

Outer Continental Shelf Air Quality System (OCS AQS)

Frequently Asked Questions (FAQs) v.1.0



The Outer Continental Shelf Air Quality System

February 8, 2021



Revision History

Date	Document Version	Software Version	Changes
2/8/21	1.0	1.5	<ul style="list-style-type: none"> • Added information re: BOEM Data Center Platform/Rig page (1.7). • Updated information on metadata report (1.11). • Added new Q&As on the following topics: <ul style="list-style-type: none"> - Pilot flare gas emissions (2.14) - Emissions from welding/painting/sanding (2.53) - Adding more emission sources to the rig (3.6) - Gridded Emissions (5.5) - Formatting downloaded reports (6.3 and 6.4)
12/30/20	0.2	1.4.26	<ul style="list-style-type: none"> • Updated OCS AQS system URL information (1.6). • Included additional guidance on populating the fugitives screen (2.17), including a note on specifying the compressor and seal type.
12/16/20	0.1	1.4.26	<ul style="list-style-type: none"> • Updated descriptions on inventory submission (1.10), calculators (2.2), GHGs/HAPs (2.3), and flares (2.13). • Added new Q&A on metadata report (1.11), policy-related inquires (1.18), emissions destinations (2.51), and auto-calculated fields (2.52). • Added Lease Operations section (3.1 to 3.5). • Minor format/typo corrections.
12/1/20	0	1.3	Original Version

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1 General Questions

1.1 What is the geographic coverage area of the Outer Continental Shelf (OCS) Emissions Inventory effort?

As in previous inventory years, OCS annual emissions inventory submittals include the following geographic areas:

- Gulf of Mexico: the portion of the OCS west of 87° 30' West longitude in the Central and Western Planning Areas
- Alaska: areas off the North Slope Borough, which includes the Chukchi Sea and Beaufort Sea Planning Areas and a portion of the Hope Basin Planning Area

1.2 What types of emissions sources must be included in the annual inventory?

According to the Bureau of Ocean Energy Management's (BOEM) Notice to Lessees (NTL) No. 2020-N03, lessees and operators with facilities (as defined in 30 CFR 550.302) in the areas listed above are to collect and report activity information, including facility, equipment, and fuel usage, and report emissions data covering the period January 1, 2021 to December 31, 2021. Operators and lessees are not required to report emissions from sources that do not constitute a "facility" as defined in 30 CFR 550.302. Additional instructions on what constitutes a facility for the purposes of meeting the requirements of 30 CFR 550.302 are covered in the OCS AQS User Manual, which is available on <https://www.boem.gov/2021-OCS-Emissions-Inventory>.

1.3 What is the definition of a "facility" for emissions reporting purposes?

As defined in 30 CFR 550.302, a "facility" means

any installation or device permanently or temporarily attached to the seabed which is used for exploration, development, and production activities for oil, gas, or sulphur and which emits or has the potential to emit any air pollutant from one or more sources. All equipment directly associated with the installation or device shall be considered part of a single facility if the equipment is dependent on, or affects the processes of, the installation or device. During production, multiple installations or devices will be considered to be a single facility if the installations or devices are directly related to the production of oil, gas, or sulphur at a single site. Any vessel used to transfer production from an offshore facility shall be considered part of the facility while physically attached to it.

1.4 What is the definition of a "temporary facility"?

As defined in 30 CFR 550.302, "temporary facility means activities associated with the construction of platforms offshore or with facilities related to exploration for or development of offshore oil and gas resources which are conducted in one location for less than 3 years." Lessees operating temporary facilities must report emissions.

1.5 In addition to reporting facility emissions for platform operations, which support vessels must also report emissions?

Operators and lessees are not required to report emissions from sources that are not a “facility” as defined in 30 CFR 550.302. Supply or crew transport vessels are not facilities as defined in the current regulation. However, drilling rigs or vessels such as mobile offshore drilling units are required to report emissions when (and only when) they are connected to the seabed or to a facility. Construction activities involved in installation are considered part of a facility and should be reported. Therefore, in addition to platform operations, activity types that are required to report emissions include, but not limited to, the following:

- Drilling (drill ships, jack up rigs, submersible rigs, semi-submersible rigs, and mobile offshore drilling units)
- Well stimulation
- Pipeline laying and burying
- Heavy lift vessel/derrick barge
- Drilling well test activities (such as flaring)
- Shuttle tankers and barges when they are connected to a facility to transfer production
- Ice management (Alaska OCS only)

1.6 How do I access the new OCS AQS Web Application and User Manual?

OCS AQS can be accessed at <https://ocsaqs.doi.gov> and will be available for users starting on December 1, 2020. The OCS AQS User Manual can be downloaded from the following website: <https://www.boem.gov/2021-OCS-Emissions-Inventory>.

Operators should have received an OCS AQS invitation email with instructions on setting up a username and password. Consultants will need the operators to request an OCS AQS account on their behalf. Inquiries should be sent to ocs.aqs_support@weblakes.com for technical support.

1.7 How can I find my BOEM Company Number or Complex and Structure Numbers?

Operator’s OSC AQS account will already be configured to include all details from their 2017 emissions inventory, which include Company, Complex and Structure Numbers, as well as all equipment.

You can also find assigned platforms and structures at the BOEM Data Center’s Platform/Rig Information Page (<https://www.data.boem.gov/Main/Platform.aspx>).

For new operators, please contact your BOEM/BSEE representative to discuss ways to enter data for a new company and structure into OCS AQS.

1.8 What are the differences between GOADS-2017 and OCS AQS?

- The new OCS AQS web application replaces the GOADS system and should be used to complete all emission inventory submittals going forward. All emission inventory work is now done online, and external MS Access spreadsheets no longer need to be filled out. The electronic submission in OCS AQS significantly streamlines the submission process.
- Operators are no longer required to submit their Quality Assurance (QA) Summary Form with the annual submittal as it is automatically available to BOEM/BSEE within OCS AQS.
- OCS AQS is a web-based application that can be accessed from a web browser (Chrome, Firefox, Edge).
- All necessary emission calculation tools and reporting features are readily available. There is no need to use Microsoft Access.
- OCS AQS allows for the importing and exporting of facility emissions sources and activity data.
- OCS AQS also includes an online mapping capability to see your facility locations as well as reports to check inputs prior to submission.

1.9 What are the similarities between GOADS-2017 and OCS AQS?

- BOEM is requesting that operators track monthly activities for variables needed to calculate monthly and annual emissions, which will be submitted electronically using OCS AQS in a single annual submittal prior to the submittal deadline.
- OCS AQS performs the same type of quality control (QC) checks that were present in GOADS. However, additional QA/QC checks have been implemented in that certain fields are designated as mandatory.
- Consistent with the GOADS-2017 data collection efforts, the reported monthly OCS AQS volume vented and flared data must be consistent with the information provided to the Office of Natural Resources Revenue (ONRR) Oil and Gas Operations Report (OGOR) forms, including data reported based on metered volumes.
- OCS AQS calculates emissions using the same emission factors and calculators as GOADS for most sources.

1.10 How do I submit my emissions inventory using OCS AQS?

After operators have updated all the source, activity, and emissions information and performed QA/QC for the emission inventory report year, go to the Operator Submittal dashboard and click the Submit link for the facility you want to submit. OCS AQS will go through a final QA check. If there are no errors, you will be asked to certify that you are the responsible party authorized to submit the inventory and if you have already submitted a Metadata report for the facility. Follow the wizard instructions to complete the submission process.

BOEM/BSEE will receive an automated notification that the inventory has been submitted for review.

Note, once the inventory is submitted, it will become locked so that no additional changes can be made. BOEM/BSEE will review the submittal and either accept it or send a notification back to the operator that additional action must be taken before it can be accepted. Notification will be sent via email and messaging within OCS AQS.

1.11 How do I submit a metadata report?

A metadata report provides data for BOEM in XML format that allows easier database sorting. OCS AQS automatically generates a metadata report for each facility in the required XML format. Go to the Emissions module and Tools menu. Select the Facility Metadata Export navigation and follow the wizard steps.

A metadata report must be prepared before you submit your inventory. The Submittal process will check if a report is available for the individual facility. If a metadata report is present, OCS AQS will attach it to the submitted inventory automatically.

1.12 Will I still have access to my inventory once it has been submitted?

You will still have access to your inventory; however, all information will be locked and read only. Operators will still have access to export their data for the EPA's electronic Greenhouse Gas Reporting Tool (e-GGRT) reporting, if necessary.

1.13 Which operating systems and internet browsers are supported in OCS AQS?

OCS AQS has been tested and is supported on multiple web browsers, including the current versions of Edge, Firefox, and Chrome. Chrome is recommended for the best user experience while using the new online mapping features.

For iOS users, OCS AQS supports Catalina and multiple browsers including current releases of Safari and Chrome.

1.14 Is there a way to facilitate reporting to the U.S. Environmental Protection Agency's (USEPA) Greenhouse Gas (GHG) Reporting Program with OCS AQS?

Yes, OCS AQS fully supports USEPA's e-GGRT reporting system. An e-GGRT-formatted XML report can easily be generated using the inputs provided. Greenhouse warming potentials (GWPs) are:

GHG	GWP
Carbon dioxide (CO₂)	1
Methane (CH₄)	25
Nitrous oxide (N₂O)	298

GWPs were taken from the Fourth Assessment Report from the Intergovernmental Panel on Climate Change (IPCC)¹ guidance for 100-year time horizons.

As a reminder, operators only need to report to e-GGRT if their emissions are greater than 25,000 metric tons (MT) carbon dioxide equivalent (CO₂e).

1.15 Is there any way I can re-use the GOADS-2017 data files within OCS AQS?

To streamline the emission inventory preparation and submittal process, previous facility and emission source data in the GOADS-2017 emission inventory data have already been imported into OCS AQS. This will serve as the starting point for the 2021 inventory reporting year. Certain data, such as throughput and hours of operation, were not imported as this information needs to be updated by the facility operator prior to calculating emissions for the new reporting year.

1.16 I do not see my list of facilities when I login. What should I do?

- As previously mentioned, all facilities that reported in the 2017 inventory year have been imported into OCS AQS. In addition, user accounts have been configured so that operators will automatically have access to all their facilities. For privacy and security purposes, operators will not be able to access facilities owned by other operators.
- Consultants hired by an operator to complete the inventory will need the operator to request an account on their behalf. Operators should submit their requests using the dedicated technical support email: ocs.aqs_support@weblakes.com
- If this is a new facility, the operator will need to enter or import data for the new facility. Simply follow instruction in the OCS AQS User Manual.

1.17 Do we need to count the new facilities that start up during the reporting year (e.g., if they start up in March, September, or December)?

Yes, operators need to report any emissions from any facility that operate at any time during the calendar reporting year.

1.18 Who do I contact if I have policy questions regarding the 2021 OCS Inventory?

Policy questions and non-technical support inquiries should be sent to:

Email: OCSEmissionsInventory@boem.gov

¹ <https://www.ipcc.ch/assessment-report/ar4/>

2 Emissions Calculations

2.1 How do I add a dual-fuel source?

For dual-fueled sources, such as turbines or boilers, you will need to create two (2) or more sources to represent the source using each type of fuel. Create the source using the Activities & Emissions Manager page and select a calculator that represents the process and fuel type used. For hours of use, the combined hours per month for the source should not exceed the total hours in the month.

2.2 How do I change calculators if I select the wrong one?

Default calculators for existing sources have already been applied. Currently, operators do not have the rights to change calculators for sources. You can either contact the OCS AQS support team to change the source calculator, or you can delete the source and create a new source with the correct calculator.

2.3 Does OCS AQS calculate GHGs and Hazardous Air Pollutants (HAPs)?

Yes, OCS AQS calculates all National Ambient Air Quality Standards (NAAQS) including carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), fine particulate matter (PM_{2.5}), coarse particulate matter (PM₁₀), and sulfur dioxide (SO₂).

In addition, OCS AQS calculates GHGs and HAPs including CO₂ equivalent (CO_{2e}).

2.4 How do I report zero emissions for an emissions source for a month?

In the Activities & Emissions Manager page, select the source from the Emission Units & Processes table to update the page. Click on the Options button next to the red QA/QC button and select the Zero Emissions option. Pick the month or months that you want to report zero emissions for the source and pick an explanation from the list for each month (for example, decommissioned or out of service).

2.5 The QA/QC check says that my input parameter is out of range, but my value is correct. How do I change the range?

To change the range of a parameter, email technical support at ocs.aqs_support@weblakes.com with the requested range of the parameter. BOEM will review the request, and, if approved, will notify you.

2.6 What should I do if I have a process that is not on the Calculator selection list?

All reportable processes have been included in the calculator list. In many cases, the process name may not be the same, such as boilers and heaters. Use the process closest to the function that the source is used for.

If a process or calculator is not available in the Activities & Emissions Manager page, contact technical support at ocs.aqs_support@weblakes.com to explain your situation and justify why you think an additional process should be included.

2.7 Can an operator manually enter emission values?

Operators can only manually enter calculated values or import calculated values from other third-party software applications like GRI-GLYCalc™. All other emissions are calculated within OCS AQS.

2.8 On the Calculated Emissions table, what does the “Calculated?” column mean?

The “Calculated?” column will show if the emission value was calculated using the process calculators and data request inputs (Y) or manually entered in the case of external applications like GRI-GLYCalc™ (N).

2.9 Can I use different emission factors or emission calculation method than the ones provided?

If you have different emission factors or emission calculation method than the ones provided in OCS AQS, contact technical support at ocs.aqs_support@weblakes.com and explain why you wish to use different emission factors or calculation methods. If approved by BOEM, the emissions factors and calculator will be modified.

2.10 I do not have information to estimate fuel gas consumption for my Pneumatic Controllers and Pneumatic Pumps. Where can I find this information?

This information should be requested from the manufacturer, as this is a required field and can no longer be left blank.

2.11 How do I select which emissions calculation methods to use for each equipment type and process?

Calculation methods and emission factors have already been assigned to equipment based on your 2017 emission inventory. For new equipment, users simply need to select the applicable calculation method from the available templates, and OCS AQS automatically assigns the appropriate calculation methods, emissions factors, and Source Classification Code (SCC).

2.12 How do I populate the cold vent screen?

For emissions that are vented remotely to a cold vent, create a cold vent source using the VEN-M01 Calculator in the Activities & Emissions Manager page. The program automatically assumes the equipment is vented locally.

Complete the required fields in green for each vent release point. The emission release assumes that the gas composition is the same. If gas compositions differ, create separate sources for each mixture.

The required data requests fields ask for the following inputs:

- **VOC [volatile organic compound] Molecular Weight (MW) in lb/lb-mol.** If component VOCs are given in g/mol, no conversion is necessary (1 lb/lb-mol = 1 g/mol). To calculate the VOC MW from components, multiply the percentage of individual VOC components by their MWs and add the products. For example, a gas consists of 88% methane (MW = 16.04 lb/lb-mol) and 6% butane (MW = 58.12 lb/lb-mol). The VOC MW = $(16.04 * 0.88) + (58.12 * 0.06) = 17.6$ lb/lb-mol. The VOC component percentages do not have to add up to 100% but need to be close to 100%.
- **Concentration of VOC in the Vent Gas in ppmv.** To convert percentage to ppmv, multiply the percentage in the decimal form by 10,000. Using the example above, the total VOC percentage of the gas is 94%. The ppmv of VOCs is $0.94 * 10,000 = 9,400$ ppmv.
- **The weight percentage of CH₄ in %.** Give the value in percent form. If the value is 88.1% (the default value), enter 88.1 in the field.
- **The weight percentage of CO₂ in %.** Give the value in percent form. If the value is 2.05% (the default value), enter 2.05 in the field.
- **Volume of Gas Vented from Miscellaneous Sources in Mscf.** The units are in thousands of scf and assumes that all gases have the same mixture ratios.

Note that vented emissions are NOT combusted. If emissions are combusted, create a Combustion Flare source.

It is important to make sure that the monthly volume vented and flared total are consistent with your monthly Oil and Gas Operations Report (OGOR)-reported value. OCS AQS allows BOEM to upload OGOR reports, so BOEM will review data submittals for consistency.

2.13 How do I select and populate the combustion flare template?

Create a combustion flare source using the FLA-M01 Combustion Flares calculator in the Activities & Emissions Manager page. Note that flared emissions are combusted. If the pilot is not lit and emissions are not combusted, create a Cold Vent record.

The flare calculator can include pilot light flare emissions. If pilot emissions are included with the total throughput and emissions calculation, select Yes in the **Pilot included in volume flared?** field. If the pilot is not included, select No and create a new source using the FLA-M01 Combustion Flares calculator to account for pilot emissions.

Operators should report one flare source per flare using their flare design specifications from manufacturers for the smoke condition and total volume flared (including pilot light).

The required data requests fields ask for the following inputs:

- **Concentration of H₂S (hydrogen sulfide) in the Flare Gas in ppm.** If H₂S is given in percentage, convert to ppm by multiplying the percentage in its decimal form by 10,000. For example, if the H₂S concentration is 3%, the ppm value is $0.03 * 10,000 = 300$ ppm.

- **Smoking Condition.** Choose the smoke output of the flared gas from the drop-down menu. If the smoking condition is unknown, choose the heavy smoking flare value.
- **Flare Gas Heating Value in Btu/scf.** The average heating value for natural gas is 1,050 Btu/scf; however, flared gas may have different characteristics, hence no default value is provided.
- **Molecular weight of VOCs in lb/lb-mol.** If component VOCs are given in g/mol, no conversion is necessary (1 lb/lb-mol = 1 g/mol). To calculate the VOC MW from components, multiply the percentage of individual VOC components by their MWs and add the products. For example, a gas consists of 88% methane (MW = 16.04 lb/lb-mol) and 6% butane (MW = 58.12 lb/lb-mol). The VOC MW = $(16.04 * 0.88) + (58.12 * 0.06) = 17.6$ lb/lb-mol. The VOC component percentages do not have to add up to 100%.
- **Total Volume of Gas Flared (Including Upsets) in Mscf.** The units are in thousands of scf and assumes that all gases have the same mixture ratios.
- **Combustion Efficiency of the Flare in percent.** Flare efficiency varies. Give the value in percent form. If the value is 98%, enter 98 in the field.

It is important to make sure that the monthly volume vented and flared total are consistent with your monthly OGOR-reported value. BOEM will review data submittals for consistency.

2.14 How do I account for pilot flare gas emissions?

We recommend you include pilot flare gas emissions with the main combustion flare source. If you do this, choose Yes in the Pilot Gas Volume field. If you do not include pilot gas with the main flare, select No in the field and create a second flare source to account for the emissions.

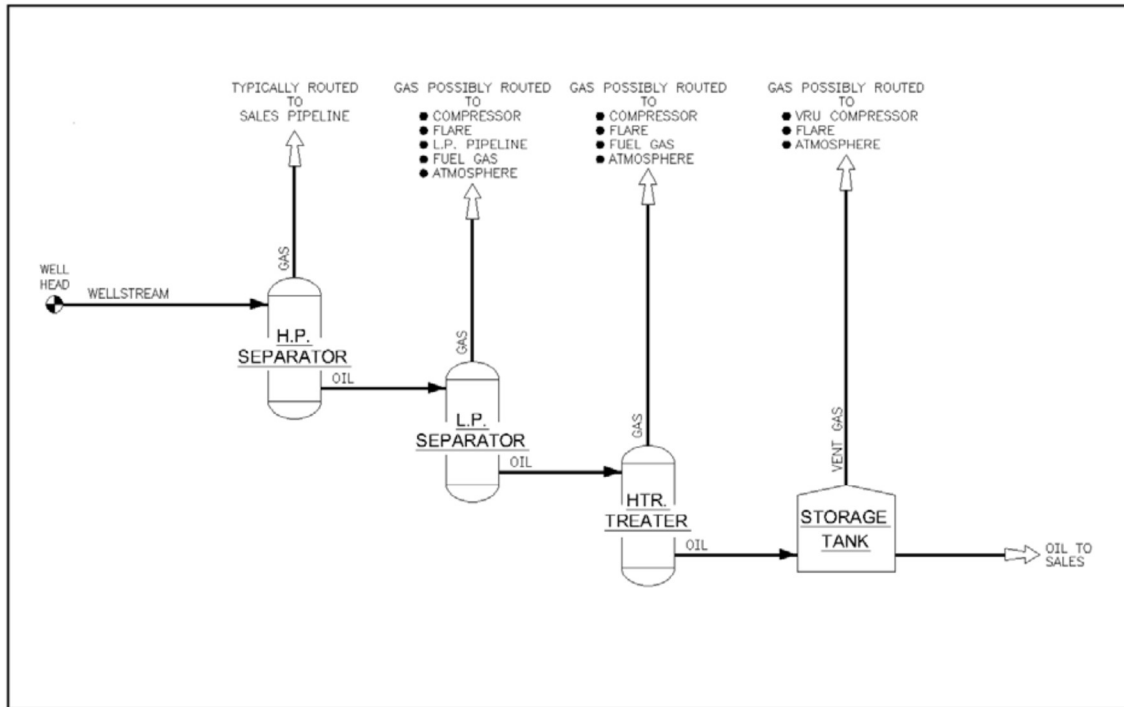
2.15 How do I populate flashing losses?

Flash gas is natural gas liberated when crude oil and condensate undergo a pressure drop. There are many areas in the production, gas processing, and transmission processes where flash gas is generated and vented to the atmosphere, including:

- **Intermediate Flash:** high/intermediate-pressure separators that send crude oil and condensate to a low-pressure separator. This low-pressure separator operates at a pressure greater than atmospheric pressure and may vent directly to the atmosphere. A heater treater may also be utilized in an intermediate flash situation. (See diagram below.)
- **Fixed Roof Storage Tanks:** high/low-pressure crude oil and condensate are flashed into tanks operating at atmospheric pressure. (See diagram below.)

Note that, for storage tanks, emissions from flashing are in addition to working and breathing emissions.

Below is a diagram of possible flash losses and routes for the flash gas.



For each stage of flash (e.g., low-pressure separator oil to heater treater) that is vented to the atmosphere (locally or to remote vent) or flared (locally or to remote flare), the operator should give the following data:

- Type of vessel (high-pressure separator, low-pressure separator, heater treater, surge tank, storage tank)
- American Petroleum Institute (API) gravity of stored oil
- Operating pressure of vessel that has flash gas that is vented or flared
- Operating temperature of vessel that has flash gas that is vented or flared
- Oil/condensate throughput
- Operating pressure of vessel upstream of vessel with flash gas that is vented or flared
- Operating temperature of vessel upstream of vessel with flash gas that is vented or flared
- If available, the “SCF of flash per bbl of oil” can be entered along with the “Type of vessel,” “API gravity of the stored oil,” and “Oil/condensate throughput.” If the “SCF of flash per bbl of oil” is entered, then the company does not have to enter the operating pressures and temperatures of the vessels.

For example, an operator has a low-pressure separator (LP) that sends its oil to a heater treater (HT), which dumps its oil to an atmospheric storage tank (T-1) then to the suction of the onsite compressor (i.e., the system). The heater treater vents its flash gas remotely to the low-pressure vent system.

The operator would create two flash records, say FLASH-1 and FLASH-2. On FLASH-1, enter data for the flash between the LP to HT flash, and on FLASH-2, enter data for the flash between the HT and T-1 flash. The LP separator sends its gas to the onsite compressor, and this flash is not vented to the atmosphere (or flared) and should not be reported.

An operator can obtain data using the following methods:

- Direct measurement
- Vasquez-Beggs Correlation Equations (SPE Paper 6719):
www.nmenv.state.nm.us/aqb/Vasquez-Beggs-Flashing-Calculations.xls
- Pressurized oil sample and measurement of gas-to-oil ratio (GOR) in lab
- API's E&P TANK Version 2 software
- Process simulators such as HYSYS or PROSIM

2.16 How do I populate the fuel combustion screens?

OCS AQS has several built-in calculators to manage combustion sources. Create a source in the Activities & Emissions Manager page and select the appropriate calculator for the source's process and fuel.

Complete the required fields in green for each source. In most cases, the required fields will only ask for heating value and throughput volume.

Heating values for common fuels are:

- Diesel average heating value: average = 19,300 Btu/lb
- Natural gas average heating value = 1,050 Btu/scf
- Gasoline average heating value = 20,300 Btu/lb

2.17 How do I populate the fugitives screen?

Fugitive sources have different calculators depending on the emission type (oil, natural gas). Each calculator requires component counts of different equipment. Surrogate default values have been added to the input data request parameters when sources are created based on average values from an API report². These component count values are:

- Connectors: 9,194
- Valves: 1,713
- Open-Ends: 285

² API. 1993. Fugitive hydrocarbon emissions from oil and gas production operations. Health and Environmental Sciences Department, American Petroleum Institute (API) Publication Number 4589.

- Others: 228

Additional information provided by the Offshore Operators Committee may also be helpful as a starting point in compiling a component count (see table below).

Skid Type	Valves	Pump Seals	Threaded Connections	Flanges	Open Ended Lines	Compressor Seals*	Diaphragms	Drains	Dump Arms	Hatches	Instruments	Meters	Pressure Relief Valves	Polished Rods	Other Relief Valves
Separator Skid	34	0	13	73	0	0	0	2	0	0	15	1	1	0	0
Heater Treater Skid	98	0	70	114	0	0	0	3	0	0	25	0	3	0	0
LACT Charge Pump Skid	21	3	6	47	0	0	0	1	0	0	9	0	0	0	0
LACT Skid	62	1	75	69	0	0	0	1	0	0	34	4	6	0	0
Pipeline Pumps Skid	39	3	12	78	0	0	0	2	0	0	70	0	3	0	0
Pig Launcher/Receiver Skid	13	0	14	16	0	0	0	0	0	0	9	0	1	0	0
Compressor Skid	119	0	113	138	0	4	0	1	0	0	69	0	9	4	0
Filter/Separator Skid	30	0	25	37	0	0	0	1	0	0	9	0	1	0	0
Gas Dehydration Skid	23	0	14	40	0	0	0	1	0	0	12	0	1	0	0
Glycol Regeneration Skid	134	0	110	194	0	0	0	4	0	0	45	1	7	6	1
Gas Meter	10	0	11	26	0	0	0	1	0	0	21	2	0	0	0
Fuel Gas Skid	62	0	47	85	0	0	0	1	0	0	32	1	4	0	0
Flotation Cell Skid	41	1	34	70	0	0	1	1	0	15	8	0	2	0	2
Scrubber	13	0	13	18	0	0	0	1	0	0	9	0	1	0	0
Amine Unit	226	8	166	391	0	0	1	5	0	0	121	2	12	0	1
Line Heater	30	0	46	18	0	0	0	1	0	0	10	0	0	0	1
Production Manifold	108	0	31	148	0	0	0	1	0	0	43	0	0	7	0
Wellhead	15	0	6	19	0	0	0	0	0	0	11	0	0	0	0
Import or Export Pipeline	3	0	0	9	0	0	0	0	0	0	0	0	0	0	0

Because there is a large variation in emissions for compressor seals, you are asked to specify the compressor and seal type:

- Centrifugal: wet seal
- Centrifugal: dry seal
- Reciprocating: shaft packing
- Other (specify in comments)

The total number of components will automatically be calculated for you in the top field under Emission Calculator Required Parameters.

2.18 Where can I get information on reducing venting and flaring emissions?

The Natural Gas STAR Program is a flexible, voluntary partnership between the USEPA and the oil and natural gas industry. Through the Program, the USEPA works with companies that produce, process, and transmit and distribute natural gas to identify and promote the implementation of cost-effective technologies and practices to reduce emissions of methane, a potent greenhouse gas. For more information, see <https://www.epa.gov/natural-gas-star-program>.

2.19 What is the average H₂S content of pipeline-quality gas?

For sweet pipeline-quality gas, use 4 ppm H₂S. Pipeline quality specifications are usually 0.25 grains H₂S per 100 SCF. One grain of H₂S per 100 SCF is equal to 16 ppm.

2.20 What values should I use to represent standard conditions?

Standard pressure of 14.7 psia and standard temperature of 60°F.

2.21 How do I allocate fuel to different equipment?

Most platforms meter only total fuel (Natural Gas or Diesel) used. To allocate fuel to each piece of fuel burning equipment do the following:

- Calculate the theoretical fuel used for each piece of equipment based on the fuel efficiency and hours operated for the month, e.g., Btu/hp-hr for engines or MMBtu/hr for heater treaters.
- To Calculate Theoretical Fuel Use for Natural Gas Engine, use the following formula:
$$\text{scf/Month} = (\text{Hrs/Month}) (\text{hp}) (\text{Btu/hp-hr}) (\text{scf}/1,050 \text{ Btu})$$
- To Calculate Theoretical Fuel use for Heater/Treater or Burner, use the following formula:
$$\text{scf/Month} = (\text{Hrs/Month}) (\text{MMBtu/hr}) (\text{scf}/1,050 \text{ Btu}) (1,000,000 \text{ Btu/MMBtu})$$
- To Calculate Theoretical Fuel Use for Diesel Engine, use the following formula.
$$\text{Gals/Month} = (\text{Hrs/Month}) (\text{hp}) (\text{Btu/hp-hr}) (1\text{lb}/19,300 \text{ Btu}) (1 \text{ gal}/7.2558 \text{ lb})$$

2.22 What happens if I leave some months/equipment data fields blank?

If you do not select “Zero Emissions” to report no emission and have missing required activity data, the tool will not allow submittal of the data until the missing activity data is filled or the operator selects “Zero Emissions” along with a reason for the zero emission.

2.23 What surrogate data can I use if I am unable to find actual data?

Although actual data is preferred, if you do not have and cannot get information about a specific piece of equipment or scientific data, the following surrogate data has been approved by BOEM for use.

Surrogate Stack Parameters Used to Supplement OCS AQS Data

Unit	Field	Default Value
Amine Unit – ventilation system for acid gas from reboiler	Exit velocity	Calculated with AMINECalc ^a
Amine Unit – ventilation system for acid gas from reboiler	Exit temperature	110 °F
Amine Unit – ventilation system for acid gas from reboiler	Combustion temperature	1,832 °F
Boiler/heater/burner – exhaust	Exit temperature	400 °F
Boiler/heater/burner – exhaust system	Outlet orientation	0 degrees
Boiler/heater/burner – exhaust system	Outlet inner diameter	12 inches
Boiler/heater/burner – exhaust system	Exit velocity	Calculated
Diesel Engine	Max rated fuel use	7,000 Btu/hp-hr
Diesel Engine	Average fuel use	7,000 Btu/hp-hr
Diesel Engine – exhaust system	Exit velocity	Calculated
Diesel Engine – exhaust system	Exit temperature	900 °F
Diesel Engine – exhaust system	Outlet orientation	0 degrees
Diesel Engine – exhaust system	Outlet inner diameter	12 inches
Combustion Flare	Average combustion temperature (excluding upsets)	1,832 °F
Combustion Flare	Stack orientation	0 degrees
Combustion Flare	Stack inner diameter	12 inches
Glycol Dehydrator – flash tank	Flash tank temperature	120 °F
Glycol Dehydrator – flash tank	Flash tank pressure	60 psig
Glycol Dehydrator – ventilation system	Exit temperature	GLYCalc default (usually 212 °F) ^b
Glycol Dehydrator – ventilation system	Outlet orientation	0 degrees

Unit	Field	Default Value
Glycol Dehydrator – ventilation system	Flare feed rate (scf/hr)	Calculated with GLYCalc ^b
Glycol Dehydrator – ventilation system	Combustion temperature	1,832 °F
Glycol Dehydrator – ventilation system	Condenser temperature	110 °F (or calculated with GLYCalc) ^b
Glycol Dehydrator – ventilation system	Condenser pressure	14.8 psia
Losses from Flashing – ventilation system	Exit velocity	Calculated
Losses from Flashing – ventilation system	Outlet inner diameter	Use Tank Vent Outlet Diameter
Natural Gas Engine	Max rated fuel usage	7,500 Btu/hp-hr
Natural Gas Engine	Average fuel usage	7,500 Btu/hp-hr
Natural Gas Engine – exhaust system	Exit velocity	Calculated
Natural Gas Engine – exhaust system	Exit temperature	4-cycle rich burn: 1,100 °F
Natural Gas Engine – exhaust system	Exit temperature	2-cycle lean burn: 700 °F
Natural Gas Engine – exhaust system	Outlet inner diameter	12 inches
Natural Gas, Diesel, or Dual Fuel Turbine	Max rated fuel use	10,000 Btu/hp-hr
Natural Gas, Diesel, or Dual Fuel Turbine	Average fuel use	10,000 Btu/hp-hr
Natural Gas, Diesel, or Dual Fuel Turbine – exhaust system	Exit velocity	Calculated
Natural Gas, Diesel, or Dual Fuel Turbine – exhaust system	Outlet inner diameter	12 inches
Pneumatic Controllers	Equipment elevation (above sea level)	50 ft
Pneumatic Pumps – ventilation system	Exit velocity	Calculated
Storage Tank – General Information	Roof height above shell (ft)	0.0625*(Tank Diameter, ft / 2)
Storage Tank – ventilation system	Exit velocity	Calculated
Storage Tank – ventilation system	Exit temperature	70 °F
Storage Tank – ventilation system	Stack orientation	0 degrees
Storage Tank – ventilation system	Flare feed rate	Calculated (or use the calculated storage tank exhaust vol. flow rate)
Vent	Stack inner diameter	Calculated (average of submitted data)
Vent	Exit temperature	70 °F
Vent	Outlet orientation	0 degrees
Vent	Stack outlet elevation (above sea level)	50 ft

Unit	Field	Default Value
Vent – upsets	Exit temperature	70 °F

^a AMINECalc is released by the Gas Technology Institute as part of the AIRCalc Air Emissions Inventory Report Management Software Program³ ^bGLYCalc is released by the Gas Technology Institute, formerly the Gas Research Institute (GRI)⁴

2.24 How do I convert API Gravity to Specific Gravity?

Specific gravity of oil = $141.5 / (\text{API gravity} + 131.5)$

2.25 What are the Ideal Gas Law Relationships?

Standard Conditions are 14.7 psia and 60° F or 520° R.

Note: °R= degrees Rankine = (°F + 460)

1 lb-mole of gas occupies approximately 379 standard cubic feet.

2.26 How do I calculate the weight, W, in lbs of a gas with a known molecular weight?

Assuming that gas has been converted to scf at 60° F and 14.7 psia, the general equation is

$$W = \frac{V * MW}{R}$$

where

W = weight in lbs of total gas

V = volume of the gas in scf

MW = molecular weight of the gas in lbs/lb-mole

R = ideal gas constant of 379.3 scf/lb-mole

2.27 How do I calculate horsepower, HP, of a compressor?

Horsepower of Compressor from Discharge, Suction Pressure, and Compressed Gas Volume

$$HP = 50.5 * \frac{1.255}{1.255 - 1} * MMsfd * \left(\left(\frac{\text{DischargePressure} + 14.7}{\text{SuctionPressure} + 14.7} \right)^{0.203} - 1 \right) + (0.05 * HP_{total})$$

where HP_{total} = total horsepower of all externally driven equipment

2.28 How do I calculate the Exit Velocity, v, for different processes in ft/sec?

The basic equation for emission exit velocity, v, is given as

³ https://global.ihs.com/doc_detail.cfm?item_s_key=00347560

⁴ <https://sales.gastechnology.org/000102.html>

$$v = \frac{Q * CV * \left(\frac{1}{3,600}\right) \left(\frac{460 + T}{520}\right)}{\frac{\pi (SD)^2}{2}}$$

where

- Q = Average Fuel Rate in either scf/hr for natural/waste gas or gal/hr for diesel
- CV = velocity coefficient in scf exhaust gas/scf fuel for natural gas or scf exhaust gas/gal fuel for diesel
- T = temperature in deg F
- SD = stack diameter in inches

Velocity coefficients for different processes are shown below:

Process	Fuel Input Units	CV	VC Unit
Turbine	scf/hr	36.79	scf Exhaust Gas/scf Fuel
Lean-burn, Natural Gas Fired Engine	scf/hr	20.08	scf Exhaust Gas/scf Fuel
Rich-burn, Natural Gas Fired Engine	scf/hr	10.52	scf Exhaust Gas/scf Fuel
Flare	scf/hr	10.52	scf Exhaust Gas/scf Fuel
Diesel Fired Engine	gal/hr	2713.3	scf Exhaust Gas/gal Fuel
Boiler/heater/burner, natural gas	scf/hr	36.73	scf Exhaust Gas/scf Fuel

2.29 How do I calculate Flashing Exhaust Vol. Flow Rate, Q, in scf/hr?

$$Q = \frac{(Oil/Condensate Throughput, bbl/yr)(scf of flash per barrel, scf/bbl)}{Hours Operated, hr/yr}$$

2.30 How do I calculate Vent Exhaust Vol. Flow Rate, Q, in scf/hr?

$$Q = \frac{1,000 * (Volume vented, excluding upsets, Mscf/month)}{Hours Operated, excluding upsets, hr/month}$$

2.31 How do I calculate the Exit Velocity (applicable for Flashing Losses, Glycol Dehydrators, Pneumatic Pumps, Storage Tanks, and Vents), v, in ft/sec?

$$v = \frac{\left(Exhaust Vol Flow Rate, \frac{scf}{hr}\right) \left(\frac{460 + Exit Temperature, deg F}{520}\right)}{\frac{\pi}{2} \left(3,600 \frac{sec}{hr}\right) \left(\frac{Stack Diameter, in.}{12}\right)^2}$$

2.32 Do we need to report the diesel and jet fuel (horizontal/cylindrical) tanks that supply fuels for generators and helicopter?

No, they are not crude or condensate.

2.33 Are there any tanks exempt from reporting due to size, capacity, material, or throughput? For example, are corrosion inhibitor tanks exempt? Are methanol tanks less than 1,000 gallons exempt?

Only storage tanks for crude oil and condensate are required to report in the OCS annual emissions inventory. There is no exemption from reporting based on size, capacity, or throughput.

2.34 Can floatation cell emissions be categorized as "LP Cold Vent" emissions?

No, the floatation cell uses a constant gas supply to separate oil and water, and vapors are vented locally. Therefore, floatation cell emissions should be categorized as fugitives.

2.35 Will BOEM require the reporting of flash emissions from skim tanks?

Yes, produced water from 3-phase separators, chemoelectrical treaters, and sumps are routed to skim tanks, where the oil entrapped in the water is allowed to separate and is skimmed off. The tank emission calculators will account for the flash emissions, but if counted separately, then they should be considered as fugitives.

2.36 How can I estimate the losses from flashing for the Oil/Water (O/W) skimmer? Typically, the water drawoff from the HP Separator goes to the O/W skimmer and mostly water. I know the oil/condensate API coming out of O/W skimmer and its operating pressure, but its oil/condensate flow is typically NOT measured and very small. Is there a typical volume % (that should be very small) of the oil/condensate from the O/W skimmer versus the total condensate to sales, which is metered?

BOEM is not requiring data for produced water separation equipment (e.g., flotation cells).

2.37 Do I need to count the vents and valves on storage tanks in the fugitive component count?

No, when you create a storage tank equipment record, the tank emissions will be accounted for.

2.38 I have found that several emission sources have dual exhaust stacks. The diameters of the stacks are the same, but the heights and orientations are different. When reporting the source exhaust information in OCS AQS, how do we handle dual exhaust stacks?

Report each exhaust stack separately as an emission source. For example, if you have a line heater with two exhaust stacks, you can code them as Heater 1 Exhaust 1 and Heater 1 Exhaust 2.

2.39 Does the level low or high shutdown (LSL or LSH) count as one level control instrument? For example, an O/W separator normally has three LSL/LSH and two level controllers for oil and water. Do I count it as five or two level controllers?

Count each LSL or LSH separately, so in this example, there are five level controllers.

2.40 How does BOEM intend to use exit velocity? It seems exit velocity is a function of production and therefore will be valid when operators begin submitting production volumes. Given other data (such as size of exhaust pipe, flow rate, temperature, pressure, and hours vented), exit velocity seems redundant.

Exit velocity is needed in air quality modeling and is used by BOEM as a QA/QC tool for the other reported variables.

2.41 Does BOEM have certain guidelines to determine if oil is crude or condensate?

Condensate is a liquid hydrocarbon that lies in a range between oil and gas and is almost always produced along with gas in the Gulf of Mexico. API gravity values for condensate are generally within the range of 50 to 120 (Handbook of Oil Industry Terms and Phrases, R.D. Langenkamp, 1988). A review of liquid commingling systems in the Gulf of Mexico for the year in 1995 indicated 37 major pipeline systems carrying condensate liquids. API gravity data for these pipeline systems in the Gulf of Mexico ranged from 42 to 68. Thus, API gravity values overlap for light crudes and heavy condensates.

2.42 If a structure with separators, tanks, compressors, etc. is going to be out of service throughout a reported year, does a report have to be submitted?

To assist in BOEM's completeness checks, an OCS AQS submittal is required if the structure is out of service the entire year. Select the Facility-Wide Zero Emissions option and select the applicable reason that describes why.

2.43 Is the subject sales gas data available for each platform in BOEM? If yes, where is it? Can I use the data that were imported from 2017?

Most companies will have a recent sales gas analysis for each facility and/or field that can be used. These data are typically available from the production and accounting departments. Do not use the data from 2017. Use a current sales gas analysis for the reported inventory year.

2.44 A facility has a vent header and vent boom and also has pressured vessels that vent locally. How do we report in OCS AQS? VEN-01 would be the existing Flare Boom. Would we then continue with VEN-02 for say HP Separator #2, VEN-03 for LP Separator, etc.? The only time these vessels would vent would be for emergency relief, but they would not vent to the existing header.

That type of ID convention will work fine in OCS AQS, but remember that you don't create a Vent ID for sources that vent locally. It is most important to make sure you track all local vents, and don't double report what is vented to the existing header.

2.45 Is the exhaust for the small pneumatic injection pumps listed as a vent location if the exhaust is not piped to a remote location? Also, is this referred to as a cold vent?

All pneumatic pumps should be entered as “Pneumatic Pumps.” They would not be considered cold vents but could be routed to a cold vent.

The Emissions Destination field in the Control Requests tab located on the Activities & Emissions Manager page is where the user should describe where the gas is vented to: vented locally, flare locally, vented remotely, flare remotely, or routed to system.

2.46 I have a separator that routes to a condensate storage tank at atmospheric pressure, which, in turn, vents to the atmosphere. If I report flashing losses from the separator to this tank and also report a storage tank, then does that cause double counting of the emissions?

No. You would indicate on the Emissions Destination field in the Control Requests tab located on the Activities & Emissions Manager page for both the flashing losses screen and the storage tank screen that the emissions are vented locally. The calculations for the storage tank do not include flashing emissions, only working and breathing emissions.

2.47 Some of my engines have much larger fuel usages than your recommended Max Fuel Rates Use for the diesel, natural gas engines (7,000 Btu/hp-hr) and turbines (10,000 Btu/hp-hr). What values should I use? If I use my actual values, will the software give an error?

Please enter the actual values for your equipment. If you trigger a QC error message, you can use the comment field to justify the value is valid for the equipment.

2.48 How do I specify on the glycol dehydrator ventilation system tab that the still column vent is processed by a VRU and not a vent or flare?

On the glycol dehydrator the Emissions Destination field in the Control Requests tab located on the Activities & Emissions Manager page, you are asked for the Destination of the Flash gas. Enter “Routed back into the system.”

2.49 What is the expected MW of VOCs in a gas stream containing 95% methane (MW = 16.043 lbs/lb-mole) and 2% ethane (30.069 lbs/lb-mole) with the other 3% VOCs? These % are in mole or volume %. The mole wt. of the gas is between 16 – 17 lbs-lb/mole.

A good average would be approximately 40 lbs/lb-mole.

2.50 I don't see a need to report a storage tank that has a vent going to a vapor recovery unit that is running by electricity? Is this correct?

In the Activities & Emissions Manager page in the Data Requests tab, you need to report this tank, and select “Yes” in the “Control Device?” Field and choose “Vapor Recovery and/or Condenser” as the Installed Control Equipment on the Primary Type of Control Equipment field. When we calculate emissions, our program will make adjustments for the VR/C.

2.51 How do I make sure emissions that are routed remotely or flared are not double counted at the source and the remote release point?

Use the Emissions Destination field to identify where emission go from a source. The four options are: Vented Locally, Flared Locally, Vented Remotely, and Flared Remotely. Use the Release Point & Apportionment tool to assign a proper release point to each source. If the appropriate Release Point is not in the list, add it and then select it.

Emissions vented locally will be assigned directly to the source.

Emissions flared locally and remotely will be assigned to the flare. You may have to create a flare to account for the emissions. Zero the emissions from the original source using the Zero Emissions option in the AEM and select a reason why (4. Equipment routed to active vent or flare). Select the flare as the release point.

Emissions vented remotely will be assigned to the remote vent. As with the local flare, create a vent if not already available and select it as the release point. Zero the local source emissions, select the appropriate reason, and add the emissions to the remote vent.

2.52 I cannot enter data in some data request fields.

Some fields are auto-calculated based on the inputs from other fields and do not allow manual entry. These include Average Fuel Used and Average Heat Input Rate. If there is nothing in these fields it is because the required fields that feed the equations have not been completed. A value will appear once values are included in the required fields.

2.53 Do I need to account for emissions from welding, painting, and/or sanding?

No. You do not need to include emissions from welding, painting, or sanding in the 2021 OCS Inventory.

3 Lease Operations

3.1 What are lease operations?

Lease operations refer to emissions generated by equipment operating within the area of a BOEM-issued lease. The area refers to the surface of the ocean the lease applies to. In some cases, a permanent facility or platform may not be present. In these cases, the drilling rig becomes the facility.

3.2 What lease operations do I have to report?

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.

Emissions from vessels underway or transiting through the lease area do not have to be reported by operators.

3.3 How do I report multiple lease operations taking place in the same block?

If multiple drilling rigs are operating at the same time or a single rig is operating at different times during the reporting period, individual entries must be made for each operation period. For example, a rig operates from 15 February 2021 to 25 March 2021 and 2 August 2021 to 11 October 2021. Two entries are required to account for the rig's operations in the lease area. Operations for drilling rigs are only counted when they are attached to the seabed.

3.4 How do I report emissions from a drilling rig that began operations in the previous year?

If a lease operation begins outside of the inventory period (earlier than 1 January 2021 or after 31 December 2021), only include the days of operation within the reporting period. For example, a drilling rig begins operation on 20 December 2020 and continues until 15 January 2021. The total number of days of operation is 26 days; however, only 15 of those days were within the reporting period. Use the ratio of reportable days to total days (15/26 or 57.7%) to pro-rate fuel used in order to calculate emissions.

3.5 How do I add drilling rigs that are not on the list?

If a drilling rig is used that is not on the drop-down list, contact OCS AQS technical support with the rig details and it will be added.

3.6 Can I add more emission sources to the rig?

Yes. The default sources that are generated when you add or create a Lease Operation are for convenience only. You can add or remove sources as needed to account for the rig's operation.

4 Dashboards

4.1 How do I clear the message counts next to my login name?

Operators should click on the message counter to open the messages and click on Show All Messages. The Notification page will appear. Select the messages that have not been read and click the Acknowledge button on the right side of the screen.

4.2 What is the difference between a complex ID and a facility?

The unique complex ID and structure ID given by BOEM/BSEE is a facility. A complex might have multiple facilities or structures. The complex and structure IDs are assigned when the structure is permitted. A company may have numerous complexes with a specific "complex ID" that would include multiple structures for a facility when appropriate.

4.3 How do I change pollutants displayed in the dashboard?

To change the pollutants displayed in the dashboard, click on the Settings button on the right-hand side of the screen and select (or deselect) the pollutants you want to see. Click Save to return to the dashboard and see the new pollutants.

4.4 The number of release points for my facility is incorrect. What happened?

The number of release points shown in the dashboards is based on the number of active sources. If the number of release points is too small, it means that some sources are inactive or have not been added. If the number is too big it means that inactive sources are still active and should be turned off.

Turn active sources on/off by selecting the source in the Activities & Emissions Manager page and turning on/off the Active select.

5 Maps

5.1 How do I change map scaling?

There are multiple ways to adjust the scaling of the OCS AQS map:

- Using the wheel on your mouse
- Using the zoom controls at the upper right of the map display
- Using the zoom options available under Map Options at the left of the map display—Zoom to Layers, Zoom Area, Zoom to Location

5.2 Can I visualize my emissions on the map?

The Gridded Emissions feature under the Map Options allows you to visualize your emissions on the map. The Gridded Emissions allows you to view emissions in many different ways, including selections for emission type, different pollutants, emission period, unit of measure, and more. Emissions can be viewed for a specific cell size, Official Protraction Diagram (OPD) area, or OPD block.

5.3 How do I select a layer?

Under the Map Options at the left of the map display, click Layer Control and select or deselect each of the layers you would like to turn on or off. For each layer in the list, if you hover the mouse over the layer name you will see a button for 'fit into the scene,' which can be clicked to adjust the map view to the layer. You can also use the Zoom to Layers feature to adjust the map for specific layers.

5.4 How do I add a map layer if I want to see specific features?

Users can import their own shapefiles into OCS AQS for display using the Import Shapefiles Feature in the Map Module.

5.5 The Gridded Emissions does not show any pollutants to choose from

If you do not see a table of pollutants under the Gridded Emissions selection, try the following:

- Make sure you are in an inventory that has emissions. The pollutant table will not appear in an empty inventory.
- Increase the size of your browser's resolution by zooming out. Depending on your screen or browser, the table might not be visible.

6 Reports

6.1 How can I create a user-defined report other than the ones that are listed?

If you need a report format other than the ones provided, contact BOEM and describe what you would like to see. If approved, a new report that meets your requirements will be implemented.

6.2 Why do I need to select the OPD Area for GHG reports for my facility?

Currently this wizard step is included in case there are multiple facilities in different OPD areas. In the future, this may be removed. For now, select the Select All button to choose all OPDs and click Next. The facilities that are assigned to you will appear on the next page.

6.3 How can I get rid of the formatting when I download a report?

Instead of download the report in Word or Excel format, download it in CSV format. You can load the file into Excel as a CSV file and have more control over the way Excel treats the values.

6.4 Why are some of my Facility IDs converted into dates when I save the report as an Excel file?

Sometimes the facility ID may be converted into a date if saved as an Excel file due to Excel's setup. You can either reset the way Excel automatically formats cells or save the report as a CSV file and import it into Excel. During the import steps, make sure you format the column with the Facility IDs as a Text column.