

Outer Continental Shelf Air Quality System (OCS AQS)

User Manual



December 1, 2020



Revision History

Revision	Date	Changes
0	12/1/20	Original Version

Acronyms

AEM	Activity & Emissions Manager
BOEM	Bureau of Ocean Energy Management
BSEE	Bureau of Safety and Environmental Enforcement
CERS	Consolidated Emissions Reporting Schema
CSV	Construction Support Vessel
DOI	Department of the Interior
EF	Emission Factor
e-GGRT	Electronic Greenhouse Gas Reporting Tool
EIS	Emissions Inventory System
FAQs	Frequently Asked Questions
GOADS	Gulfwide Offshore Activities Data System
GWP	Global Warming Potential
LO	Lease Operations
OCS AQS	Outer Continental Shelf Air Quality System
OPD	Official Protraction Diagram
USEPA	US Environmental Protection Agency

Units of Measure

Units	Description
%	percentage
bbl	US barrel (42 gallons)
Btu/hp-hr	British thermal unit per horsepower-hour
Btu/lb	British thermal unit per pound
Btu/scf	British thermal unit per standard cubic foot
days	24 hour period
days/month	days per calendar month
deg F	degree Fahrenheit
ft	feet
ft ³ /month	cubic feet per month
wt%	percent of total weight
gallons/hr	gallons per hour
gallons/month	gallons per month
hp	horsepower
hr	hour
kW	kiloWatts
lb CH ₄ /lb	fraction of methane in total weight
lb CO ₂ /lb	fraction of carbon dioxide in total weight
lb VOC/lb	fraction of volatile organic compounds in total weight
lb/hr	pounds per hour
lb/lb-mol	pounds per mole
lb/month	pounds per month
MMBtu/hr	Million Btus per hour
months	calendar months
Mscf	Thousand standard cubic feet
Mscf/hr	Thousand standard cubic feet per hour
Mscf/month	Thousand standard cubic feet per month
ppm	parts per million
ppmv	parts per million volume
psia	pounds per square inch, atmosphere
psig	pounds per square inch, gauge
scf	standard cubic feet
scf/hr	standard cubic feet per hour
scf/month	standard cubic feet per month
year	calendar year

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1 Getting Started with OCS AQS

The Outer Continental Shelf Air Quality System (OCS AQS) is a comprehensive web-based software solution for managing and reporting OCS emission source data in the Gulf of Mexico and Alaska regions, to include inputting activity data, calculating emissions, performing quality assurance and control, and submitting the emissions results. OCS AQS provides an intuitive user interface to facilitate the participation by the offshore operators in the annual survey program mandated by the Bureau of Ocean Energy Management (BOEM).

1.1 This Document

This User Manual was prepared to assist the operators in their use of OCS AQS to complete the 2021 OCS Emissions Inventory in compliance with 30 CFR 550.303(k) and 550.304(g). As OCS AQS is a web solution that supports regular updates, the User Manual will serve as a living document which will be updated periodically to reflect software updates to OCS AQS.

Please note that OCS AQS replaces the legacy Gulfwide Offshore Activities Data System (GOADS) but includes the same required data input fields. Key differences between OCS AQS and GOADS include:

- OCS AQS is a web-based system that can be accessed from a common web browser and does not require any separate installation.
- OCS AQS has dashboards, reports, and mapping features to provide user-friendly and content-rich interface.
- OCS AQS includes historical emissions inventories (2000, 2005, 2008, 2011, 2014, and 2017) for reference and review by operators and lessees.

1.2 Accessing OCS AQS

In order to access OCS AQS, the following steps must be completed:

1. BOEM/BSEE will send an invitation email with instructions on how to access OCS AQS. If you are an operator (or authorized consultant) and did not receive an email, please send an account request to ocs.aqs_support@weblakes.com.
2. If you did receive the invitation email, follow the instructions, including the requirement to create a login.gov account. When setting up your login.gov account, you must use the same email address in which you received the OCS AQS invitation. If you would like use a different email address, please send your request to ocs.aqs_support@weblakes.com.
3. Once your login.gov account has been created, you can log into OCS AQS and access your facilities emission inventory at the following website: <https://www.ocsqaqs.doi.gov>. Operators will select the login.gov option and enter credentials (additional details below). BOEM/BSEE users will use the BOEM/BSEE button to access OCS AQS. In certain cases, the OCS AQS Systems Administrator may require 24 to complete the account setup process, so please keep this in mind the first time you log into the system.

1.3 Supported Browsers

OCS AQS can be accessed by authorized users from any computer with an internet connection. OCS AQS supports most major browsers including:

- Microsoft Edge™
- Mozilla Firefox™
- Google Chrome™

Other browsers may run OCS AQS without significant issues, but they are not explicitly supported.

IMPORTANT: OCS AQS does not support Microsoft Internet Explorer™.

1.4 Logging in the First Time

Once you have successfully created your login.gov account, go to the following website:

<https://www.ocsqqs.doi.gov>

You should see a login screen similar to Figure 1. Operators will use the **LOGIN.GOV** button.

Outer Continental Shelf (OCS) Air Quality System

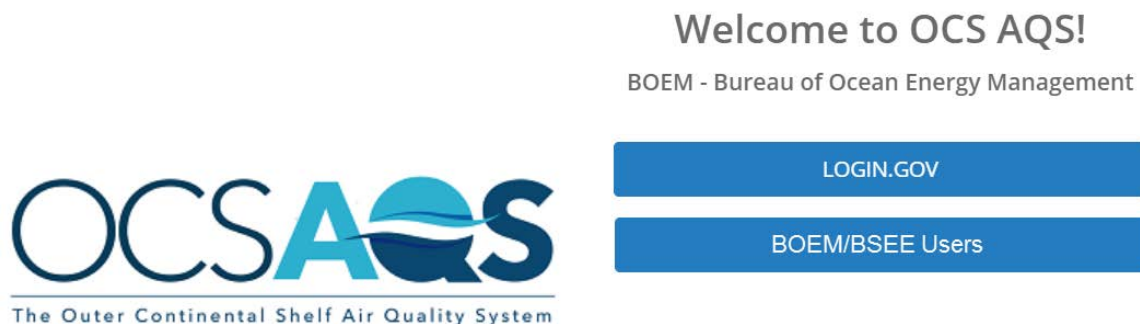


Figure 1. OCS AQS login screen

Click the LOGIN.GOV button (unless you are an authorized BOEM/BSEE user) and this will take you to the login.gov screen as shows in Figure 2. Enter your login.gov credentials and click the **Sign in** button. Since this is your first time accessing OCS AQS through login.gov, depending on the two-factor authentication option you selected when you created your login.gov account, you will be prompted with additional instructions. For example, if you elected to use text messaging, login.gov will send you a code to the phone you specified with instruction on how to enter the code to complete the two-factor authentication process. If you run into any problems with login.gov, please contact login.gov technical support.



PRDOCSAQS is using login.gov to allow you to sign in to your account safely and securely.

Email address

Password Show password

Sign in

Create an account

[Sign in with your government employee ID](#)

[← Back to PRDOCSAQS](#)

[Forgot your password?](#)

[Security and Privacy Practices](#) [↗](#)

[Privacy Act Statement](#) [↗](#)

Figure 2. Main login.gov page

Once successfully logged in, your initial landing page (and home page) is the Dashboard module, similar to the one shown in Figure 3 below.

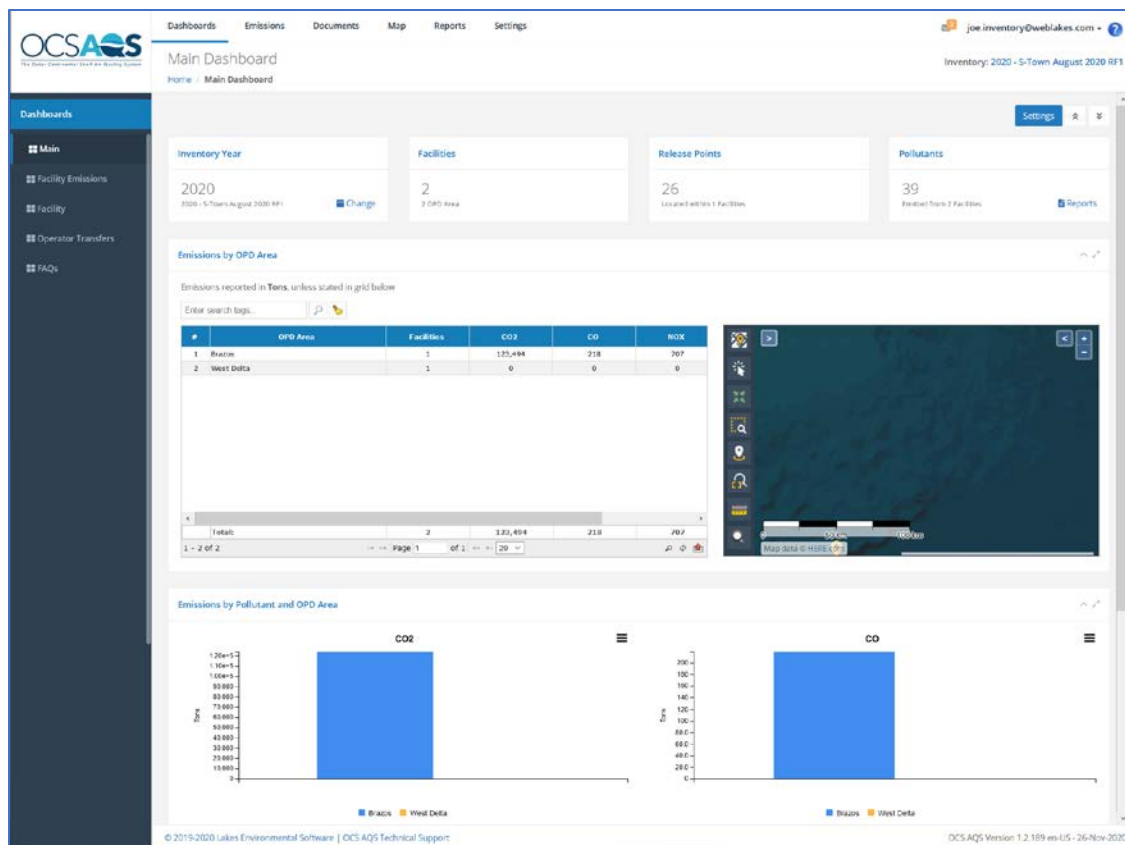


Figure 3. Main dashboard after login

The number of different dashboards available to you in the Navigation Panel may vary depending on assigned access rights while the displayed data may vary due to the default inventory in your account.

1.5 System Security

1.5.1 Automatic Logout

Due to the U. S. Department of Interior (DOI) security requirements, if you do not use the system for more than 15 minutes, you will be automatically logged out and you will have to log back in again. You will be given a one-minute warning prior to the automatic logout.

IMPORTANT - If you are logged out, any work in pages that are in **Edit** mode and require you to **Save** will be lost if it was not saved.

1.5.2 Password Recovery

If you forget your password, simply click the **Forgot your password?** button as shown toward the bottom of Figure 2 earlier and follow the instructions provided.

1.5.3 Lockout

When accessing OCS AQS through your login.gov account, if you enter your password or email address incorrectly too many times, you will get locked out of the system. Follow the instructions provided to reactivate your account. In addition, OCS AQS Technical Support is available at ocs.aqs_support@weblakes.com during normal workdays between the hours of 8 am and 5 pm EST.

1.6 Navigating the System

1.6.1 Overview

Once you log in, you will see a screen similar to Figure 4 shown below. While each screen may vary slightly based on access to authorized facility inventories and user-defined dashboard setting, the navigation tools will be located in the same area for easy reference. For the current submittal year, users will only have access to their specific inventories and facilities. Users have access to all facilities for past, final inventories that are publicly available, and these inventories are locked.

IMPORTANT: Depending on your computer screen size and resolution, you may have to scroll down to see all the content.

The main navigation tools are as follows and are indicated in Figure 4:

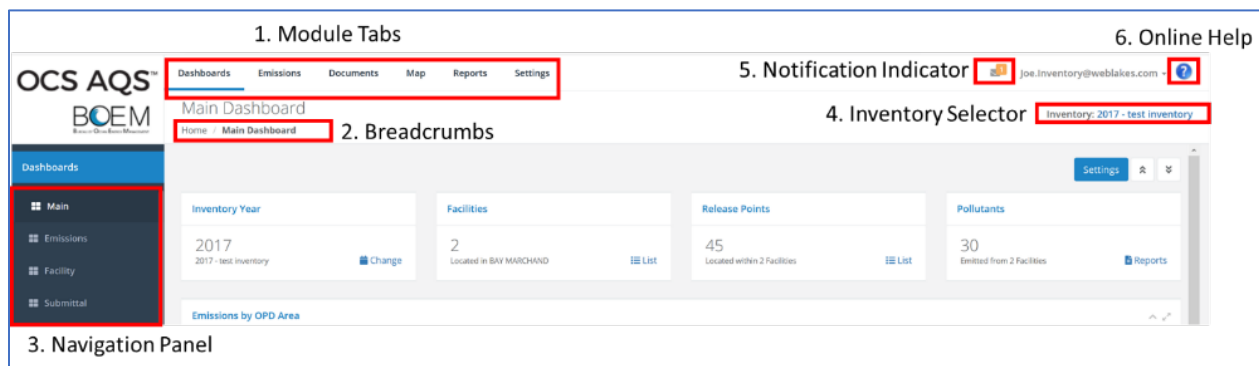


Figure 4. Example home screen

1. **Module Tabs:** These tabs provide access to the OCS AQS modules (see next section for a description of each module). The module you are in is underscored by a blue line.
2. **Breadcrumbs:** This link shows your current location within the web hierarchy and thus provides contextual information to the current page. Clicking on any text will take you to that particular page. Clicking on **Home** takes you back to the first page you see after login.
3. **Navigator Panel:** These folders provide navigation options for a given module and the steps you are taking. For pages other than the Dashboard, there will be **Navicons** to access different pages and wizards.

4. **Inventory Selector:** This tool is used to select the emissions inventory that you will be working in. Depending on your user rights, your access may be limited to a single inventory. Past inventories (2017, 2014, etc.) will be locked and available for review only.
5. **Notification Indicator:** This button shows if you have system messages related to OCS AQS operations.
6. **Online Help:** This icon displays a context-specific help window based on the page you are viewing. If you need to search for a different feature, the icon also allows access to **View Full Help** – the complete set of help content.

1.6.2 Using Windows and Tables

Detailed data in OCS AQS are organized and presented using windows and tables. An example of a table that lists emission units for platform sources (to be covered later) is shown in Figure 5. A number of tools are available to the user to navigate, search, manipulate, and export the tables and windows. These tools are identified in the same figure and described below.

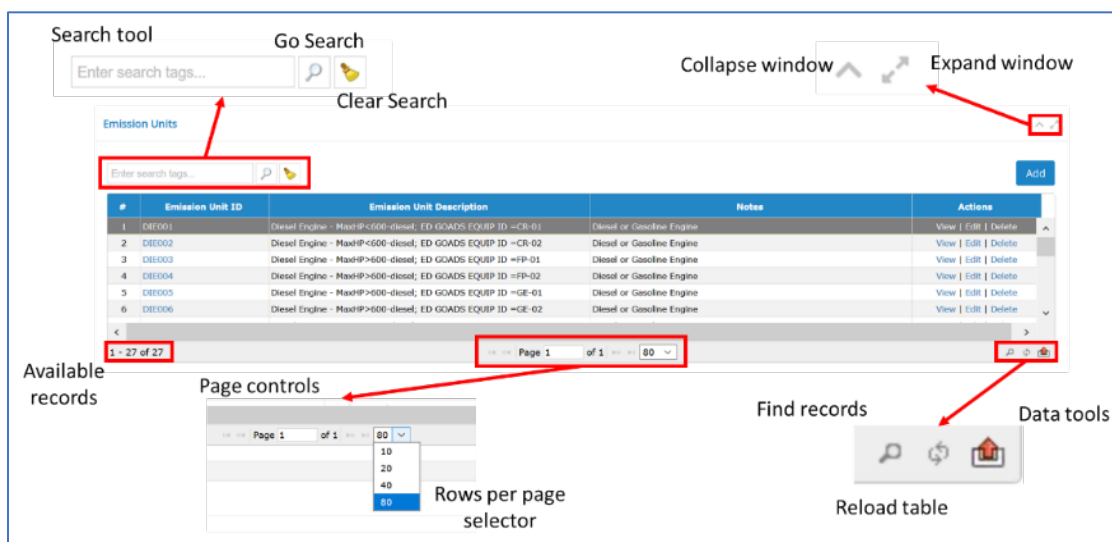



Figure 5. Window and table tools

- **Window control tools** are located in the upper right-hand corner of each table. They allow you to **Collapse** the window or **Expand** it to a full page.
TIP: You can also “double-click” on the white header above the table to expand and collapse the table.
- The **Search tool** in the upper left of the window allows you enter keywords to find specific records. Keywords can include partial spellings like “pneu” for “pneumatic” and are not case sensitive. The Go Search button (magnifying glass) executes the search and the Clear Search button (broom/brush) removes all text in the search bar.

- **Available records** in the lower left corner of the window shows the number of available records that the table will display.
- **Page controls** in the lower center of the window allows page by page navigation of the table and controls the number of rows displayed per page using the drop-down menu.
- **Data Tools** in the lower right of the window allows the user to perform a more customized search and reload the table after the query. The export icon (up arrow) allows the user to export the table's records in Excel or CSV format. The table can also be printed from this icon.

1.6.3 Getting Help

OCS AQS is designed to be easy to use and intuitive. Additional tools are provided to assist you. These include:

- | | |
|-------------------------------|---|
| • Online help | Press the  icon on the top right-hand corner of any page to go to a help section for the page. |
| • Full Help | In the Online Help window, press the View Full Help link. This will provide a searchable help feature. |
| • User Manual (this document) | The User Manual provides in-depth assistance with easy-to-follow examples and indexed content. |
| • OCS AQS support team | For help not covered above, contact tech support for OCS AQS at ocs.aqs_support@weblakes.com . |

Technical support is available by clicking on the OCS AQS Technical Support link in the bottom part of the screen after you log in as shown in Figure 6. Clicking on the link opens up the OCS AQS Technical Support page that gives contact information for both technical support and BOEM inquiry email address (OCSEmissionsInventory@boem.gov).

The screenshot shows the OCS AQS Main Dashboard. The top left features the OCS AQS logo and the text 'The Outer Continental Shelf Air Quality System'. The main header includes 'Main Dashboard' and 'Inventory:'. A left sidebar contains a 'Dashboards' menu with options like Main, Facility Emissions, Platform Emissions, Facility, Non-Platform Emissions, Submittals, Admin Transfers, Operator Transfers, Admin, and FAQs. The main content area has three summary cards: 'Inventory Year' (2020, 2020 - S-Town August 2020, Shashikant Sarada), 'Facilities' (2, 2 OPD Area), and 'Release Points' (26, Located within 1 Facilities). Below these is a section for 'Emissions by OPD Area' with a table showing emissions in Tons. A search bar is present above the table. At the bottom of the page, a copyright notice and a link for 'OCS AQS Technical Support' are visible, with the link circled in red.

© 2019-2020 Lakes Environmental Software | [OCS AQS Technical Support](#)

Figure 6. Technical support link

IMPORTANT – when requesting technical support, please let us know which web browser you are using so that we can focus our response to your requirements. Each browser displays content differently.

1.7 Selecting Inventories

The emissions inventory selected determines the year and emissions scenario you will be working with. It is therefore extremely important to make sure you select the correct inventory before you begin working. By default, upon the initial login users will automatically be directed to their 2021 inventory. Contact your OCS AQS representative at OCSEmissionsInventory@boem.gov to determine which inventory you should be using if you have questions.

Operators also have the ability to create and save sandbox (test) inventories. In addition, users have the ability to select historical inventories. To change or select a specific inventory, click on the **Inventory Selector** link (as described in Section 1.5.1). This will take you to the **Inventory Configuration** page. Click on the desired inventory name. The desired inventory should appear in the Inventory Selector area, similar to the example shown in Figure 7. In some cases, when you initially log in, there may be only one inventory.

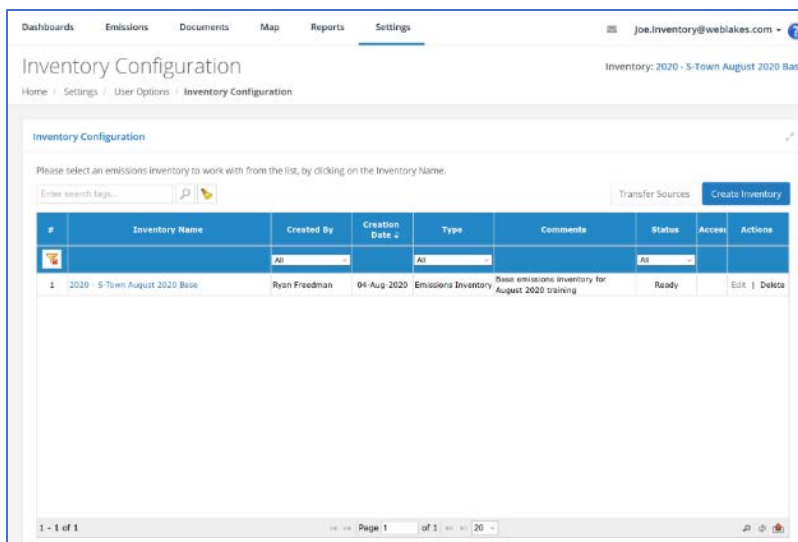


Figure 7. Inventory configuration page

Use the **Module Tabs** or **Breadcrumbs** to navigate back to **Home** or to new pages.

1.8 OCS AQS Modules

OCS AQS has several modules that group functionalities for easy navigation. Move around modules by clicking on the **Module Tabs** as shown previously in Figure 4. The modules that are available are:

- **Dashboards** - This module presents a snapshot of activities based on your access rights. The Navigation Panel has several options you can choose from. Each view can be customized by using the Settings button located in the upper right corner of the page.
- **Emissions** - This module provides all the resources you will need to add and update emission sources and pollutant totals.
- **Documents** - This module allows you to upload and access supporting documentation such as stack tests or proposed alternate emissions factors.
- **Map** - This module provides an interactive GIS style map with different layers for sources, sea-lanes and pipelines. Sources are linked to pages in the Emissions module for easy reference.
- **Reports** - OCS AQS comes with several prepared reports for use. Each report has its own wizard to guide you through criteria selection to help create a report specific to your requirements.
- **Settings** - This module allows you to update your user profile as well as select the inventory you are working in.
- **Admin** – This module allows an authorized administrator to add accounts, track usage and change logs, update reference tables, and synchronize individual operator inventories. Only users with administrative rights will be able to view this section.

1.9 OCS AQS Definitions

OCS AQS uses the same nomenclature as GOADS in reference to hierarchies and definitions. The following terms are used throughout this manual:

- **Company** refers to the organization or legal entity that owns and operates assets and has the requirement and responsibility to submit the OCS Emissions Inventory.
- **Lease** refers to the legal agreement between the company and BOEM to operate in a specified manner in a specified location.
- **Lease Operations** refer to specific activities taken by the Lessee as part of the Lease. Lease Operations include platform sources; however, for OCS AQS, lease operations refer only to drilling operations in which the drilling rig is connected to the sea bed and construction support vessels installing new platforms or pipelines.
- **Complex** refers to a group of related structures within a lease area that is assigned a Complex ID.
- **Facility** refers to an individual structure (Complex-Structure ID). A single facility or multiple facilities can make up a complex.
- **Emission Source** refers to a process or piece of equipment on a facility that generates air emissions and releases it to the environment. For OCS AQS, an Emission Source consists of an Emission Unit and a Release Point. In some cases, such as fugitive emissions, the Emission Unit and the Release Point are the same.
- **Emission Unit** refers to the process or equipment type on a facility capable of generating air emissions. In some cases, such as fugitive emissions, the Emission Unit is a collection of components that may be located throughout a facility.
- **Release Point** refers to the physical properties of an emission source that release emissions into the environment.
- **Process** refers to the physical and chemical reactions that take place in an Emission Source that converts throughput material into air emissions.

1.10 OCS AQS Function Map

An outline of all OCS AQS modules and their function located within the Navigation Panel selections is shown in Figure 8.

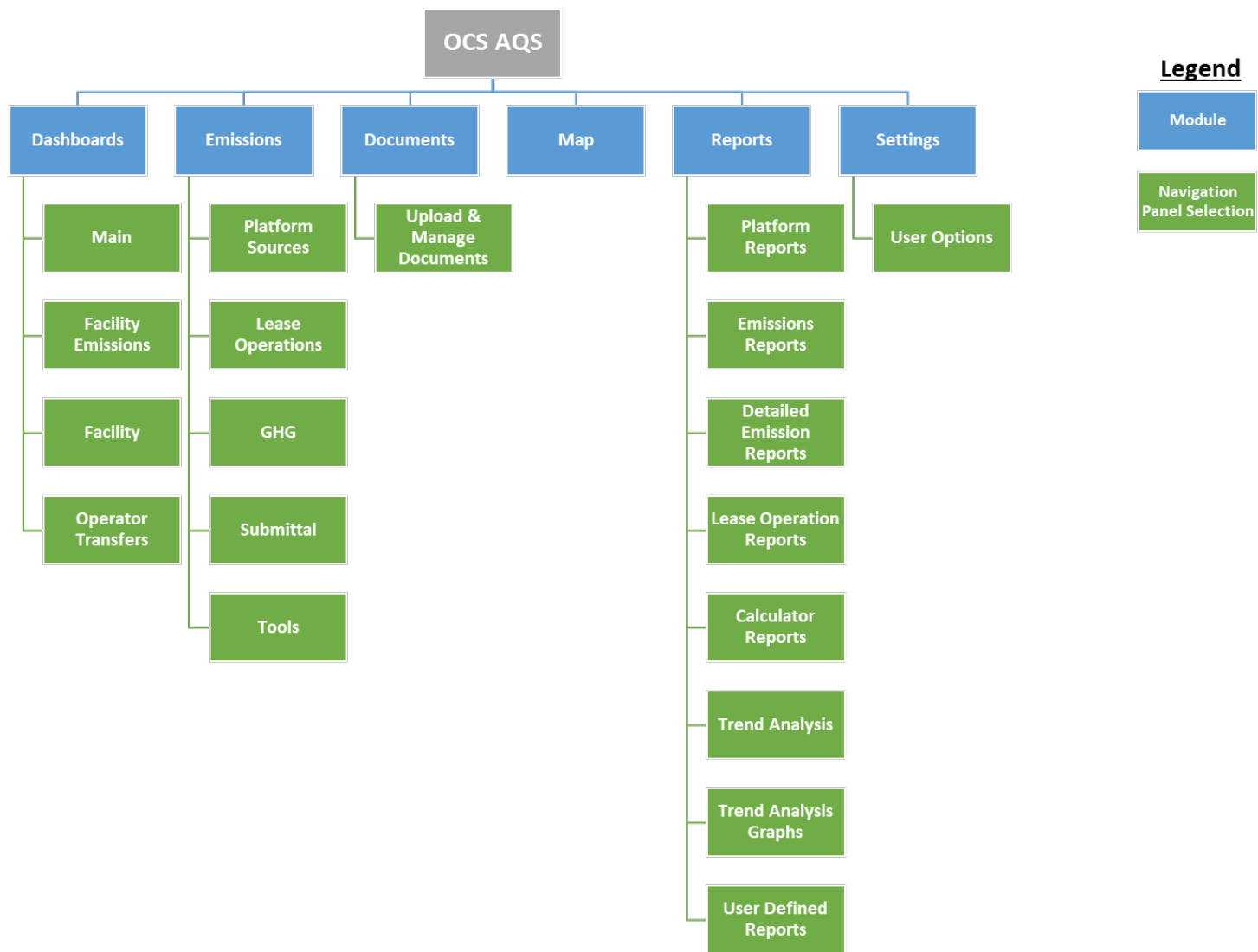


Figure 8. OCS AQS function map for operators

1.11 Layout of User Manual

The rest of the User Manual is laid out in the following sections:

- Section 2 – Dashboards
- Section 3 – Emissions: Platform Sources
- Section 4 – Emissions: Lease Operations
- Section 5 – Emissions: Other Emissions Functions
- Section 6 - Documents
- Section 7 – Map
- Section 8 - Reports
- Section 9 - Settings

The Emissions module is broken into three parts in order to focus each section on the main functions within the module.

Each section will have a more detailed map of the module functions accessed through the Navigation Panel.

2 Dashboards

Dashboards provide a summary of key OCS AQS data using tables, maps, and graphs. There are multiple dashboard screens available, all accessible on the Navigation Panel as shown on the module map in Figure 9. The specific dashboards available to you will depend on your access rights.

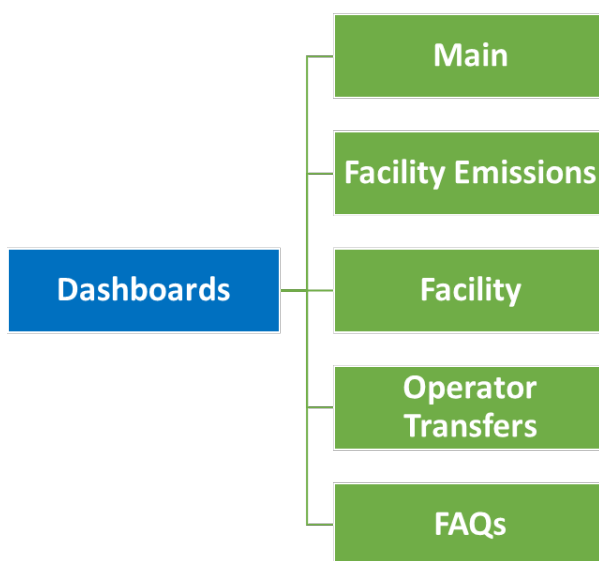




Figure 9. Dashboard module map showing panels available to operators

The dashboard pages share several common features:

- Graphs and visuals on the page can be changed by clicking on the  button on the top right of the page. Select (or deselect) the options you want to see on the dashboard page and click Save to apply the changes. Some pages do not have a Settings feature.
- Selecting the 3 bars  next to a graph gives you the option to save the graph figure in .png or .jpg format.
- Scrolling over graphs reveals the data tables.

IMPORTANT: Scroll down to see additional content.

TIP: If you do not see the data on a Dashboard page that you want, check the Inventory and make sure you have the right one.

The available Dashboards include:

- **Main** – This is the main dashboard that will be displayed when you log in. It shows the inventory year and includes a summary of facilities, release points, and pollutants inventoried. This dashboard also includes a map of the facility (or facilities) and

summary graphs of selected pollutant emission totals. Data is organized by Official Protraction Diagram (OPD) Areas. An example of this dashboard is shown in Figure 10.

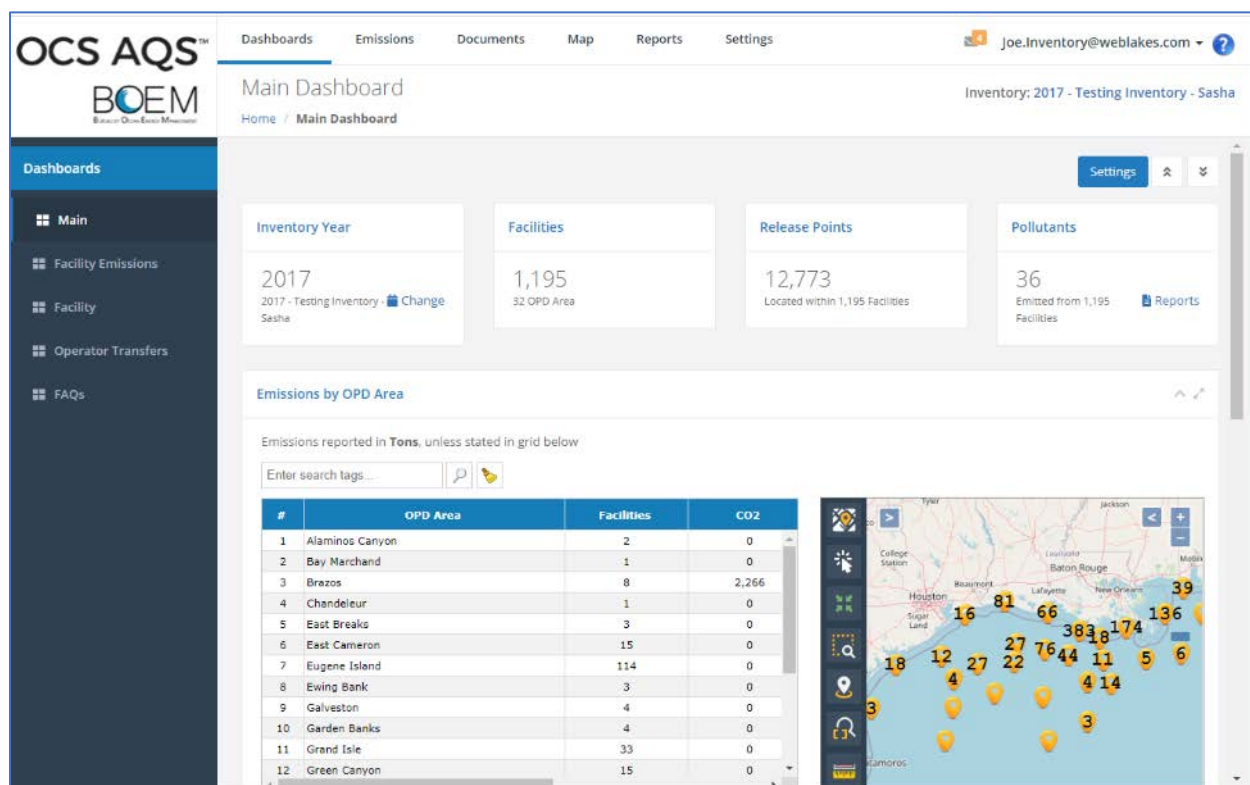


Figure 10. Main dashboard for operators

Additional Dashboards that are available are:

- **Facility Emissions** – This dashboard is similar to the Main Dashboard but shows a breakdown of emissions by facility across a region.
- **Facility** – This dashboard provides facility level data details as well as a list of pollutant totals emitted by the facility.
- **Operator Transfers** – This dashboard shows the status of facility transfers made by the operator (if any) over selected periods.
- **FAQs** – This is not technically a dashboard but provides a collection of Frequently Asked Questions (FAQs) about the OCS AQS software, emissions inventories and other topics. The FAQs are grouped in the following categories:
 - General Questions
 - Emissions Calculations
 - Dashboards
 - Maps
 - Reports

Some dashboard pages, especially the Main and Facility Emissions dashboards, have quick links in the top row of summary information. This allows you to access the tables or reports that are associated with the display data.

3 Emissions: Platform Sources

Platform sources make up the majority of emission sources and pollutant emissions in OCS AQS. You can manage all platform sources in the **Emissions** module. When you select the Emissions module, you are automatically taken to the **Emissions – Platform Sources** page by default. The Platform Sources page provides links to several different options as shown in Figure 11 with the various navicons. Navigation to other Emission module functions is done using links on the Navigation Panel.

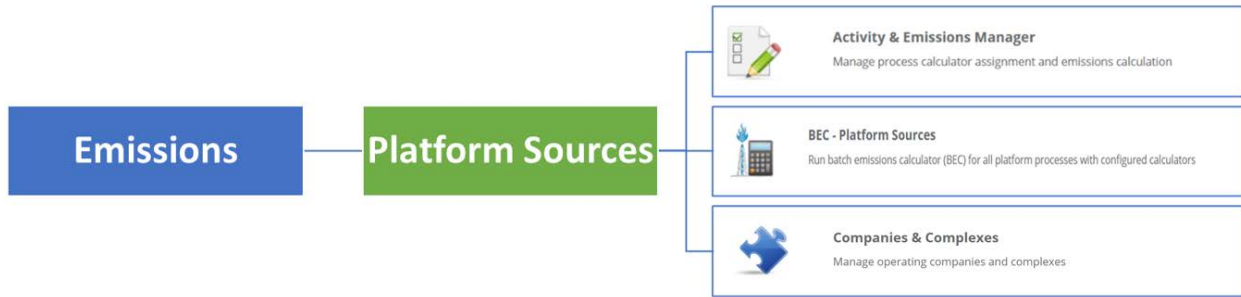


Figure 11. Emissions main page functions

3.1 Platform Sources Workflow

OCS AQS is designed to make updating and editing emission sources easy. Updating and editing platform sources is handled in the **Activity & Emissions Manager** (AEM). The AEM provides a one-stop shop for all platform emission source functions. The basic workflow using the AEM is shown in Figure 12.

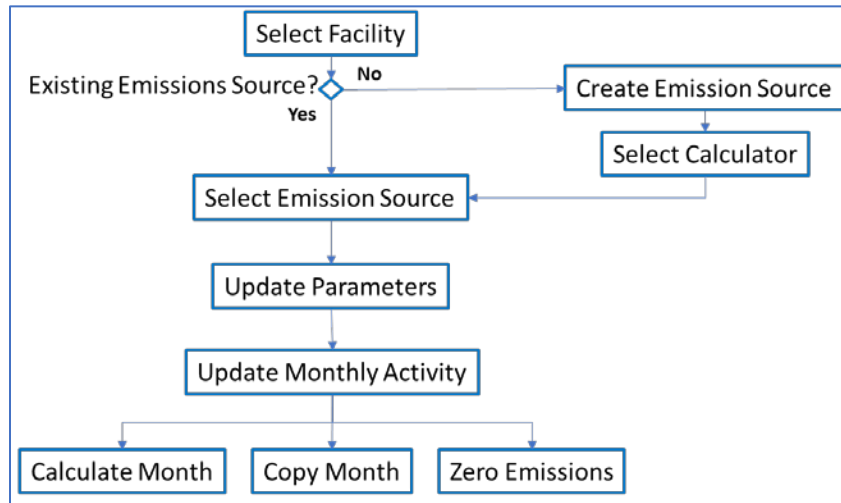


Figure 12. Emission source workflow using the Activity & Emissions Manager (AEM)

To implement this workflow, OCS AQS uses integrated toolsets and prepared import/export templates for all emission processes.

3.2 Using the Activity & Emissions Manager

To access the AEM, click on the Activity & Emissions Manager button (shown in Figure 11 above). This takes you to the **Facilities** page. Select the facility to work with (hyperlink) in the Facility ID column from the table in the Facilities page, as shown in Figure 13 below. You can also click on **View** in the Actions column. In some cases, there will only be one facility to choose from. If your facility is not in the list, please contact OCS AQS support.

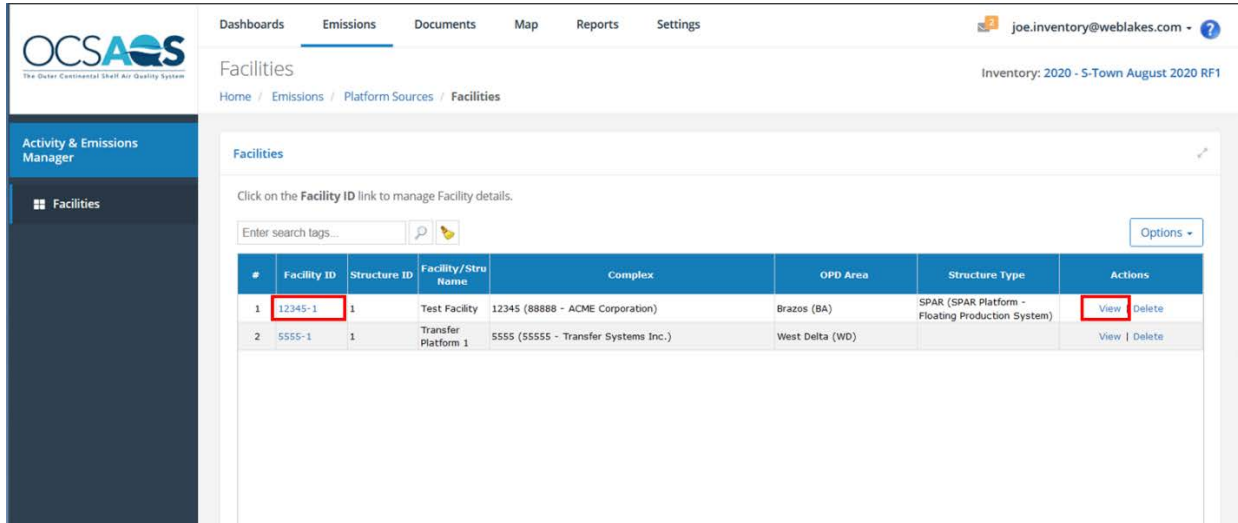


Figure 13. Selecting a facility in the AEM

3.2.1 Activity & Emissions Manager Details Page

Selecting the facility takes you to the **Activity & Emissions Manager Details** page with a view similar to Figure 14. This page allows you to make changes in designated fields as well as perform certain other operations.

The screenshot displays the 'Activity & Emissions Manager Details' page. At the top, there is a navigation menu with 'Dashboards', 'Emissions', 'Documents', 'Map', 'Reports', and 'Settings'. The user's profile 'joe.inventory@weblakes.com' is visible in the top right. The main heading is 'Activity & Emissions Manager Details', with a sub-heading 'Inventory: 2020 - 5-Town August 2020 RFI'. Below this is a search bar for facilities. The primary section is 'Emission Units & Processes' for 'Facility: 12345-1 - Test Facility - ACME Corporation'. It features a search bar and buttons for 'Import/Export Activity Data', 'Facility-Wide Zero Emissions', and 'Add Emission Unit'. A table lists emission units with columns: #, Emission Unit ID, Emission Unit Description, Process ID, Process Description, Source Classification Code (SCC), Calculator, Last Calculation Date, and Actions. The table shows four entries, including 'Boiler/Heater/Burner (Gas) A', 'Diesel or gasoline engine (Gasoline)', 'Diesel Engine - Max HP > 500 - diesel', and 'Diesel or gasoline engine (Max HP < 500) A'. Below the table is a 'Process' section with expandable panels for 'Release Point & Apportionment', 'Calculator Parameters & Requests', 'Calculated Emissions', 'Tags', 'Trade Secrets', and 'Data Entry QA and Log'.

Figure 14. Default view of the AEM Details page

3.2.1.1 Main Features of AEM Details Page


The AEM Details page has a number of features which can be seen by scrolling down the page. These features and their use will be described in detail in the sections that follow.

First, in the upper right part of the page, there are buttons to update annual **Production** and throughput values and **Sales Gas** composition per facility. Below them, you can see the **Emission Units & Processes** section, which shows the different emission units within the facility in tabular form and includes buttons to Add Emission Unit and to Import/Export Activity Data. This section encompasses the **Process** section which includes the following sections:

- **Release Point & Apportionment** – View and update release point parameters associated with an emission source.
- **Calculator Parameters & Requests** – Provides the activity data entry for emission calculation parameters and associated metadata for individual sources. This will be described in greater detail below.
- **Calculated Emissions** – Shows the calculated emissions for an emission unit for the entire year by month based on calculator parameters provided in the Process feature.
- **Data Entry QA and Log** – Shows when updates were made and by whom.

3.2.1.2 *Edit Mode*

It is important to note that you will automatically be in Edit mode when you enter the AEM Details page. You can confirm this if you are able to edit or otherwise make changes to fields in the Process section. If you are not in Edit mode, these options will be visible but disabled. You can exit Edit mode by either saving your changes or clicking the Cancel button under the Emission Units panel.

To expand the different sub-groups under Process, click the down chevron  on the right side of the page.

To save data, click on the Save button in the upper right corner of the **Process** Section. This will update the **Process** Section and hide several buttons and selectors. To return to Edit mode, highlight the desired Emission Unit in the table at the top of the screen and click on the Edit button where the Save button used to be.

IMPORTANT: If you do not save your work, it will be lost if you are automatically logged off or navigate away.

3.2.2 Updating Annual Production Rate and Sales Gas Composition

3.2.2.1 *Annual Production Rates*

Production rates can be updated by clicking on the Production button in the upper right corner. This will open a window with fields for annual production, throughput and usage. To edit the values, click on Edit in the bottom left corner. Be aware that input fields are for specific energy type (crude oil, natural gas, and diesel) based on the units and field descriptions. All values must be greater than or equal to 0.

Click Save to save updates and get out of Edit mode. Click Close to close the window.

3.2.2.2 *Sales Gas Composition*

Update sales gas composition by clicking on the Sales Gas button and the Edit button similar to the Production procedure described above.

The input fields for the different mole fraction components will automatically sum in the lower right box (Sales Gas Total [mole%]). If the final sum does not equal 100%, you can normalize the value clicking on the Normalize button that will appear in the upper right corner of the window. The Normalize button will add or subtract from the non-zero elements in the fields by a linear weighting method that allows the composite total to sum exactly to 100.00%. If the sum is equal to 100.00%, the Normalize button will not appear

An example of the Sales Gas update screen with a sum not equal to 100.00% is shown in Figure 15.

Sales Gas Components

Normalize

H2S [mole %]: 0

O2 [mole %]: 0

CO2 [mole %]: 0.256

N2 [mole %]: 0.509

Methane [mole %]: 66.997

Ethane [mole %]: 15.497

C3 Hydrocarbons [mole %]: 12.419

i-C4 Hydrocarbons [mole %]: 1.199

n-C4 Hydrocarbons [mole %]: 2.51

i-C5 Hydrocarbons [mole %]: 0.284

n-C5 Hydrocarbons [mole %]: 0.253

C6 Hydrocarbons [mole %]: 0.086

C7 Hydrocarbons [mole %]: 0

C8+ Hydrocarbons [mole %]: 0

Sales Gas Total [mole %]: 100.0100

Data Entry QA and Log

Cancel Save

Figure 15. Sales Gas Components page

3.2.3 Updating Facility Details

To check facility details such as address, sales gas composition, and location, click on the Facility Name link under the Emission Units & Processes section as shown in Figure 16. A window will pop up with facility details. Scroll down to see Production and Sales Gas Composition as well as location information of the facility.

Activity & Emissions Manager Details

Inventory: 2020 - S-Town August 2020 RF1

Facilities

Enter Facility Name to Search

Production Sales Gas

Emission Units & Processes

Facility: 12345-1 - Test Facility - ACME Corporation

Enter search tags

Import/Export Activity Data Facility-Wide Zero Emissions Add Emission Unit

#	Emission Unit ID	Emission Unit Description	Process ID	Process Description	Source Classification Code (SCC)	Calculator	Last Calculation Date	Actions
1	BO0003R	Boiler/Heater/Burner (Gas) R	BOI	Boilers, Heaters, and Burners - Natural Gas, Process Gas, or Waste Gas	1020003	BOI-M03		View Edit Delete Copy
2	D00001	Diesel or gasoline engine (gasoline)	DIE	Gasoline Engine		DIE-M01		View Edit Delete Copy
3	D00002	Diesel Engine - MaxHP<600-Series: ED GOADS EQUIP ID #CR-02 a	D-600d	Diesel Engine - MaxHP<600-diesel	20200102	DIE-M02	14-Oct-2020, 15:32:43	View Edit Delete Copy
4	D00003	Diesel or gasoline engine (Max HP)	DIE	Diesel Engine (Max HP)		DIE-M01	30-Sep-2020, 14:30:40	View Edit Delete Copy

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Figure 16. Facility details link location.

To edit information about the facility, click on the blue Edit button in the bottom right of the window to enter the edit mode. Click Save to complete the updates.

Production Rates and Sales Gas Composition can be edited in this window as well as the individual windows described above.

3.2.4 Emission Units & Processes

The Emissions Units & Processes table includes all emission units and a summary of key information including:

- Process ID and description of each emission unit
- The Source Classification Code (SCC)
- The assigned calculator
- The date and time of the last emission calculation (if applicable)

3.2.4.1 Select Emission Unit

Emission units associated with a particular facility are shown in the top of the AEM Details page. To view the Process section details of any emission unit, click anywhere in the row, other than the hyperlinks, to select the emission unit, as show in Figure 17. This will update the Process section. Clicking on the hyperlink in the Emission Unit ID column (or View under the Actions column) will open the Details for Emission Unit window for viewing emission unit information.

Don't click to select emission unit

#	Emission Unit ID	Emission Unit Description	Process ID	Process Description	Source Classification Code (SCC)	Calculator	Last Calculation Date	Actions
1	BOI003K	Boiler/heater/burner (Gas) K	BOI	Boilers, Heaters, and Burners - Natural Gas, Process Gas, or Waste Gas	10200603	BOI-M03		View Edit Delete Copy
2	DIE001	Diesel or gasoline engine (Gasoline)	DIE	Gasoline Engine		DIE-M01		View Edit Delete Copy
3	DIE002	Diesel Engine - MaxHP-6500-diesel; ED GOADS EQUIP ID =CR 02 a	D-c6500d	Diesel Engine - MaxHP-6500-diesel	20200102	DIE-M02	14-Oct-2020, 15:32:43	View Edit Delete Copy
4	DIE003	Diesel or gasoline engine (Max HP)	DIE	Diesel Engine Without Max HP		DIE-M03	30-Nov-2020, 14:30:40	View Edit Delete Copy

Click in the row to select emission unit

Figure 17. Emission unit selection

3.2.4.2 View/Edit an Emission Unit

To view the details of an emission unit, click the hyperlink in the Emission Unit ID column or View in the Actions column. Edit the emission unit by selecting Edit in the Actions column. Green fields represent required data that must be included before you can save the item. Click Save to save changes.

3.2.4.3 Add an Emission Unit

To add a new Emission Unit, click the Add Emission Unit button at the top right on the Emission Units and Processes page and fill in the required fields. Click Save to save changes.

3.2.4.4 Copy an Emission Unit

To copy an Emission Unit, select the click the Copy link under the Actions column and complete the required fields if necessary. The fields should all copy from the original Emission Unit; however, you are required to rename the Emission Unit ID. Click Save to save changes. A new Emission Unit will appear in the table when complete.

3.2.4.5 Bulk Import/Export

Emissions unit parameters can be easily reviewed and updated by exporting them into an Excel spreadsheet and then importing them back into OCS AQS. This is done by clicking on the Import/Export Activity Data button near the top of the Emission Units and Processes page and is described below in Section 3.2.7.1.

3.2.4.6 Facility Wide Zero Emissions

If no emissions are generated for the entire facility for a month due to inactivity, maintenance or natural disaster, you can zero out emissions for all sources by month without updating each unit individually.

Click the Facility-Wide Zero Emission button on the top right of the Emission Units and Processes page and select the month or months of zero emissions that took place for the entire facility as shown in Figure 18. If you need to show zero emissions for a particular emission unit, you can do that in the Calculator Parameters & Request section.

Facility-Wide Zero Emissions

Select the months and reason you would like to set the "Zero Emissions" flag to ALL "Emission Units / Processes" within this facility.

Facility: 12345-1 - Test Facility - ACME Corporation

Select Reason for Zero Emissions and Apply to All Checked Periods:

#	Period	Zero Emissions	Select Reason
1	January	<input type="checkbox"/>	<input type="text"/>
2	February	<input type="checkbox"/>	<input type="text"/>
3	March	<input type="checkbox"/>	<input type="text"/>
4	April	<input type="checkbox"/>	<input type="text"/>
5	May	<input type="checkbox"/>	<input type="text"/>
6	June	<input type="checkbox"/>	<input type="text"/>
7	July	<input type="checkbox"/>	<input type="text"/>
8	August	<input type="checkbox"/>	<input type="text"/>
9	September	<input type="checkbox"/>	<input type="text"/>
10	October	<input type="checkbox"/>	<input type="text"/>
11	November	<input type="checkbox"/>	<input type="text"/>
12	December	<input type="checkbox"/>	<input type="text"/>

Figure 18. Facility-Wide Zero Emissions window

Choose a reason for each month the facility reports zero emissions by clicking on the options button (...) to the far right of each row and selecting the most applicable reason. Choices include,

for example, “Platform was decommissioned and/or out of service”, “Suspension of production”, etc.

3.2.5 Release Point & Apportionment

Release points are used to designate where emissions transfer from a process into the atmosphere. They are required for dispersion modeling and source characterization. All elevations for release points are measured from Mean Sea Level (MSL).

Apportionment refers to the amount of emissions generated by a process that is sent to an individual release point. In OCS AQS, all apportionments are assumed to be 100%, meaning that all emissions from one emission unit goes to one release point.

3.2.5.1 Assign Release Point to an Emission Unit

To assign a release point to an Emission Unit:

1. Select the Emission Unit you want to assign by choosing it in the Emissions Unit & Processes table.
2. Choose an existing release point by opening the additional options (...) and searching through the list of available choices. A new window will open with options.
3. Select the desired release point to highlight it. Click Select on the bottom right of the window to save the selection.

If you need to create a new release point, follow the directions below.

3.2.5.2 Edit a Release Point

Once a release point is selected, a See Details button will appear. Click this button to view details about the selected release point. You can edit the release point by scrolling to the bottom of the window and clicking Edit.

3.2.5.3 Create New Release Point

To create a new release point:

1. Click the Create New Release Point button.
2. The Add Release Point window will open as shown in Figure 19.
3. Complete the required information in green fields.
4. In the Georeference section, you can use latitude/longitude coordinates in decimal degrees instead of UTM coordinates. OCS AQS automatically converts one coordinate system to the other.
5. If you do not have the exact coordinates of the release point, enter the coordinates of the facility. You can update anytime when the specific coordinate are available.
6. Click Save to save the release point information.

Add Release Point

Release Point Information

Release Point ID:	Description:	Release Type:
<input type="text"/>	<input type="text"/>	<input type="text" value="Vertical"/>
Active:	Base Elevation [ft]:	Outlet Orientation Angle [deg]:
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="0"/>
Notes:		
<input style="width: 100%;" type="text"/>		

Stack Parameters

Stack Height - from Mean Sea Level (MSL) [ft]:	Stack Inner Diameter [ft]:	Exit Temperature [F]:
<input type="text"/>	<input type="text"/>	<input type="text"/>
Exit Velocity [ft/s]:	Flow Rate [ft ³ /s]:	
<input type="text"/>	<input type="text" value="0"/>	

Georeference

Geographic Datum:	
<input type="text" value="WGS84, Global Definition"/>	
Latitude [deg]:	Longitude [deg]:
<input type="text"/>	<input type="text"/>
<input type="button" value="Lat/Lon to UTM"/>	<input type="button" value="UTM to Lat/Lon"/>
Projected Datum:	
<input type="text" value="WGS84, Global Definition"/>	
UTM-X [m]:	UTM-Y [m]:
<input type="text"/>	<input type="text"/>
UTM Zone:	
<input type="text"/>	

Figure 19. New release point fields

Release points represent the physical system that transfers emissions to the atmosphere. The most common types of platform release points are Fugitive (for fugitive emissions) or Vertical (for stacks). Other options are available such as Horizontal, Goose-neck and Vertical with Rain-Cap.

To add a release point, select the desired facility and click the Add Release Point button. A new record will be generated. Required fields include:

- Release Point ID
- Release Type
- Coordinates in decimal degrees Latitude/Longitude or UTM

If the stack type is Vertical, the following parameters are required:

- Stack height in feet
- Stack Diameter in feet
- Exit Temperature in deg F
- Exit Velocity in ft/s

If the stack type is Fugitive, the following parameters are required:

- Type (Area or Volume)
- Release Height in feet
- Length of X side in feet
- Length of Y side in feet
- Orientation Angle in degrees

The geometry of the Fugitive release point is shown in Figure 20.

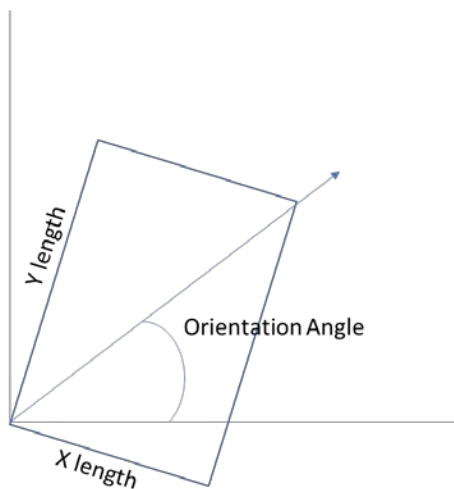


Figure 20. Geometry of a Fugitive release point

Flow rate will automatically be generated when Stack Diameter and Exit Velocity are filled. Similarly, for coordinates, one system will be automatically completed if the other coordinate system is filled (Latitude/Longitude or UTM-X/UTM-Y). Click **Save** to complete the record creation.

While not required, it is recommended to provide a release point description to make it easier to identify.

3.2.6 Calculator Parameters & Requests

As part of the Process section, the Calculator Parameters & Requests contain the main functionality of the AEM. It allows you to set the following parameters for each emission unit by month:

- Select input and physical parameters by month
- Copy inputs from a month to one or more other months
- Assign zero emissions for a month
- Enter required throughput and calculation parameters in required fields (green boxes) and optional fields (white boxes)
- Provide process control information

- Provide release point information
- View emission factors for each pollutant
- Perform range checks and other QA for input parameters

Each emission unit has different input parameters based on the assigned calculator. For example, the input parameters for a combustion flare will differ significantly from the input parameters for fugitive emissions.

Input parameters used for emission calculations and process descriptions are called **Data Requests** while parameters used to describe the pollution control technology are described under **Control Requests**. Each field allows annotation and comments with the **QA** button to the right of the field as shown in Figure 21 below.

The following tabs are available, to be described further in the sections that follow.

- Data Requests allow input of required and optional data used for emissions calculations and process metadata.
- Control Requests are used to provide input data that describes the pollution control technology used for an individual source (if applicable)
- Emission Factors provide engineering parameters to calculate individual pollutant emissions.

3.2.6.1 Data Requests

A typical Data Requests tab is shown in Figure 21. Green backgrounds indicate fields that are required, while white backgrounds indicate optional fields. Most processes contain some green fields.

IMPORTANT: You must complete any required (green) fields for a process in order to save your changes or calculate emissions.

Please note that certain white fields will auto-calculate results based on inputs to the required fields, as shown Figure 21. The calculated results will appear automatically once the required input fields are filled.

Some input fields have drop-down menus with selection associated with the process, also shown in Figure 21. If a selection is not available for your process, contact the OCS AQS Support Team and let them know what additional options are required.

Finally, certain fields have pre-defined ranges of inputs to prevent out-of-range values or values with the wrong format (text in a numerical field). All field values must be within the defined ranges and format before they can be saved. A list of fields with ranges and the range values is provided for each calculator in Appendix A.

Calculator Parameters & Requests

Calculator Name: BOI-M03 Description: Boilers, Heaters, and Burners - Natural Gas, Process Gas, or Waste Gas Version: 2

January

Options QA/QC

Clear Select Calculator

Data Requests Control Requests Emission Factors

Description	Value	
EMISSION CALCULATOR REQUIRED PARAMETERS		
Total Fuel Usage [Mscf/month]:	2000	QA →
Equipped with Flue Gas Recirculation System?:	No	QA →
Hours of Operation per Month [hr]:	450	QA →
Fuel Heating Value [Btu/scf]:	1050	QA →
Equipped with Low NOx Burner?:	No	QA →
OTHER INFORMATION		
Material Processed:		QA →
Average Fuel Used [scf/hr]:	0.004444444444444444	QA →
Average Heat Input [MMBtu/hr]:	4666666.666666667	QA →
Max Rated Heat Input Rate [MMBtu/hr]:		QA →
Max Rated Fuel Usage [scf/hr]:		QA →
Emissions Destination:		QA →
Fuel Sulfur Content [wt%]:		QA →
	Vented Locally	
	Vented Remotely	

Description	Value
AVAILABLE FOR ADMIN ONLY	
COMMENTS	
Operator Comments:	QA →

Auto-calculated fields

Drop-down menus

Figure 21. Data Requests tab

3.2.6.2 Control Requests

Control Requests only capture information regarding pollution control technology used by the individual source. Unlike the Data Requests, Control Requests have a set number of input fields with reduction efficiencies for five pollutants (PM₁₀, CO, SO_x, NO_x, and VOCs). For some calculators, only VOC reduction efficiency is requested since the process does not involve combustion or chemical transformation. A typical Control Request tab is shown in Figure 22.

Data Requests Control Requests Emission Factors

Description	Value	
PROCESS CONTROL INFORMATION		
Control Device?:	No	QA →
Primary Type of Control Equipment:		QA →
Description of Control Equipment Chain:		QA →
PM10 Reduction Efficiency [%]:		QA →
CO Reduction Efficiency [%]:		QA →
NOx Reduction Efficiency [%]:		QA →
SOx Reduction Efficiency [%]:		QA →
VOC Reduction Efficiency [%]:		QA →

Description	Value
COMMENTS	
Operator Comments:	QA →
Admin Comments:	QA →

Figure 22. Control Requests tab

Control Request input fields include:

- Control Device? – Is a control device or end of pipe treatment included in the process? This is a Yes/No question.

- **Primary Type of Control Equipment:** - If a control device is part of the process, what kind of device or technology is it? A drop-down menu is provided for most processes to select the primary type of equipment. If the equipment is not on the list, select 999 for Other and describe it in the Operator Comments field.
- **Description of Control Equipment Chain:** - This field allows you to describe the control equipment chain if more than one type of technology is used.
- **Reduction Efficiency [%] for pollutant** – this describes the average reduction of emitted pollutant using the control technology. If the total reduction of VOCs using a vapor recovery unit is 65%, enter “65” in the field.

3.2.6.3 Emission Factors

Emission factors are assigned to each calculator based on published values from USEPA AP-42 or other BOEM approved references. The values cannot be updated by operators, but additional pollutants can be added. An example is shown in Figure 23.

Pollutant	Code	lb/MMscf	Action
Volatle Organic Compounds	VOC	5.5	
Lead	7439921	0.0005	
Sulfur Dioxide	SO2	0.6	
Nitrogen Oxides	NOX	Implicit	
Particulate Matter Less Than 10 Microns	PM10	1.9	
Particulate Matter Less Than 2.5 Microns	PM25	1.9	
Ammonia	NH3	3.2	
Carbon Monoxide	CO	84	
Nitrous Oxide	N2O	2.2	
Methane	CH4	2.3	
Carbon Dioxide	CO2	120000	
Arsenic	7440382	0.0002	
Benzene	71432	0.0021	
Beryllium	7440417	1.2E-05	
Cadmium	7440439	0.0011	
Formaldehyde	50000	0.075	
Hexane	110543	1.8	
Mercury	7439976	0.00026	
Toluene	108883	0.0034	
Chromium III	16065831	0.001344	
Chromium (VI)	18540299	5.6E-05	
Antimony Trichloride	10025919	6E-7	Remove
Total:		120103.4839726	

Implicit emission factor field

User-provided emission factor

Figure 23. Emission Factors tab

For pollutants listed without values and an “Implicit” code (as shown in Figure 23), the value has been incorporated into the calculator equation. This usually takes place if there is a conditional statement in the algorithm that uses two or more emission factors depending on the process condition.

3.2.6.3.1 Add New Emission Factor

To add a new emission factor for a pollutant, click the Add button and select the desired pollutant from the list. The pollutant will be added to the list along with a new value field in blue under the unit column. Scientific notation is allowed such that 0.00003 can be written as 3E-5. The field will stay blue to show that it is a user-provided value as shown in Figure 23 above. Adding a new emissions factor might require BOEM approval of that value and/or additional documentation.

3.2.7 Updating Monthly Data

Input parameters can be updated for each emission source on a monthly basis. OCS AQS provides two different ways to update:

- Batch updates using the Import/Export tool
- Manual updates using the Calculator Parameter & Requests feature described above

3.2.7.1 Download Monthly Data Using the Import/Export Tool

To use the Import/Export tool, it is advisable to **export** the existing parameters first:

1. After selecting the facility and arriving at the Activity & Emissions Manager Details page, select the **Import/Export Activity Data** button in the upper right corner of the Emission Units & Processes panel as shown in Figure 24.

The screenshot shows the 'Emission Units & Processes' interface. At the top right, there are buttons for 'Import/Export Activity Data', 'Facility-Wide Zero Emissions', and 'Add Emission Unit'. A red box highlights the 'Import/Export Activity Data' button. Below this is a table with the following columns: #, Emission Unit ID, Emission Unit Description, Process ID, Process Description, Source ID, Calculator, Last Calculation Date, and Actions. The table contains two rows of data for Diesel Engine - MaxHP<600-diesel; ED GOADS EQUIP ID = W-CRANE. The first row has Emission Unit ID DIE700 and the second has DIE701. The 'Actions' column for each row contains 'View | Edit | Delete | Copy'.

#	Emission Unit ID	Emission Unit Description	Process ID	Process Description	Source ID	Calculator	Last Calculation Date	Actions
1	DIE700	Diesel Engine - MaxHP<600-diesel; ED GOADS EQUIP ID = W-CRANE	D<600d	Diesel Engine - MaxHP<600-diesel	20200102	DIE-M02	03-Oct-2020, 01:44:53	View Edit Delete Copy
2	DIE701	Diesel Engine - MaxHP<600-diesel; ED GOADS EQUIP ID = E-CRANE	D<600d	Diesel Engine - MaxHP<600-diesel	20200102	DIE-M02	03-Oct-2020, 01:44:58	View Edit Delete Copy

Figure 24. Import/Export Activity Data selection

2. Select Run Wizard from the drop-down box.
3. Select **Export** from the Monthly Activity Import/Export Wizard mode selection. Click Next on the bottom right corner of the wizard window.

- Select the emission sources to be exported by clicking on the selection squares or select all by clicking on the **Check All** box near the search bar. Once completed, select Finish on the bottom right corner to process the request, Previous to go to the previous step, or Cancel to abort the operation.
- Select the processed request from the Queue-Activity Data Export page by selecting the **Files** hyperlink under the **Actions** column as shown in Figure 25 below. The most recent request will be at the top of the table, but the table can be sorted or searched to find a specific request.

The screenshot shows a web interface titled "Queue - Activity Data Export". At the top, there is a search bar with the text "Enter search tags...", a "Stop Refreshing" checkbox, and dropdown menus for "User: All Jobs" and "Inventory: All". Below this is a table with the following columns: #, Job Type, Notes, Submitted On, Submitted By, Inventory Year, Status, Messages, and Actions. The table contains 8 rows of data, each representing a job request. The first row is highlighted in blue. The "Actions" column for each row contains hyperlinks for "History", "Files", and "Resubmit". At the bottom of the table, there is a "Total: 0" and a pagination control showing "Page 1 of 1" and "20" items per page. A "Close" button is located at the bottom right of the interface.

#	Job Type	Notes	Submitted On	Submitted By	Inventory Year	Status	Messages	Actions
1	Activity Data Export		13-Aug-2020, 13:19:40	Joe Inventory	2020 - S-Town August 2020 Base	Completed Finished		History Files Resubmit
2	Activity Data Export		13-Aug-2020, 11:18:23	Mohammad Munshed	2020 - S-Town August 2020 Base MH	Completed Finished		History Files Resubmit
3	Activity Data Export		13-Aug-2020, 11:17:56	Mohammad Munshed	2020 - S-Town August 2020 Base MH	Completed Finished		History Files Resubmit
4	Activity Data Export		13-Aug-2020, 10:31:29	Ryan Freeman	2020 - S-Town August 2020 Base Lakes	Completed Finished		History Files Resubmit
5	EQ Multiple Periods Export		11-Aug-2020, 15:03:29	Mohammad Munshed	2020 - S-Town August 2020 Base MH	Completed Finished		History Files Resubmit
6	EQ Multiple Periods Export		11-Aug-2020, 13:16:26	Brian Freeman	2020 - S-Town August 2020 Base	Completed Finished		History Files Resubmit
7	EQ Multiple Periods Export		10-Aug-2020, 19:38:48	Joe Inventory	2020 - S-Town August 2020 Base	Completed Finished		History Files Resubmit
8	EQ Multiple Periods Export		09-Aug-2020,	Deva Lim	2020 - S-Town	Completed Finished		History Files Resubmit
Total:		0						

Figure 25. Activity Data Export queue

IMPORTANT: To come back to the Job Queue, select Open Queue from the drop-down box shown previously in Figure 24.

- To save the processed Excel file to your computer, click the Files hyperlink in the Actions column. The link will take you to a Job Files page.
- Click the Download link and save to your computer. Please note that most browsers support file renaming, so users can enter the specific file name they want to use. If the browser does not allow changing file names, save using the default name and rename using the File Explore – double click rename the file.

3.2.7.2 Update Monthly Activity Data Using the Import/Export Template

Once you have downloaded the Excel sheet with your facility's emission sources, update the monthly activity data:

- Open the Excel file for the emission source you want to update as shown in Figure 26. The file has a Summary sheet with hyperlinks to go to the individual emission source located as individual sheet tabs.

IMPORTANT: Do not change the data on the Summary sheet. Changing the Summary sheet may cause import errors.

	A	B	C	D	E								
1	Facility ID:	1004-1 B											
2													
3	Emission Unit	Process	Calculator										
4	DIE700	D<600d	DIE-M02 Diesel Engines Where Max HP < 600										
5	PNE700	PNE	PNE-M01 Pneumatic Pumps										
6	PNE701	PNE	PNE-M01 Pneumatic Pumps										
7	PRE702	PRE	PRE-M01 Pneumatic Controllers										
8	PRE700	PRE	PRE-M01 Pneumatic Controllers										
9	PRE701	PRE	PRE-M01 Pneumatic Controllers										
10	PNE702	PNE	PNE-M01 Pneumatic Pumps										
11	Controls DIE-C02												
12	Controls PNE-C01												
13	Controls PRE-C01												
14													
<table border="1"> <tr> <td>Summary</td> <td>DIE700 D<600d</td> <td>PNE700 PNE</td> <td>PNE701 PNE</td> <td>PRE702 PRE</td> <td>PRE700 PRE</td> <td>PRE701 PRE</td> <td>PNE702 PNE</td> </tr> </table>						Summary	DIE700 D<600d	PNE700 PNE	PNE701 PNE	PRE702 PRE	PRE700 PRE	PRE701 PRE	PNE702 PNE
Summary	DIE700 D<600d	PNE700 PNE	PNE701 PNE	PRE702 PRE	PRE700 PRE	PRE701 PRE	PNE702 PNE						

Figure 26. Export summary sheet

- Update parameters by month as shown in Figure 27. Note that the required fields for the emission calculators are listed in the top rows between EMISSION CALCULATOR REQUIRED PARAMETERS and OTHER INFORMATION in column A.

IMPORTANT: Match input values to the units of measure shown in the Description column of the spreadsheet. For example, input parameters for percentages [%] mean that a value of 0.05% should be entered as “0.05”.

IMPORTANT: For Yes/No responses, the template uses “T” for Yes (True) and “F” for No (False).

TIP: For fields with drop-down menus that have specific selections, select an option in the AEM before you export. This way you will have the exact spelling and can copy it to the other months.

	A	B	C	D	E	F	G	H	I	J	K	L	M														
1	Emission Unit:	DIE700																									
2	Process:	D<600d																									
3	Description	January	February	March	April	May	June	July	August	September	October	November	December														
4	EMISSION CALCULATOR REQUIRED PARAMETERS																										
5	Total Fuel Usage [gallons/month]:	2	2	2	2	2	2	2	2	2	2	2	2														
6	Fuel Heating Value [Btu/lb]:	19300	19300	19300	19300	19300	19300	19300	19300	19300	19300	19300	19300														
7	Hours of Operation per Month [hr]:	1	1	1	1	1	1	1	1	1	1	1	1														
8	Operating Horsepower [hp]:	100	100	100	100	100	100	100	100	100	100	100	100														
9	OTHER INFORMATION																										
10	Material Processed:																										
11	Emissions Destination:																										
12	Average Fuel Used [Btu/hp-hr]:	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000														
13	Max Rated Fuel (Diesel) Usage [Btu/hp-hr]:	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000														
14	Max Rated Horsepower (Diesel) [hp]:	100	100	100	100	100	100	100	100	100	100	100	100														
15	Fuel Sulfur Content [wt%]:	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5														
16	AVAILABLE FOR ADMIN ONLY																										
17	Was Record Augmented?	F	F	F	F	F	F	F	F	F	F	F	F														
18	Is Material Used (INPUT) or Produced (OUTPUT)?	INPUT	INPUT	INPUT	INPUT	INPUT	INPUT	INPUT	INPUT	INPUT	INPUT	INPUT	INPUT														
19	COMMENTS																										
20	Operator Comments:																										
21	Admin Comments:																										
<table border="1"> <tr> <td>Summary</td> <td>DIE700 D<600d</td> <td>PNE700 PNE</td> <td>PNE701 PNE</td> <td>PRE702 PRE</td> <td>PRE700 PRE</td> <td>PRE701 PRE</td> <td>PNE702 PNE</td> <td>Contr ...</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>														Summary	DIE700 D<600d	PNE700 PNE	PNE701 PNE	PRE702 PRE	PRE700 PRE	PRE701 PRE	PNE702 PNE	Contr ...					
Summary	DIE700 D<600d	PNE700 PNE	PNE701 PNE	PRE702 PRE	PRE700 PRE	PRE701 PRE	PNE702 PNE	Contr ...																			

Figure 27. Calculator sheet

3.2.7.3 Updating Control Data Using the Import/Export Tool

The Control Data sheets do not have monthly columns like the Activity Data sheets because it is assumed that conditions will not change significantly over the inventory reporting period. An example Control Data sheet is shown in Figure 28.

	A	B	C	D	E	F	G	H
1		DIE100	Emission Unit ID					
2	Description	D<600d	Process Name					
3	PROCESS CONTROL INFORMATION							
4	Control Device?	F						
5	Primary Type of Control Equipment:							
6	Description of Control Equipment Chain:							
7	PM10 Reduction Efficiency [%]:							
8	CO Reduction Efficiency [%]:							
9	NOx Reduction Efficiency [%]:							
10	SOx Reduction Efficiency [%]:							
11	VOC Reduction Efficiency [%]:							
12	COMMENTS							
13	Operator Comments:							Associated Control ID
14	Admin Comments:							
	...	DIE101 D<600d	BOI001 BOI	Controls FUG-C01	Controls AML-C01	Controls BOI-C01		

Figure 28. Control data sheet

Two areas are highlighted in Figure 28 to show the different naming identification. The area on top shows the Emission Unit ID and Process Name for the specific Emission Unit. The Control ID may not be the same as the Emission Unit or Process Name so it is important to check which Emission Unit you are working on. The assigned calculator shown on the Summary sheet will show which control is assigned to each Emission Unit. The calculator ID is similar to the Control ID except the Calculator has an M while the Control has a C (for example: BOI-M01 is the calculator and BOI-C01 is the Control).

Like the Activity Data fields, Yes/No fields should be entered as “T” for Yes and “F” for No. Percentages should be entered as written (“98.5” for 98.5%).

3.2.7.4 Importing Monthly Data Using the Import/Export Tool

After updating the parameters in the exported file, you will need to import it back into OCS AQS:

1. Save the updated file with your revised parameters.
2. Select the **Import/Export Activity Data** button in the upper right window of the Emission Units feature as previously shown in Figure 24.
3. Select **Import** from the Monthly Activity Import/Export Wizard mode selection. Click Next on the bottom right corner of the wizard window.

4. Select the Excel file to upload from your computer. To upload multiple facilities, select the corresponding facility files. The files should be in the same directory. Click Finish to import.
5. If you are sent to the Job Queue – Activity Data Import, click OK to finish or check the uploaded job files by clicking on the Files hyperlink in the Action column.
6. If you click on Files, you will open a Job Files window that shows the files imported as well as an Import log spreadsheet. Download any of the files using the Download hyperlink next to the file in the Download column.
7. The Import log file, Import_Log.xlsx, will show the status of each imported source and the results of the QA/QC check. A summary of errors will be identified for the source and section (Summary, Data Requests, and/or Control Requests) on the Summary sheet as shown in Figure 29. Individual errors and location in the Emission Source worksheet are shown in the Errors sheet.

1					
2	Import Summary				
3					
4	Date[UTC]:	8/6/2020			
5	User:	Joe Inventory			
6					
7	File Name	WorkSheet	Device	Material	Status
8	FUG003_Fugitives_FFLAow_MonthAcSummary		FUG003 Fugitives	FFLAow Fugitives - Flanges - oil/water	OK
9	FUG003_Fugitives_FFLAow_MonthAcData Requests		FUG003 Fugitives	FFLAow Fugitives - Flanges - oil/water	ERRORS
10	FUG003_Fugitives_FFLAow_MonthAcControl Requests		FUG003 Fugitives	FFLAow Fugitives - Flanges - oil/water	OK
11	FUG003_Fugitives_FOTHow_MonthA Summary		FUG003 Fugitives	FOTHow Fugitives - Other Equipment - oil/water	OK
12	FUG003_Fugitives_FOTHow_MonthA Data Requests		FUG003 Fugitives	FOTHow Fugitives - Other Equipment - oil/water	ERRORS
13	FUG003_Fugitives_FOTHow_MonthA Control Requests		FUG003 Fugitives	FOTHow Fugitives - Other Equipment - oil/water	OK
14	FUG003_Fugitives_FPUMow_MonthA Summary		FUG003 Fugitives	FPUMow Fugitives - Pumps - oil/water	OK
15	FUG003_Fugitives_FPUMow_MonthA Data Requests		FUG003 Fugitives	FPUMow Fugitives - Pumps - oil/water	ERRORS
16	FUG003_Fugitives_FPUMow_MonthA Control Requests		FUG003 Fugitives	FPUMow Fugitives - Pumps - oil/water	OK
17	FUG003_Fugitives_FVALow_MonthAcSummary		FUG003 Fugitives	FVALow Fugitives - Valves - oil/water	OK
18	FUG003_Fugitives_FVALow_MonthAcData Requests		FUG003 Fugitives	FVALow Fugitives - Valves - oil/water	ERRORS
19	FUG003_Fugitives_FVALow_MonthAcControl Requests		FUG003 Fugitives	FVALow Fugitives - Valves - oil/water	OK
20					

Figure 29. Example of import log with errors

It is highly recommended to fix errors and re-import before trying to calculate emissions. Comment on errors in the AEM by clicking the QA button by the parameter in question.

3.2.7.5 Updating Using the Calculator Parameters & Requests Feature

For individual emission sources or small updates, the Calculator Parameters & Requests allows fast and easy editing.

1. After arriving at the Activity & Emissions Manager Details page and selecting the emission source for editing, scroll down to the **Calculator Parameters & Requests** feature. The feature is already in **Edit** mode and available for updating.
2. Select the month you want to update using the drop-down menu or the control arrows as shown in Figure 30.

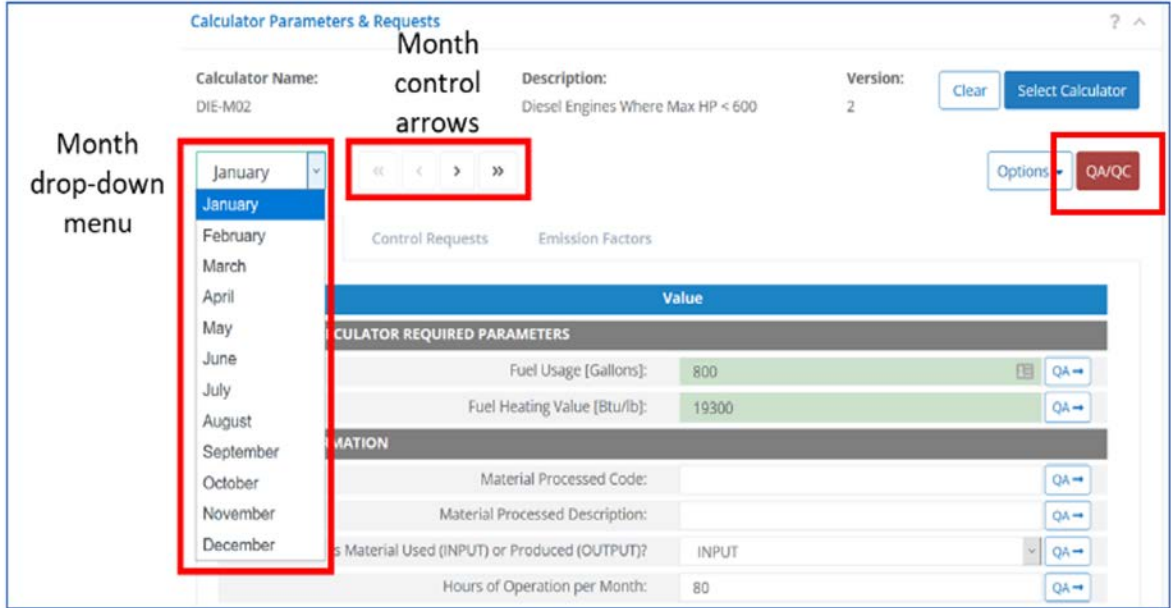




Figure 30. Month selection controls

- For the selected month, update the parameters by completing the data fields. Green fields indicate required data and must be filled in. White fields are optional data. A QA box is available to the right of each field to optionally add notes and comments regarding the specified value for each field. Values are automatically saved after you leave the field.
- Confirm the input parameters meet range and required input requirements by clicking on the red **QA/QC** button, as shown in Figure 30. If there are no issues, a blue message will appear stating that there are no QA/QC issues for the emission source under edit. If there are errors, the specific field and month for the error will be identified similar to the example shown in Figure 31. In this example a required field (Fuel Usage) is missing in the Data Requests and the Fuel Heating Value is out of range.

QA/QC Data

Enter search tags...  


#	Month	Section	Description	Details	Value
	All	All			
1	January	Data Requests	Fuel Usage [Gallons]:	"Fuel Usage [Gallons]:"	
2	January	Data Requests	Fuel Heating Value [Btu/lb]:	Value should be >= 18000 and <= 21000"Fuel Heating Value [Btu/lb]:"	2

Figure 31. Example QA/QC report for emission source

5. Save the updated values by clicking Save. To return to Edit mode, click Edit. Upon saving, there is an automatic QA/QC check. If further issues are found, you can again click the QA/QC button to review the issues identified.

3.2.8 Zero Emissions

To report zero emissions from an emission source for a month (or months):

1. After arriving at the Activity & Emissions Manager Details page and selecting the emission source for editing, scroll down to the **Calculator Parameters & Requests** feature.
2. Select the **Options** pull-down menu next to the QA/QC button as shown in Figure 32 and select **Zero Emissions**.

The screenshot shows the 'Calculator Parameters & Requests' interface. At the top, there are fields for 'Calculator Name' (DIE-M02), 'Description' (Diesel Engines Where Max HP < 600), and 'Version' (2). There are 'Clear' and 'Select Calculator' buttons. Below this is a month selector set to 'January' and navigation arrows. To the right, there is an 'Options' dropdown menu and a 'QA/QC' button. The 'Options' menu is open, showing 'Zero Emissions' (highlighted with a red box) and 'Copy Monthly Data'. Below the menu, there are three tabs: 'Data Requests', 'Control Requests', and 'Emission Factors'. The 'Data Requests' tab is active, showing a table with columns 'Description' and 'Value'. The table is divided into two sections: 'EMISSION CALCULATOR REQUIRED PARAMETERS' and 'OTHER INFORMATION'. Each row has a 'QA' button on the right.

Description	Value	QA
EMISSION CALCULATOR REQUIRED PARAMETERS		
Fuel Usage [Gallons]:	800	QA
Fuel Heating Value [Btu/lb]:	19300	QA
OTHER INFORMATION		
Material Processed Code:		QA
Material Processed Description:		QA
Is Material Used (INPUT) or Produced (OUTPUT)?	INPUT	QA
Hours of Operation per Month:	80	QA
Was Record Augmented?	No	QA
Average Fuel Used During Survey Period [Gallons]:	7000	QA
Max Rated Fuel (Diesel) Usage [Btu/hp-hr]:	7000	QA
Max Rated Horsepower (Diesel) [Hp]:	525	QA
Operating Horsepower [Hp]:	525	QA

Figure 32. Options selection for Zero Emissions

3. Choose the months you want to declare zero emissions from the check boxes, same as Figure 18 in the Facility-Wide Zero Emissions.
4. Once a month is selected, the corresponding Select Reason box will be active. Click on the **...** (extra options) button on the right of the box to open a list of possible reasons why the month has zero emissions. Select the most appropriate reason from the available choices.
5. Scroll down to click the OK button to save changes.

3.2.9 Copying Months

Emission source parameters from one month can be quickly copied to all months or individual months. If selected, all parameters are copied.

1. After arriving at the Activity & Emissions Manager Details page and selecting the emission source for editing, scroll down to the **Calculator Parameters & Requests** feature.
2. Select the **Options** pull-down menu next to the QA/QC button as shown in Figure 32 above and select Copy Monthly Data.
3. The Copy Monthly Data window will open. Select the month to copy activity data parameters FROM (you can choose only one).
4. Select the months or months to copy data TO. A **Select All** button is available to copy to all months. Click Copy to complete the action. An example is shown in Figure 33. In the example, the month of January is copied to June, July, and August.

The screenshot shows a dialog box titled "Copy Monthly Data". It contains two columns of month selection options. The left column, labeled "Month to Copy Activity Data FROM:", has radio buttons for each month from January to December, with "January" selected. The right column, labeled "Month to Copy Activity Data TO:", has checkboxes for each month from January to December, with "June", "July", and "August" checked. A green arrow points from the "FROM" column to the "TO" column. At the top right of the dialog are "Select All" and "Unselect All" buttons. At the bottom right are "Cancel" and "Copy" buttons.

Figure 33. Example to copy data to months

3.2.10 Calculate Emissions

Emissions from a source can be calculated within the Activity & Emission Manager by month using the input parameters from the Data Requests and the assigned calculator equations.

The assigned calculator is shown at the top of the **Calculator Parameters & Requests** feature as well as a **Select Calculator** button on the right. Selecting this button displays more

information about the chosen calculator and allows another calculator to be selected if required. More information about the individual calculator used, such as the actual equations and input variables used, can be found by running an Emissions Equation Description Report under the Calculator Report section in the **Reports** module.

To calculate emissions with an existing calculator:

1. After arriving at the Activity & Emissions Manager Details page and selecting the emission source for editing, scroll down to the Calculated Emissions feature near the bottom of the page.
2. Press the Calculate button.

WARNING: previous emission values will be lost or overwritten once the button is pressed. Also note that you can only calculate when in the **Edit** mode.

3. Once pressed, the calculations may take several seconds to process depending on the number of pollutants reported for the emission source.

IMPORTANT: Emissions will not calculate if required fields are missing from months that are not zeroed out.

4. A table will appear with monthly emissions that were either calculated (shown in the Calculated? column as Yes) or manually inserted (No) as shown in Figure 34.

Calculated Emissions

Pressing the Calculate button, new emission values will be computed and saved. Previous values may be lost or overwritten.

Enter search tags...

#	Emission Period	Pollutant	Emission	Measurement Units	Calculated ?
1	January - Actual [ENTIRE PERIOD]	CO	0.0472	Metric Tons	Yes
2	January - Actual [ENTIRE PERIOD]	CO2	8,154.8	Kg	Yes
3	January - Actual [ENTIRE PERIOD]	CO2-F	8,154.8	Kg	Yes
4	January - Actual [ENTIRE PERIOD]	NOX	0.2193	Metric Tons	Yes
5	January - Actual [ENTIRE PERIOD]	PM10-FIL	0.0243	Tons	No
6	January - Actual [ENTIRE PERIOD]	PM10-PRI	0.0249	Tons	No
7	January - Actual [ENTIRE PERIOD]	PM25-FIL	0.0243	Tons	No
8	January - Actual [ENTIRE PERIOD]	PM25-PRI	0.0249	Tons	No
9	January - Actual [ENTIRE PERIOD]	PM-CON	0.0006	Tons	No
10	January - Actual [ENTIRE PERIOD]	SO2	0.0144	Metric Tons	Yes
11	January - Actual [ENTIRE PERIOD]	VOC	0.0164	Metric Tons	Yes
12	January - Actual [ENTIRE PERIOD]	Toluene	0.0203	Kg	Yes
13	January - Actual [ENTIRE PERIOD]	Xylenes (Mixed Isomers)	0.0142	Kg	Yes
14	January - Actual [ENTIRE PERIOD]	PAH/POM - Unspecified	1.3467E-005	Tons	No
15	January - Actual [ENTIRE PERIOD]	Formaldehyde	0.0587	Kg	Yes
16	January - Actual [ENTIRE PERIOD]	Benzene	0.0464	Kg	Yes
17	January - Actual [ENTIRE PERIOD]	Acetaldehyde	0.0381	Kg	Yes
18	January - Actual [ENTIRE PERIOD]	PM10	15.41	Kg	Yes
19	January - Actual [ENTIRE PERIOD]	PM25	15.41	Kg	Yes
20	January - Actual [ENTIRE PERIOD]	"PAH, total"	0.0084	Kg	Yes

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Figure 34. Table showing whether monthly emissions were calculated or manually inserted

3.2.11 Combustion Flares

OCS AQS breaks down each stationary emission source into a release point and an emission unit. The release point is the physical transfer location of emissions from a process to the

atmosphere. For most processes, the release point is the top of a smokestack. For flares and open flames, it is the exterior surface of the flame as shown in Figure 35. For flares on platforms, the physical stack height assumes the height of the flare stack above mean sea level¹.

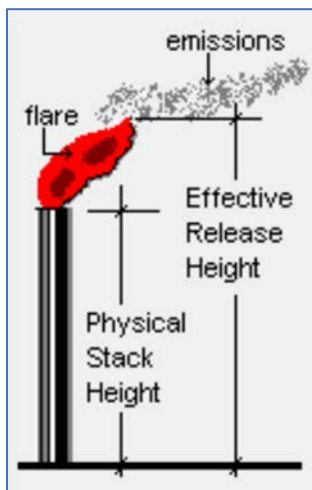


Figure 35. Flare emission parameters

Only one calculator should be used per flare to account for flared and pilot gas. Users should create flares based on flare design specifications as listed in the manufacturer's information and use the total volume (including pilots).

3.2.12 Updating Assigned Calculator

If the assigned default calculator does not represent an existing emissions source accurately, you must contact BOEM/BSEE and submit a request along with supporting information. For adding Calculators for new sources, complete the following:

1. Choose the new emission source you want to update in the Emission Units table and click the Select Calculator button in the **Calculator Parameters & Requests** feature.
2. The **Select User Calculator** page will pop up like the one shown in Figure 36. To get more selections, unclick the filter icon highlighted in the top left corner. A list of available emission calculators will appear.

¹ <https://www.boem.gov/sites/default/files/environmental-stewardship/Environmental-Studies/Gulf-of-Mexico-Region/Air-Quality/Readme-2011-Gulfwide-Platform-file.doc>

#	Name	Description	Version	Active	Request	Reference	Date of Last Change
					DIE-R02		
1	DIE-M02	Diesel Engines Where Max HP < 600	2	Yes	DIE-R02	Section 4.2.3 Diesel and Gasoline Engines - BOEM 2019-072 - Year 2017 Emissions Inventory Study.	
2	DIE-M02	Diesel Engines Where Max HP < 600	3	Yes	DIE-R02	Section 4.2.3 Diesel and Gasoline Engines - BOEM 2019-072 - Year 2017 Emissions Inventory Study.	

Figure 36. Calculator selection window

3. Select a new calculator. In the example above, DIE-M02 was selected. The Version refers to the different calculators created to account for changes in methodologies and emission factors for historical inventories. Figure 36 is just an example of the window and the user needs to make sure to always use the latest version for the current inventory. In most cases, the versions for historic and current inventories are the same.

Calculators have been prepared for the following processes found on platforms, as shown in Table 1.

Table 1. Available platform calculator types

Code	Description
AMI	Amine Gas Sweetening Unit
BOI	Boilers
DIE	Diesel and gasoline engines
DRI	Drilling Equipment
FLA	Flares
FUG	Fugitive emissions
GLY	Glycol dehydrators
LOA	Loading operation emissions
LOS	Losses from flashing
MUD	Mud degassing

NGE	Natural gas engines
NGT	Natural gas/diesel dual-fuel turbines
PNE	Pneumatic pumps
PRE	Pneumatic controllers
STO	Storage tanks
VEN	Cold vents

A complete description of each calculator and Data Request input field is provided in Appendix A.

3.3 Batch Emissions Calculator (BEC) – Platform Sources

Section 3.2.10 showed how to calculate emissions for a single emission unit over the reporting period. The BEC allows all emission units within a facility to be calculated together.

3.3.1 View Previous Facility Calculations

Select the **BEC – Platform Sources** navicon under the Emissions Module. This will take you to a Summary List page as shown in Figure 37 that shows all previously run calculations. Historical results can be viewed by selecting View Files under the Actions column. If there is no link, that means a calculation is taking place.

IMPORTANT: If the link does not appear after several minutes, refresh the screen.

#	Source Type	Description	User	Submitted On	Actions
1	Point Sources		Joe.Inventory@weblakes.com - Joe Inventory	28-Nov-2020	
2	Point Sources	Ryan's run during demo.	ryan.freedman@weblakes.com - Ryan Freedman	30-Sep-2020	View Files
3	Point Sources	Ryan is doing a test run. December only.	ryan.freedman@weblakes.com - Ryan Freedman	30-Sep-2020	View Files

Figure 37. Batch Emissions Calculator (BEC) summary page

Downloaded files includes the individual steps taken by each calculator by month as well as a log of the BEC status. Most importantly, the file includes an ERRORS log that highlights errors by Facility, Emission Unit, Process, and Month as shown in Figure 38.

	B	C	D	E	F	G	H	I	J
1	Facility	Emission Unit	Process	Emission Period	Error				
62	Test Facility	FUG001	FOTHg - Fugitives - Other Equipment - gas		Error: FUG-M01 - v2 - parser error: ' Expression 7: error				
63	Test Facility	FLA555	FLA - Combustion Flare	APR	Negative calculation result: FLA-M01 - v2				
64	Test Facility	FLA555	FLA - Combustion Flare	DEC	Negative calculation result: FLA-M01 - v2				
65	Test Facility	STO004R	STO - Storage Tank - Vertical, Cylindrical Tank	JAN	Not a Number Error: STO-M04 - v2				
66	Test Facility	STO004R	STO - Storage Tank - Vertical, Cylindrical Tank	FEB	Not a Number Error: STO-M04 - v2				
67	Test Facility	STO004R	STO - Storage Tank - Vertical, Cylindrical Tank	MAR	Not a Number Error: STO-M04 - v2				
68	Test Facility	STO004R	STO - Storage Tank - Vertical, Cylindrical Tank	APR	Not a Number Error: STO-M04 - v2				
69	Test Facility	STO004R	STO - Storage Tank - Vertical, Cylindrical Tank	MAY	Not a Number Error: STO-M04 - v2				
70	Test Facility	STO004R	STO - Storage Tank - Vertical, Cylindrical Tank	JUN	Not a Number Error: STO-M04 - v2				
71	Test Facility	STO004R	STO - Storage Tank - Vertical, Cylindrical Tank	JUL	Not a Number Error: STO-M04 - v2				
72	Test Facility	STO004R	STO - Storage Tank - Vertical, Cylindrical Tank	AUG	Not a Number Error: STO-M04 - v2				
73	Test Facility	STO004R	STO - Storage Tank - Vertical, Cylindrical Tank	SEP	Not a Number Error: STO-M04 - v2				
74	Test Facility	STO004R	STO - Storage Tank - Vertical, Cylindrical Tank	OCT	Not a Number Error: STO-M04 - v2				
75	Test Facility	STO004R	STO - Storage Tank - Vertical, Cylindrical Tank	NOV	Not a Number Error: STO-M04 - v2				
76	Test Facility	STO004R	STO - Storage Tank - Vertical, Cylindrical Tank	DEC	Not a Number Error: STO-M04 - v2				
77	Test Facility	LOS001A	LOS - Losses from Flashing		Could not find the user-defined calculator: '71'				
78									

Figure 38. Example BEC error log

3.3.2 Run New Facility-Wide calculations

To run a new calculation, click the Run BEC – Platform Sources button. This will take you to a wizard that will guide your selections.

1. Select the facility or facilities you want to calculate and click Next.
2. Select the time period to calculate and add any notes. Click Next to continue.
3. Review your input selection and click Finish to begin the calculation process.

3.3.3 BEC Job Queue

You can follow the status of the calculations by going to the Job Queue page. Select the Job Queue link on the Navigation Panel.

3.4 Companies & Complexes

Selecting the **Companies & Complexes** navicon under the Emissions module allows you to view and manage operating companies and complexes.

3.4.1 List of Companies

Once you click on the Companies & Complexes navicon, you are taken to the page that lists all active companies in your current inventory. From this page you can:

- View the company details by clicking either the link in the Company Name column or the **View** option in the Actions column.
- Edit company details by clicking the **Edit** option in the Actions column (discussed further below).
- Create a new company by clicking the **Add Company** button in the upper right corner of the page. Doing so will move you to the main page of the detailed editor where required information for the complex must be filled in before any associated facilities (structures)

can be created. Only companies that officially have BOEM Company Numbers can be added.

3.4.2 Company Details

Selecting a company from the list (or clicking on the View option) will open the Detail page that provides information related to the company, including contact information. From this page, you can edit the information and add contacts by clicking the **Edit** button. You can also go directly into this edit mode from the list of companies by clicking on the Edit option in the Actions column, as previously described. Figure 39 shows an example of edit mode.

The screenshot displays the 'Edit Company' interface for 'Company : 773'. The page is divided into several sections:

- Operating Company Information:** Includes fields for Company Name (ACME Corporation), Company Number (88888), and a Notes field.
- Mailing Address:** Includes fields for Address (501 Westlake Park Boulevard), City (Houston), State (TX (Texas)), ZIP Code (77079), and Country (USA).
- Company Contacts:** A table with columns for Contact, Contact Role, and Actions. One contact is listed: 'Joe Inventory - Lakes' with the role 'Inventory Preparer'. An 'Add Contact' button is located in the top right of this section.

Figure 39. Company information page

3.4.2.1 Add Contacts

To add (or delete) contacts, go into Edit mode and click the Add Contact button as shown in the bottom right of Figure 39. The Add Contact window will open.

1. For Existing Contacts: Select the name from the Contact list by opening up the option table (...) and select the Contact Role. One person can have multiple roles.
2. New Contact: Complete the contact information and assign a Contact Role.
3. Click Save to save entry.

Contact Roles are:

- Company Responsible Official
- Complex Responsible Official
- Facility Responsible Official
- Inventory Preparer
- Inventory Reviewer
- BOEM Representative
- BSEE Representative

IMPORTANT: Contact Roles refer only to the person's involvement with the OCS Emissions Inventory and should not be confused with the actual job or job title of the person.

Please make sure that each facility has a Company Responsible Official contact.

3.4.2.2 *Edit/Delete Contacts*

To edit or delete contacts, go into Edit mode and select the Edit or Delete hyperlink under the Actions column for the contact you want.

If you are editing the contact, the contact details page will pop up. Make edits and click Save to store your changes.

3.4.3 Complexes

In the Companies & Complexes Navigation Panel, click on the Complexes option. The page will display a list of complexes, similar to how the list of companies was shown. Select the complex you want to view from the list of Complexes. This will take you to the Complex Details page similar the one shown below in Figure 40.

This page offers the opportunity to add or review facilities assigned to the complex or individual contacts associated with the complex.

3.4.3.1 *Edit/Add Contacts*

To add or edit Contacts, click the Edit button and follow the instructions in Section 3.4.2.1.

3.4.3.2 *Edit Facility*

To edit facilities, select the desired facility from the table and click View or Edit from the links under the Actions columns. If you selected View, you will have to click the Edit button when the facility details page loads.

3.4.3.3 *Add Facility*

To add a facility, click the Add Facility button. This will open a blank Facility Details page with required and optional fields.

IMPORTANT: All required (green) fields must have a value in order to save.

[Dashboards](#)
[Emissions](#)
[Documents](#)
[Map](#)
[Reports](#)
[Settings](#)
joe.inventory@weblakes.com

Companies & Complexes Details
Inventory: 2020 - S-Town August 2020 RF1

[Home](#) / [Emissions](#) / [Platform Sources](#) / [Complexes](#) / [Companies & Complexes Details](#)

[Complexes](#)

Complex Edit

Complex Information

Complex ID:
12345

Operating Company:
88888 - ACME Corporation

BOEM Lease Number:
123

Block ID:
AC1002 (Alaminos Canyon)

Complex Contacts

Enter search tags...

#	Contact	Contact Role
1	Tom Complex - Acme	Complex Responsible Official

Facilities

Enter search tags... Add

#	Facilit ID	Struct ID	Facilit Name	Complex	OPD Area	Structure Type	Actions
1	12345-1		Test	12345 (88888 - ACME Facility Corporation)	Brazos (BA)	SPAR (SPAR Platform - Floating Production System)	View Edit Delete

Figure 40. Complex details page

4 Emissions: Lease Operations

Operators are required to account for emissions from non-platform operation only if they include:

- Drilling rigs when connected to the seabed
- Construction support vessels (CSV) when performing the construction. Construction support vessels would be used during installation of a facility or a lease term pipeline.

Vessels underway do not have to be reported by operators.

The functions available to operators for Lease Operations (LOs) are shown in Figure 41 and can be accessed by first clicking on the Lease Operations option in the Emissions Navigation Panel.

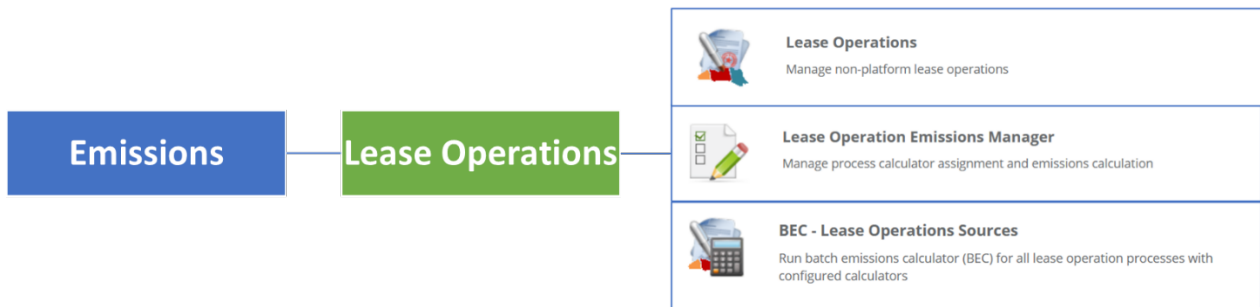


Figure 41. Lease Operations map

4.1 Managing Lease Operations

OCS AQS has imported all the known leases available on the BOEM Data Center website (<https://www.data.boem.gov/>). If new leases are required for the company, they can be added.

LOs can be managed using a process summarized in Figure 42.

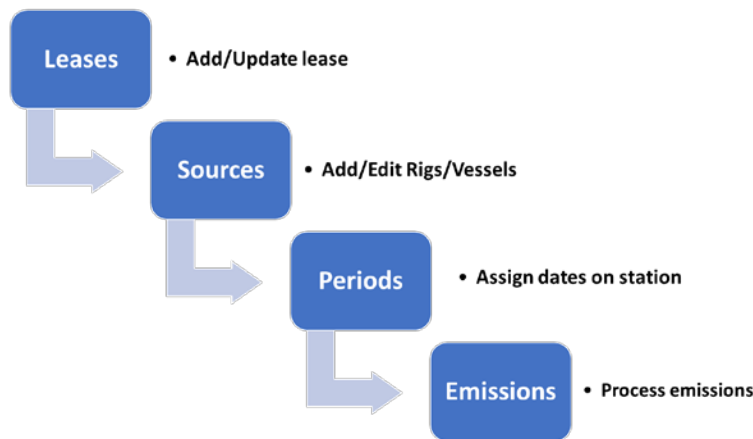


Figure 42. Summary of Lease Operations (LOs) emissions

4.2 Lease Operations Emissions Manager

The Lease Operations Emissions Manager (LOEM) is similar to the Activities & Emissions Manager (AEM) used for Platform Emissions. However, this tool is specifically used to calculate emissions for non-platform sources such as drilling rigs connected to the seabed and construction support vessels when performing construction activities as noted above. Users can create a lease operation process based on existing templates, assign lease operations calculators, and enter parameters that describe the monthly activity. Then, the user can calculate the emissions generated by the non-point processes.

To use the LOEM, select the Lease Operations option from the Emissions Navigation Panel and then click on the LOEM navicon. This will take you to the Leases page, similar to what is shown in Figure 43. Click on the lease number in the BOEM Lease Number column of the Leases table to view.

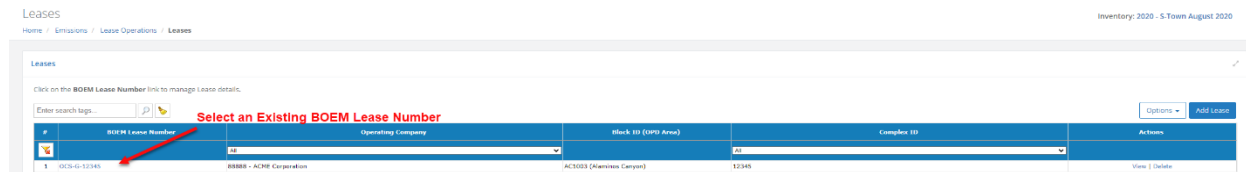


Figure 43. Leases page and selecting BOEM lease number

4.2.1 Add a Lease

If a Lease is not shown, it must be added using the **Add Lease** button. Only official BOEM leases can be added.

In the Leases page, select the Add Lease button, which is located in the upper right corner of the page shown in Figure 43. This will take you to the Add Lease page as shown in Figure 44.

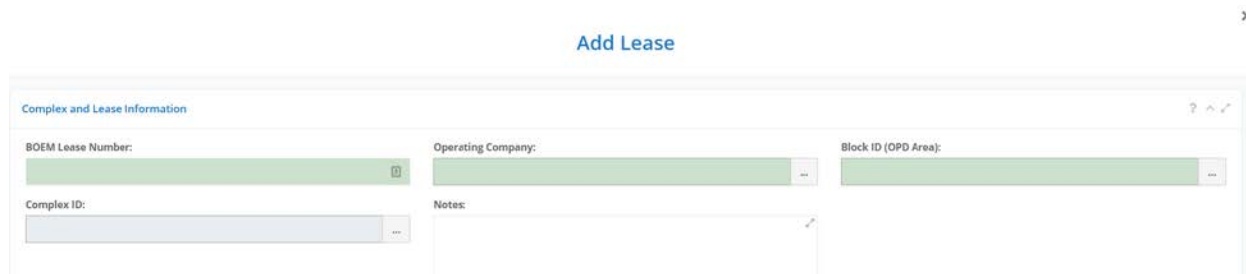


Figure 44. Add Lease page

Lease numbers in the Gulf of Mexico must be entered as OCS-G-XXXXX (or OCS-Y-XXXXX for Alaska) where each X is a single digit. Lease numbers that are less than 5 digits long should pad zeroes to the left. For example, OCS-G-00033.

BOEM Official Operating company and Block ID must also be selected for each lease before saving.

4.2.2 Edit Existing Lease Operation Sources

Editing sources for lease operations is similar to updating platform sources using the AEM. To edit an existing Lease Operation Source, first select an existing BOEM Lease Number as previously shown in Figure 43.

Then, from the Sources & Processes table, select the source you wish to edit. After that, click Edit under the Actions column. Figure 45 shows the source selection and the edit button.

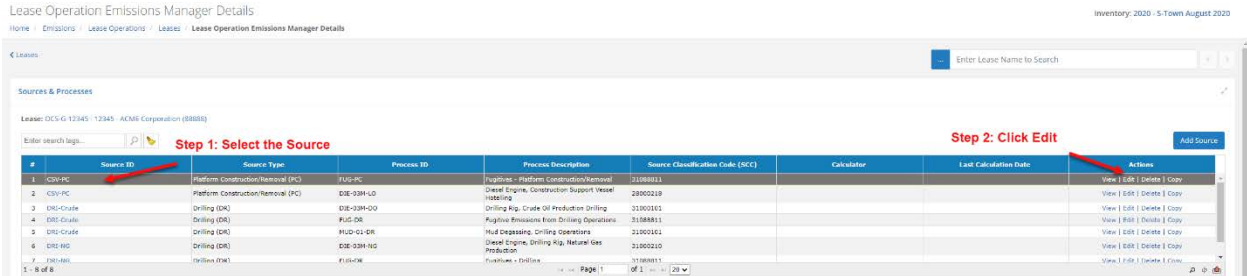


Figure 45: Source Selection

The user will be prompted with the Edit Source page. Make the necessary changes and then click Save as shown in Figure 46.

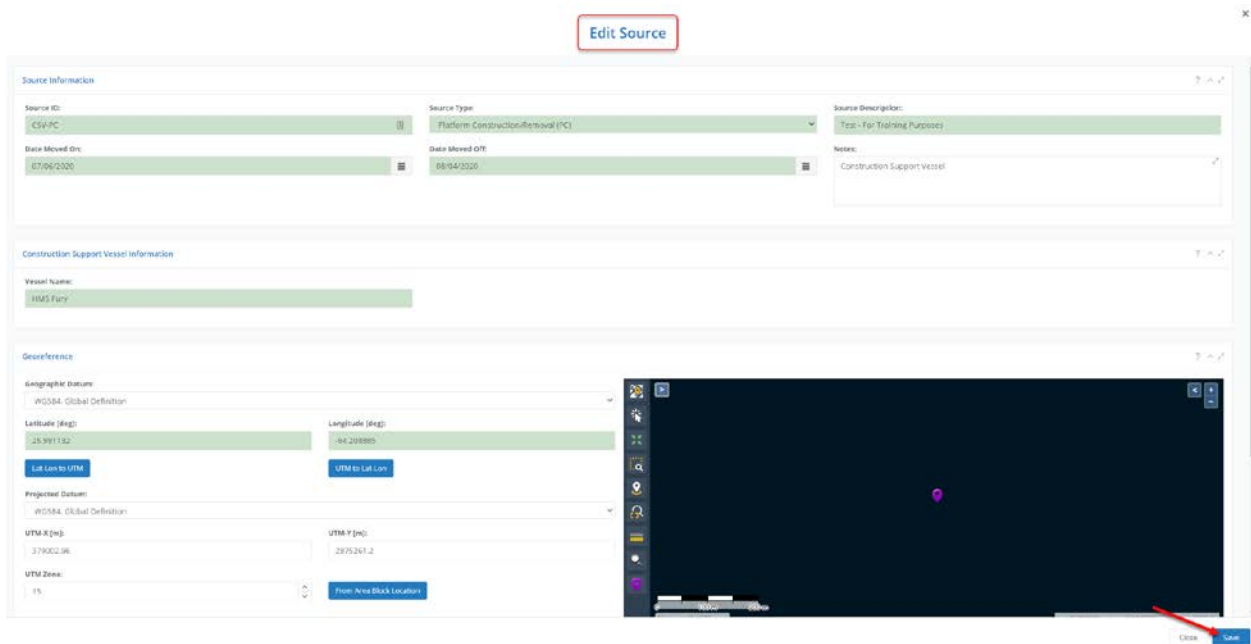


Figure 46. Edit Source Page

4.2.3 Add Lease Operation Source

To add a Lease Operation Source, the user again needs to navigate to the Leases page as shown in Figure 43. Select an existing BOEM Lease Number and then click the **Add Source** button in the upper right part of the Sources & Processes table.

Follow the steps below to set up your new Lease Operations Source.

1. Select the applicable Lease Operations (LO) Source template. The following equipment sources are provided for lease operations in Table 2.

Table 2. Sources for Lease Operations

Source ID	Source Type
CSV-PC	Platform Construction (PC)
DRI-Crude	Drilling, Crude Oil (DR)
DRI-NG	Drilling, Natural Gas (DR)

2. A Source Information page will open to provide information on the LO and vessel involved based on the type of operation you selected as shown in Figure 47.

For Drilling Rigs, the Vessel Name can be searched for by opening the option table (...). For Construction Support Vessel (CSVs), the Vessel Name must be typed in.

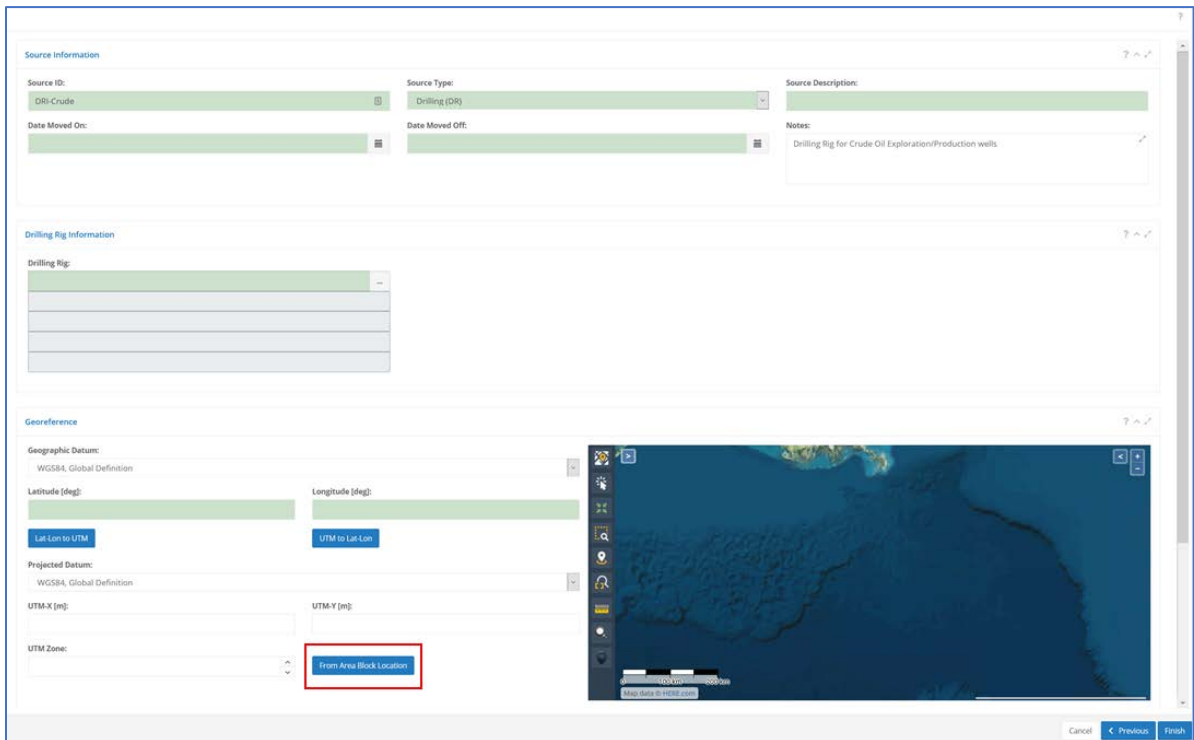


Figure 47. Add LO Source page

If the georeferenced location is unknown, an estimate can be generated by clicking the **From Area Block Location button** (highlighted in red in Figure 47). This provides the center point of the block the lease is assigned to.

3. Click **Finish** to save changes. OCS AQS will automatically generate processes associated with the operation you selected as shown in Table 3.

Table 3. Processes created based on operation source type

Operation Type	Process ID	Process Description	SCC
Construction Support Vessel	FUG-PC	Fugitives - Platform Construction	31088811
	DIE-03M-LO	Diesel Engine, Construction Support Vessel Hotelling	28000218
Drilling Rig - Crude Oil	DIE-03M-DO	Drilling Rig, Crude Oil Production Drilling	31000101
	FUG-DR	Fugitive Emissions from Drilling Operations	31088811
	MUD-01-DR	Mud Degassing, Drilling Operations	31000101
Drilling Rig - Natural Gas	DIE-03M-NG	Diesel Engine, Drilling Rig, Natural Gas Production	31000210
	FUG-DR	Fugitive Emissions from Drilling Operations	31088811

Once the sources and processes are in place, you can add activity data the same way it was done with the AEM as explained in Section 3.2

4.2.4 Calculate Lease Operation Emissions

Emissions can be calculated for reporting periods after all required data request fields are filled in. Check completeness and input ranges by clicking on the red **QA/QC** button. If input data is filled and within range expectations, a blue status will be displayed. Errors will be highlighted with a red status message and a pop-up window appears with the errors.

Click the **Calculate** button if all input parameters are error-free or zeroed out. Depending on the calculator and number of months, the processing may take several minutes. Calculated emissions will appear in the table under the button.

5 Emissions: Other Functions and Submittal

The Emissions module includes additional resources that can assist the user to manage individual sources and emissions. It also includes the Submittal function, which will be covered in this section. Figure 48 shows the Greenhouse Gas (GHG), Submittal, and Tools options that can be found in the Emissions Navigation Panel, along with the navicons associated with each option. We will cover GHG and Tools before describing the Submittal function.

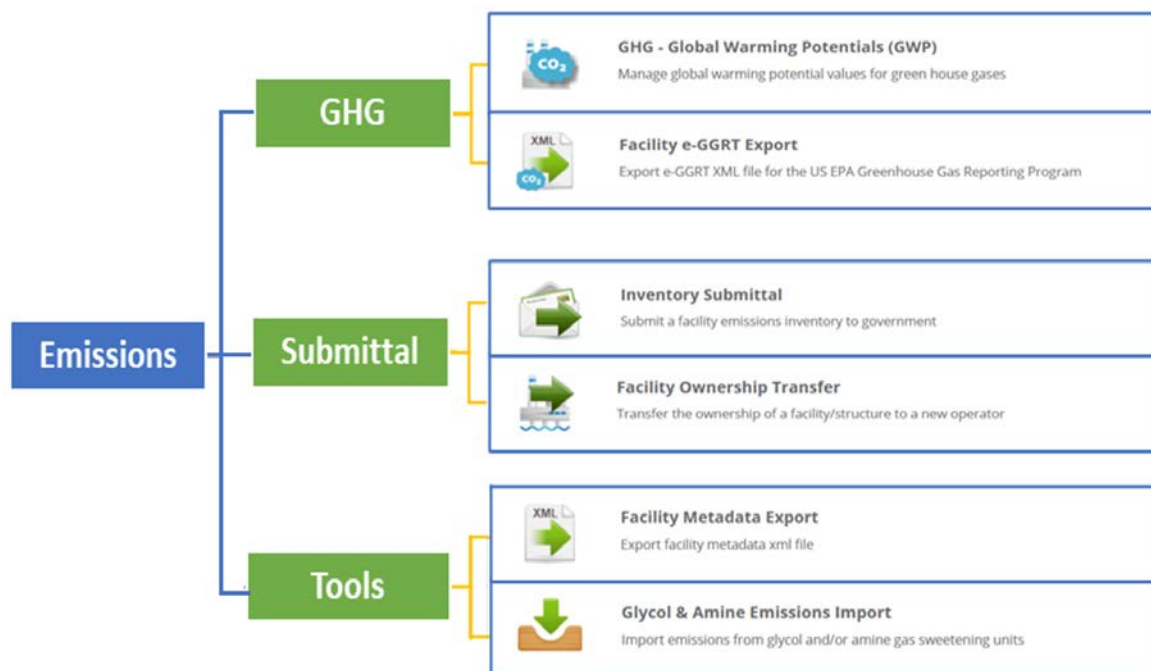


Figure 48. Other Emissions module functions

5.1 Greenhouse Gas (GHG)

The **GHG** option can be selected from the Emissions Navigation Panel and includes functions specific to Greenhouse Gas management. In addition to calculating GHG emissions for submittal to EPA, GHG emissions are also reported to BOEM during the inventory submittal process.

5.1.1 GHG- Global Warming Potential (GWP)

GWPs are used to calculate the CO₂ equivalent (CO₂e) parameter. The calculator takes the effective year closest to the inventory year. For a 2021 inventory, the most recent effective GWP for methane (CH₄) was released in 2012. This value will be used to compute the CO₂e of methane instead of the 1995 effective year value.

5.1.2 Facility e-GGRT Export

The USEPA's electronic Greenhouse Gas Reporting Tool (e-GGRT) supports facility and supplier reporting for the USEPA Greenhouse Gas Reporting Program (GHGRP). OCS AQS

contains a built-in tool capable of generating an e-GGRT file in the appropriate XML format for submission to USEPA for a single facility or a complex with multiple facilities.

To generate and export an e-GGRT report for a specific facility:

1. Click on **Facility e-GGRT Export** navicon.
2. The **Facility e-GGRT Export – Download** screen is shown in Figure 49. Click the Export Facility e-GGRT button.

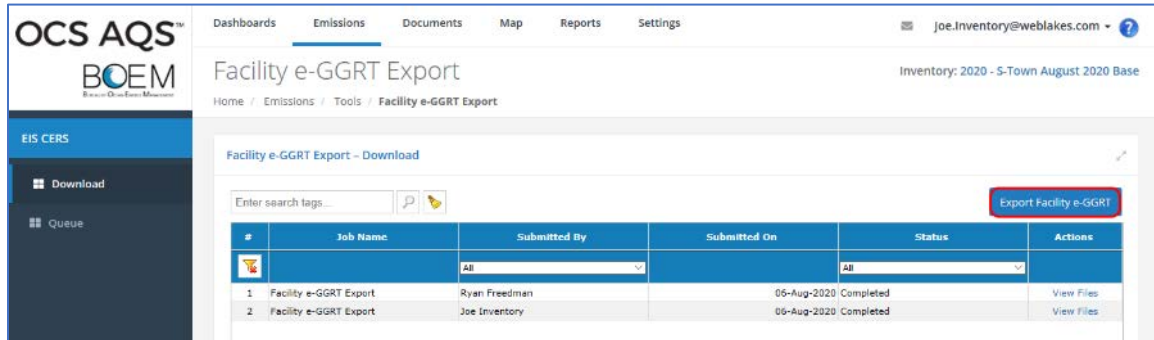


Figure 49. e-GGRT report export

3. Select the e-GGRT Export Mode you want. Options are:
 - **By Facility (Individual)** – this option will generate a report for the facility selected only.
 - **By Complex (Aggregated)** – this option will generate a report that sums the total GHGs for all the selected facilities and lists the emission units within one report.

5.1.2.1 Generating a single facility e-GGRT report

1. Select the desired facility (or facilities) from the list as shown in Figure 50 and click Next.

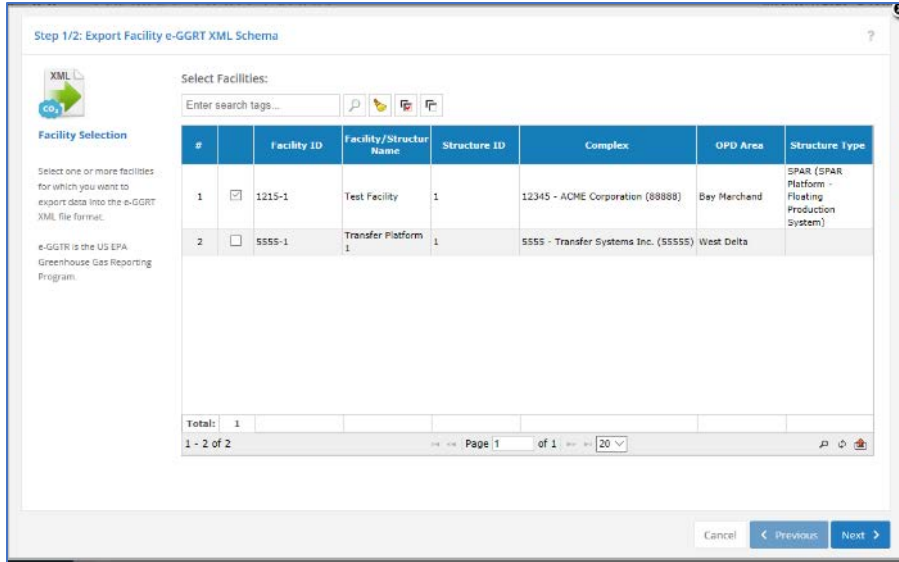


Figure 50. Facility selection for e-GGRT report export

2. Confirm that the correct facility is selected in the Summary page and click Finish. OCS AQS will begin the export.
3. You will be taken to the Facility e-GGRT Export queue which shows the progress of your export as shown in Figure 51. After a moment, the export completes. The Status of the export updates to Complete, and a notification appears at the top of the screen which, when clicked, shows a message confirming the successful export.

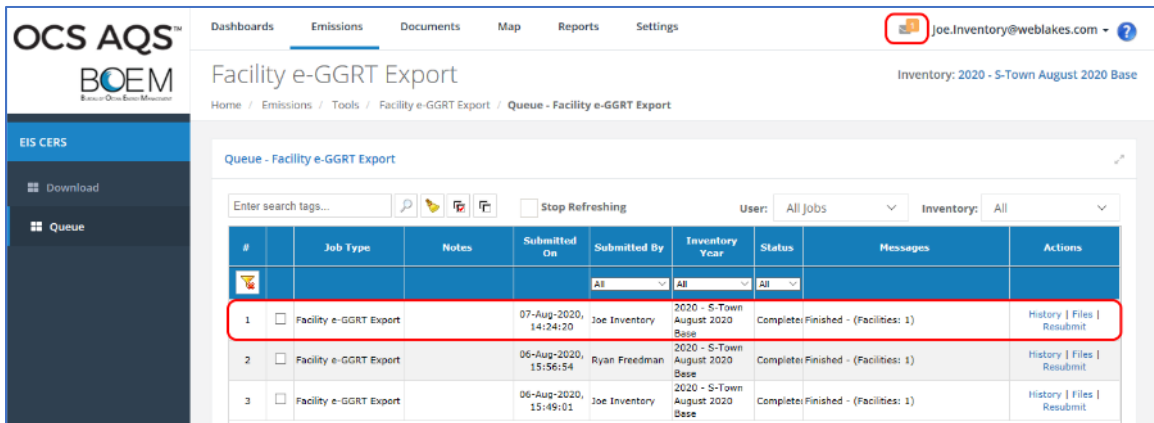


Figure 51. Facility e-GGRT Export queue

4. In the Actions column of the table, click the Files link to view the exported file(s).
5. The Job Files dialog is shown. Click the Download link in Figure 52 to save the file to your computer.

#	Download	Description	File Name	Added On	Added By	Notes
1	Download	Zip Archive	Facility_eGGRT_Inventory_20	07-Aug-2020, 14:24:36	Joe Inventory	

Figure 52. Download link

You can open the XML file on your computer using any editor. It is recommended that you use an editor capable to displaying XML files, or the content may be difficult to read. You can also open the file in a browser such as Microsoft Edge.

5.1.2.2 Generating an e-GGRT report for a Complex

The steps to generate an aggregated or multiple facilities e-GGRT report are similar to generating a report for a single facility. The only difference takes place in the beginning steps after selecting the e-GGRT Export Mode for a Complex.

1. After selecting the **By Complex** mode, select the complex that is the parent for all child facilities under it. Click Next.
2. Select the facilities associated with the complex. In some cases, there may be only one facility. Click Next.
3. If the input parameters are ok, click Finish to run the report.

5.2 Tools

The **Tools** option in the Emissions Navigation Panel provides a number of different tools that help manage emission sources.

5.2.1 Facility Metadata Export

OCS AQS contains a built-in tool capable of generating an XML file containing metadata for emissions inventory submissions to BOEM.

To export a Metadata report for a particular facility:

1. After selecting the Tools option from Emissions Navigation Panel, click on **Facility Metadata Export** navicon.
2. The Facility Metadata Export – Download screen is shown in Figure 53. Click the **Export Facility Metadata** button.

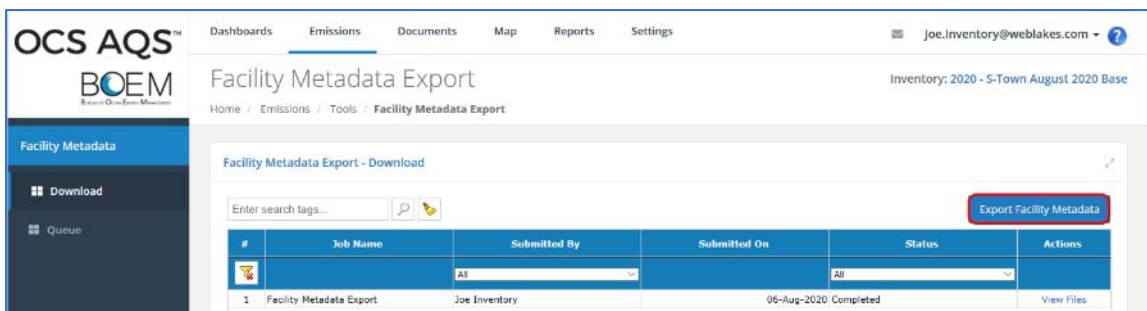


Figure 53. Metadata report page

3. Select the facility (or facilities) for which to generate a report from the list. You may select more than one facility. Individual reports will be generated for each.
4. Confirm that the correct facility is selected in the Summary page and click **Finish**. OCS AQS will begin the export.
5. You will be taken to the Facility Metadata Export queue which shows the progress of your export, as shown in Figure 54. After a moment, the export completes. The Status of the export updates to Complete, and a notification appears at the top of the screen to confirm the successful export.

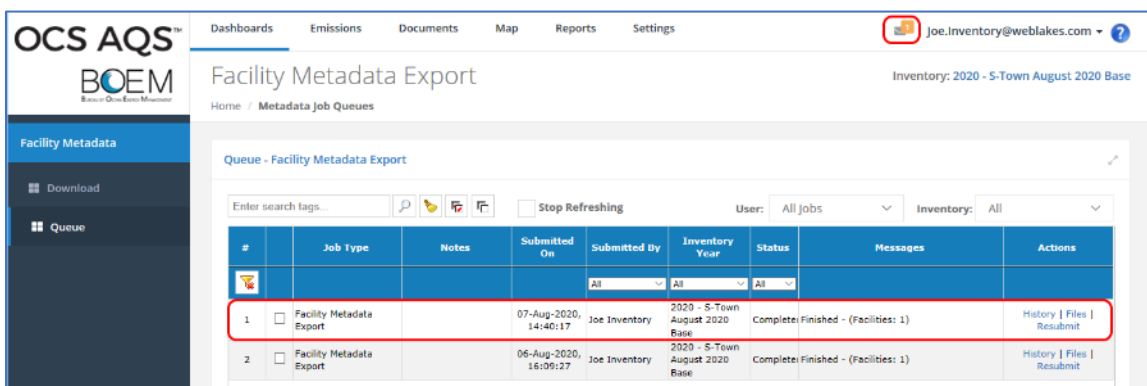


Figure 54. Metadata export queue

6. In the Actions column of the table, you can click the **Files** link to view the exported file(s).
7. Click the **Download** link in the Job queue to save the file to your computer.

The downloaded file is in a .zip format with an Excel spreadsheet that contains an export report and individual XML files for each facility.

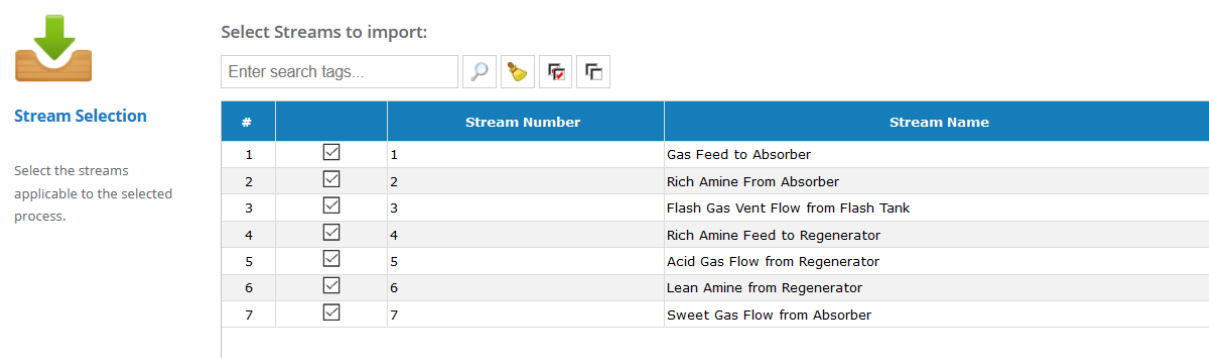
5.2.2 Import Glycol/Amine Emissions

Calculated emissions for amine and glycol processes generated from AMINECalc² and GRI-GLYCalc^{TM, 3}, respectively, can be imported directly using the Glycol & Amine Emissions Import tool.





IMPORTANT: Please make sure to set up the emissions correctly in the third-party software, as OCS AQS has no influence on the results of the third-party software.

1. Make sure there is an emission source that can receive the imported emissions. If not, create an emission source using the Activities & Emissions Manager using either the AMI-000 Amine Gas Sweetening Unit or GLY-000 Glycol Dehydrator Unit calculators.
2. Go to the **Emissions** module and select **Tools** on the Navigation Panel and select the **Glycol & Amine Emissions Import** tool.
3. Select either AMINECalc Version 1.0 for amine emissions or GRI-GLYCalc Version 4. For glycol emissions. Click the **Next** button.
4. Select the process/emission source the imported emissions will be assigned to. Click the **Next** button.
5. Find the emissions file for upload. No additional formatting is required from the program output text files. Click the **Next** button.
6. Select the streams to import. An example for amine units is shown in Figure 55.

Step 4/6: Glycol & Amine Emissions Import



Select Streams to import:

Enter search tags...    

#		Stream Number	Stream Name
1	<input checked="" type="checkbox"/>	1	Gas Feed to Absorber
2	<input checked="" type="checkbox"/>	2	Rich Amine From Absorber
3	<input checked="" type="checkbox"/>	3	Flash Gas Vent Flow from Flash Tank
4	<input checked="" type="checkbox"/>	4	Rich Amine Feed to Regenerator
5	<input checked="" type="checkbox"/>	5	Acid Gas Flow from Regenerator
6	<input checked="" type="checkbox"/>	6	Lean Amine from Regenerator
7	<input checked="" type="checkbox"/>	7	Sweet Gas Flow from Absorber

Stream Selection

Select the streams applicable to the selected process.

Figure 55. Stream selection for Amine units

7. Select the emission period months. Click the **Next** button.
8. A table will appear with a summary of the emissions that will be imported. Click **Finish** to upload the emissions file and map it to the selected process. A warning will appear stating that previous emissions will be overwritten.

IMPORTANT: If the emission streams do not appear in Step 6, there may be an error in the import file or the wrong importer was selected.

² API PUBL 4679 Amine Unit Emissions Model AMINECalc Version 1.0

³ www.gastechnology.org

5.3 Submittal

The Submittal option in the Emissions Navigation Panel includes functions that support submitting inventories and transferring facilities.

5.3.1 Inventory Submittal

The Inventory Submittal function can only be used when you are inside a Portal Emissions Inventory (Portal EI). These inventories typically only include a small number of facilities. A complete region-wide inventory cannot be used with this feature.

To determine if the current inventory is a Portal EI, click on the inventory link on the top right of the page and look at the inventory type in the Inventory Configuration table as shown in Figure 56. To use this feature, select an inventory that is a Portal EI or create one.

#	Inventory Name	Created By	Creation Date	Type	Comments	Status	Access	Actions
101	2017 - Ownership Transfer - 1002 - A-VALUE (DOT)	support_BOEM@boemalaska.com	01-Jul-2020	Emissions Inventory		Ready		edit delete
102	2017 - Ownership Transfer - 1075 - A	support_BOEM@boemalaska.com	01-Jul-2020	Emissions Inventory		Ready		edit delete
103	2017 - 2017 Complete Inventory Easy	support_BOEM@boemalaska.com	05-May-2020	Emissions Inventory		Ready		edit delete
104	2017 - 2017 Testing Inventory B08ay	support_BOEM@boemalaska.com	05-May-2020	Emissions Inventory		Ready		edit delete
105	2020 - S Town Platform - 1431B	support_BOEM@boemalaska.com	20-Apr-2020	Emissions Inventory	1431B	Ready		edit delete
106	2020 - S Town Platform - Ryan	support_BOEM@boemalaska.com	24-Apr-2020	Emissions Inventory		Ready		edit delete
107	2020 - S Town Platform - Sasha	support_BOEM@boemalaska.com	24-Apr-2020	Emissions Inventory		Ready		edit delete
108	2017 - 821-J - Arctic Slope Petroleum Corporation - Nansen	Ryan Freedman	14-Apr-2020	Portal EI		Ready		edit delete
109	2017 - 1228-L - ConocoPhillips Co (00050) - Magnolia	Ryan Freedman	14-Apr-2020	Portal EI		Ready		edit delete
110	2017 - 0325-L - Arctic Slope Petroleum - Hokenan	Ryan Freedman	14-Apr-2020	Portal EI		Ready		edit delete
111	2017 - BP Exploration & Production Inc. - 1001-J - Nalika	Ryan Freedman	14-Apr-2020	Portal EI		Ready		edit delete
112	2017 - TANA Exploration Company, LLC - 2512-L - A	Ryan Freedman	09-Apr-2020	Portal EI		Ready		edit delete
113	2017 - BP Exploration & Production Inc. - 1101-L - A - Transfer Nansen	Ryan Freedman	09-Apr-2020	Portal EI		Ready		edit delete
114	2017 - 2017 Testing Inventory here	Ryan Freedman	09-Apr-2020	Emissions Inventory	New 2017 testing inventory created April 9, 2020.	Ready		edit delete
115	2017 - 2017 Testing Inventory here	Ryan Freedman	09-Apr-2020	Emissions Inventory	New 2017 testing inventory created April 9, 2020.	Ready		edit delete
116	2020 - S Town Platform	Mike Johnson	07-Apr-2020	Emissions Inventory	State Inventory	Ready		edit delete
117	2008 - 2008 Complete Inventory	Administrator	23-Feb-2020	Emissions Inventory		Ready		edit delete
118	2008 - 2008 Complete Inventory	Administrator	11-Feb-2020	Emissions Inventory		Ready		edit delete
119	2008 - 2008 Complete Inventory	Administrator	11-Feb-2020	Emissions Inventory		Ready		edit delete
120	2011 - 2011 Complete Inventory	Administrator	11-Feb-2020	Emissions Inventory		Ready		edit delete

Figure 56. Inventory Configuration table

To submit an inventory, select the **Inventory Submittal** navicon and complete the page by checking the certification box and adding comments for the reviewer. Both fields are mandatory. Click **Finish** to submit the inventory.

OCS AQS will automatically conduct a QA/QC on the inventory upon requesting a submission. The check will confirm that all sources and all months are accounted for either with calculation results or zero emissions. If errors are found, an error report will be generated that specifies where errors are located and the reason.

IMPORTANT: All errors must be cleared before the report can be submitted.

If the QA/QC finds no errors, an email will be sent to the BOEM reviewer and operator submitting the report that the submission was accomplished.

5.3.2 Facility Ownership Transfer

If a facility or portion of a facility is transferred to another company during the inventory reporting period, the transfer can be captured using this feature. Although the organization is able to initiate this process on its own, the process can only be completed by receiving approval from BOEM. The owner of the facility is responsible for the reporting of emissions for the months that they have ownership.

The steps below summarize the process for requesting the transfer of ownership for a facility:

1. Click on **Facility Ownership Transfer** navicon. The first page of the **Facility Ownership Transfer** wizard appears. Select the facility that will be transferred or has an emission source that will be transferred. An example is shown in Figure 57.

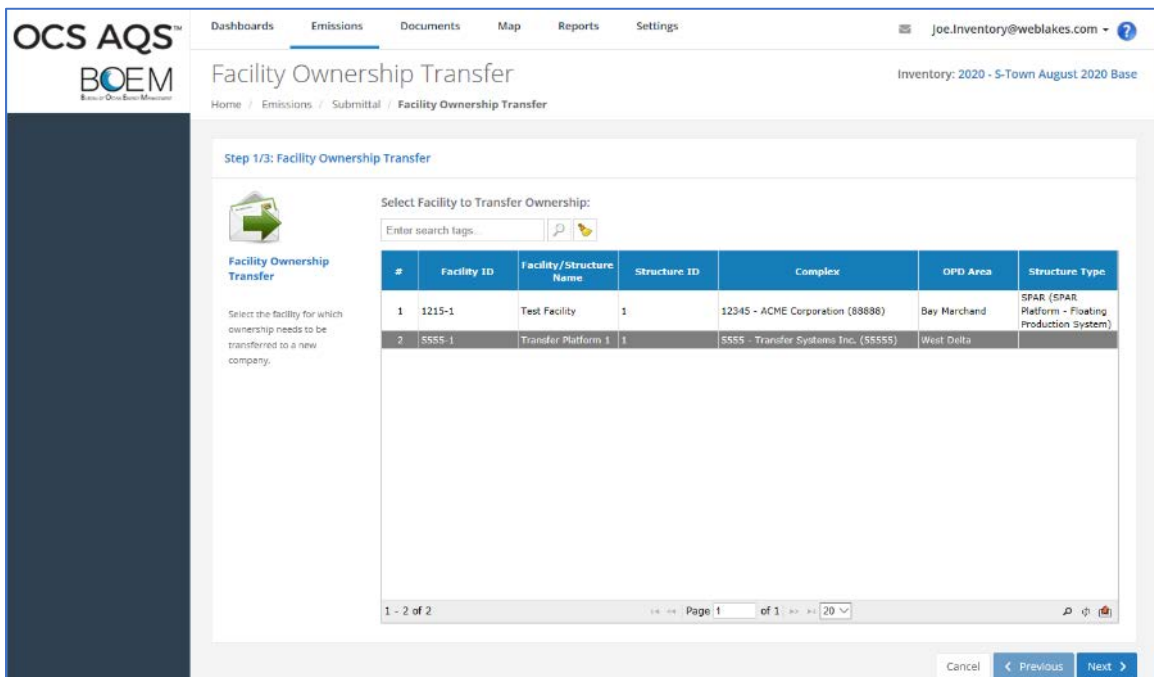


Figure 57. Facility transfer selection

2. Specify the Transfer Details as shown in Figure 58 below with the following information:
 - Transfer Type: Transfer the full facility, or a portion of the facility.
 - Transfer Date: Date that the transfer is effective.
 - Old Owner/Operator: This is a read-only field displaying the name of the existing owner/operator.
 - New Owner/Operator: Select the name of the new owner/operator.
 - Comments: Add comments explaining the reason for the transfer.

When finished, click **Next**.

3. The Summary screen provides an opportunity to review the details of the ownership transfer before sending the request. Click **Finish** to complete the transfer request.
4. After completing the request, you will be returned to the **Emissions** section. From here, you can take a look at the status of the requests by going to the **Dashboards** module and selecting the **Operator Transfers** dashboard. This dashboard gives a listing of all transfer requests and their status. Recent requests are shown with a status of *Submitted/Pending*.

The screenshot shows the OCS AQS web interface for a Facility Ownership Transfer. The page title is "Facility Ownership Transfer" and the user is logged in as "Joe.Inventory@weblakes.com". The breadcrumb trail is "Home / Emissions / Submittal / Facility Ownership Transfer". The current step is "Step 2/3: Facility Ownership Transfer".

The form contains the following fields and options:

- Transfer Type:** Radio buttons for "Full" (selected) and "Partial".
- Transfer Date:** A date input field containing "08/07/2020".
- Old Owner/Operator:** A dropdown menu showing "5555 -Transfer Systems Inc.".
- New Owner/Operator:** A dropdown menu showing "12345 - ACME Corporation".
- Comments:** A text area containing "This is an example for training."

At the bottom right, there are three buttons: "Cancel", "Previous", and "Next".

Figure 58. Transfer options page

6 Documents

The Documents module allows common reference material, documentation, and job request logs to be stored and accessed. For operators, only the **Upload & Manage Documents** navicon is available as shown in Figure 59.

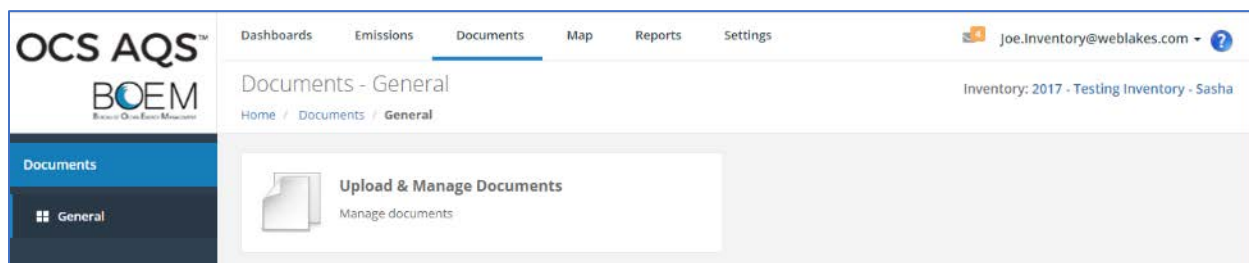


Figure 59. Documents module

6.1 Upload & Manage Documents

This feature allows external media to be uploaded. It provides two different areas in which to store documents, to be based on user preference.

- **General Documents** (default) allows all OCS AQS users to access the documents
- **My Documents** includes all files generated as a result of job requests or uploaded, and these files are only accessible by the user that created or uploaded the files.

6.1.1 Add a Document

To upload a document to the folder, select the **Add Document Set** button on the top right of the table of the General Documents option. Follow the wizard steps to select the document and identify it with descriptive text.

You can upload multiple documents in one session as shown in Figure 60.

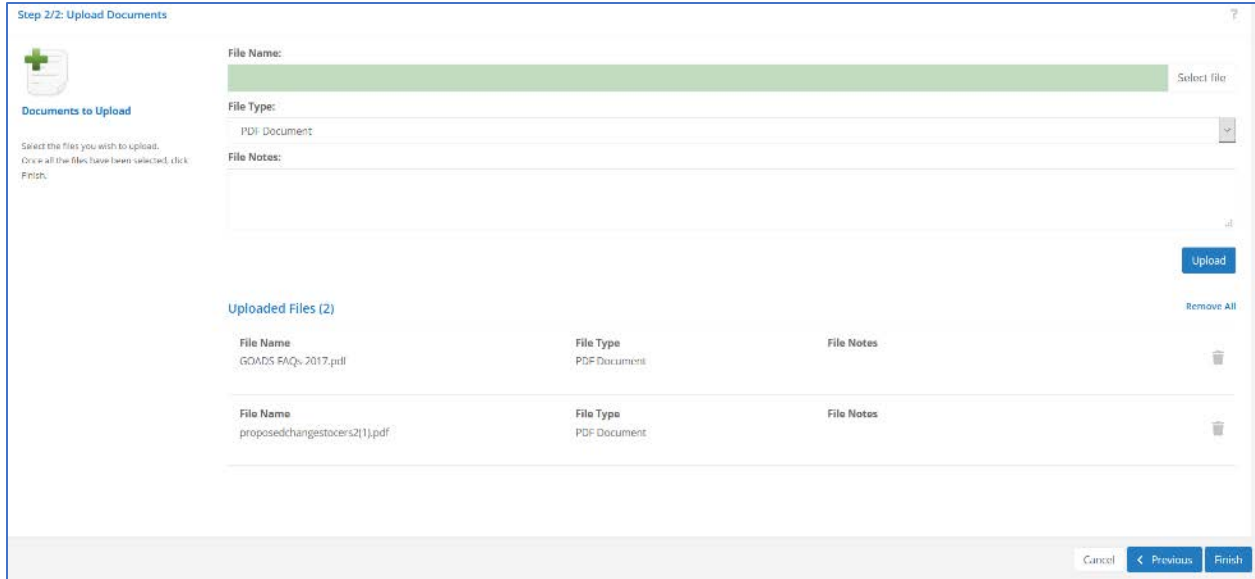


Figure 60. Document upload page

The uploaded files will appear for review prior to the operation is completed. If the file, file type, or description is not correct, delete the individual file by clicking on the small gray trash can to the far right and start again. Click **Finish** to complete the upload.

6.1.2 Edit/View Documents

To view or edit existing documents in the General Documents option, click the **View** or **Edit** links under the Actions column. The listed descriptions refer to the document group that was uploaded and not individual documents. Click on the link to access the individual documents within the group. In some cases, there may be only one document in the group.

Once the Document Information is open, additional documents can be added to the group by clicking on the **Attach File** button. Files can also be deleted and descriptions updated in the Notes column.

For documents in My Documents, select the document link to view. To delete the document, click the Delete link in the Actions column.

7 Maps

The OCS AQS Map Module provides a graphical display of all georeferenced objects, such as platforms, on a map of the Gulf of Mexico or Alaska regions for the inventory selected. It also allows you to display gridded emissions and custom shapefiles and query the database to locate and display specific objects. If a past historical inventory year is selected, all facilities (including other operators) will appear on the map. If a current inventory year is selected, operators will only see their facility information on the map. An overview of features is shown in Figure 61.

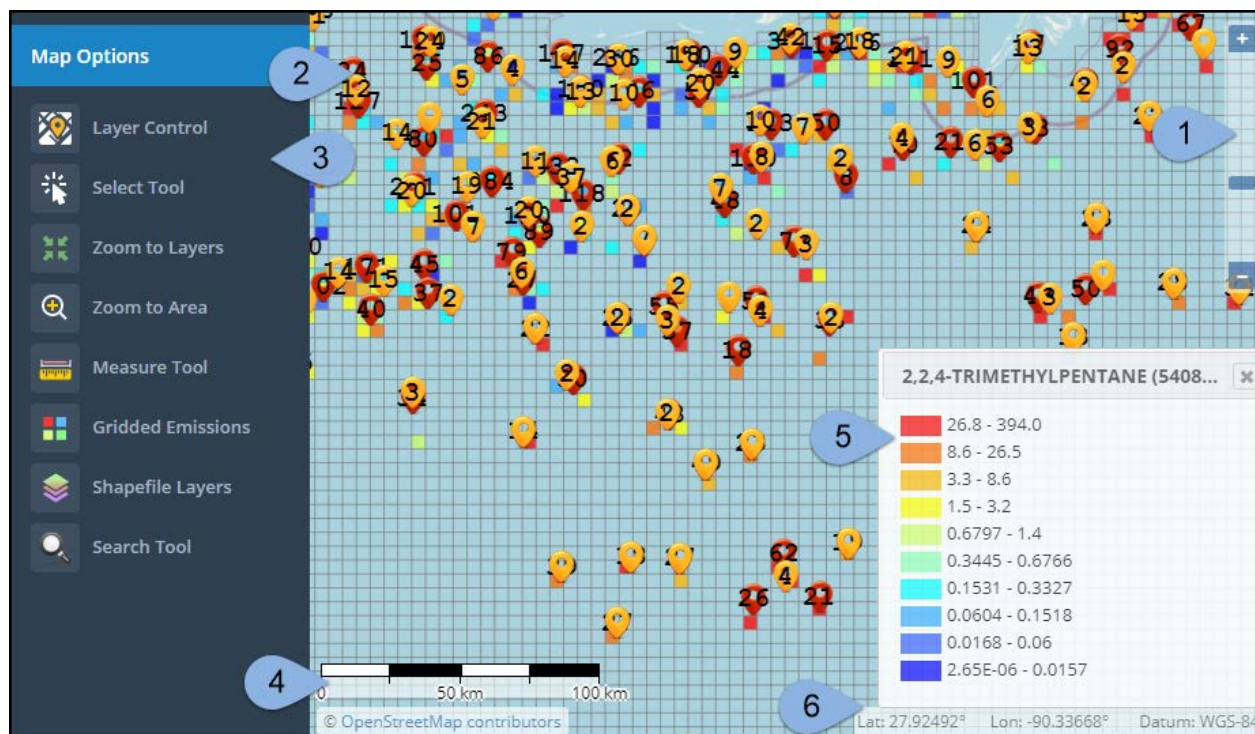












Figure 61. Map features

The map includes the following elements:

- Zoom Level (indicated by the light blue pointer 1 in Figure 61)
- Map (2)
- Map Options (3)
- Scale (4)
- Color Ramp (5)
- Coordinates (6)

You can move the map area by holding the cursor over the map and dragging it with the left mouse button. You can also zoom in and out using the mouse scroller.

The Map Module also provides a number of useful functionalities that are accessed from the Navigation Panel. These options are summarized below and their use is illustrated in the section that follows.

	Layer Control	Access different layers by selecting or de-selecting layer boxes.
	Select Tool	Pick a feature by clicking on it.
	Zoom to Layers	Zoom to the extents of the layer.
	Zoom to Area	Click and draw a box around an area to zoom.
	Zoom to Location	Click this tool and then click on the map where you wish to center the zoom area to load the Zoom to Location dialog.
	Overview Map	Click to activate a display of a map overview with a blue dot box delineating the area currently being displayed on the map.
	Measure Tool	Measure the distance between two points by clicking on the points; or, measure area by clicking on points.
	Gridded Emissions	Select parameters for Gridded Emissions layer by choosing grid cell size and pollutant.
	Shapefile Layers	Select Shapefile and attributes (if available).
	Search Tool	Search the map for objects containing a specified search string.

7.1 Using the Map Module

The steps below will help illustrate the map functionalities summarized above.

1. Select an inventory.
2. Click the **Map** module.
3. The map display appears. For this exercise, make sure your map is centered on the Gulf of Mexico. You can zoom and pan using the method described in the previous section. You can also use the Zoom tool at the top right of the map screen as shown in Figure 62.

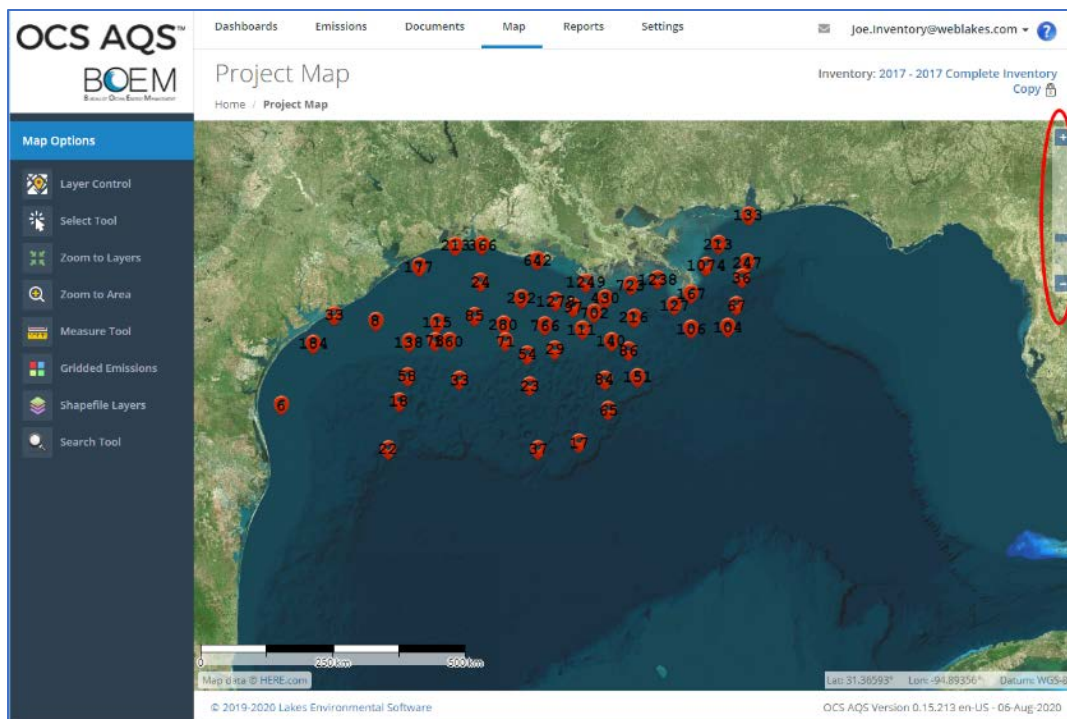


Figure 62. Map with release points

4. In the **Map Options** panel to the left of the map, click the **Layer Control**. This opens a dialog that shows a list of layers available in the map. Turn off all layers except the *Facility* layer and the *Base Layers*. For the *Base Layers*, you can click the + in the list to expand the dialog in order to switch between the satellite view and the OpenStreetMap view, similar to what is shown in Figure 63.
5. Take a moment to experiment with some of the other graphical tools in the **Map Options** such as the **Select Tool**, **Zoom to Layers**, **Zoom to Area**, **Measure Tool**.
6. Under the **Map Options**, click **Shapefile Layers**.
7. The **Shapefile Layers** dialog is displayed. This dialog lists shapefiles which have been imported into OCS AQS, as well as the corresponding map **Layer Name**.
8. Within the dialog, click on the *OPD Area* shapefile layer and then click the **Apply** button. When finished, close the dialog.
9. The OPD areas are now visible on the map display. Additionally, the **OPD Area** map layer is now visible in the **Layer Control** dialog. Move the cursor over **OPD Area** in the list of layers and several options are available to you to the right of the layer name in the list, including the 'Fit into the scene' option which adjusts the zoom level of the map to fit the **OPD Area** shapefile comfortably into the map display area.

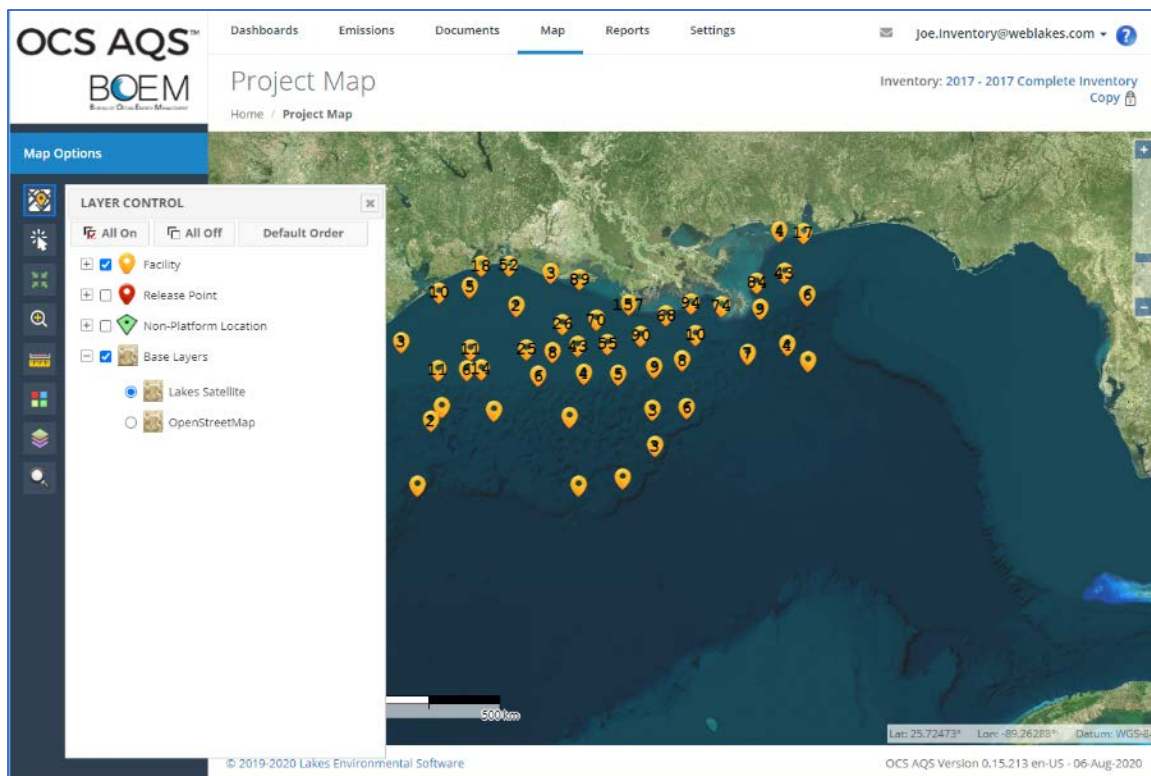


Figure 63. Map with facilities

10. Close the **Layer Control** and **Shapefile Layers** dialogs if they are still open.
11. Under the **Map Options**, click the **Search Tool**.
12. The **Search Tool** dialog is displayed. Enter the search string 'Anadarko' in the search field. All objects containing 'Anadarko' within the name are listed as shown in Figure 64.

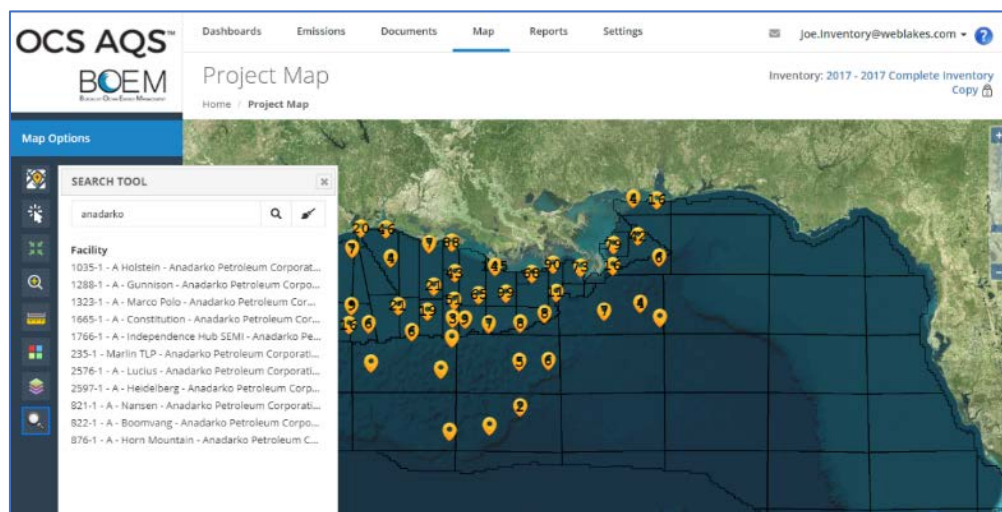


Figure 64. Using the Search Tool in Maps

- Hover the cursor over any of the records in the search results. This will allow you to see the **Zoom In** feature for the record, which when clicked will zoom the map to the location of the selected object.

7.2 Gridded Emissions

The Map module allows you to map gridded emissions based on annual or monthly reported values for all pollutants in the inventory

- Under the **Map Options**, select **Gridded Emissions**.
- The **Gridded Emissions** dialog is displayed in Figure 65.

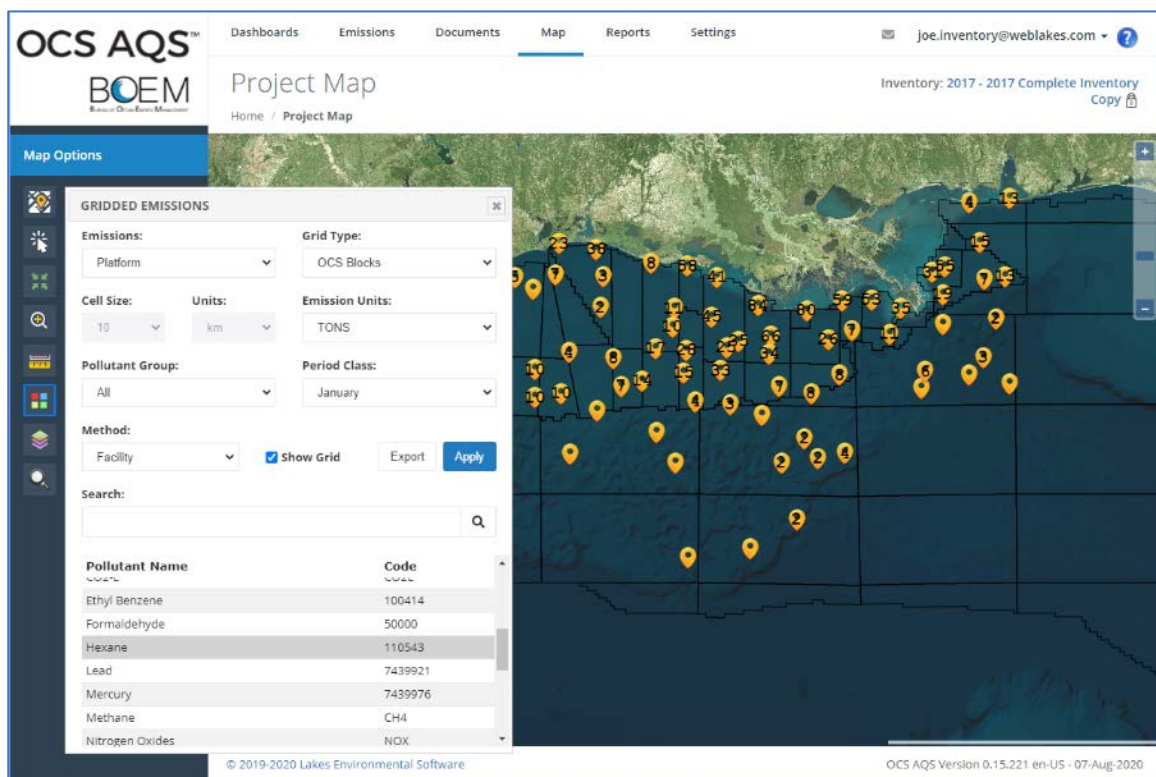


Figure 65. Gridded emissions dialogue box

- The **Gridded Emissions** dialog contains many different options and selections to allow you to graphically represent your emissions. These options are reviewed below:
 - Emissions:** Determines whether displayed emissions are for Platform sources, Non-Platform sources, or both. Select Platform for this example.
 - Grid Type:** Gridded emissions can be graphed by Uniform Cells, OPD Area, or OCS Blocks. Select OCS Blocks.
 - Cell Size (and Units):** This allows you to determine the size of each cell if you selected Uniform Cells; otherwise, this field is disabled.
 - Emission Units:** Unit of measure to use for graphing the emissions. Select TONS.

- e. **Pollutant Group:** This determines the type of pollutants to show. Leave this as All.
 - f. **Period Class:** The period for which emissions are displayed. Select January. Note that this applies to active inventory year; since our example is an inventory in 2017, this means we will show emissions for January 2017.
 - g. **Method:** Determines if emissions are located on the graph based on the facility location or the point of release. This will often have little impact on results, but for some cases it can make a difference. Select Facility.
4. The bottom of the **Gridded Emissions** dialog shows a list of all available pollutants in the emissions inventory. For this exercise, select *Carbon Monoxide (CO)* in the table.
 5. Now that you have made your selections, click the Apply button at the right side of the **Gridded Emissions** dialog.
 6. The gridded emissions will appear on the map, similar to what is shown in Figure 66. At first the details can be hard to see; it will help to close the **Gridded Emissions** dialog and zoom in on the northern Gulf of Mexico.
 7. After zooming in, it is easier to see the individual cells. Cells with no emissions have no coloring and simply show the base map (satellite or OpenStreetMaps). Cells with emissions are colored according to the color ramp at the bottom right of the Map display. Notice that the cells which are colored correspond to the locations of facilities on the map (yellow markers), as would be expected.

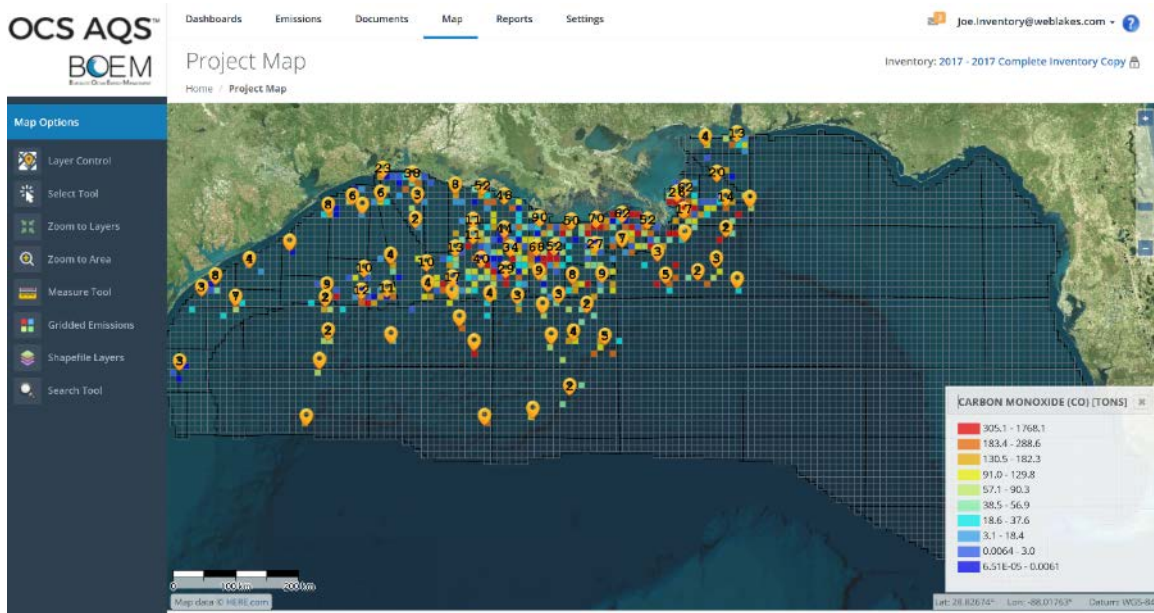


Figure 66. Map with gridded emissions

8. Take a moment to open the **Gridded Emissions** dialog and try out some of the other options available to you.

9. To get the numerical values of the emissions on each grid cell, open the **Gridded Emissions** dialogue box and select **Export** next to the Apply button. A Microsoft Excel file with the values will be downloaded automatically to your Download folder. The spreadsheet columns include the cell center coordinates in Latitude and Longitude and the cell grid value in the units selected.

7.3 Additional Map Layers

Additional map layers can be added to the Map module by sending the appropriate SHP and SHX files to the BOEM OCS AQS administrator. Uploaded maps layers will be located under the Shapefile Layers option of the map.

8 Reports

OCS AQS comes with a set of reports that can be customized by the operator using OCS AQS Reports wizards. Click on the Reports module and then click on the All Reports navicon to see the following options in the Navigation Panel. Each option includes a number of functionalities which can be viewed by clicking the left arrow next to each option.

- Platform Reports
- Emission Reports
- Detailed Emission Reports
- Lease Operation Reports
- Calculator Reports
- Trend Analysis
- Trend Analysis Graphs

8.1 Reports Overview

To run a report, click on the report you would like to generate from the Navigation Panel and complete the wizard steps. Select individual search criteria – or select all options. Run the report by clicking Finish and wait for the results. If a past historical inventory year is selected, the report will be generated with all facility information (including other operator's data). If a current inventory year is selected, the report will only generate your facility information.

All reports can be downloaded in a number of formats including:

- XML
- Comma separated values (ASCII text)
- MHTML
- MS Excel
- TIFF
- MS Word

A typical report showing the download icon is shown in Figure 67.

The screenshot displays the OCS AQS interface. The top navigation bar includes 'Dashboards', 'Emissions', 'Documents', 'Map', 'Reports', and 'Settings'. The user is logged in as 'joe.inventory@weblakes.com'. The main content area shows the 'Reports - Annual Facility Pollutant Totals' page for 'Inventory: 2020 - S-Town August 2020 RF1'. A left sidebar lists various report categories under 'Emission Reports'. The main report area features the BOEM logo and a table of emissions data. A download menu is open, showing options: XML file with report data, CSV (comma delimited), PDF, MHTML (web archive), Excel, TIFF file, and Word.

Operating Company:	ACME Corporation	Latitude:	27.18837
Company ID:	88888	Longitude:	-90.26871
Complex ID:	12345	OPD Area:	Brazos
Facility ID	Pollutant	Annual Emissions (lbs)	
12345-1	Carbon Dioxide	2.4755E+008	
	Carbon Monoxide	3.7875E+005	

Figure 67. Report with download formats options

8.2 Report Categories

8.2.1 Platform Reports

Platform reports provide summaries of complex and facility level parameters. They include:

1. Complex List
2. Company List
3. OPD Facility List
4. Facility Emission Units
5. Complex QA
6. Sales Gas Quality Assurance

8.2.2 Emission Reports

Emission reports provide results from emission calculations and include:

1. Pollutant Totals
2. Complex Pollutant Totals
3. Complex Pollutant Totals (Tabular)
4. Monthly Facility Pollutant Totals
5. Annual Facility Pollutant Totals
6. Annual Emissions by OPD Area

7. Monthly Emissions by OPD Area

8.2.3 Detailed Emission Reports

Detailed emissions reports are additional emission reports that include GHG specific results. They include:

1. Monthly Emissions by Emission Unit
2. Pollutant Total from Complex Total
3. Emissions by Equipment Type
4. GHG Emissions by OPD Area
5. GHG Emissions by Facility
6. GHG Emissions by Emission Unit

8.2.4 Lease Operation Reports

Lease operations cover reports that summarize emissions generated during lease operation activities. They include:

1. Lease Operations - Sources
2. Lease Operations - Drilling Rigs
3. Lease Operations Pollutant Totals By Source
4. Lease Operations Emissions By Source Type
5. Combined Complex Pollutant Totals by Platform and Lease Operations

8.2.5 Calculator Reports

Calculator reports describe the different calculation methods and input parameters used to calculate emissions. They include:

1. Emission Equation Descriptions
2. Calculation Method Usage
3. Emission Factor By Status
4. Zero Emissions
5. Data Request - Field Range
6. Control Request - Field Range
7. QA/QC Comments
8. Monthly Parameters Comparison

8.2.6 Trend Analysis Reports

Trend analysis reports include:

1. Monthly Facility to Equipment Trend Analysis
2. Monthly Equipment Trend Analysis
3. Monthly Facility Trend Analysis
4. Monthly Complex Trend Analysis

In addition, Trend analysis reports can be prepared in a graphical format:

1. Monthly Equipment Trend Analysis - Graph
2. Monthly Facility Trend Analysis - Graph
3. Monthly Complex Trend Analysis - Graph

8.2.7 User-Defined Reports

Users can request new reports that do not fit any of the above categories by contacting BOEM.

9 Settings

The **Settings** module allows you to update system access for yourself as well as review activities under your account. The Navigation Panel provides links for **User Options** and **Auditing**.

9.1 User Options

User Options include the ability to change your password, change the active inventory you are working in, and manage system notifications as shown in Figure 68.

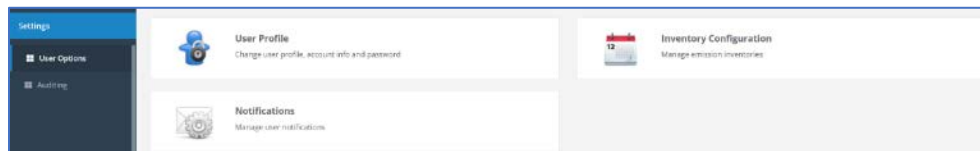


Figure 68. User Options page

- **Change Password:** Select the **User Profile** navicon and follow the fields. You will have to enter your old password and confirm your new password. Click Save to complete.
- **Change Inventory:** Select the **Inventory Configuration** navicon and click the inventory link. Note that selecting the Inventory Configuration is equivalent to clicking on the Inventory Selector link, which was described earlier.
- **Acknowledge Notifications:** Select the **Notifications** navicon and click the boxes of the notifications you want to acknowledge. Click the Acknowledge button to finish.

9.2 Auditing

The Auditing option allows you to review the activities and change log that took place during login. The two available navicons are shown in Figure 69.

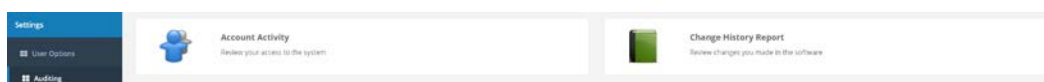


Figure 69. Auditing navicons

Account Activity shows the list of users who accessed the system, and the type of activity performed such as login, logoff, project selection, etc. This feature is especially useful if there are multiple users associated with the inventory account.

Change History Report shows the tables that were changed by the user and when they were changed. The Change History Report is shown in Figure 70.

Change History Report Inventory: 2020 - S-Town Platform

Home / Settings / Auditing / Change History Report

Change History Report

Inventory: All

User
Period
Inventory

#	Date/Time	Table Changed	Inventory	Change Type	Record Changed
1	22-Apr-2020, 11:05:35	General Documents	N/A	Object Added	2014 Emissions Inventory Study
2	21-Apr-2020, 18:47:36	Non-Platform Emissions	2020 - S-Town Platform	Object Added	Carbon Dioxide (CO2) - 350 TONS
3	21-Apr-2020, 18:35:31	Non-Platform Periods	2020 - S-Town Platform	Object Added	January [ENTIRE PERIOD]
4	21-Apr-2020, 18:25:27	Non-Platform Processes	2020 - S-Town Platform	Object Added	2280002200 - Marine Vessels, Commercial - General Cargo - C1
5	21-Apr-2020, 15:28:50	Emissions	2020 - S-Town Platform	Object Added	Sulfur Dioxide (SO2) - 100.0000 TONS
6	20-Apr-2020, 18:05:43	Processes	2020 - S-Town Platform	Field Changed	diesel_gen [Diesel generator] (20200102) - Industrial
7	20-Apr-2020, 17:42:42	Processes	2020 - S-Town Platform	Field Changed	diesel_gen [Diesel generator] (20200102) - Industrial
8	20-Apr-2020, 17:37:49	Processes	2020 - S-Town Platform	Object Added	diesel_gen [Diesel generator] (20200102) - Industrial
9	16-Apr-2020, 13:28:44	Control Pollutants	2020 - S-Town Platform	Object Added	Nitrogen Dioxide - 20%
10	16-Apr-2020, 13:28:07	Control Devices	2020 - S-Town Platform	Object Added	205 (Low NOx Burner (LNB))

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Figure 70. Change History Report

Select the user (e.g., Joe Inventory), time period, and inventory to customize the view. Click the **Update** button to refresh the table based on the selected inputs.

Appendix A – Calculator Descriptions

A.1 AMI-000 (Amine Gas Sweetening Unit)

This calculator possesses the following fields:

The screenshot displays the AMI-000 calculator interface. At the top, the 'Calculator Name' is 'AMI-000' and the 'Description' is 'Amine Gas Sweetening Unit'. Below this, there is a dropdown menu for the month, currently set to 'January', and four navigation buttons: '<<', '<', '>', and '>>'. The interface is divided into three tabs: 'Data Requests' (selected), 'Control Requests', and 'Emission Factors'. Under the 'Data Requests' tab, there is a table with two columns: 'Description' and 'Value'. The table contains four rows under the heading 'OTHER INFORMATION':

Description	Value
Total Fuel Usage [Mscf/month]:	<input type="text"/> QA →
Material Processed:	Natural Gas <input type="text"/> QA →
Hours of Operation per Month [hr]:	<input type="text"/> QA →
Emissions Destination:	<input type="text"/> QA →

Appendix Figure 1. Amine Gas Sweetening Unit – AMI-000

1. Total fuel usage [Mscf/month] - The total volume of natural gas processed by this amine unit during the specific monthly survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).
2. Material processed - Indicates the material processed: Natural gas, or process gas
3. Hours of operation per month [hr] - The total number of hours that this amine unit was in operation during the specific monthly survey period.
4. Emissions destination - Indicates whether the emissions are vented/flared locally or remotely.

A.2 BOI-M01 (Boilers, Heaters, and Burners (Diesel))

The calculator possesses the following fields:

Calculator Name:
BOI-M01

Description:
Boilers, Heaters, and Burners (Diesel)

January

Data Requests Control Requests Emission Factors

Description	Value	
EMISSION CALCULATOR REQUIRED PARAMETERS		
Total Fuel Usage [lb/month]:		QA →
Fuel Sulfur Content [wt%]:	0.0015	QA →
Hours of Operation per Month [hr]:		QA →
Equipped with Flue Gas Recirculation System?	No	QA →
Fuel Heating Value [Btu/lb]:	19300	QA →
Equipped with Low NOx Burner ?	No	QA →
OTHER INFORMATION		
Material Processed:	Diesel	QA →
Average Fuel Used [lb/hr]:		QA →
Average Heat Input [MMBtu/hr]:		QA →
Max Rated Heat Input Rate [MMBtu/hr]:		QA →
Max Rated Fuel Usage [lb/hr]:		QA →
Emissions Destination:		QA →

Appendix Figure 2. Boilers, Heaters, and Burners (Diesel) – BOI-M01

1. Total fuel usage [lb/month] - Total liquid fuel used during this survey period.
2. Fuel sulfur content [%] - The sulfur content in liquid fuel types.
3. Hours of operation per month [hr] - The total number of hours that this diesel engine was in operation during the specific monthly survey period.
4. Equipped with flue gas recirculation system? [Boolean]
5. Fuel heating value [Btu/lb] - The energy content of liquid fuel types.
6. Equipped with low NOx burner? [Boolean]
7. Material processed - The type of fuel burned by the equipment.
8. Average fuel usage [lb/hr] - The average rate of liquid fuel usage during operation this survey period.
9. Average heat input [MMBtu/hr] - The average heat input rate during operation this survey period.
10. Max rated heat input [MMBtu/hr] - The manufacturer's maximum rated heat input rate.
11. Max rated fuel usage [lb/hr] - The maximum rate of liquid fuel usage.
12. Emissions destination - Indicates whether the emissions are vented locally or remotely.

A.3 BOI-M02 (Boilers, Heaters, and Burners - Waste Oil, Max Rated Heat Input = 100 MMBtu/hr)

The calculator possesses the following fields:

Calculator Parameters & Requests

Calculator Name: BOI-M02 **Description:** Boilers, Heaters, and Burners - Waste Oil

January << < > >>

Data Requests Control Requests Emission Factors

Description	Value	
EMISSION CALCULATOR REQUIRED PARAMETERS		
Total Fuel Usage [lb/month]:		QA→
Fuel Sulfur Content [wt%]:		QA→
Equipped with Low NOx Burner ?	No	QA→
Hours of Operation per Month [hr]:		QA→
Fuel Heating Value [Btu/lb]:	19300	QA→
OTHER INFORMATION		
Material Processed:	Crude Oil	QA→
Average Fuel Used [lb/hr]:		QA→
Average Heat Input[MMBtu/hr]:		QA→
Max Rated Heat Input Rate [MMBtu/hr]:		QA→
Emissions Destination:		QA→
Max Rated Fuel Usage [lb/hr]:		QA→

Appendix Figure 3. Boilers, Heaters, and Burners - Waste Oil, Max Rated Heat Input = 100 MMBtu/hr – BOI-M02

1. Total fuel usage [lb/month] - Total liquid fuel used during this survey period.
2. Fuel sulfur content [%] - The sulfur content in liquid fuel types.
3. Equipped with low NOx burner? [Boolean]
4. Hours of operation per month [hr] - The total number of hours that this equipment was in operation during the specific monthly survey period.
5. Fuel heating value [Btu/lb] - The energy content of liquid fuel types.
6. Material processed - The type of fuel burned by the equipment.
7. Average fuel used [lb/hr] - The average rate of liquid fuel usage during operation this survey period.
8. Average heat input [MMBtu/hr] - The average heat input rate during operation this survey period.

9. Max rated heat input rate [MMBtu/hr] - The manufacturer's maximum rated heat input rate.
10. Emissions destination - Indicates whether the emissions are vented locally or remotely.
11. Max rated fuel usage [lb/hr] - The maximum rate of liquid fuel usage.

A.4 BOI-M03 (Boilers, Heaters, and Burners - Natural Gas, Process Gas, or Waste Gas)

The calculator possesses the following fields:

Calculator Name:		Description:	
BOI-M03		Boilers, Heaters, and Burners - Natural Gas, Pro	
January		« < > »	
Data Requests	Control Requests	Emission Factors	
Description		Value	
EMISSION CALCULATOR REQUIRED PARAMETERS			
Total Fuel Usage [Mscf/month]:			QA →
Equipped with Flue Gas Recirculation System?	No	▼	QA →
Hours of Operation per Month [hr]:			QA →
Fuel Heating Value [Btu/scf]:	1050		QA →
Equipped with Low NOx Burner ?	No	▼	QA →
OTHER INFORMATION			
Material Processed:		▼	QA →
Average Fuel Used [scf/hr]:			QA →
Average Heat Input [MMBtu/hr]:			QA →
Max Rated Heat Input Rate [MMBtu/hr]:			QA →
Max Rated Fuel Usage [scf/hr]:			QA →
Emissions Destination:		▼	QA →
Fuel Sulfur Content [wt%]:			QA →

Appendix Figure 4. Boilers, Heaters, and Burners - Natural Gas, Process Gas, or Waste Gas – BOI-M03

1. Total fuel usage [Mscf/month] - Total liquid fuel used during this survey period.
2. Equipped with flue gas recirculation system? [Boolean]
3. Hours of operation per month [hr] - The total number of hours that this equipment was in operation during the specific monthly survey period.
4. Fuel heating value [Btu/scf] - The energy content of liquid fuel types.
5. Equipped with low NOx burner? [Boolean]
6. Material processed - The type of fuel burned by the equipment.
7. Average fuel used [scf/hr] - The average rate of liquid fuel usage during operation this survey period.

8. Average heat input [MMBtu/hr] - The average heat input rate during operation this survey period.
9. Max rated heat input rate [MMBtu/hr] - The manufacturer’s maximum rated heat input rate.
10. Max rated fuel usage [scf/hr] - The maximum rate of liquid fuel usage.
11. Emissions destination - Indicates whether the emissions are vented locally or remotely.
12. Fuel sulfur content [%] - The sulfur content in liquid fuel types.

A.5 DIE-M01 (Gasoline Engines)

The calculator possesses the following fields:

Calculator Name: DIE-M01 Description: Gasoline Engines

January « < > »

Data Requests Control Requests Emission Factors

Description	Value	
EMISSION CALCULATOR REQUIRED PARAMETERS		
Total Fuel Usage [gallons/month]:	10055	QA →
Operating Horsepower [hp]:	150	QA →
Hours of Operation per Month [hr]:	140	QA →
Fuel Heating Value [Btu/lb]:	203555	QA →
OTHER INFORMATION		
Material Processed:	Gasoline	QA →
Average Fuel Used [Btu/hp-hr]:		QA →
Max Rated Fuel Usage [Btu/hp-hr]:		QA →
Max Rated Horsepower [hp]:		QA →
Fuel Sulfur Content [wt%]:		QA →
Emissions Destination:		QA →

Appendix Figure 5. Gasoline Engines – DIE-M01

1. Total fuel usage [gallons/month] - Total liquid fuel used during this survey period.
2. Operating horsepower [hp] - The operating horsepower during operation this survey period.
3. Hours of operation per month [hr] - The total number of hours that this engine was in operation during the specific monthly survey period.
4. Fuel heating value [Btu/lb] - The energy content of liquid fuel types.
5. Material processed - The type of fuel burned by the equipment.
6. Average fuel used [Btu/hp-hr] - The average rate of fuel usage during operation this survey period.

7. Max rated fuel usage [Btu/hp-hr] - The manufacturer's maximum rate of fuel usage.
8. Max rated horsepower [hp] - The manufacturer's maximum rated horsepower output.
9. Fuel sulfur content [%] - The sulfur content in liquid fuel types.
10. Emissions destination - Indicates whether the emissions are vented locally or remotely.

A.6 DIE-M02 (Diesel Engines Where Max HP < 600)

The calculator possesses the following fields:

Calculator Name: DIE-M02		Description: Diesel Engines Where Max HP < 600	
January		« < > »	
Data Requests		Control Requests	
Emission Factors			
Description		Value	
EMISSION CALCULATOR REQUIRED PARAMETERS			
Total Fuel Usage [gallons/month]:			QA →
Fuel Heating Value [Btu/lb]:	19300		QA →
Hours of Operation per Month [hr]:			QA →
Operating Horsepower [hp]:			QA →
OTHER INFORMATION			
Material Processed:		▼	QA →
Emissions Destination:		▼	QA →
Average Fuel Used [Btu/hp-hr]:			QA →
Max Rated Fuel (Diesel) Usage [Btu/hp-hr]:			QA →
Max Rated Horsepower (Diesel) [hp]:			QA →
Fuel Sulfur Content [wt%]:	0.0015		QA →

Appendix Figure 6. Diesel Engines Where Max HP < 600 – DIE-M02

1. Total fuel usage [gallons/month] - Total liquid fuel used during this survey period.
2. Fuel heating value [Btu/lb] - The energy content of liquid fuel types.
3. Hours of operation per month [hr] - The total number of hours that this engine was in operation during the specific monthly survey period.
4. Operating horsepower [hp] - The operating horsepower during operation this survey period.
5. Material processed - The type of fuel burned by the equipment.
6. Emissions destination - Indicates whether the emissions are vented/flared locally or remotely.
7. Average fuel used [Btu/hp-hr] - The average rate of fuel usage during operation this survey period.

8. Max rated fuel (Diesel) usage [Btu/hp-hr] - The manufacturer's maximum rate of fuel usage.
9. Max rated horsepower (Diesel) [hp] - The manufacturer's maximum rated horsepower output.
10. Fuel sulfur content [%] - The sulfur content in liquid fuel types.

A.7 DIE-M03 (Diesel Engines Where Max HP => 600)

The calculator possesses the following fields:

Calculator Name: DIE-M03		Description: Diesel Engines Where Max HP => 600	
<input type="text" value="january"/>		<input type="button" value="«"/> <input type="button" value="<"/> <input type="button" value=">"/> <input type="button" value="»"/>	
<input type="button" value="Data Requests"/>		<input type="button" value="Control Requests"/>	
<input type="button" value="Emission Factors"/>			
Description		Value	
EMISSION CALCULATOR REQUIRED PARAMETERS			
Total Fuel Usage [gallons/month]:			<input type="button" value="QA →"/>
Fuel Heating Value [Btu/lb]:	19300		<input type="button" value="QA →"/>
Hours of Operation per Month [hr]:			<input type="button" value="QA →"/>
Operating Horsepower [hp]:			<input type="button" value="QA →"/>
Fuel Sulfur Content [wt%]:	0.0015		<input type="button" value="QA →"/>
OTHER INFORMATION			
Material Processed:	Diesel	<input type="button" value="v"/>	<input type="button" value="QA →"/>
Emissions Destination:		<input type="button" value="v"/>	<input type="button" value="QA →"/>
Average Fuel Used [Btu/hp-hr]:			<input type="button" value="QA →"/>
Max Rated Fuel (Diesel) Usage [Btu/hp-hr]:			<input type="button" value="QA →"/>
Max Rated Horsepower (Diesel) [hp]:			<input type="button" value="QA →"/>

Appendix Figure 7. Diesel Engines Where Max HP => 600 – DIE-M03

1. Total fuel usage [gallons/month] - Total liquid fuel used during this survey period.
2. Fuel heating value [Btu/lb] - The energy content of liquid fuel types.
3. Hours of operation per month [hr] - The total number of hours that this engine was in operation during the specific monthly survey period.
4. Operating horsepower [hp] - The operating horsepower during operation this survey period.
5. Fuel sulfur content [%] - The sulfur content in liquid fuel types.
6. Material processed - The type of fuel burned by the equipment.
7. Emissions destination - Indicates whether the emissions are vented/flared locally or remotely.

8. Average fuel usage [Btu/hp-hr] - The average rate of fuel usage during operation this survey period.
9. Max rated fuel (Diesel) Usage [Btu/hp-hr] - The manufacturer's maximum rate of fuel usage.
10. Max rated horsepower (Diesel) [hp] - The manufacturer's maximum rated horsepower output.

A.8 DIE-M03-DG (Diesel Engines Where Max HP => 600, LO Natural Gas Production Well Drilling)

The calculator possesses the following fields:

Calculator Name: DIE-M03-DG		Description: Diesel Engines Where Max HP => 600, LO	
January		<input type="button" value="«"/> <input type="button" value="<"/> <input type="button" value=">"/> <input type="button" value="»"/>	
Data Requests		Control Requests	
Emission Factors			
Description		Value	
EMISSION CALCULATOR REQUIRED PARAMETERS			
Total Fuel Usage over Period [gallons]:			<input type="button" value="QA→"/>
Fuel Heating Value [Btu/lb]:	19300		<input type="button" value="QA→"/>
Hours of Operation per Period [hr]:			<input type="button" value="QA→"/>
Operating Horsepower [hp]:			<input type="button" value="QA→"/>
Fuel Sulfur Content [wt%]:	0.0015		<input type="button" value="QA→"/>
OTHER INFORMATION			
Material Processed:	Diesel		<input type="button" value="QA→"/>
Emissions Destination:			<input type="button" value="QA→"/>
Average Fuel Used [Btu/hp-hr]:			<input type="button" value="QA→"/>
Max Rated Fuel (Diesel) Usage [Btu/hp-hr]:			<input type="button" value="QA→"/>
Max Rated Horsepower (Diesel) [hp]:			<input type="button" value="QA→"/>

Appendix Figure 8. Diesel Engines Where Max HP => 600, LO Natural Gas Production Well Drilling – DIE-M03-DG

1. Total fuel usage over period [gallons] - Total liquid fuel used during this survey period.
2. Fuel heating value [Btu/lb] - The energy content of liquid fuel types.
3. Hours of operation per month [hr] - The total number of hours that this engine was in operation during the specific monthly survey period.
4. Operating horsepower [hp] - The operating horsepower during operation this survey period.
5. Fuel sulfur content [%] - The sulfur content in liquid fuel types.
6. Material processed - The type of fuel burned by the equipment.

7. Emissions destination - Indicates whether the emissions are vented/flared locally or remotely.
8. Average fuel usage [Btu/hp-hr] - The average rate of fuel usage during operation this survey period.
9. Max rated fuel (Diesel) usage [Btu/hp-hr] - The manufacturer's maximum rate of fuel usage.
10. Max rated horsepower (Diesel) [hp] - The manufacturer's maximum rated horsepower output.

A.9 DIE-M03-DO (Diesel Engines Where Max HP => 600, Lease Operations Crude Oil Drilling)

The calculator possesses the following fields:

Calculator Name: DIE-M03-DO		Description: Diesel Engines Where Max HP => 600, Le	
January		<input type="button" value="«"/> <input type="button" value="<"/> <input type="button" value=">"/> <input type="button" value="»"/>	
Data Requests		Control Requests	
Emission Factors			
Description		Value	
EMISSION CALCULATOR REQUIRED PARAMETERS			
Total Fuel Usage over Period [gallons]:		<input type="button" value="QA→"/>	
Fuel Heating Value [Btu/lb]:	19300	<input type="button" value="QA→"/>	
Hours of Operation per Period [hr]:		<input type="button" value="QA→"/>	
Operating Horsepower [hp]:		<input type="button" value="QA→"/>	
Fuel Sulfur Content [wt%]:	0.0015	<input type="button" value="QA→"/>	
OTHER INFORMATION			
Material Processed:	Diesel	<input type="button" value="QA→"/>	
Emissions Destination:		<input type="button" value="QA→"/>	
Average Fuel Used [Btu/hp-hr]:		<input type="button" value="QA→"/>	
Max Rated Fuel (Diesel) Usage [Btu/hp-hr]:		<input type="button" value="QA→"/>	
Max Rated Horsepower (Diesel) [hp]:		<input type="button" value="QA→"/>	

Appendix Figure 9. Diesel Engines Where Max HP => 600, Lease Operations Crude Oil Drilling – DIE-M03-DO

1. Total fuel usage over period [gallons] - Total liquid fuel used during this survey period.
2. Fuel heating value [Btu/lb] - The energy content of liquid fuel types.
3. Hours of operation per month [hr] - The total number of hours that this engine was in operation during the specific monthly survey period.
4. Operating horsepower [hp] - The operating horsepower during operation this survey period.
5. Fuel sulfur content [%] - The sulfur content in liquid fuel types.

6. Material processed - The type of fuel burned by the equipment.
7. Emissions destination - Indicates whether the emissions are vented/flared locally or remotely.
8. Average fuel usage [Btu/hp-hr] - The average rate of fuel usage during operation this survey period.
9. Max rated fuel (Diesel) usage [Btu/hp-hr] - The manufacturer's maximum rate of fuel usage.
10. Max rated horsepower (Diesel) [hp] - The manufacturer's maximum rated horsepower output.

A.10 DIE-M03-LO (Diesel Engines Where Max HP => 600, Lease Operations Hotelling)

The calculator possesses the following fields:

Calculator Name: DIE-M03-LO		Description: Diesel Engines Where Max HP => 600, Lease Operations Hotelling	
January		<input type="button" value="«"/> <input type="button" value="<"/> <input type="button" value=">"/> <input type="button" value="»"/>	
Data Requests		Control Requests	
Emission Factors			
Description		Value	
EMISSION CALCULATOR REQUIRED PARAMETERS			
Total Fuel Usage over Period [gallons]:			<input type="button" value="QA →"/>
Fuel Heating Value [Btu/lb]:	19300		<input type="button" value="QA →"/>
Hours of Operation per Period [hr]:			<input type="button" value="QA →"/>
Operating Horsepower [hp]:			<input type="button" value="QA →"/>
Fuel Sulfur Content [wt%]:	0.0015		<input type="button" value="QA →"/>
OTHER INFORMATION			
Material Processed:	Diesel		<input type="button" value="QA →"/>
Emissions Destination:			<input type="button" value="QA →"/>
Average Fuel Used [Btu/hp-hr]:			<input type="button" value="QA →"/>
Max Rated Fuel (Diesel) Usage [Btu/hp-hr]:			<input type="button" value="QA →"/>
Max Rated Horsepower (Diesel) [hp]:			<input type="button" value="QA →"/>

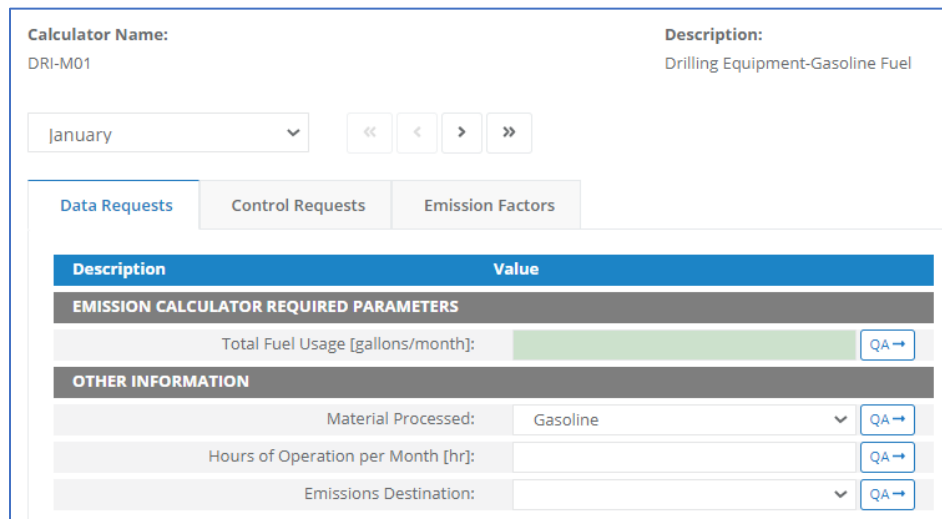
Appendix Figure 10. Diesel Engines Where Max HP => 600, Lease Operations Hotelling – DIE-M03-LO

1. Total fuel usage over period [gallons] - Total liquid fuel used during this survey period.
2. Fuel heating value [Btu/lb] - The energy content of liquid fuel types.
3. Hours of operation per period [hr] - The total number of hours that this engine was in operation during the specific monthly survey period.
4. Operating horsepower [hp] - The operating horsepower during operation this survey period.

5. Fuel sulfur content [%] - The sulfur content in liquid fuel types.
6. Material processed - The type of fuel burned by the equipment.
7. Emissions destination - Indicates whether the emissions are vented/flared locally or remotely.
8. Average fuel usage [Btu/hp-hr] - The average rate of fuel usage during operation this survey period.
9. Max rated fuel (Diesel) usage [Btu/hp-hr] - The manufacturer's maximum rate of fuel usage.
10. Max rated horsepower (Diesel) [hp] - The manufacturer's maximum rated horsepower output.

A.11 DRI-M01 (Drilling Equipment - Gasoline Fuel)

The calculator possesses the following fields:



Calculator Name: DRI-M01 Description: Drilling Equipment-Gasoline Fuel

January << < > >>

Data Requests Control Requests Emission Factors

Description	Value
EMISSION CALCULATOR REQUIRED PARAMETERS	
Total Fuel Usage [gallons/month]:	<input type="text"/> QA →
OTHER INFORMATION	
Material Processed:	Gasoline ▼ QA →
Hours of Operation per Month [hr]:	<input type="text"/> QA →
Emissions Destination:	▼ QA →

Appendix Figure 11. Drilling Equipment - Gasoline Fuel – DRI-M01

1. Total fuel usage [gallons/month] - The total gasoline fuel used by the drilling equipment during the survey period.
2. Material processed - The type of fuel burned by the equipment.
3. Hours of operation per month [hr] - The number of hours that the drilling equipment was present and working at this structure.
4. Emissions destination - Indicates whether the emissions are vented/flared locally or remotely.

A.12 DRI-M02 (Drilling Equipment - Diesel Fuel)

The calculator possesses the following fields:

Calculator Name:
 DRI-M02

Description:
 Drilling Equipment-Diesel Fuel

January
 << < > >>

Data Requests Control Requests Emission Factors

Description	Value
EMISSION CALCULATOR REQUIRED PARAMETERS	
Total Fuel Usage [gallons/month]:	<input type="text"/> QA →
Fuel Sulfur Content [wt%]:	0.0015 QA →
OTHER INFORMATION	
Material Processed:	<input type="text"/> QA →
Hours of Operation per Month [hr]:	<input type="text"/> QA →
Emissions Destination:	<input type="text"/> QA →

Appendix Figure 12. Drilling Equipment - Diesel Fuel – DRI-M02

1. Total fuel usage [gallons/month] - The total diesel fuel used by the drilling equipment during the survey period.
2. Fuel sulfur content [%] - The sulfur content in liquid fuel types.
3. Material processed - The type of fuel burned by the equipment.
4. Hours of operation per month [hr] - The number of hours that the drilling equipment was present and working at this structure.
5. Emissions destination - Indicates whether the emissions are vented/flared locally or remotely.

A.13 DRI-M03 (Drilling Equipment - Natural Gas Fuel)

The calculator possesses the following fields:

Calculator Name:
 DRI-M03

Description:
 Drilling Equipment-Natural Gas Fuel

January
 << < > >>

Data Requests Control Requests Emission Factors

Description	Value
EMISSION CALCULATOR REQUIRED PARAMETERS	
Total Fuel Usage [Mscf/month]:	<input type="text"/> QA →
OTHER INFORMATION	
Material Processed:	<input type="text"/> QA →
Hours of Operation per Month [hr]:	<input type="text"/> QA →
Emissions Destination:	<input type="text"/> QA →

Appendix Figure 13. Drilling Equipment - Natural Gas Fuel – DRI-M03

1. Total fuel usage [Mscf/month] - The total natural gas used by the drilling equipment during the survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).
2. Material processed - The type of fuel burned by the equipment.
3. Hours of operation per month [hr] - The number of hours that the drilling equipment was present and working at this structure.
4. Emissions destination - Indicates whether the emissions are vented/flared locally or remotely.

A.14 FLA-M01 (Combustion Flare)

The calculator possesses the following fields:

Calculator Name: FLA-M01		Description: Combustion Flares	
<input type="text" value="January"/>		<input type="button" value="«"/> <input type="button" value="<"/> <input type="button" value=">"/> <input type="button" value="»"/>	
Data Requests		Control Requests	
Emission Factors			
Description		Value	
EMISSION CALCULATOR REQUIRED PARAMETERS			
Concentration of H2S in the Flare Gas [ppm]:	<input type="text"/>	<input type="button" value="QA →"/>	
Smoking Condition:	No smoke	<input type="button" value="QA →"/>	<input type="button" value="v"/>
Flare Gas Heating Value [Btu/scf]:	300	<input type="button" value="QA →"/>	
Molecular weight of VOC [lb/lb-mol]:	<input type="text"/>	<input type="button" value="QA →"/>	
Total Volume of Gas Flared (Including Upsets) [Mscf]:	<input type="text"/>	<input type="button" value="QA →"/>	
Hours of Operation per Month [hr]:	<input type="text"/>	<input type="button" value="QA →"/>	
Combustion Efficiency of the Flare [%]:	98	<input type="button" value="QA →"/>	
OTHER INFORMATION			
Material Processed:	<input type="text"/>	<input type="button" value="QA →"/>	<input type="button" value="v"/>
Pilot included in volume flared?	Yes	<input type="button" value="QA →"/>	<input type="button" value="v"/>
Average Flaring Rate [Mscf/hr]:	<input type="text"/>	<input type="button" value="QA →"/>	

Appendix Figure 14. Combustion Flare – FLA-M01

1. Concentration of H2S in the flare gas [ppm] - The concentration of hydrogen sulfide present in the flare feed gas.
2. Smoking condition - A qualitative assessment of the level of smoke emitted from the flare.
3. Flare gas heating value [Btu/scf]
4. Molecular weight of VOC [lb/lb-mol]

5. Total volume of gas flared (including upsets) [Mscf] - The total volume of gas flared during the survey period, including periods of upset flaring, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere). The GOADS volume flared should match the ONRR's volume flared reported on the OGOR.
6. Hours of operation per month [hr] - The total number of hours that the flare was operated during the survey period, including periods of upset flaring.
7. Combustion efficiency of the flare [%] - The flare combustion efficiency, or the completeness of hydrocarbon conversion to carbon dioxide (as CO₂).
8. Material processed - The type of fuel burned by the equipment.
9. Pilot included in volume flared? [Boolean] - Indicate if pilot fuel feed rate is included in total volume flared provided.
10. Average flaring rate [Mscf/hr]

A.15 FUG-M01 (Fugitive Sources - Gas)

The calculator possesses the following fields:

Calculator Name: FUG-M01		Description: Fugitive Sources (Gas)	
<input type="text" value="January"/>		<input type="button" value="«"/> <input type="button" value="<"/> <input type="button" value=">"/> <input type="button" value="»"/>	
Data Requests	Control Requests	Emission Factors	
Description		Value	
EMISSION CALCULATOR REQUIRED PARAMETERS			
Total Number of Components (Specify by Type Below):	11192	<input type="button" value="QA →"/>	
Number of Connectors:	9194	<input type="button" value="QA →"/>	
Number of Flanges:	0	<input type="button" value="QA →"/>	
Number of Open-Ended Lines:	285	<input type="button" value="QA →"/>	
Number of Pumps:	0	<input type="button" value="QA →"/>	
Number of Pump Seals:	0	<input type="button" value="QA →"/>	
Number of Valves:	1713	<input type="button" value="QA →"/>	
Number of Centrifugal Compressors - Dry Seals:	0	<input type="button" value="QA →"/>	
Number of Centrifugal Compressors - Wet Seals:	0	<input type="button" value="QA →"/>	
Number of Other Compressors - Seals:	0	<input type="button" value="QA →"/>	
Number of Other Relief Valves:	0	<input type="button" value="QA →"/>	
Number of Pressure Relief Valves:	0	<input type="button" value="QA →"/>	
Number of Meters:	0	<input type="button" value="QA →"/>	
Number of Instruments:	0	<input type="button" value="QA →"/>	
Number of Hatches:	0	<input type="button" value="QA →"/>	
Number of Polished Rods:	0	<input type="button" value="QA →"/>	
Number of Dumps:	0	<input type="button" value="QA →"/>	
Number of Drains:	0	<input type="button" value="QA →"/>	
Number of Diaphragms:	0	<input type="button" value="QA →"/>	
Number of Operating Days in Month [days]:		<input type="button" value="QA →"/>	
LDAR			
LDAR is in Place?	Yes	<input type="button" value="QA →"/>	
Inspection Method:		<input type="button" value="QA →"/>	
Number Of Months Between Inspections [months]:	<input type="text"/>	<input type="button" value="QA →"/>	
OTHER INFORMATION			
Average VOC Weight Percent of Fugitive Releases [%]:		<input type="button" value="QA →"/>	
Material Processed:		<input type="button" value="QA →"/>	
Average Equipment Elevation above Mean Sea Level [ft]:		<input type="button" value="QA →"/>	
Are Component Counts Based on Default Values?	Yes	<input type="button" value="QA →"/>	

Appendix Figure 15. Fugitive Sources - Gas – FUG-M01

1. Total number of components (Specify by type below) [Integer] - The total count of components that handles the selected process stream at this structure.

2. Number of connectors [Integer] - Total number of connectors in this structure.
3. Number of flanges [Integer] - Total number of flanges in this structure.
4. Number of open-ended lines [Integer] - Total number of open-ended lines in this structure.
5. Number of pumps [Integer] - Total number of pumps in this structure.
6. Number of pump seals [Integer] - Total number of pump seals in this structure.
7. Number of valves [Integer] - Total number of valves in this structure.
8. Number of centrifugal compressors - dry seals [Integer] - Total number of centrifugal compressors dry seals in this structure.
9. Number of centrifugal compressors - wet seals [Integer] - Total number of centrifugal compressors wet seals in this structure.
10. Number of other compressors - seals [Integer] - Total number of other compressor seals in this structure.
11. Number of other relief valves [Integer] - Total number of other relief valves in this structure.
12. Number of pressure relief valves [Integer] - Total number of pressure relief valves in this structure.
13. Number of meters [Integer] - Total number of meters in this structure.
14. Number of instruments [Integer] - Total number of instruments in this structure.
15. Number of hatches [Integer] - Total number of hatches in this structure.
16. Number of polished rods [Integer] - Total number of polished rods in this structure.
17. Number of dumps [Integer] - Total number of dumps in this structure.

18. Number of drains [Integer] - Total number of drains in this structure.
19. Number of diaphragms [Integer] - Total number of diaphragms in this structure.
20. Number of operating days in month [Integer] - The total number of days that the fugitive source operated during the survey period.
21. LDAR is in place? [Boolean] - Indicates if the facility routinely assesses and repairs leaking fugitive components.
22. Inspection method - Indicates if the LDAR program is based on the use of optical instrumentation, vapor analyzer, or visual inspection.
23. Number of months between inspections [Integer] - Indicates the LDAR program inspection frequency.
24. Average VOC weight percent of fugitive releases [%] - The average VOC content of fugitive emissions for the inventoried components and the selected stream type.
25. Material processed - The type of fuel burned by the equipment.

- 26. Average equipment elevation above mean sea level [ft] - A good estimate is half the elevation of the top deck.
- 27. Are component counts based on default values? [Boolean] - Identifies whether a facility-specific component count is provided.

A.16 FUG-M02 (Fugitive Sources - Natural Gas Liquid)

The calculator possesses the following fields:

Calculator Name:
FUG-M02

Description:
Fugitive Sources (Natural Gas Liquid)

January

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Data Requests

Control Requests

Emission Factors

Description	Value	
EMISSION CALCULATOR REQUIRED PARAMETERS		
Total Number of Components (Specify by Type Below):	11192	QA →
Number of Connectors:	9194	QA →
Number of Flanges:	0	QA →
Number of Open-Ended Lines:	285	QA →
Number of Pumps:	0	QA →
Number of Pump Seals:	0	QA →
Number of Valves:	1713	QA →
Number of Centrifugal Compressors - Dry Seals:	0	QA →
Number of Centrifugal Compressors - Wet Seals:	0	QA →
Number of Other Compressors - Seals:	0	QA →
Number of Other Relief Valves:	0	QA →
Number of Pressure Relief Valves:	0	QA →
Number of Meters:	0	QA →
Number of Instruments:	0	QA →
Number of Hatches:	0	QA →
Number of Polished Rods:	0	QA →
Number of Dumps:	0	QA →
Number of Drains:	0	QA →
Number of Diaphragms:	0	QA →
Number of Operating Days in Month [days]:		QA →

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LDAR	
LDAR is in Place?	Yes <input type="button" value="QA →"/>
Inspection Method:	<input type="button" value="QA →"/>
Number Of Months Between Inspections [months]:	<input type="button" value="QA →"/>
OTHER INFORMATION	
Average VOC Weight Percent of Fugitive Releases [%]:	<input type="button" value="QA →"/>
Material Processed:	<input type="button" value="QA →"/>
Average Equipment Elevation above Mean Sea Level [ft]:	<input type="button" value="QA →"/>
Are Component Counts Based on Default Values?	Yes <input type="button" value="QA →"/>

Appendix Figure 16. Fugitive Sources - Natural Gas Liquid – FUG-M02

1. Total number of components (Specify by type below) [Integer] - The total count of components that handles the selected process stream at this structure.
2. Number of connectors [Integer] - Total number of connectors in this structure.
3. Number of flanges [Integer] - Total number of flanges in this structure.
4. Number of open-ended lines [Integer] - Total number of open-ended lines in this structure.
5. Number of pumps [Integer] - Total number of pumps in this structure.
6. Number of pump Seals [Integer] - Total number of pump seals in this structure.
7. Number of valves [Integer] - Total number of valves in this structure.
8. Number of centrifugal compressors - dry seals [Integer] - Total number of centrifugal compressors dry seals in this structure.
9. Number of centrifugal compressors - wet seals [Integer] - Total number of centrifugal compressors wet seals in this structure.
10. Number of other compressors - seals [Integer] - Total number of other compressor seals in this structure.
11. Number of other relief valves [Integer] - Total number of other relief valves in this structure.
12. Number of pressure relief valves [Integer] - Total number of pressure relief valves in this structure.
13. Number of meters [Integer] - Total number of meters in this structure.
14. Number of instruments [Integer] - Total number of instruments in this structure.
15. Number of hatches [Integer] - Total number of hatches in this structure.
16. Number of polished rods [Integer] - Total number of polished rods in this structure.
17. Number of dumps [Integer] - Total number of dumps in this structure.
18. Number of drains [Integer] - Total number of drains in this structure.

19. Number of diaphragms [Integer] - Total number of diaphragms in this structure.
20. Number of operating days in month [Integer] - The total number of days that the fugitive source was operated during the survey period.
21. LDAR is in place? [Boolean] - Indicates if the facility routinely assesses and repairs leaking fugitive components.
22. Inspection method - Indicates if the LDAR program is based on the use of optical instrumentation, vapor analyzer, or visual inspection.
23. Number of months between inspections [Integer] - Indicates the LDAR program inspection frequency.
24. Average VOC weight percent of fugitive releases [%] - The average VOC content of fugitive emissions for the inventoried components and the selected stream type.
25. Material processed - The type of fuel burned by the equipment.

26. Average equipment elevation above mean sea level [ft] - A good estimate is half the elevation of the top deck.
27. Are component counts based on default values? [Boolean] - Identifies whether a facility-specific component count is provided.

A.17 FUG-M03 (Fugitive Sources - Heavy Oil)

The calculator possesses the following fields:

Calculator Name: FUG-M03		Description: Fugitive Sources (Heavy Oil)	
January <input type="button" value="v"/>		<input type="button" value="«"/> <input type="button" value="<"/> <input type="button" value=">"/> <input type="button" value="»"/>	
Data Requests		Control Requests	
Emission Factors			
Description		Value	
EMISSION CALCULATOR REQUIRED PARAMETERS			
Total Number of Components (Specify by Type Below):	11192	<input type="button" value="QA →"/>	
Number of Connectors:	9194	<input type="button" value="QA →"/>	
Number of Flanges:	0	<input type="button" value="QA →"/>	
Number of Open-Ended Lines:	285	<input type="button" value="QA →"/>	
Number of Pumps:	0	<input type="button" value="QA →"/>	
Number of Pump Seals:	0	<input type="button" value="QA →"/>	
Number of Valves:	1713	<input type="button" value="QA →"/>	
Number of Centrifugal Compressors - Dry Seals:	0	<input type="button" value="QA →"/>	
Number of Centrifugal Compressors - Wet Seals:	0	<input type="button" value="QA →"/>	
Number of Other Compressors - Seals:	0	<input type="button" value="QA →"/>	
Number of Other Relief Valves:	0	<input type="button" value="QA →"/>	
Number of Pressure Relief Valves:	0	<input type="button" value="QA →"/>	
Number of Meters:	0	<input type="button" value="QA →"/>	
Number of Instruments:	0	<input type="button" value="QA →"/>	
Number of Hatches:	0	<input type="button" value="QA →"/>	
Number of Polished Rods:	0	<input type="button" value="QA →"/>	
Number of Dumps:	0	<input type="button" value="QA →"/>	
Number of Drains:	0	<input type="button" value="QA →"/>	
Number of Diaphragms:	0	<input type="button" value="QA →"/>	
Number of Operating Days in Month [days]:		<input type="button" value="QA →"/>	
LDAR			
LDAR is in Place?	Yes	<input type="button" value="QA →"/>	
Inspection Method:		<input type="button" value="QA →"/>	
Number Of Months Between Inspections [months]:		<input type="button" value="QA →"/>	
OTHER INFORMATION			
Average VOC Weight Percent of Fugitive Releases [%]:		<input type="button" value="QA →"/>	
Material Processed:		<input type="button" value="QA →"/>	
Average Equipment Elevation above Mean Sea Level [ft]:		<input type="button" value="QA →"/>	
Are Component Counts Based on Default Values?	Yes	<input type="button" value="QA →"/>	

Appendix Figure 17. Fugitive Sources - Heavy Oil – FUG-M03

1. Total number of components (Specify by type below) [Integer] - The total count of components that handles the selected process stream at this structure.

2. Number of connectors [Integer] - Total number of connectors in this structure.
3. Number of flanges [Integer] - Total number of flanges in this structure.
4. Number of open-ended lines [Integer] - Total number of open-ended lines in this structure.
5. Number of pumps [Integer] - Total number of pumps in this structure.
6. Number of pump seals [Integer] - Total number of pump seals in this structure.
7. Number of valves [Integer] - Total number of valves in this structure.
8. Number of centrifugal compressors - dry seals [Integer] - Total number of centrifugal compressors dry seals in this structure.
9. Number of centrifugal compressors - wet seals [Integer] - Total number of centrifugal compressors wet seals in this structure.
10. Number of other compressors - seals [Integer] - Total number of other compressor seals in this structure.
11. Number of other relief valves [Integer] - Total number of other relief valves in this structure.
12. Number of pressure relief valves [Integer] - Total number of pressure relief valves in this structure.
13. Number of meters [Integer] - Total number of meters in this structure.
14. Number of instruments [Integer] - Total number of instruments in this structure.
15. Number of hatches [Integer] - Total number of hatches in this structure.
16. Number of polished rods [Integer] - Total number of polished rods in this structure.
17. Number of dumps [Integer] - Total number of dumps in this structure.

18. Number of drains [Integer] - Total number of drains in this structure.
19. Number of diaphragms [Integer] - Total number of diaphragms in this structure.
20. Number of operating days in month [Integer] - The total number of days that the fugitive source was operated during the survey period.
21. LDAR is in place? [Boolean] - Indicates if the facility routinely assesses and repairs leaking fugitive components.
22. Inspection method - Indicates if the LDAR program is based on the use of optical instrumentation, vapor analyzer, or visual inspection.
23. Number of months between inspections [Integer] - Indicates the LDAR program inspection frequency.
24. Average VOC weight percent of fugitive releases [%] - The average VOC content of fugitive emissions for the inventoried components and the selected stream type.
25. Material processed - The type of fuel burned by the equipment.

- 26. Average equipment elevation above mean sea level [ft] - A good estimate is half the elevation of the top deck.
- 27. Are component counts based on default values? [Boolean] - Identifies whether or not a facility-specific component count is provided.

A.18 FUG-M04 (Fugitive Sources - Light Oil)

The calculator possesses the following fields:

Calculator Name:
FUG-M04

Description:
Fugitive Sources (Light Oil)

January

«
<
>
»

Data Requests

Control Requests

Emission Factors

Description	Value	
EMISSION CALCULATOR REQUIRED PARAMETERS		
Total Number of Components (Specify by Type Below):	11192	QA →
Number of Connectors:	9194	QA →
Number of Flanges:	0	QA →
Number of Open-Ended Lines:	285	QA →
Number of Pumps:	0	QA →
Number of Pump Seals:	0	QA →
Number of Valves:	1713	QA →
Number of Centrifugal Compressors - Dry Seals:	0	QA →
Number of Centrifugal Compressors - Wet Seals:	0	QA →
Number of Other Compressors - Seals:	0	QA →
Number of Other Relief Valves:	0	QA →
Number of Pressure Relief Valves:	0	QA →
Number of Meters:	0	QA →
Number of Instruments:	0	QA →
Number of Hatches:	0	QA →
Number of Polished Rods:	0	QA →
Number of Dumps:	0	QA →
Number of Drains:	0	QA →
Number of Diaphragms:	0	QA →
Number of Operating Days in Month [days]:		QA →

LDAR	
LDAR is in Place?	No <input type="button" value="QA →"/>
Inspection Method:	<input type="button" value="QA →"/>
Number Of Months Between Inspections [months]:	<input type="button" value="QA →"/>
OTHER INFORMATION	
Average VOC Weight Percent of Fugitive Releases [%]:	<input type="button" value="QA →"/>
Material Processed:	<input type="button" value="QA →"/>
Average Equipment Elevation above Mean Sea Level [ft]:	<input type="button" value="QA →"/>
Are Component Counts Based on Default Values?	No <input type="button" value="QA →"/>

Appendix Figure 18. Fugitive Sources - Light Oil – FUG-M04

1. Total number of components (Specify by type below) [Integer] - The total count of components that handles the selected process stream at this structure.
2. Number of connectors [Integer] - Total number of connectors in this structure.
3. Number of flanges [Integer] - Total number of flanges in this structure.
4. Number of open-ended lines [Integer] - Total number of open-ended lines in this structure.
5. Number of pumps [Integer] - Total number of pumps in this structure.
6. Number of pump seals [Integer] - Total number of pump seals in this structure.
7. Number of valves [Integer] - Total number of valves in this structure.
8. Number of centrifugal compressors - dry seals [Integer] - Total number of centrifugal compressors dry seals in this structure.
9. Number of centrifugal compressors - wet seals [Integer] - Total number of centrifugal compressors wet seals in this structure.
10. Number of other compressors - seals [Integer] - Total number of other compressor seals in this structure.
11. Number of other relief valves [Integer] - Total number of other relief valves in this structure.
12. Number of pressure relief valves [Integer] - Total number of pressure relief valves in this structure.
13. Number of meters [Integer] - Total number of meters in this structure.
14. Number of instruments [Integer] - Total number of instruments in this structure.
15. Number of hatches [Integer] - Total number of hatches in this structure.
16. Number of polished rods [Integer] - Total number of polished rods in this structure.
17. Number of dumps [Integer] - Total number of dumps in this structure.
18. Number of drains [Integer] - Total number of drains in this structure.
19. Number of diaphragms [Integer] - Total number of diaphragms in this structure.

20. Number of operating days in month [Integer] - The total number of days that the fugitive source was operated during the survey period.
21. LDAR is in place? [Boolean] - Indicates if the facility routinely assesses and repairs leaking fugitive components.
22. Inspection method - Indicates if the LDAR program is based on the use of optical instrumentation, vapor analyzer, or visual inspection.
23. Number of months between inspections [Integer] - Indicates the LDAR program inspection frequency.
24. Average VOC weight percent of fugitive releases [%] - The average VOC content of fugitive emissions for the inventoried components and the selected stream type.
25. Material processed - The type of fuel burned by the equipment.

26. Average equipment elevation above mean sea level [ft] - A good estimate is half the elevation of the top deck.
27. Are component counts based on default values? [Boolean] - Identifies whether or not a facility-specific component count is provided.

A.19 FUG-M05 (Fugitive Sources - Water, Oil)

The calculator possesses the following fields:

Calculator Name:
 FUG-M05

Description:
 Fugitive Sources (Water, Oil)

January

Data Requests Control Requests Emission Factors

Description	Value	
EMISSION CALCULATOR REQUIRED PARAMETERS		
Total Number of Components (Specify by Type Below):	11192	QA →
Number of Connectors:	9194	QA →
Number of Flanges:	0	QA →
Number of Open-Ended Lines:	285	QA →
Number of Pumps:	0	QA →
Number of Pump Seals:	0	QA →
Number of Valves:	1713	QA →
Number of Centrifugal Compressors - Dry Seals:	0	QA →
Number of Centrifugal Compressors - Wet Seals:	0	QA →
Number of Other Compressors - Seals:	0	QA →
Number of Other Relief Valves:	0	QA →
Number of Pressure Relief Valves:	0	QA →
Number of Meters:	0	QA →
Number of Instruments:	0	QA →
Number of Hatches:	0	QA →
Number of Polished Rods:	0	QA →
Number of Dumps:	0	QA →
Number of Drains:	0	QA →
Number of Diaphragms:	0	QA →
Number of Operating Days in Month [days]:		QA →

LDAR		
LDAR is in Place?	Yes	QA →
Inspection Method:		QA →
Number Of Months Between Inspections [months]:		QA →

OTHER INFORMATION		
Average VOC Weight Percent of Fugitive Releases [%]:		QA →
Material Processed:		QA →
Average Equipment Elevation above Mean Sea Level [ft]:		QA →
Are Component Counts Based on Default Values?	Yes	QA →

Appendix Figure 19. Fugitive Sources - Water, Oil – FUG-M05

1. Total number of components (Specify by type below) [Integer] - The total count of components that handles the selected process stream at this structure.

2. Number of connectors [Integer] - Total number of connectors in this structure.
3. Number of flanges [Integer] - Total number of flanges in this structure.
4. Number of open-ended lines [Integer] - Total number of open-ended lines in this structure.
5. Number of pumps [Integer] - Total number of pumps in this structure.
6. Number of pump seals [Integer] - Total number of pump seals in this structure.
7. Number of valves [Integer] - Total number of valves in this structure.
8. Number of centrifugal compressors - dry seals [Integer] - Total number of centrifugal compressors dry seals in this structure.
9. Number of centrifugal compressors - wet seals [Integer] - Total number of centrifugal compressors wet seals in this structure.
10. Number of other compressors - seals [Integer] - Total number of other compressor seals in this structure.
11. Number of other relief valves [Integer] - Total number of other relief valves in this structure.
12. Number of pressure relief valves [Integer] - Total number of pressure relief valves in this structure.
13. Number of meters [Integer] - Total number of meters in this structure.
14. Number of instruments [Integer] - Total number of instruments in this structure.
15. Number of hatches [Integer] - Total number of hatches in this structure.
16. Number of polished rods [Integer] - Total number of polished rods in this structure.
17. Number of dumps [Integer] - Total number of dumps in this structure.
18. Number of drains [Integer] - Total number of drains in this structure.
19. Number of diaphragms [Integer] - Total number of diaphragms in this structure.
20. Number of operating days in month [Integer] - The total number of days that the fugitive source was operated during the survey period.
21. LDAR is in place? [Boolean] - Indicates if the facility routinely assesses and repairs leaking fugitive components.
22. Inspection method - Indicates if the LDAR program is based on the use of optical instrumentation, vapor analyzer, or visual inspection.
23. Number of months between inspections [Integer] - Indicates the LDAR program inspection frequency.
24. Average VOC weight percent of fugitive releases [%] - The average VOC content of fugitive emissions for the inventoried components and the selected stream type.
25. Material processed - The type of fuel burned by the equipment.

- 26. Average equipment elevation above mean sea level [ft] - A good estimate is half the elevation of the top deck.
- 27. Are component counts based on default values? [Boolean] - Identifies whether a facility-specific component count is provided.

A.20 FUG-M06 (Fugitive Sources - Oil, Water, Gas)

The calculator possesses the following fields:

Calculator Name:
FUG-M06

Description:
Fugitive Sources (Oil, Water, Gas)

January « < > »

Data Requests | Control Requests | Emission Factors

Description	Value	
EMISSION CALCULATOR REQUIRED PARAMETERS		
Total Number of Components (Specify by Type Below):	11192	QA →
Number of Connectors:	9194	QA →
Number of Flanges:	0	QA →
Number of Open-Ended Lines:	285	QA →
Number of Pumps:	0	QA →
Number of Pump Seals:	0	QA →
Number of Valves:	1713	QA →
Number of Centrifugal Compressors - Dry Seals:	0	QA →
Number of Centrifugal Compressors - Wet Seals:	0	QA →
Number of Other Compressors - Seals:	0	QA →
Number of Other Relief Valves:	0	QA →
Number of Pressure Relief Valves:	0	QA →
Number of Meters:	0	QA →
Number of Instruments:	0	QA →
Number of Hatches:	0	QA →
Number of Polished Rods:	0	QA →
Number of Dumps:	0	QA →
Number of Drains:	0	QA →
Number of Diaphragms:	0	QA →
Number of Operating Days in Month [days]:		QA →

LDAR	
LDAR is in Place?	Yes <input type="button" value="QA →"/>
Inspection Method:	<input type="button" value="QA →"/>
Number Of Months Between Inspections [months]:	<input type="button" value="QA →"/>
OTHER INFORMATION	
Average VOC Weight Percent of Fugitive Releases [%]:	<input type="button" value="QA →"/>
Material Processed:	<input type="button" value="QA →"/>
Average Equipment Elevation above Mean Sea Level [ft]:	<input type="button" value="QA →"/>
Are Component Counts Based on Default Values?	Yes <input type="button" value="QA →"/>

Appendix Figure 20. Fugitive Sources - Oil, Water, Gas – FUG-M06

1. Total number of components (Specify by type below) [Integer] - The total count of components that handles the selected process stream at this structure.
2. Number of connectors [Integer] - Total number of connectors in this structure.
3. Number of flanges [Integer] - Total number of flanges in this structure.
4. Number of open-ended lines [Integer] - Total number of open-ended lines in this structure.
5. Number of pumps [Integer] - Total number of pumps in this structure.
6. Number of pump seals [Integer] - Total number of pump seals in this structure.
7. Number of valves [Integer] - Total number of valves in this structure.
8. Number of centrifugal compressors - dry seals [Integer] - Total number of centrifugal compressors dry seals in this structure.
9. Number of centrifugal compressors - wet seals [Integer] - Total number of centrifugal compressors wet seals in this structure.
10. Number of other compressors - seals [Integer] - Total number of other compressor seals in this structure.
11. Number of other relief valves [Integer] - Total number of other relief valves in this structure.
12. Number of pressure relief valves [Integer] - Total number of pressure relief valves in this structure.
13. Number of meters [Integer] - Total number of meters in this structure.
14. Number of instruments [Integer] - Total number of instruments in this structure.
15. Number of hatches [Integer] - Total number of hatches in this structure.
16. Number of polished rods [Integer] - Total number of polished rods in this structure.
17. Number of dumps [Integer] - Total number of dumps in this structure.
18. Number of drains [Integer] - Total number of drains in this structure.
19. Number of diaphragms [Integer] - Total number of diaphragms in this structure.

20. Number of operating days in month [Integer] - The total number of days that the fugitive source was operated during the survey period.
21. LDAR is in place? [Boolean] - Indicates if the facility routinely assesses and repairs leaking fugitive components.
22. Inspection method - Indicates if the LDAR program is based on the use of optical instrumentation, vapor analyzer, or visual inspection.
23. Number of months between inspections [Integer] - Indicates the LDAR program inspection frequency.
24. Average VOC weight percent of fugitive releases [%] - The average VOC content of fugitive emissions for the inventoried components and the selected stream type.
25. Material processed - The type of fuel burned by the equipment.

26. Average equipment elevation above mean sea level [ft] - A good estimate is half the elevation of the top deck.
27. Are component counts based on default values? [Boolean] - Identifies whether or not a facility-specific component count is provided.

A.21 FUG-M06-LO (Fugitive Sources (Oil, Water, Gas) for Lease Operations Drilling)

The calculator possesses the following fields:

Calculator Name: FUG-M06-LO		Description: Fugitive Sources (Oil, Water, Gas) for Lease Oper	
<input type="text" value="January"/>		<input type="button" value="«"/> <input type="button" value="<"/> <input type="button" value=">"/> <input type="button" value="»"/>	
<input type="button" value="Data Requests"/>		<input type="button" value="Control Requests"/>	
<input type="button" value="Emission Factors"/>			
Description		Value	
EMISSION CALCULATOR REQUIRED PARAMETERS			
Total Number of Components (Specify by Type Below):	11192	<input type="button" value="QA →"/>	
Number of Connectors:	9194	<input type="button" value="QA →"/>	
Number of Open-Ended Lines:	285	<input type="button" value="QA →"/>	
Number of Pumps:	0	<input type="button" value="QA →"/>	
Number of Pump Seals:	0	<input type="button" value="QA →"/>	
Number of Valves:	1713	<input type="button" value="QA →"/>	
Number of Centrifugal Compressors - Dry Seals:	0	<input type="button" value="QA →"/>	
Number of Centrifugal Compressors - Wet Seals:	0	<input type="button" value="QA →"/>	
Number of Other Compressors - Seals:	0	<input type="button" value="QA →"/>	
Number of Other Relief Valves:	0	<input type="button" value="QA →"/>	
Number of Pressure Relief Valves:	0	<input type="button" value="QA →"/>	
Number of Meters:	0	<input type="button" value="QA →"/>	
Number of Instruments:	0	<input type="button" value="QA →"/>	
Number of Hatches:	0	<input type="button" value="QA →"/>	
Number of Polished Rods:	0	<input type="button" value="QA →"/>	
Number of Drains:	0	<input type="button" value="QA →"/>	
Number of Diaphragms:	0	<input type="button" value="QA →"/>	
Number of Dumps:	0	<input type="button" value="QA →"/>	
Number of Flanges:	0	<input type="button" value="QA →"/>	
Number of Operating Days in Period [days]:		<input type="button" value="QA →"/>	
LDAR			
LDAR is in Place?	Yes	<input type="button" value="QA →"/>	
Inspection Method:		<input type="button" value="QA →"/>	
Number Of Months Between Inspections [months]:		<input type="button" value="QA →"/>	
OTHER INFORMATION			
Average VOC Weight Percent of Fugitive Releases [%]:		<input type="button" value="QA →"/>	
Material Processed:		<input type="button" value="QA →"/>	
Average Equipment Elevation above Mean Sea Level [ft]:		<input type="button" value="QA →"/>	
Are Component Counts Based on Default Values?	Yes	<input type="button" value="QA →"/>	

Appendix Figure 21. Fugitive Sources (Oil, Water, Gas) for Lease Operations Drilling – FUG-M06-LO

1. Total number of components (Specify by type below) [Integer] - The total count of components that handles the selected process stream at this structure.
2. Number of connectors [Integer] - Total number of connectors in this structure.
3. Number of open-ended lines [Integer] - Total number of open-ended lines in this structure.
4. Number of pumps [Integer] - Total number of pumps in this structure.
5. Number of pump seals [Integer] - Total number of pump seals in this structure.
6. Number of valves [Integer] - Total number of valves in this structure.
7. Number of centrifugal compressors - dry seals [Integer] - Total number of centrifugal compressors dry seals in this structure.
8. Number of centrifugal compressors - wet seals [Integer] - Total number of centrifugal compressors wet seals in this structure.
9. Number of other compressors - seals [Integer] - Total number of other compressor seals in this structure.
10. Number of other relief valves [Integer] - Total number of other relief valves in this structure.
11. Number of pressure relief valves [Integer] - Total number of pressure relief valves in this structure.
12. Number of meters [Integer] - Total number of meters in this structure.
13. Number of instruments [Integer] - Total number of instruments in this structure.
14. Number of hatches [Integer] - Total number of hatches in this structure.
15. Number of polished rods [Integer] - Total number of polished rods in this structure.
16. Number of drains [Integer] - Total number of drains in this structure.
17. Number of diaphragms [Integer] - Total number of diaphragms in this structure.
18. Number of dumps [Integer] - Total number of dumps in this structure.

19. Number of flanges [Integer] - Total number of flanges in this structure.
20. Number of operating days in period [Integer] - The total number of days that the fugitive source was operated during the survey period.
21. LDAR is in place? [Boolean] - Indicates if the facility routinely assesses and repairs leaking fugitive components.
22. Inspection method - Indicates if the LDAR program is based on the use of optical instrumentation, vapor analyzer, or visual inspection.
23. Number of months between inspections [Integer] - Indicates the LDAR program inspection frequency.

24. Average VOC weight percent of fugitive releases [%] - The average VOC content of fugitive emissions for the inventoried components and the selected stream type.
25. Material processed - The type of fuel burned by the equipment.
26. Average equipment elevation above mean sea level [ft] - A good estimate is half the elevation of the top deck.
27. Are component counts based on default values? [Boolean] - Identifies whether or not a facility-specific component count is provided.

A.22 GLY-000 (Glycol Dehydrator Unit)

The calculator possesses the following fields:

Calculator Name:		Description:	
GLY-000		Glycol Dehydrator Unit	
January	<<	<	>
Data Requests		Control Requests	
Emission Factors			
Description	Value		
Total Fuel Usage [Mscf/month]:		QA →	
Material Processed:	Natural Gas	▼	QA →
Hours of Operation per Month [hr]:		QA →	
Emissions Destination:		▼	QA →

Appendix Figure 22. Glycol Dehydrator Unit – GLY-000

1. Total fuel usage [Mscf/month] - The total volume of natural gas processed by this glycol unit during the specific monthly survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).
2. Material processed - The type of fuel burned by the unit.
3. Hours of operation per month [hr] - The total number of hours that the unit was operated during the survey period.
4. Emissions destination - Indicates whether the emissions are vented/flared locally or remotely.

A.23 LOA-M01 (Loading Operations)

The calculator possesses the following fields:

Calculator Name: LOA-M01		Description: Loading Operations	
January		« ‹ › »	
Data Requests	Control Requests	Emission Factors	
Description		Value	
EMISSION CALCULATOR REQUIRED PARAMETERS			
Total Barrels Transferred per Month [bb]:			QA →
Storage Tank Paint Color:	Aluminum or Specular	▼	QA →
Storage Tank Paint Condition:	Good	▼	QA →
Reid Vapor Pressure [psia]:			QA →
VOC Tank Vapor Weight Percent [wt%]:			QA →
Average Molecular Weight of Vapors [lb/lb-mol]:			QA →
Daily Average Ambient Temperature [deg F]:			QA →
Liquid Bulk Temperature [deg F]:			QA →
OTHER INFORMATION			
Average Elevation Above Mean Sea Level [ft]:			QA →
Hours of Operation per Month [hr]:			QA →
Material Processed:	Crude Oil	▼	QA →
Emissions Destination:	Vented Locally	▼	QA →

Appendix Figure 23. Loading Operations – LOA-M01

1. Total barrels transferred per month [Barrels] - The quantity of liquid hydrocarbon loaded into ships or barges at this structure.
2. Storage tank paint color - The exterior paint color of the dispensing storage tank.
3. Storage tank paint condition - The exterior paint condition of the dispensing storage tank.
4. Reid vapor pressure [psia] - The Reid vapor pressure of the liquid contained within the dispensing storage tank.
5. VOC tank vapor weight percent [%] - The VOC content of vapors in the storage tank headspace, measured as weight percent.
6. Average molecular weight of vapors [lb/lb-mol] - The average molecular weight of VOCs present in the storage tank headspace.
7. Daily average ambient temperature [F°] - The average ambient daily temperature.
8. Liquid bulk temperature [F°] - The bulk temperature of the liquid contained within the dispensing storage tank.
9. Average elevation above mean sea level [ft] - The approximate elevation of loading operations, measured from mean sea level to the point of dispensing.

10. Hours of operation per month [hr] - The total number of hours that equipment was operated during the survey period.
11. Material processed - The type of fuel burned by the equipment.
12. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.

A.24 LOS-M01 (Losses from Flashings)

The calculator possesses the following fields:

Calculator Name: LOS-M01		Description: Losses from Flashing
<input type="text" value="January"/> <input type="button" value="«"/> <input type="button" value="<"/> <input type="button" value=">"/> <input type="button" value="»"/>		
Data Requests	Control Requests	Emission Factors
Description	Value	
EMISSION CALCULATOR REQUIRED PARAMETERS		
API Gravity:	<input type="text"/>	<input type="button" value="QA →"/>
Atmospheric Pressure [psia]:	14.7	<input type="button" value="QA →"/>
Vessel Operating Pressure [psig]:	<input type="text"/>	<input type="button" value="QA →"/>
Vessel Operating Temperature [deg F]:	<input type="text"/>	<input type="button" value="QA →"/>
Throughput Volume per Month [bbl]:	<input type="text"/>	<input type="button" value="QA →"/>
OTHER INFORMATION		
Type of Vessel	Heater	<input type="button" value="QA →"/>
Amount of loss per bbl of oil [scf]:	<input type="text"/>	<input type="button" value="QA →"/>
Material Processed:	Crude Oil	<input type="button" value="QA →"/>
Emissions Destination:	<input type="text"/>	<input type="button" value="QA →"/>
Hours of Operation per Month [hr]:	<input type="text"/>	<input type="button" value="QA →"/>

Appendix Figure 24. Losses from Flashings – LOS-M01

1. API gravity [$^{\circ}$ API] - The API gravity of the oil/condensate contained within the vessel where the flashing occurs.
2. Atmospheric pressure [psia]
3. Vessel operating pressure [psig] - Indicates the pressure setting of the vessel where the flashing occurs.
4. Vessel operating temperature [F°] - Indicates the operating temperature of the vessel where the flashing occurs.
5. Throughput volume per month [bbl] - "Indicates the actual throughput volume of oil/condensate for each vessel for the specific monthly survey period."
6. Type of vessel - Indicates the type of vessel [separator, heater treater, surge tank, other) where the flashing occurs.
7. Amount of loss per bbl of oil [scf]

8. Material processed - The type of fuel burned by the equipment.
9. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.
10. Hours of operation per month [hr] - The total number of hours that the vessel was operated during the survey period.

A.25 MUD-M01 (Mud Degassings)

The calculator possesses the following fields:

Calculator Name: MUD-M01		Description: Mud Degassing	
January		<input type="button" value="«"/> <input type="button" value="<"/> <input type="button" value=">"/> <input type="button" value="»"/>	
Data Requests	Control Requests	Emission Factors	
Description		Value	
EMISSION CALCULATOR REQUIRED PARAMETERS			
Days per Month of Drilling with Mud [days]:			<input type="button" value="QA →"/>
Type of Mud:		Water-based Muds	<input type="button" value="QA →"/>
OTHER INFORMATION			
Material Processed:		Gas	<input type="button" value="QA →"/>
Hours of Operation per Month [hr]:			<input type="button" value="QA →"/>
Emissions Destination:			<input type="button" value="QA →"/>

Appendix Figure 25. Mud Degassings – MUD-M01

1. Days per month of drilling with mud [Integer] - The total number of 24-hour days that drilling (with mud) occurred during the specific monthly survey period.
2. Type of mud - Indicates the type of mud used (drilling fluid) (water-based, oil-based, or synthetic).
3. Material processed - The type of fuel burned by the equipment.
4. Hours of operation per month [hr] - The total number of hours that the equipment was operated during the survey period.
5. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.

A.26 MUD-M01-LO (Mud Degassing for Lease Operations Drilling)

The calculator possesses the following fields:

Calculator Name: MUD-M01-LO		Description: Mud Degassing for Lease Operations Drilling		
January	«	<	>	»
Data Requests	Control Requests	Emission Factors		
Description		Value		
EMISSION CALCULATOR REQUIRED PARAMETERS				
Days per Period of Drilling with Mud [days]:				QA →
Type of Mud:				QA →
OTHER INFORMATION				
Material Processed:	Gas			QA →
Hours of Operation per Period [hr]:				QA →
Emissions Destination:				QA →

Appendix Figure 26. Mud Degassing for Lease Operations Drilling – MUD-M01-LO

1. Days per period of drilling with mud [Integer] - The total number of 24-hour days that drilling (with mud) occurred during the specific monthly survey period.
2. Type of mud - Indicates the type of mud used (drilling fluid) (water-based, oil-based, or synthetic).
3. Material processed - The type of fuel burned by the equipment.
4. Hours of operation per period [hr] - The total number of hours that the equipment was operated during the survey period.
5. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.

A.27 NGE-M01 (Natural Gas Engines Where Engine Stroke Cycle = 2-Cycle and Engine Burn = Lean)

The calculator possesses the following fields:

Calculator Name: NGE-M01		Description: Natural Gas Engines Where Engine Stroke Cycle	
January		« < > »	
Data Requests		Control Requests	
Emission Factors			
Description		Value	
EMISSION CALCULATOR REQUIRED PARAMETERS			
Total Fuel Usage [Mscf/month]:			QA →
Fuel Heating Value [Btu/scf]:	1050		QA →
Hours of Operation per Month [hr]:			QA →
OTHER INFORMATION			
Material Processed:	Natural Gas	▼	QA →
Emissions Destination:		▼	QA →
Average Fuel Used [Mscf/hr]:			QA →
Max Rated Fuel Usage [Btu/hp-hr]:			QA →
Max Rated Horsepower [hp]:			QA →
Operating Horsepower [hp]:			QA →
Fuel Sulfur Content [wt%]:			QA →
Manufacturer:			QA →
Model Number:			QA →

Appendix Figure 27. Natural Gas Engines Where Engine Stroke Cycle = 2-Cycle and Engine Burn = Lean – NGE-M01

1. Total fuel usage [Mscf/month] - Total gaseous fuel used during this survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).
2. Fuel heating value [Btu/scf] - The energy content of gaseous fuel types.
3. Hours of operation per month [hr] - The total number of hours that this engine was in operation during the specific monthly survey period.
4. Material processed - The type of fuel burned by the equipment.
5. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.
6. Average fuel usage [Mscf/hr] - The average rate of fuel usage during operation this survey period.
7. Max rated fuel usage [Btu/hp-hr] - The manufacturer's maximum rate of fuel usage.
8. Max rated horsepower [hp] - The manufacturer's maximum rated horsepower output.
9. Operating horsepower [hp] - The operating horsepower during operation this survey period.
10. Fuel sulfur content [%] - The sulfur content in liquid fuel types.
11. Manufacturer [Text] - The company name of the engine manufacturer.
12. Model No. [Text] - The manufacturer's model number of the engine.

A.28 NGE-M02 (Natural Gas Engines Where Engine Stroke Cycle = 4-Cycle and Engine Burn = Lean)

The calculator possesses the following fields:

Calculator Name: NGE-M02		Description: Natural Gas Engines Where Engine Stroke Cycle	
January		« ‹ › »	
Data Requests	Control Requests	Emission Factors	
Description	Value		
EMISSION CALCULATOR REQUIRED PARAMETERS			
Total Fuel Usage [Mscf/month]:			QA →
Fuel Heating Value [Btu/scf]:	1050		QA →
Hours of Operation per Month [hr]:			QA →
OTHER INFORMATION			
Material Processed:	Natural Gas		QA →
Emissions Destination:			QA →
Average Fuel Used [Mscf/hr]:			QA →
Max Rated Fuel Usage [Btu/hp-hr]:			QA →
Max Rated Horsepower [hp]:			QA →
Operating Horsepower [hp]:			QA →
Fuel Sulfur Content [wt%]:			QA →
Manufacturer:			QA →
Model Number:			QA →

Appendix Figure 28. Natural Gas Engines Where Engine Stroke Cycle = 4-Cycle and Engine Burn = Lean – NGE-M02

1. Total fuel usage [Mscf/month] - Total gaseous fuel used during this survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).
2. Fuel heating value [Btu/scf] - The energy content of gaseous fuel types.
3. Hours of operation per month [hr] - The total number of hours that this engine was in operation during the specific monthly survey period.
4. Material processed - The type of fuel burned by the equipment.
5. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.
6. Average fuel usage [Mscf/hr] - The average rate of fuel usage during operation this survey period.
7. Max rated fuel usage [Btu/hp-hr] - The manufacturer's maximum rate of fuel usage.
8. Max rated horsepower [hp] - The manufacturer's maximum rated horsepower output.
9. Operating horsepower [hp] - The operating horsepower during operation this survey period.

10. Fuel sulfur content [%] - The sulfur content in liquid fuel types.
11. Manufacturer [Text] - The company name of the engine manufacturer.
12. Model No. [Text] - The manufacturer's model number of the engine.

A.29 NGE-M03 (Natural Gas Engines Where Engine Stroke Cycle = 4-Cycle and Engine Burn = Rich)

The calculator possesses the following fields:

Calculator Name: NGE-M03		Description: Natural Gas Engines Where Engine Stroke Cycle	
January		« < > »	
Data Requests	Control Requests	Emission Factors	
Description	Value		
EMISSION CALCULATOR REQUIRED PARAMETERS			
Total Fuel Usage [Mscf/month]:			QA →
Fuel Heating Value [Btu/scf]:	1050		QA →
Hours of Operation per Month [hr]:			QA →
OTHER INFORMATION			
Material Processed:	Natural Gas	▼	QA →
Emissions Destination:		▼	QA →
Average Fuel Used [Mscf/hr]:			QA →
Max Rated Fuel Usage [Btu/hp-hr]:			QA →
Max Rated Horsepower [hp]:			QA →
Operating Horsepower [hp]:			QA →
Fuel Sulfur Content [wt%]:			QA →
Manufacturer:			QA →
Model Number:			QA →

Appendix Figure 29. Natural Gas Engines Where Engine Stroke Cycle = 4-Cycle and Engine Burn = Rich – NGE-M03

1. Total fuel usage [Mscf/month] - Total gaseous fuel used during this survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).
2. Fuel heating value [Btu/scf] - The energy content of gaseous fuel types.
3. Hours of operation per month [hr] - The total number of hours that this engine was in operation during the specific monthly survey period.
4. Material processed - The type of fuel burned by the equipment.
5. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.
6. Average fuel usage [Mscf/hr] - The average rate of fuel usage during operation this survey period.
7. Max rated fuel usage [Btu/hp-hr] - The manufacturer's maximum rate of fuel usage.

8. Max rated horsepower [hp] - The manufacturer’s maximum rated horsepower output.
9. Operating horsepower [hp] - The operating horsepower during operation this survey period.
10. Fuel sulfur content [%] - The sulfur content in liquid fuel types.
11. Manufacturer [Text] - The company name of the engine manufacturer.
12. Model No. [Text] - The manufacturer’s model number of the engine.

A.30 NGE-M04 (Natural Gas Engines Where Engine Burn Type = Clean)

The calculator possesses the following fields:

The screenshot shows a web-based calculator interface for 'Natural Gas Engines Where Engine Burn Type = Clean'. At the top, it displays 'Calculator Name: NGE-M04' and 'Description: Natural Gas Engines Where Engine Burn Type = Clean'. Below this is a month selector set to 'January' and navigation arrows. There are three tabs: 'Data Requests' (selected), 'Control Requests', and 'Emission Factors'. The main area contains a table with two sections: 'EMISSION CALCULATOR REQUIRED PARAMETERS' and 'OTHER INFORMATION'. The first section has three rows: 'Total Fuel Usage [Mscf/month]' (empty), 'Fuel Heating Value [Btu/scf]' (1050), and 'Hours of Operation per Month [hr]' (empty). The second section has eight rows: 'Material Processed' (Natural Gas), 'Emissions Destination' (empty), 'Average Fuel Used [Mscf/hr]' (empty), 'Max Rated Fuel Usage [Btu/hp-hr]' (empty), 'Max Rated Horsepower [hp]' (empty), 'Operating Horsepower [hp]' (empty), 'Fuel Sulfur Content [wt%]' (empty), and 'Manufacturer' (empty). Each row has a 'QA' button with a right-pointing arrow.

Description	Value	
EMISSION CALCULATOR REQUIRED PARAMETERS		
Total Fuel Usage [Mscf/month]:		QA →
Fuel Heating Value [Btu/scf]:	1050	QA →
Hours of Operation per Month [hr]:		QA →
OTHER INFORMATION		
Material Processed:	Natural Gas	QA →
Emissions Destination:		QA →
Average Fuel Used [Mscf/hr]:		QA →
Max Rated Fuel Usage [Btu/hp-hr]:		QA →
Max Rated Horsepower [hp]:		QA →
Operating Horsepower [hp]:		QA →
Fuel Sulfur Content [wt%]:		QA →
Manufacturer:		QA →
Model Number:		QA →

Appendix Figure 30. Natural Gas Engines Where Engine Burn Type = Clean – NGE-M04

1. Total fuel usage [Mscf/month] - Total gaseous fuel used during this survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).
2. Fuel heating value [Btu/scf] - The energy content of gaseous fuel types.
3. Hours of operation per month [hr] - The total number of hours that this engine was in operation during the specific monthly survey period.
4. Material processed - The type of fuel burned by the equipment.
5. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.

6. Average fuel usage [Mscf/hr] - The average rate of fuel usage during operation this survey period.
7. Max rated fuel usage [Btu/hp-hr] - The manufacturer's maximum rate of fuel usage.
8. Max rated horsepower [hp] - The manufacturer's maximum rated horsepower output.
9. Operating horsepower [hp] - The operating horsepower during operation this survey period.
10. Fuel sulfur content [%] - The sulfur content in liquid fuel types.
11. Manufacturer [Text] - The company name of the engine manufacturer.
12. Model No. [Text] - The manufacturer's model number of the engine.

A.31 NGT-M01 (Dual-Fuel Turbines - Nat. Gas - Known Sulfur)

The calculator possesses the following fields:

Calculator Name: NGT-M01		Description: Dual-Fuel Turbines - Nat. Gas - Known Sulfur	
January		« ‹ › »	
Data Requests	Control Requests	Emission Factors	
Description		Value	
EMISSION CALCULATOR REQUIRED PARAMETERS			
Total Fuel Usage [Mscf/month]:			QA →
Hours of Operation per Month:			QA →
Fuel Heating Value [Btu/scf]:	1050		QA →
Fuel Sulfur Content [wt%]:			QA →
OTHER INFORMATION			
Material Processed:	Natural Gas	▼	QA →
Emissions Destination:		▼	QA →
Average Fuel Usage [Mscf/hr]:			QA →
Max Rated Fuel (Nat Gas) Usage [Btu/hp-hr]:			QA →
Max Rated Horsepower (Nat Gas) [hp]:			QA →
Operating Horsepower [hp]:			QA →

Appendix Figure 31. Dual-Fuel Turbines - Nat. Gas - Known Sulfur – NGT-M01

1. Total fuel usage [Mscf/month] - Total gaseous fuel used during this survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).
2. Hours of operation per month [hr] - The total number of hours that this turbine was in operation during the specific monthly survey period.
3. Fuel heating value [Btu/scf] - The energy content of gaseous fuel types.
4. Fuel sulfur content [%] - The sulfur content in liquid fuel types.

5. Material processed - The type of fuel burned by the equipment.
6. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.
7. Average fuel usage [Mscf/hr] - The average rate of gaseous fuel usage during operation this survey period.
8. Max rated fuel (Nat Gas) Usage [Btu/hp-hr] - The manufacturer’s maximum rate of gaseous fuel usage.
9. Max rated horsepower (Nat Gas) [hp] - The manufacturer’s maximum rated horsepower output.
10. Operating horsepower [hp] - The operating horsepower during operation this survey period.

A.32 NGT-M02 (Dual-Fuel Turbines - Nat. Gas - Unknown Sulfur)

The calculator possesses the following fields:

The screenshot shows a web-based calculator interface for 'NGT-M02'. At the top, it displays the 'Calculator Name' as 'NGT-M02' and the 'Description' as 'Dual-Fuel Turbines - Nat. Gas - Unknown Sulfur'. Below this is a dropdown menu set to 'January' and navigation buttons. The main area has three tabs: 'Data Requests', 'Control Requests', and 'Emission Factors'. The 'Data Requests' tab is active, showing a table with two sections: 'EMISSION CALCULATOR REQUIRED PARAMETERS' and 'OTHER INFORMATION'. The 'REQUIRED PARAMETERS' section includes 'Total Fuel Usage [Mscf/month]', 'Fuel Heating Value [Btu/scf]' (with a value of 1050), and 'Hours of Operation per Month'. The 'OTHER INFORMATION' section includes 'Material Processed' (set to 'Natural Gas'), 'Emissions Destination', 'Average Fuel Usage [Mscf/hr]', 'Max Rated Fuel (Nat Gas) Usage [Btu/hp-hr]', 'Max Rated Horsepower (Nat Gas) [hp]', 'Operating Horsepower [hp]', and 'Fuel Sulfur Content [wt%]'. Each field has a 'QA' button to its right.

Description	Value	QA
EMISSION CALCULATOR REQUIRED PARAMETERS		
Total Fuel Usage [Mscf/month]:		QA →
Fuel Heating Value [Btu/scf]:	1050	QA →
Hours of Operation per Month:		QA →
OTHER INFORMATION		
Material Processed:	Natural Gas	QA →
Emissions Destination:		QA →
Average Fuel Usage [Mscf/hr]:		QA →
Max Rated Fuel (Nat Gas) Usage [Btu/hp-hr]:		QA →
Max Rated Horsepower (Nat Gas) [hp]:		QA →
Operating Horsepower [hp]:		QA →
Fuel Sulfur Content [wt%]:		QA →

Appendix Figure 32. Dual-Fuel Turbines - Nat. Gas - Unknown Sulfur – NGT-M02

1. Total fuel usage [Mscf/month] - Total gaseous fuel used during this survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).
2. Fuel heating value [Btu/scf] - The energy content of gaseous fuel types.
3. Hours of operation per month [hr] - The total number of hours that this turbine was in operation during the specific monthly survey period.

4. Material processed - The type of fuel burned by the equipment.
5. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.
6. Average fuel usage [Mscf/hr] - The average rate of gaseous fuel usage during operation this survey period.
7. Max rated fuel (Nat Gas) Usage [Btu/hp-hr] - The manufacturer's maximum rate of gaseous fuel usage.
8. Max rated horsepower (Nat Gas) [hp] - The manufacturer's maximum rated horsepower output.
9. Operating horsepower [hp] - The operating horsepower during operation this survey period.
10. Fuel sulfur content [%] - The sulfur content in liquid fuel types.

A.33 NGT-M03 (Dual-Fuel Turbines - Diesel)

The calculator possesses the following fields:

Calculator Name: NGT-M03		Description: Dual-Fuel Turbines - Diesel	
January		« < > »	
Data Requests		Control Requests	
Emission Factors			
Description	Value		
EMISSION CALCULATOR REQUIRED PARAMETERS			
Total Fuel Usage [gallons/month]:		QA →	
Fuel Heating Value [Btu/lb]:	19300	QA →	
Hours of Operation per Month [hr]:		QA →	
Fuel Sulfur Content [wt%]:	0.0015	QA →	
OTHER INFORMATION			
Material Processed:	Diesel	QA →	
Average Fuel Usage [gallons/hr]:		QA →	
Max Rated Fuel (Diesel) Usage [Btu/hp-hr]:		QA →	
Max Rated Horsepower (Diesel) [hp]:		QA →	
Operating Horsepower [hp]:		QA →	
Emissions Destination:		QA →	

Appendix Figure 33. Dual-Fuel Turbines - Diesel – NGT-M03

1. Total fuel usage [gallons/month] - Total liquid fuel used during this survey period.
2. Fuel heating value [Btu/lb] - The energy content of diesel fuel.
3. Hours of operation per month [hr] - The total number of hours that this turbine was in operation during the specific monthly survey period.
4. Fuel sulfur content [%] - The sulfur content in liquid fuel types.

5. Material processed - The type of fuel burned by the equipment.
6. Average fuel usage [gallons/hr] - The average rate of diesel fuel usage during operation this survey period.
7. Max rated fuel (Diesel) Usage [Btu/hp-hr] - The manufacturer’s maximum rate of fuel usage.
8. Max rated horsepower (Diesel) [hp] - The manufacturer’s maximum rated horsepower output.
9. Operating horsepower [hp] - The operating horsepower during operation this survey period.
10. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.

A.34 PNE-M01 (Pneumatic Pumps)

The calculator possesses the following fields:

Calculator Name: PNE-M01		Description: Pneumatic Pumps	
<input type="text" value="January"/>		<input type="button" value="«"/> <input type="button" value="<"/> <input type="button" value=">"/> <input type="button" value="»"/>	
<input type="button" value="Data Requests"/>		<input type="button" value="Control Requests"/>	
<input type="button" value="Emission Factors"/>			
Description		Value	
EMISSION CALCULATOR REQUIRED PARAMETERS			
Hours of Operation per Month [hr]:			<input type="button" value="QA →"/>
Fuel Gas Usage Rate [scf/hr]:			<input type="button" value="QA →"/>
Gas Molecular Weight [lb/lb-mol]:			<input type="button" value="QA →"/>
Mass Fraction of CH4 in the Gas [lb CH4/lb]:			<input type="button" value="QA →"/>
Mass Fraction of CO2 in the Gas [lb CO2/lb]:			<input type="button" value="QA →"/>
Mass Fraction of VOC in the Gas [lb VOC/lb]:			<input type="button" value="QA →"/>
OTHER INFORMATION			
Manufacturer:			<input type="button" value="QA →"/>
Model:			<input type="button" value="QA →"/>
Total Fuel Usage [scf/month]:			<input type="button" value="QA →"/>
Material Processed:	Natural Gas	<input type="button" value="v"/>	<input type="button" value="QA →"/>
Emissions Destination:	Vented Locally	<input type="button" value="v"/>	<input type="button" value="QA →"/>

Appendix Figure 34. Pneumatic Pumps – PNE-M01

1. Hours of operation per month [hr] - The total number of hours that the pump was in operation during the specific monthly survey period.
2. Fuel gas usage rate [scf/hr] - The rate of natural gas usage during this survey period. This information is no longer optional. You should obtain the fuel gas usage rate for each specific make and model from the equipment vendor.

3. Gas molecular weight [lb/lb-mol]
4. Mass fraction of CH4 in the gas [lb CH4/lb]
5. Mass fraction of CO2 in the gas [lb CO2/lb]
6. Mass fraction of VOC in the gas [lb VOC/lb]

7. Manufacturer [Text] - The company name of the equipment manufacturer.
8. Model [Text] - The manufacturer's model number of the pump. Only include pumps that are in natural gas service. Do not include pumps in compressed air service.
9. Total fuel usage [scf/month] - Total gaseous fuel used during this survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).
10. Material processed - The type of fuel burned by the equipment.
11. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.

A.35 PRE-M01 (Pneumatic Controllers)

The calculator possesses the following fields:

Calculator Name: PRE-M01		Description: Pneumatic Controllers
<input type="text" value="January"/> « < > »		
Data Requests	Control Requests	Emission Factors
Description	Value	
EMISSION CALCULATOR REQUIRED PARAMETERS		
Number of Units:	<input type="text"/>	<input type="button" value="QA →"/>
Hours of Operation per Month [hr]:	<input type="text"/>	<input type="button" value="QA →"/>
Fuel Gas Usage Rate [scf/hr]:	<input type="text"/>	<input type="button" value="QA →"/>
Gas Molecular Weight [lb/lb-mol]:	<input type="text"/>	<input type="button" value="QA →"/>
Mass Fraction of CH4 in the Gas [lb CH4/lb]:	<input type="text"/>	<input type="button" value="QA →"/>
Mass Fraction of CO2 in the Gas [lb CO2/lb]:	<input type="text"/>	<input type="button" value="QA →"/>
Mass Fraction of VOC in the Gas [lb VOC/lb]:	<input type="text"/>	<input type="button" value="QA →"/>
OTHER INFORMATION		
Service Type:	PC	<input type="button" value="QA →"/>
Manufacturer:	<input type="text"/>	<input type="button" value="QA →"/>
Model:	<input type="text"/>	<input type="button" value="QA →"/>
Equipment Elevation Above Mean Sea Level [ft]:	<input type="text"/>	<input type="button" value="QA →"/>
Bleed Rate:	<input type="text"/>	<input type="button" value="QA →"/>
Total Fuel Usage [scf/month]:	<input type="text"/>	<input type="button" value="QA →"/>
Material Processed:	Natural Gas	<input type="button" value="QA →"/>
Emissions Destination:	<input type="text"/>	<input type="button" value="QA →"/>

Appendix Figure 35. Pneumatic Controllers – PRE-M01

1. Number of units [Integer] - Number of equipment of this exact make and model.
2. Hours of operation per month [hr] - The total number of hours that the equipment was in operation during the specific monthly survey period.
3. Fuel gas usage rate [scf/hr] - The rate of natural gas usage during this survey period. This information is no longer optional. You should obtain the fuel gas usage rate for each specific make and model from the equipment vendor.
4. Gas molecular weight [lb/lb-mol]
5. Mass fraction of CH₄ in the gas [lb CH₄/lb]
6. Mass fraction of CO₂ in the gas [lb CO₂/lb]
7. Mass fraction of VOC in the gas [lb VOC/lb]
8. Service type - Indicates whether the equipment is in pressure control (PC), level control (LC), flow control (FC), or other service.
9. Manufacturer [Text] - The company name of the equipment manufacturer. Only include equipment that is in natural gas service. Do not include equipment in compressed air service.
10. Model [Text] - The manufacturer's model number of the equipment.
11. Equipment elevation above mean sea level [ft] - A good estimate is half the elevation of the top deck.
12. Bleed rate - Indicates if the device is: High-bleed (>6scfh), Low-bleed (<6scfh), Intermittent, or Zero-bleed.
13. Total fuel usage [scf/month] - Total gaseous fuel used during this survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).
14. Material processed - The type of fuel burned by the equipment.
15. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.

A.36 STO-M01 (Storage Tank - Horizontal, Rectangular Tank)

The calculator possesses the following fields:

Calculator Name: STO-M01		Description: Storage Tank - Horizontal, Rectangular Tank	
January		<input type="button" value="«"/> <input type="button" value="<"/> <input type="button" value=">"/> <input type="button" value="»"/>	
Data Requests		Control Requests	
Emission Factors			
Description		Value	
EMISSION CALCULATOR REQUIRED PARAMETERS			
Monthly Net Throughput [bbl]:			QA →
Net Working Loss Throughput [ft ³ /month]:			QA →
Tank VOC Molecular Weight [lb/lb-mol]:			QA →
Reid Vapor Pressure [psia]:			QA →
Average Daily Maximum Ambient Temperature [deg F]:			QA →
Average Daily Minimum Ambient Temperature [deg F]:			QA →
Liquid Bulk Temperature [deg F]:			QA →
Number Of Days In The Month [days/month]:			QA →
Paint Color	Aluminum or Specular	▼	QA →
Paint Condition	Good	▼	QA →
Tank Shell Length [ft]:			QA →
Tank Shell Height [ft]:			QA →
Tank Shell Width [ft]:			QA →
Tank Average Liquid Height [ft]:			QA →
OTHER INFORMATION			
Emissions Destination:		▼	QA →
Material Processed:		▼	QA →

Appendix Figure 36. Storage Tank - Horizontal, Rectangular Tank – STO-M01

1. Monthly net throughput [Barrels] - The volume of liquid hydrocarbon turned over through the storage tank during the survey period.
2. Net working loss Throughput [ft³/month]
3. Tank VOC molecular weight [lb/lb-mol] - The molecular weight of VOCs present in the storage tank headspace.
4. Reid vapor pressure [psia] - The Reid vapor pressure of the liquid contained within the storage tank.
5. Average daily maximum ambient temperature [F°] - The average maximum ambient temperature for the day
6. Average daily minimum ambient temperature [F°] - The average minimum ambient temperature for the day
7. Liquid bulk temperature [F°] - The bulk temperature of the liquid contained within the storage tank.
8. Number of days in the month [Integer] - Indicates the number of days for the during the specific monthly survey period.
9. Paint color - The exterior paint color of the storage tank.

10. Paint condition - The exterior paint condition of the storage tank.
11. Tank shell length [ft] - The longest horizontal dimension of a horizontal tank.
12. Tank shell height [ft] - The vertical height of a cylindrical tank (oriented vertically) or of a rectangular tank (oriented vertically or horizontally).
13. Tank shell width [ft] - The horizontal width of a rectangular tank (oriented vertically or horizontally).
14. Tanks average liquid height [ft] - The average height of stored liquid during the survey period, measured from the bottom of the storage space to the top of the liquid.
15. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.
16. Material processed - Indicates whether the storage tank contains crude oil or condensates. It is not mandatory that you enter data for jet fuel storage tanks.

A.37 STO-M02 (Storage Tank - Vertical, Rectangular Tank)

The calculator possesses the following fields:

Calculator Name: STO-M02 **Description:** Storage Tank - Vertical, Rectangular Tank

January « < > »

Data Requests | Control Requests | Emission Factors

Description	Value	
EMISSION CALCULATOR REQUIRED PARAMETERS		
Monthly Net Throughput [bb]:	<input type="text"/>	QA →
Net Working Loss Throughput [ft3/month]:	<input type="text"/>	QA →
Tank VOC Molecular Weight [lb/lb-mol]:	<input type="text"/>	QA →
Reid Vapor Pressure [psia]:	<input type="text"/>	QA →
Average Daily Maximum Ambient Temperature [deg F]:	<input type="text"/>	QA →
Average Daily Minimum Ambient Temperature [deg F]:	<input type="text"/>	QA →
Liquid Bulk Temperature [deg F]:	<input type="text"/>	QA →
Number Of Days In The Month [days/month]:	<input type="text"/>	QA →
Paint Color	Aluminum or Specular ▼	QA →
Paint Condition	Good ▼	QA →
Horizontal Width Of A Rectangular Tank (Oriented Vertically) [ft]:	<input type="text"/>	QA →
Tank Shell Height [ft]:	<input type="text"/>	QA →
Second Horizontal Width Of A Rectangular Tank (Oriented Vertically) [ft]:	<input type="text"/>	QA →
Tank Average Liquid Height [ft]:	<input type="text"/>	QA →
OTHER INFORMATION		
Emissions Destination:	<input type="text"/>	QA →
Material Processed:	<input type="text"/>	QA →

Appendix Figure 37. Storage Tank - Vertical, Rectangular Tank – STO-M02

1. Monthly net throughput [Barrels] - The volume of liquid hydrocarbon turned over through the storage tank during the survey period.
2. Net working loss throughput [ft³/month]
3. Tank VOC molecular weight [lb/lb-mol] - The molecular weight of VOCs present in the storage tank headspace.
4. Reid vapor pressure [psia] - The Reid vapor pressure of the liquid contained within the storage tank.
5. Average daily maximum ambient temperature [F°] - The average maximum ambient temperature for the day.
6. Average daily minimum ambient temperature [F°] - The average minimum ambient temperature for the day.
7. Liquid bulk temperature [F°] - The bulk temperature of the liquid contained within the storage tank.
8. Number of days in the month [Integer] - Indicates the number of days for the during the specific monthly survey period.
9. Paint color - The exterior paint color of the storage tank.
10. Paint condition - The exterior paint condition of the storage tank.
11. Horizontal width of a rectangular tank (Oriented Vertically) [ft] - The horizontal width of a rectangular tank (oriented vertically or horizontally).
12. Tank shell height [ft] - The vertical height of a cylindrical tank (oriented vertically) or of a rectangular tank (oriented vertically or horizontally).
13. Second horizontal width of a rectangular tank (Oriented Vertically) [ft] - The 2nd horizontal width of a rectangular tank (oriented vertically).
14. Tanks average liquid height [ft] - The average height of stored liquid during the survey period, measured from the bottom of the storage space to the top of the liquid.
15. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.
16. Material processed - Indicates whether the storage tank contains crude oil or condensates. It is not mandatory that you enter data for jet fuel storage tanks.

A.38 STO-M03 (Storage Tank - Horizontal, Cylindrical Tank)

The calculator possesses the following fields:

Calculator Name: STO-M03	Description: Storage Tank - Horizontal, Cylindrical Tank	
January	« < > »	
Data Requests	Control Requests	Emission Factors
Description		Value
EMISSION CALCULATOR REQUIRED PARAMETERS		
Monthly Net Throughput [bbl]:		QA →
Net Working Loss Throughput [ft ³ /month]:		QA →
Tank VOC Molecular Weight [lb/lb-mol]:		QA →
Reid Vapor Pressure [psia]:		QA →
Average Daily Maximum Ambient Temperature [deg F]:		QA →
Average Daily Minimum Ambient Temperature [deg F]:		QA →
Liquid Bulk Temperature [deg F]:		QA →
Number Of Days In The Month [days/month]:		QA →
Paint Color	Aluminum or Specular	QA →
Paint Condition	Good	QA →
Tank Shell Length [ft]:		QA →
Tank Shell Diameter [ft]:		QA →
Tank Average Liquid Height [ft]:		QA →
OTHER INFORMATION		
Emissions Destination:		QA →
Material Processed:		QA →

Appendix Figure 38. Storage Tank - Horizontal, Cylindrical Tank – STO-M03

1. Monthly net throughput [Barrels] - The volume of liquid hydrocarbon turned over through the storage tank during the survey period.
2. Net working loss throughput [ft³/month]
3. Tank VOC molecular weight [lb/lb-mol] - The molecular weight of VOCs present in the storage tank headspace.
4. Reid vapor pressure [psia] - The Reid vapor pressure of the liquid contained within the storage tank.
5. Average daily maximum ambient temperature [F°] - The average maximum ambient temperature for the day.
6. Average daily minimum ambient temperature [F°] - The average minimum ambient temperature for the day.
7. Liquid bulk temperature [F°] - The bulk temperature of the liquid contained within the storage tank.
8. Number of days in the month [Integer] - Indicates the number of days for the during the specific monthly survey period.

9. Paint color - The exterior paint color of the storage tank.
10. Paint condition - The exterior paint condition of the storage tank.
11. Tank shell length [ft] - The longest horizontal dimension of a horizontal tank.
12. Tank shell diameter [ft] - The diameter of a cylindrical tank (either horizontal or vertical).
13. Tanks average liquid height [ft] - The average height of stored liquid during the survey period, measured from the bottom of the storage space to the top of the liquid.
14. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.
15. Material processed - Indicates whether the storage tank contains crude oil or condensates. It is not mandatory that you enter data for jet fuel storage tanks.

A.39 STO-M04 (Storage Tank - Vertical, Cylindrical Tank)

The calculator possesses the following fields:

Calculator Name: STO-M04		Description: Storage Tank - Vertical, Cylindrical Tank	
January		« ‹ › »	
Data Requests		Control Requests	
Emission Factors			
Description	Value		
EMISSION CALCULATOR REQUIRED PARAMETERS			
Monthly Net Throughput [bb]:			QA →
Net Working Loss Throughput [ft3/month]:			QA →
Tank VOC Molecular Weight [lb/lb-mol]:			QA →
Reid Vapor Pressure [psia]:			QA →
Average Daily Maximum Ambient Temperature [deg F]:			QA →
Average Daily Minimum Ambient Temperature [deg F]:			QA →
Liquid Bulk Temperature [deg F]:			QA →
Number Of Days In The Month [days/month]:			QA →
Paint Color	Aluminum or Specular	▼	QA →
Paint Condition	Good	▼	QA →
Tank Roof Type	Cone or Peaked	▼	QA →
Tank Shell Diameter [ft]:			QA →
Tank Roof Height [ft]:			QA →
Tank Shell Height [ft]:			QA →
Tank Average Liquid Height [ft]:			QA →
OTHER INFORMATION			
Material Processed:		▼	QA →
Emissions Destination:		▼	QA →

Appendix Figure 39. Storage Tank - Vertical, Cylindrical Tank – STO-M04

1. Monthly net throughput [Barrels] - The volume of liquid hydrocarbon turned over through the storage tank during the survey period.
2. Net working loss throughput [ft³/month]
3. Tank VOC molecular weight [lb/lb-mol] - The molecular weight of VOCs present in the storage tank headspace.
4. Reid vapor pressure [psia] - The Reid vapor pressure of the liquid contained within the storage tank.
5. Average daily maximum ambient temperature [F°] - The average maximum ambient temperature for the day.
6. Average daily minimum ambient temperature [F°] - The average minimum ambient temperature for the day.
7. Liquid bulk temperature [F°] - The bulk temperature of the liquid contained within the storage tank.
8. Number of days in the month [Integer] - Indicates the number of days for the during the specific monthly survey period.
9. Paint color - The exterior paint color of the storage tank.
10. Paint condition - The exterior paint condition of the storage tank.
11. Tank roof type - Indicates the shape of a vertical tank's roof.
12. Tank shell diameter [ft] - The diameter of a cylindrical tank (either horizontal or vertical).
13. Tank roof height [ft] - The height of a fixed roof measured from the top of the tank shell to the highest point of the roof.
14. Tank shell height [ft] - The vertical height of a cylindrical tank (oriented vertically) or of a rectangular tank (oriented vertically or horizontally).
15. Tanks average liquid height [ft] - The average height of stored liquid during the survey period, measured from the bottom of the storage space to the top of the liquid.
16. Material processed - Indicates whether the storage tank contains crude oil or condensates. It is not mandatory that you enter data for jet fuel storage tanks.
17. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.

A.40 VEN-M01 (Cold Vent)

The calculator possesses the following fields:

Calculator Name: VEN-M01		Description: Cold Vents	
January		« < > »	
Data Requests	Control Requests	Emission Factors	
Description	Value		
EMISSION CALCULATOR REQUIRED PARAMETERS			
Volume Vented (including upsets) [Mscf]:		QA →	
Vent Gas VOC Concentration [ppmv]:		QA →	
VOC Molecular Weight [lb/lb-mol]:		QA →	
Use Sales Gas Average Molecular Weight?	Yes	QA →	
Weight Percent Methane (CH4) [%]:	88.17	QA →	
Weight Percent Carbon Dioxide (CO2) [%]:	2.048	QA →	
OTHER INFORMATION			
Hours of Operation (including upsets) [hr]:		QA →	
Vent Gas H2S Concentration [ppmv]:		QA →	
Vent Type:		QA →	
Material Processed:	Natural Gas	QA →	
Emissions Destination:		QA →	

Appendix Figure 40. Cold Vent – VEN-M01

1. Volume vented (including upsets) [Mscf] - The total volume of gas vented during the survey period, including periods of upset venting, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere). The GOADS volume vented should match the Office of Natural Resources Revenue (ONRR)'s volume vented reported on the Oil and Gas Operations Report (OGOR).
2. Vent gas VOC concentration [ppmv] - The concentration of volatile organic compounds present in the vented gas.
3. VOC molecular weight [lb/lb-mol] - The molecular weight of VOCs present in the vented gas.
4. Use sales gas average molecular weight [lb/lb-mol]
5. Weight percent methane (CH4) [%]
6. Weight percent carbon dioxide (CO2) [%]
7. Hours of operation (including upsets) [hr] - The total number of hours that the vent was operated during the survey period, including periods of upset venting.
8. Vent gas H2S concentration [ppmv] - The concentration of hydrogen sulfide present in the vented gas.
9. Vent type - Indicates whether vent gases are released at high pressure or low pressure.
10. Material processed
11. Emissions destination - Indicates whether the emissions from this equipment are vented or flared locally, or at some distance from the equipment.