tons">77765.4</ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas quantity data for a facility.

XML Excerpt 9
Example for Supplier Site Total Emissions (Rollup)

```
<ghg:TotalCO2eSupplierSubpartsKKtoPP massUOM="Metric Tons">872563.2</ghg:TotalCO2eSupplierSubpartsKKtoPP>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas quantity data for a supplier.

IV. Appendix A – Sample XML Document

Sample XML Document for Subpart A

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


```xml
<?xml version="1.0" encoding="UTF-8"?>
<ghg:GHG xsi:schemaLocation="http://www.exchangenetwork.net/schema/ghg/1">
  <ghg:FacilitySiteInformation>
    <ghg:ReportingYear>2012</ghg:ReportingYear>
    <ghg:FacilitySiteDetails>
        <ghg:FacilitySite>
            <ghg:FacilitySiteIdentifier>509316</ghg:FacilitySiteIdentifier>
            <ghg:FacilitySiteName>Acme Farming Supplies Inc.</ghg:FacilitySiteName>
        </ghg:FacilitySite>
        <ghg:LocationAddress/>
        <ghg:CogenerationUnitEmissionsIndicator>N</ghg:CogenerationUnitEmissionsIndicator>
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                <ghg:State>IL</ghg:State>
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                <ghg:ParentCompanyLegalName>USA Farming, INC</ghg:ParentCompanyLegalName>
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                <ghg:SubPartC/>

        </ghg:SubPartInformation>
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```


See XML reporting instructions for your specific Subpart(s).

Note: This example has not been updated for RY2013 and the v4.2 schema. The only change to this section of the schema in v4.2 is the addition of PlantCodeIndicator within FacilitySiteDetails.

V. Appendix B – Additional Resources

- Electronic Code of Federal Regulations (e-CFR) for Part 98
- Known Issues for e-GGRT XML Reporting
- EPA published a final rule that delineates which data submitted in e-GGRT will be treated as CBI and which data can be released to the public (76 FR 30782). This final rule made CBI determinations for the source categories required to report by April 2, 2012. EPA will handle data submitted in e-GGRT based on these determinations. Reporters cannot make additional claims in their XML file. More information on CBI is available at http://www.epa.gov/climatechange/emissions/CBI.html.