SUPPORTING STATEMENT
FOR PUBLIC COMMENT

INFORMATION COLLECTION EFFORT FOR OIL AND GAS FACILITIES

Sector Policies and Programs Division
U.S. Environmental Protection Agency
Research Triangle Park, North Carolina 27711

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PART A OF THE SUPPORTING STATEMENT

INFORMATION COLLECTION EFFORT FOR OIL AND GAS FACILITIES

1. Identification of the Information Collection

1(a) Title of the Information Collection

"Information Collection Effort for Oil and Gas Facilities." This is a new Information Collection Request (ICR).

1(b) Short Characterization

This information collection is being conducted by the U.S. Environmental Protection Agency's (EPA's) Office of Air and Radiation (OAR) pursuant to section 114 of the Clean Air Act, as amended ("CAA" or "the Act"), to assist the Administrator of EPA in developing emissions standards for oil and gas facilities pursuant to section 111 of the Act. Section 114(a) states, in pertinent part:

> For the purpose...(iii) carrying out any provision of this Chapter...(1) the Administrator may require any person who owns or operates any emission source...to-. . .(D) sample such emissions (in accordance with such procedures or methods, at such locations, at such intervals, during such periods and in such manner as the Administrator shall prescribe); (E) keep records on control equipment parameters, production variables or other indirect data when direct monitoring of emissions is impractical.. .(G) provide such other information as the Administrator may reasonably require...

The non-confidential information submitted in response to this information collection will be made available to the public.

In January 2015, as part of the Obama Administration's commitment to addressing climate change, the EPA outlined a number of steps it plans to take to address methane and smog-forming volatile organic compound (VOC) emissions from the oil and gas industry, in order to ensure continued, safe and responsible growth in U.S. oil and natural gas production. As a result, EPA proposed and finalized New Source Performance Standards for the oil and gas industry to achieve both methane reductions and additional reductions in VOCs. The EPA has also committed to develop standards of performance for existing oil and gas sources. This information collection request is necessary to develop nationally applicable regulations to reduce

methane emissions from oil and gas sources.

The oil and gas industry includes a wide range of different types of facilities or industry segments. The oil and gas industry segments considered in the framework of this information collection request include, but are not necessarily limited to: onshore petroleum and natural gas production; onshore petroleum and natural gas gathering and boosting; onshore natural gas processing; onshore natural gas transmission compression; onshore natural gas transmission pipelines; underground natural gas storage; LNG storage; and LNG import and export equipment. It is estimated that there are almost 1.4-million producing oil and gas wells at approximately 698,800 well sites (onshore production facilities) in the United States (U.S.). There are approximately 5,000 gathering and boosting facilities, 668 processing facilities, 1,400 transmission compression facilities, 939 transmission pipeline facilities, 418 underground natural gas storage facilities, and 111 liquefied natural gas (LNG) storage or import/export facilities. Information on greenhouse gas (GHG) emissions from oil and gas facilities is collected as part of the EPA's Greenhouse Gas Reporting Program (GHGRP) under 40 CFR Part 98 Subpart W, Petroleum and Natural Gas Systems. However, there is a reporting threshold and the reporting requirements do not currently cover certain emission sources (i.e., gathering and boosting and transmission pipelines facilities; these industry segments will begin to report emissions in 2017 for emissions occurring in the 2016 calendar year), and therefore the data do not represent the entire universe of emissions from oil and gas systems. The GHGRP also aggregates production level reporting at a basin level. Further, the GHGRP does not collect information on design, performance and costs of mitigation measures. This information is necessary to evaluate the scope, design, and potential impacts of future regulation of this industry, in particular, of methane emissions from existing oil and gas facility sources.

There will be two parts to the information collection. Part 1, referred to as the operator survey is specifically designed to obtain comprehensive information from onshore petroleum and natural gas production facilities to better understand the number and types of equipment at production facilities. Part 1 seeks to collect facility-level information (e.g., facility name, location, contact information, and number of wells, tanks, and compressors) using the definition of facility commonly employed when permitting new and existing sources (*i.e.*, all buildings, equipment, structures, and other stationary equipment that are located on one or more contiguous

or adjacent properties and that are under common ownership or control). Part 1 will be sent to all known operators of oil and gas production wells and will allow the Agency to obtain the information necessary to identify and categorize all potentially affected oil and gas production facilities. The operators will complete the Part 1 survey and provide equipment counts for all production facilities that they operate except for facilities selected to complete Part 2. Part 1 is not expected to contain any confidential business information. This operator survey may be submitted either electronically or through hard copy responses. The submission requires the owner or operator to certify that the information being provided is accurate and complete.

Part 2, referred to as the detailed facility survey, will be sent to selected oil and gas facilities (production, gathering and boosting, processing, compression/transmission, pipeline, natural gas storage, and LNG storage and import/export facilities) based on statistical sampling method described in Part B of this Supporting Statement. Part 2 will collect detailed unit-specific information on emission sources at the facility and any emission control devices or management practices used to reduce emissions. Most of the information requested under Part 2 is expected to be available from company records and would not require additional measurements to be performed. However, selected data elements must be completed based on actual component equipment counts (specifically, pneumatic device counts and equipment leak component counts) or measurement data (specifically, separator/storage vessel flash analyses). If this information is not directly available for a facility, the respondent must collect and report this information (count equipment components and/or sample and analyze tank feed streams) as part of this information collection. Part 2 is expected to include information that oil and gas facilities consider to be confidential and the survey must be completed and submitted electronically via the EPA's Electronic Greenhouse Gas Reporting Tool (e-GGRT).

The EPA estimates the cost of Part 1 and Part 2 of the information collection will be 227,923 hours and $40,149,494.

2. Need for and Use of the Collection

2(a) Need/Authority for the Collection

Collectively, oil and gas facilities are the largest industrial emitters of methane in the U.S. In January 2015, as part of the Obama Administration's commitment to addressing climate

change, the EPA outlined a number of steps it plans to take to address methane and smog-forming volatile organic compound (VOC) emissions from the oil and gas industry. Concurrently with this action, the EPA has promulgated new source performance standards (NSPS) for the oil and gas industry to achieve both methane reductions and additional reductions in VOCs (40 CFR part 60, subpart OOOOa). The EPA is also now beginning the process of development of standards of performance for existing oil and gas sources. Section 111(d) of the Act provides a cooperative federalism approach to establishing standards of performance for existing sources. Under this approach, EPA establishes guidelines that identify the emission performance states must require their sources to achieve, and states then submit plans for EPA review and approval, which establish standards of performance that achieve that emissions performance.

Available information on-hand for oil and gas facilities is incomplete to assess what may be the best approach for regulating these sources. As noted previously, the EPA collects information on the GHG emissions from oil and gas facilities under Subpart W of the GHGRP. However, the GHGRP does not collect information on costs or technical feasibility of mitigation measures. This information is necessary to evaluate the scope and potential impact and design of future standards of performance for oil and gas facility sources, both for existing sources and sources not covered by the standards for performance for new and modified sources. There are also differences in the definition of "facility" in the GHGRP for the oil and gas production facilities as compared to the way we have defined facility under our NSPS regulations. Additionally, certain states have moved forward with their own rules and have developed information needed for their own purposes, but this information is not sufficient for a national rulemaking. Thus, it is necessary to collect specific information for oil and gas production facilities to understand the number of affected facilities and to assess potential alternative regulatory approaches for existing sources.

2(b) Use/Users of the Data

The data collected from Parts 1 and 2 will be used to determine the number of potentially affected emission sources the types and prevalence of emission controls or emission reduction measures used for these sources at oil and gas facilities nationwide, and potential costs for those measures and controls. Due to the large number of potentially affected sources in most of the industry sectors, a statistically significant number of facilities from each sector will be surveyed to

collect this information and fill data gaps for setting emission limits and evaluating the emission impacts of various regulatory options for standards of performance for oil and gas facilities.

3. Non-duplication, Consultations, and Other Collection Criteria

3(a) Non-duplication

The Agency recognizes that some of the information requested may already be included in the submittals being made by individual companies to the GHGRP. Therefore, the Agency reviewed each survey question to determine if the information is already included in the GHGRP. Where the information requested is identical to that collected under the GHGRP, facilities that report under the GHGRP are only required to provide their GHGRP ID number and may skip the questions that are duplications of information being reported under the GHGRP. However, a production facility under the GHGRP includes all wells owned or operated by a person within a single basin, which may include properties that are not contiguous or adjacent. While some of the production information is reported at the sub-basin level under the GHGRP, this information is still expected to be an aggregation of the production across numerous affected facilities. In these cases, the reporting of sub-basin level information under the GHGRP is not identical to reporting facility level production information under this ICR where respondents must provide the information at the facility level considering the CAA affected source definition (contiguous or adjacent properties under common ownership or control).

Some of the information requested may also be included in submittals by individual facilities pursuant to operating permit applications, state reporting requirements, or lease requirements. Even when the permit is available, often the unit-specific information is unavailable. Typically, the information requested under this electronic survey is not available in a consistent and usable format from these other sources.

3(b) Public Notice Required Prior to ICR Submission to OMB

This draft information collection questionnaire and supporting statement are being submitted for public review. The EPA will consider public comments on the draft questionnaire and supporting statement when preparing the final ICR. The final ICR will then be submitted to OMB and published for another public comment period.

3(c) Consultations

The Agency also worked with EPA Regional Offices and State delegated authorities to understand data needs and to solicit comment on the draft questionnaire. The Agency conducted a number of webinars for environmental groups, industry representatives and state agencies to inform various stakeholders regarding the planned ICR. The comments and data received were reviewed and utilized in the development of the draft surveys (see Attachments 1A through 1C, 2A through 2M) and initial estimates of respondents, burden, and costs related to this ICR.

3(d) Effects of Less Frequent Collection

This ICR is a one-time information collection. Part 1 will require the owner/operator of each potentially affected oil and gas production facility to complete a short survey of the numbers of wells, separators, storage tanks, and compressors at each facility. This information is critical in understanding the universe of existing facilities and the impacts of the rule for existing sources. Part 2 employs a statistically-based sampling approach to collect unit-specific operation and control system information. This information is needed to understand the types of control systems used at existing facilities, the prevalence of use, and the emissions reductions that can be achieved through alternative regulatory strategies for existing sources.

Because this is a one-time information collection, the Agency could not consider less frequent information collection. However, in order to reduce the overall burden of the ICR, the Agency is proposing a statistically-based sampling approach for Part 2. The Agency considered the accuracy of the industry characterization of processing units and controls obtained from the survey needed to make informed decisions. The Agency considered sampling approaches based on acceptable error margins. While the Agency would prefer to have the smallest error possible, reducing the acceptable error margin increases the number of facilities that would need to be included in the sampling survey. After evaluating the impacts of sampling approaches, the Agency developed the sampling approach described in Appendix B based on acceptable error margins. Surveying fewer facilities in the sampling approach would increase the error associated with data evaluations conducted using the collected data and may result in the Agency making incorrect conclusions based the uncertainty associated with a more limited data set.

3(e) General Guidelines

This ICR will adhere to the guidelines for Federal data requestors, as provided at 5 CFR 1320.6.

3(f) Confidentiality

Respondents will be required to respond under the authority of section 114 of the Act. The Agency has developed draft confidentiality determinations for the data elements in Part 1 and 2 of the draft ICR using the determination methods established for data reporting under the GHGRP as a model[1] and also using the policy notice entitled "Disclosure of Emission Data Claimed as Confidential Under Sections 110 and 114(c) of the Clean Air Act (56 FR 7042, February 21, 1991.) These determinations are included in the information being supplied for public review and comment. Confidentiality designations will be made according to the provisions set forth in Title 40, Code of Regulations Part 2, Subpart B -- Confidentiality of Business Information Any information subsequently determined to constitute a trade secret will be protected under 18 U.S.C. 1905. Information received by the EPA that has not been designated as CBI may be made available to the public without further notice (40 CFR 2.203, September 1, 1976).

3(g) Sensitive questions

This section is not applicable because this ICR will not involve matters of a sensitive nature.

4. The Respondents and the Information Requested

4(a) Respondents/NAICS Codes

Respondents affected by this action are owners/operators of oil and gas facilities. There are several industry segments that may be considered oil and gas facilities. This ICR is specifically requesting information for facilities in the following industry segments: onshore petroleum and natural gas production, onshore petroleum and natural gas gathering and boosting, onshore natural gas processing, onshore natural gas transmission compression, onshore natural gas transmission pipelines, underground natural gas storage, LNG storage, and

[1] See "Proposed Confidentiality Determinations for Data Required Under the Mandatory Greenhouse Gas Reporting Rule and Proposed Amendment to Special Rules Governing Certain Information Obtained Under the Clean Air Act" published on July 7, 2010 (75 FR 39094); and "Confidentiality Determinations for Data Required under the Mandatory Greenhouse Gas Reporting Rule and Amendment to Special Rules Governing Certain

LNG import and export equipment. The ICR is not requesting information for the offshore petroleum and natural gas production industry segment or the natural gas (local) distribution industry segment. Table 1 below presents some examples of potentially affected entities according to NAICS code. Table 1 is not intended to be exhaustive, but rather provides a guide for respondents regarding facilities likely to be affected by this ICR.

Table 1. Examples of Potentially Affected Entities by Category.

Category	NAICS code	Example of Potentially Affected Entities
Petroleum and Natural Gas Systems.	211111	Crude petroleum and natural gas extraction.
	211112	Natural gas liquid extraction.
	486210	Pipeline transportation of natural gas.

Table B-1 in Part B of this Supporting Statement presents a preliminary count of potential affected facilities by industry segment. This list was derived based on review of information reported to the Pipeline and Hazardous Materials Safety Administration (PHMSA), the Energy Information Administration (EIA) and other publically available information.

4(b) Information Requested

(i) Data items, including recordkeeping requirements. Part 1 will collect corporate and operator-level contact information as well as equipment counts for key equipment (number of wells, tanks, and compressors) at each facility owned or operated by that operator. This information is expected to be readily available to the operator and no additional measurement of recordkeeping requirements are imposed. Part 2 will collect detailed unit-specific information on emission sources at selected facilities as well as information on emission controls or management practices used to reduce emissions at the selected facilities. A majority of the information requested under Part 2 is expected to be available from company records and would not require additional measurements to be performed. However, respondents will be required to collect and report detailed counts of pneumatic devices and equipment leak components if this information is not already available in the company records. Additionally, respondents of facilities that have

Information Obtained under the Clean Air Act" published on May 26, 2011 (76 FR 30782)

separators or storage vessels will have to collect pressurized samples of liquid streams in order to perform a flash analyses if these analyses are not available. Except for these three data elements, all other information requested in the questionnaire is to be completed based on existing company records. The survey will also request submission of the recent emission measurements, if available, to further characterize the emission sources. These data elements are only required when measurement data are already available; respondents are not required to perform direct emission measurements (except for flash gas analysis) as a result of this information collection.

(ii) *Respondent activities*. The activities a respondent will undertake to fulfill the requirements of the information collection are presented in Attachments 3A and 3B. These include: i) read instructions; ii) compile requested information on each affected source based on existing data; iii) if necessary, visit the facility to perform required equipment counts and collect tank feed samples (Part 2 only); iv) if necessary, have the feed samples analyzed for flashing potential and composition of flash gas according to methods prescribed in the information collection (Part 2 only), and v) submit information to the EPA through electronic survey instrument or, for Part 1 only, via hard-copy submission.

5. The Information Collected--Agency Activities, Collection Methodology, and Information Management

5(a) *Agency Activities*

A list of activities that will be required of EPA is provided in Attachment 4. These include: i) develop electronic questionnaire/reporting form; ii) answer respondent questions; and iii) review and analyze responses.

5(b) *Collection Methodology and Management*

In collecting and analyzing the information associated with this ICR, the EPA will use personal computers, Microsoft Excel© based reporting forms, and the e-GGRT reporting system. The EPA will ensure the accuracy and completeness of the collected information by reviewing each submittal. The information collected pursuant to this ICR will be maintained in a computerized database on secure EPA servers. To better facilitate uniformity in the format of the reports that are received, and, thus, increase the ease of data review and analysis, standardized survey Excel spreadsheet reporting forms will be developed and distributed to respondents.

5(c) *Small Entity Flexibility*

The Part 1 survey is required for all operators of oil and gas production facilities and all respondents to the Part 1 survey will be subject to the same requirements. The Part 2 survey employs a sampling approach of facilities in each industry segment, and facilities selected to complete the Part 2 survey will be subject to the same requirements. The EPA expects that a portion of the respondents to both Parts 1 and 2 may be small entities; however, any individual small entity would be expected to have fewer sources so its response burden will be minimized. The Agency has also opted to use an electronic format for the questionnaire, which allows some automation in the form and response fields, to reduce the burden and improve the data accuracy from all respondents, including small entities. However, the information requested under Part 1 is limited, especially for small entities, which are expected to have fewer wells and equipment to report. Therefore, we are allowing respondents to Part 1 to submit via hard-copy, which will eliminate the need to register the facility online prior to data submission. The survey will contain questions to determine the small entity status of a facility. These questions may help to identify, quantify, and minimize the burden on small entities during the rulemaking process.

5(d) *Collection Schedule*

The EPA anticipates issuing the 114 letters by October 30, 2016. These section 114 letters would require the owner/operator of an oil and gas facility to complete the Part 1 survey within 30 days of receipt of the survey, and would require facilities to complete the Part 2 survey with 120 days of receipt.

6. Estimating the Burden and Cost of the Collection

6(a) *Estimating Respondent Burden*

The one-time burden estimate for reporting and recordkeeping requirements are presented in Attachments 3A and 3B. These numbers were derived from estimates based on the time needed to collect and enter the information required for each of the different forms included in the Part 1 and Part 2 surveys and the proportion of facilities in each industry segment that is expected to complete each form. These estimates represent the one-time burden that will be incurred by the recipients. These estimates are based on a maximum number of

22,500 respondents for Part 1 and 3,385 expected respondents to Part 2. In reality, the actual number of respondents to Part 1 may be less due to incorrect contact information so that not all questionnaires mailed out will be deliverable.

6(b) Estimating Respondent Costs

Attachments 3A and 3B present estimated costs for the required recordkeeping and reporting activities. Labor rates were based on May 2015 raw labor rates for the Mining: Oil and Gas Extraction Sector (NAICS 211000), loaded using an overhead factor of 110%, consistent with other ICRs. The resulting loaded hourly rates are $176.95 for management personnel, $148.95 for engineering personnel, $65.10 for plant operator personnel, and $47.08 for clerical personnel. These values were taken from the Bureau of Labor Statistics Occupational Employment Statistics Survey Web site and reflect the latest values available (May 2015).

6(c) Estimating Agency Burden and Cost

The costs the Federal Government would incur are presented in Attachment 4. Labor rates and associated costs are based on the estimated 2015 loaded hourly rates (labor rate plus 60% for overhead) of $88.30 for management personnel (GS- 15, step 5); $53.42 for technical personnel (GS- 12, step 5); and $30.11 for clerical personnel (GS-7, step 5). These labor categories and burden estimates were selected to be consistent with other ICRs.

6(d) Estimating the Respondent Universe and Total Burden and Costs

The potential respondent universe consists of 22,500 operators for Part 1 representing approximately 698,800 facilities (based on total well counts assuming 2 wells per facility). Thus, the burden estimate for each operator is based on reporting information for 30 facilities on average, with 2 wells per facility. Operators with wells that are selected for Part 2 will not be required to report information for the facilities that contain the selected wells in the Part 1 questionnaire. Furthermore, the Agency is estimating a 75 percent response rate to determine the number of Part 2 questionnaires to be mailed out to ensure a statistically significant number of responses are received and expects a similar response rate for the Part 1 survey. As the Part 1 survey is designed as a complete survey of all well operators, the respondent burden for Part 1 is conservatively estimated based on 22,500 respondents.

Part 2 is designed as a statistically based sampling survey of each of the industry segments as described in greater detail in Part B of this Supporting Statement. Table B-3 in

Part B of this Supporting Statement provides the total facility counts in each industry segment and the number of responses needed and the number of questionnaires to be mailed to ensure the desired number of responses are received. Thus, the Part 2 burden estimates are based on mailing out 4,505 Part 2 questionnaires and receiving 3,385 responses from industry respondents. Burden estimates were estimated for each questionnaire form based on the number of sources expected to be at a typical facility when that source type is present. Additionally, not all source types will be present at certain types of facilities or at all facilities of a certain type. For example, well sites are only expected to be at production facilities and acid gas removal units may not be present at every production facility. Therefore, the fraction of facilities within a given industry segment that are expected to have a specific source type were also estimated in order to determine the number of respondents for each form. Table 2 summarizes the assumptions used to estimate the respondent burden for the Part 2 survey.

6(e) *Bottom Line Burden Hours and Costs Tables*

(i) *Respondent tally.* The total industry burden hours and costs, presented in Attachments 3A and 3B, are calculated by summing the person-hours column and by summing the cost column. The burden and cost to the industry is 227,923 hours and $40,149,494, which includes $11,302,500 in operation and maintenance (O&M) costs to cover postage and contracting services for storage vessel feed material flashing analyses.

Table 2. Assumptions used to Estimate Respondent Burden for Part 2.

Form/Sheet Name	Number of Units per Form Used to Estimate Time Needed to Complete Form	Fraction of Facilities with Source Type[1]						
		Prod	G&B	Proc	TC	Pipe	UNGS	LNG
Facility (& Intro)	1	1	1	1	1	1	1	1
Well Sites - Pads	2 wells	1	0	0	0	0	0	0
Tanks Separators	6 (2 separators; 4 tanks)	1	1	1	1	0	0	0
Pneumatic Devices	1 (multiple devices, but no device specific info)	0.8	0.5	0.5	0.5	0.5	0	0

AGRU	1	0.5	0.5	0.5	0	0	0	0
Dehydrators	1	0.5	0.5	1	0.2	0	0.2	0.2
Compressors	4	0.5	1	0.5	1	0	1	1
Equipment Leaks	1 (many components, but no component specific info)	1	1	1	1	1	1	1
Blowdown Events	1 (multiple events, but no event specific info)	1	1	1	1	1	1	1
Control Devices	2 (1 flare and one vapor recovery unit)	1	1	1	0.5	0	0.5	0.5

[1]Abbreviations for industry segments are as follows: Prod – production; G&B – gathering and boosting; Proc – processing; TC – transmission compression; Pipe – transmission pipeline; UNGS – underground natural gas storage; LNG – LNG storage as well as LNG import and export.

The reporting and recordkeeping burden and cost to production operators for the Part 1 information collection is 116,438 hours and $16,476,182, which includes $22,500 in O&M costs to mail the hard copies of the responses (see Attachment 3B). The reporting and recordkeeping burden and cost to the industry for the Part 2 information collection for facilities selected for the detailed Part 2 survey is 111,485 hours and $23,673,312, which includes $11,280,000 in O&M costs for contracted storage vessel feed material flashing analyses (see Attachment 3B).

(ii) *Agency tally.* The total line Agency burden and cost, presented in Attachment 4 is calculated in the same manner as the industry burden and cost. The estimated burden and cost are 17,947 hours and $960,793, which includes $144,618 in O&M costs to send certified section 114 letters to all respondents selected for Part 1 and Part 2 surveys with electronic return receipt.

(iii) *The complex collection.* This ICR is a simple collection; therefore this section does not apply.

(iv) *Variations in the annual bottom line.* This section does not apply as this is a one time collection.

6(f) *Reasons for Change in Burden*

This is the initial estimation of burden for this information collection; therefore, this

section does not apply.

6(g) Burden Statement

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, disclose, or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR part 9 and 48 CFR chapter 15.

The total reporting and recordkeeping burden and cost to production operators for the Part 1 information collection is 116,438 hours and $16,476,182 (5.2 hours and $732 per respondent for 22,500 respondents). The total annual reporting and recordkeeping burden and cost to the industry for the Part 2 information collection is 111,923 hours and $23,673,312 (32.9 hours and $6,994 per respondent for 3,385 respondents).

This ICR does not include any requirements that would cause the respondents to incur either capital or start-up costs. The EPA has assumed that all respondents will contract (i.e., purchase services/operation and maintenance costs) for the storage vessel feed material flashing analyses. In addition, there will be a small O&M costs for respondents electing to mail a hard copy of the Part 1 responses. These costs have been included in the burden estimate above. The resulting total burden for Part 1 and Part 2 of this information collection is 227,923 hours and $40,149,494, which includes $11,302,500 in O&M costs to cover mailing hard copies of Part 1 responses and contracting services for storage vessel feed material flashing analyses.

To comment on the Agency’s need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques, EPA has established a docket for this ICR under

Docket ID EPA-HQ-OAR-2016-0204, which is available for online viewing at www.regulations.gov, or in hard copy at the EPA Docket Center (EPA/DC), EPA WJC West Building, Room 3334, 1301 Constitution Ave., NW, Washington, DC 2004. The EPA/DC Public Reading Room is open from 8 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Reading Room is 202-566-1744, and the telephone number for the Air and Radiation Docket Center is 202-566-1742.

An electronic version of the public docket is available at www.regulations.gov. This site can be used to submit or view public comments, access the index listing of the contents of the public docket, and to access those documents in the public docket that are available electronically. When in the system, select "search," then key in the Docket ID Number identified above. Also, you can send comments to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, NW, Washington, DC 20503, Attention: Desk Office for EPA. Please include the EPA Docket ID No. EPA-HQ-OAR-2016-0204 in any correspondence.

PART B OF THE SUPPORTING STATEMENT

INFORMATION COLLECTION EFFORT FOR OIL AND GAS FACILITIES

1. Respondent Universe

This ICR will collect information from oil and gas industry sectors including facilities associated with production, processing, transmission, and storage of oil and natural gas. This ICR is specific to onshore operations and does not include offshore oil and gas production facilities. This ICR also does not include local gas distribution facilities as these facilities are regulated under separate authority. Thus, this ICR covers the following industry segments within the oil and gas industry: onshore petroleum and natural gas production; onshore petroleum and natural gas gathering and boosting; onshore natural gas processing; onshore natural gas transmission compression; onshore natural gas transmission pipelines; underground natural gas storage; LNG storage; and LNG import and export equipment.

2. Respondent Universe Stratification

As noted previously, there are numerous types of oil and gas facilities, which are referred to as industry segments. Table B-1 provides a listing of the oil and gas facility industry segments that this ICR will examine and the number of facilities expected to be included in each industry segment. These industry segments are considered to have unique characteristics and are, therefore, considered to be different populations for statistical sampling. The Agency also considers that the representation of the production segment should be further stratified, for the purpose of this ICR, based on differences in the type of well (oil or natural gas, vertical or horizontal wells, or further distinctions based on gas-to-oil ratio), the type of formation, and the production basin. At this time, the Agency has limited information on means to characterize individual facilities or wells by formation type or well drilling type (vertical versus horizontal wells). However, the Agency does have estimates of the number of wells in a given basin and the gas-to-oil ratio (GOR), from which we designate well type, for nearly all wells. Therefore, the Agency considered two options for establishing different populations within the production segment: one based on GOR ranges and the other based on regional groupings of basins. Table B-2 provides a summary of the populations to be considered in the production segment.

Table B-1. Facility Count for Oil and Gas Industry

Facility Type	Count of Parent Companies	Count of Facilities	Source of Counts[1]
Onshore petroleum and natural gas production facility	22,500	698,800	DI Desktop
Onshore petroleum and natural gas gathering and boosting facility	1,200	5,000	PHMSA
Onshore natural gas processing plant (or facility)	620	668	EIA
Onshore natural gas transmission compressor station	NA	1,400	EIA
Natural gas transmission pipeline facility	646	939	PHMSA
Underground natural gas storage facility	NA	418	EIA
Liquefied natural gas (LNG) storage facility	70	100	PHMSA
LNG import and export facility	11	11	PHMSA

[1]Sources of counts are as follows:
DI Desktop = Drilling Information Desktop, a subscription database of production wells; Facility count assumes 2 wells per facility.
PHMSA = Pipeline and Hazardous Materials Safety Administration
EIA = Energy Information Administration

Table B-2. Populations Considered within the Onshore Petroleum and Natural Gas Production Industry Segment

Production Facility Type	Count of Wells	Estimated Count of Facilities[1]
Option 1: Groupings by GOR		
Heavy Oil, GOR ≤ 300 scf/bbl	496,020	248,010
Light Oil, 300 < GOR ≤ 100,000 scf/bbl	438,790	219,395
Wet Gas, 100,000 < GOR ≤ 1,000,000 scf/bbl	62,400	31,200
Dry Gas, GOR > 1,000,000 scf/bbl	354,770	177,385
Coal Bed Methane	45,620	22,810
Option 2: Groupings by Basin Regions		
East, Basins 100 to 190	212,550	106,275
South, Basins 200 to 290 and 400	215,060	107,530
Midwest, Basins 300 to 395	349,210	174,605
West Texas, Basins 405 to 440	434,160	217,080
West, Basins 445 to 895	186,620	93,310
TOTALS (for either option)	1,397,600	698,800

[1]Facility count is based on number of wells assuming 2 wells per facility, based on NSPS OOOOa Technical Support Document, Docket Item EPA-HQ-OAR-2010-0505-5120.

3. Sample Size

A key consideration in survey design is determining how large a sample is needed for the estimates obtained from that sample to be statistically reliable enough to meet the objectives of the study. In general, the estimates are considered statistically reliable if they meet the criteria for desired levels of accuracy and precision. Accordingly, while determining sample sizes for the facility populations shown in Tables B-1 and B-2, we considered desired levels of accuracy and precision for the estimates to be obtained from survey sampling.

The type of question, the desired margin of error, and the specified confidence level are the key factors for determining sample sizes to ensure that estimates have desired levels of accuracy. In general, two types of questions are included in a survey: fixed response questions (yes/no questions, for which a proportion of respondents may be estimated) and numeric value questions (from which an average (mean) value may be estimated). The necessary sample size when there is an infinite population size (n_o) may be determined as follows:

$n\_o = p \times (1-p) \times (z/error)^2$ when the objective is estimation of a proportion

$n\_o = (t \times s/error)^2$ when the objective is estimation of a mean

where,

p = expected proportion of a given outcome, typically assumed to be 0.5 as this maximizes $p \times (1-p)$.

z = z-statistic based on desired confidence level.

error = acceptable margin of error.

t = t-statistic based on desired confidence level and expected population size. Same as z-statistic for population sizes greater than 30.

s = the standard deviation of the estimate.

For fixed response questions (estimation of a proportion), the Agency has selected a 95 percent 2-sided confidence level (z = 1.96) and a 5 percent margin of error (*error* = 0.05). The Agency considers these selections adequate to assure the objectives of the ICR will be met for proportional response questions. Therefore, the projected sample size needed for questions with proportional objectives is 385 [i.e., $(0.5 \times 0.5 \times (1.96/0.05)^2 = 384.16$, which would round up to 385].

For numeric value questions designed to estimate a mean value, the Agency's acceptable margin of error is dependent on the variability of the data. For certain emission sources, like equipment leaks or compressor emissions, emission values often vary over 4 to 5 orders of magnitude. With these highly variable emission sources, we have found that the relative standard deviation (standard deviation divided by the mean, s/μ where μ is the mean) is generally 3. For example, the average relative standard deviation for compressor emissions data from the Greenhouse Gas Reporting Program (GHGRP) is 2.76[2]. For sources with such large variability (i.e., $\sigma/\mu \sim 3$), we consider it reasonable to know the mean value within ±30% (i.e., $error/\mu = 0.3$ or $error = 0.3\mu$). For data that are less variable (i.e., data that only vary over one or two orders of magnitude), the relative standard deviation is typically 1 or less (i.e., $\sigma/\mu \leq 1$). For these less variable data, we consider it reasonable to know the mean value within ±10%. For both types of sources (i.e., those with more variable data and those with less variable data) we find that $s/error = 10$ provides a reasonable level of accuracy (e.g., when $s = 3\mu$ and $error = 0.3\mu$, then $s/error = 3\mu/(0.3\mu) = 10$). Using $s/error = 10$ and the *t* value of 1.96 (based on a 95 percent 2-sided confidence level with population size greater than 30), the projected sample size needed for numeric value questions is 385 [i.e., $(1.96\times10)^2 = 384.16$, which would round up to 385].

Data precision can be characterized as the ability to distinguish the difference between two estimates obtained from a sample, which is termed the power of a conclusion in statistical terms. The sample size needed to assess differences between means is given by the following formula.

$$n\_o = [(Z_{1-\alpha/2}+Z_{1-\beta}) / ES]^2$$ when the objective is estimation of a mean

where,

$Z_{1-\alpha/2}$ = z-statistic based on desired 2-sided confidence level; typically a value of $Z_{1-\alpha/2} = 1.96$ for the 95 percent confidence interval is used in power analyses.

$Z_{1-\beta}$ = z-statistic based on desired 1-sided power level; $Z_{1-\beta} = 0.84$ for 80 percent power and $Z_{1-\beta} = 1.282$ for 90 percent power.

ES = the effect size = $|\mu_1 - \mu_2|/\sigma$.

[2] Based on the data in Table 6-4 of the Greenhouse Gas Reporting Rule: Technical Support for 2014 Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems;

For proportional sampling, the sample size equation is the same, but the effect size, ES, is defined as $ES = \left| p_1 - p_2 \right| / (p \times (1-p))^{0.5}$.

The effect size for differences in average values can be deduced from other available studies (e.g., available studies from which the standard deviation may deduced) or it can be selected based on recommended values. In the absence of more-specific prior information, it is common practice to use an effect size value of 0.5 when interested in discerning a moderate to large effect, and an effect size of 0.2 if interested in discerning a small effect.[3] Since no prior information on the standard deviation for most of the values requested in the information collection, we considered using the recommended value of 0.2 to discern a small effect on an average value. For proportional questions, we consider it reasonable that a difference of 10 percent ($p_1 - p_2 = 0.1$) be discernable. The maximum value of the denominator, $(p \times (1-p))^{0.5}$, is 0.5 (when p = 0.5). Therefore, for proportional questions, we determined that an ES value of 0.2 (0.1/0.5=0.2) is appropriate. Thus, we concluded that, regardless of the type of question, effect size of 0.2 is sufficient for the purposes of this information collection effort. Using an effect size of 0.2 for a small effect, 80 percent power ($Z_{1-\beta} = 0.84$), and a 95 percent confidence interval, the required sampling size is 196 (, i.e., $[(1.96+0.84)/0.2]^2 = 196$). Using an effect size of 0.2 for a small effect, 90 percent power ($Z_{1-\beta} = 1.282$), and a 95 percent confidence interval, the required sampling size is 263 (, i.e., $[(1.96+1.282)/0.2]^2 = 262.76$).

Therefore, for any question included in the information collection request, we determined that the target sample size (for infinite population sizes) is 385. We also determined that this sample size is sufficient for the needs of this information collection request in terms of our desired requirements of accuracy (error margin) and precision (effect size).

For populations of limited size (N), the actual sample size (n) needed to meet the ICR survey objectives is given by the following equation:

$$n = n\_o/(1+n\_o/N)$$

When applying this equation, we used the theoretical value of *n_o* of 384.16 to calculate *n* and then rounded the calculated value of *n* up to the next highest integer. Table B-3 provides the results of this calculation based on the size for each of the facility type populations to be considered.

Final Rule, Docket Item No. EPA-HQ-OAR-2011-0512-0100

[3] http://meera.snre.umich.edu/power-analysis-statistical-significance-effect-size

The Agency also estimates that facility response rates will be approximately 75 percent due to inaccurate contact information and facility closures. Therefore, the Agency also projected the number of detailed survey form requests that would have to be mailed out based this 75 percent response rate. These results were rounded up to the next integer and are also provided in Table B-3. For populations with a large number of facilities, like the production segment populations, 512 facilities (384/0.75) will be selected to receive the survey. For the LNG storage and the LNG import and export segments, there are a limited number of facilities, so a complete survey rather than sampling from the population will be employed.

Table B-3. Desired Survey Sample Size and Number of Requests Sent by Industry Segment

Production Facility Type	Estimated Count of Facilities	Target Number of Responses	Number of Requests to be Sent[1]
Option 1: Groupings by GOR			
Heavy Oil, GOR ≤ 300 scf/bbl	248,010	384	512
Light Oil, 300 < GOR ≤ 100,000 scf/bbl	219,395	384	512
Wet Gas, 100,000 < GOR ≤ 1,000,000 scf/bbl	31,200	380	507
Dry Gas, GOR > 1,000,000 scf/bbl	177,385	384	512
Coal Bed Methane	22,810	378	504
Option 2: Groupings by Basin Regions			
-Production basins 100 to 190	106,275	383	511
-Production basins 200 to 290 and 400	107,530	383	511
-Production basins 300 to 395	174,605	384	512
-Production basins 405 to 440	217,080	384	512
-Production basins 445 to 895	93,310	383	511
Subtotal for Onshore petroleum and natural gas production facility (Option 2)[2]	698,800	1,917	2,557
Onshore petroleum and natural gas gathering and boosting facility	5,000	357	476
Onshore natural gas processing plant (or facility)	668	244	326
Onshore natural gas transmission compressor station	1,400	302	403
Natural gas transmission pipeline facility	939	273	364
Underground natural gas storage facility	418	201	268
Liquefied natural gas (LNG) storage facility	100	80	100
LNG import and export facility	11	11	11
TOTALS	707,336	3,385	4,505

[1]Number of requests sent calculated as Target Number of Responses/0.75. If this number exceeds the total number of facilities, the number of requests sent is equal to the facility count.

[2]Option 2 is used to estimate the burden and cost of the ICR because this option results in a slightly higher number of target respondents.

To ensure that random sampling of facilities within the production segment includes a proportional number of facilities within a given basin, a proportional allocation of wells will be used within each production population. In proportional allocation, the number of wells selected from a given subcategory (e.g., by basin and/or GOR category), n_h is determined as follows:

$$n_h = n_{requests} \times (N_h/N)$$

where,

n_h = the number of wells of a specified type within a given production population to which requests will be sent.

$n_{requests}$ = the total number of wells for which requests will be sent within a given production population.

N_h = the total number of wells of a specified type within the population.

N = the total number of wells within the population.

In the proportional allocation, the values are rounded to the nearest integer, so that the sum of the all n_h equals (but does not exceed) $n_{requests}$. Thus, if a given basin or well type (by GOR) accounts for 20 percent of the wells within a production population with $n_{requests} = 512$, then 102 wells ($512 \times 0.20 = 102.4$) will be randomly selected from that basin or well type to receive the Part 2 survey.

4. Respondent Sample Collection

A random selection process will be used as described above to determine the well ID numbers selected for the Part 2 survey. The facility that contains a well selected for the Part 2 survey must complete the Part 2 survey for every well at that facility. There may be cases where two selected wells will be located at a single facility. The Agency considers this unlikely for all production basins except the production basins with fewer than 100 wells. Additionally, the response rate factor used to estimate the number of wells selected is expected to help ensure that the targeted number of facility responses will be received even if some facilities contain multiple wells selected for the Part 2 survey.

5. Response Rates

Since the information will be requested pursuant to the authority of section 114 of the Act, EPA anticipates that all respondents that receive the questionnaire will submit information will do so. However, for most of the industry segments, we are unsure if the facility contact information we do have is accurate. While we are confident that we have good contact information for current GHGRP reporters, we are interested in obtaining information for a significant number of reporters that do not currently report to the GHGRP. Given the uncertainty in the accuracies of the contact information, we have estimated a 75 percent response rate for each industry segment.

List of Attachments

Attachment 1A:	Draft Part 1 Questionnaire and Instructions Sheet
Attachment 1B:	Draft Part 1 Questionnaire Acknowledgement (Acknow) Sheet
Attachment 1C:	Draft Part 1 Questionnaire Definitions Sheet
Attachment 2A:	Draft Part 2 Questionnaire Introduction/Instruction Sheet
Attachment 2B:	Draft Part 2 Questionnaire Acronym Sheet
Attachment 2C:	Draft Part 2 Questionnaire Definitions Sheet
Attachment 2D:	Draft Part 2 Questionnaire Facility Sheet
Attachment 2E:	Draft Part 2 Questionnaire Well Site Sheet
Attachment 2F:	Draft Part 2 Questionnaire Tanks Separator Sheet
Attachment 2G:	Draft Part 2 Questionnaire Pneumatics Sheet
Attachment 2H:	Draft Part 2 Questionnaire Acid Gas Removal Unit (AGRU) Sheet
Attachment 2I:	Draft Part 2 Questionnaire Dehydrator (Dehyd) Sheet
Attachment 2J:	Draft Part 2 Questionnaire Equipment Leaks (EqLeaks) Sheet
Attachment 2K:	Draft Part 2 Questionnaire Compressor (Comp) Sheet
Attachment 2L:	Draft Part 2 Questionnaire Blowdown Sheet
Attachment 2M:	Draft Part 2 Questionnaire Control Device Sheet
Attachment 3A:	Industry Burden and Cost for Responding to the Part 1 Questionnaire
Attachment 3B:	Industry Burden and Cost for Responding to the Part 2 Questionnaire
Attachment 4:	Agency Burden and Cost

Attachment 1A: Draft Part 1 Questionnaire and Instructions Sheet

Oil and Gas Information Collection Request

Part 1. Production Operator Survey

Instructions

This information collection request is designed to be completed by operators of onshore petroleum and natural gas (oil and gas) production facilities.

Step 1. Please complete the parent company information requested under Section 1. This information should be for the highest-level, majority corporate owner.

Step 2. Please complete the operator information requested under Section 2. This information should be field operator sites managing one or more well sites.

Step 3. Please complete the facility-level information requested under Section 3 for all facilities managed by the operator except those that contain a well for which the Phase 2 - Detailed Facility Survey must be completed.

Please note that a production facility is typically an individual well site, but please refer to the definition of "facility" in the Definitions tab to determine if multiple well sites may be considered to be located at a single facility.

Step 4. Please complete and sign the acknowledgement in the sheet Acknow tab and submit the completed form either electronically at

https://oil&gasicr.rti.org/

or via hard copy to: Attn: Ms. Brenda Shine
U.S. Environmental Protection Agency
109 T.W. Alexander Drive, Mail Code: E143-01
Research Triangle Park, NC 27709

1.) Parent Company General Information

Legal Name:	
Number of Employees:	
Dun and Bradstreet Number:	
Parent Company Physical Address:	
Parent Company Physical City:	
Parent Company Physical State:	
Parent Company Physical Zip:	
Parent Company Mailing Address:	
Parent Company Mailing City:	
Parent Company Mailing State:	
Parent Company Mailing Zip:	
Parent Company Contact Name:	

Parent Company Contact Title:	
Parent Company Contact Phone:	
Parent Company Contact Phone 2:	
Parent Company Contact Email:	
Parent Company Contact Email 2:	

2.) Operator General Office Information

Operator Name:	
Operator Office Physical Address:	
Operator Office Physical City:	
Operator Office Physical State:	
Operator Office Physical Zip:	
Latitude (degrees decimal)	
Longitude (degrees decimal)	
Operator Office Mailing Address:	
Operator Office Mailing City:	
Operator Office Mailing State:	
Operator Office Mailing Zip:	
Operator Office Contact Name:	
Operator Office Contact Title:	
Operator Office Contact Phone:	
Operator Office Contact Phone 2:	
Operator Office Contact Email:	
Operator Office Contact Email 2:	

3.) For each petroleum and natural gas production facility (see definition), provide the following information.

Provide an ID, description and general information about each facility:

Facility ID (Permit or lease ID number or other facility ID number, as applicable)	
Facility Name/Description	
Is the facility manned?	
Does the facility have electricity?	
Distance from facility to field office (miles)	
Distance from facility to nearest natural gas gathering line (miles)	
Does this facility produce natural gas for sales?	
Does this facility produce crude oil or condensate for sales?	

Attachment 1A: Draft Part 1 Questionnaire and Instructions Sheet

Do wells at this facility conduct liquids unloading?	
Is there a flare or thermal combustor present at the facility?	

Provide facility-wide equipment counts for the major equipment listed below present at the facility:

Total Number of Producing Wells	
Number of Producing Wells that have been hydraulically fractured or re-fractured	
Number of Capped or Abandoned Production Wells	
Number of Separators	
Number of Atmospheric Storage Tanks <10 bbl/day	
Number of Atmospheric Storage Tanks ≥10 bbl/day	
Number of Reciprocating Compressors	
Number of Dry Seal Centrifugal Compressors	
Number of Wet Seal Centrifugal Compressors	

Provide the US, API, or other Well ID Number as provided to State or local permitting agency for each well present at the facility (include producing wells, capped or abandoned wells, and injection wells):

Well ID for Well 1	
Well ID for Well 2	
Well ID for Well 3	
Well ID for Well 4	
Well ID for Well 5	
Well ID for Well 6	
Well ID for Well 7	
Well ID for Well 8	
Well ID for Well 9	
Well ID for Well 10	
Well ID for Well 11	
Well ID for Well 12	
Well ID for Well 13	
Well ID for Well 14	
Well ID for Well 15	
Well ID for Well 16	
Well ID for Well 17	
Well ID for Well 18	
Well ID for Well 19	
Well ID for Well 20	

Attachment 1B: Draft Part 1 Questionnaire Acknowledgement (Acknow) Sheet

Oil and Gas Information Collection Request

Part 1. Production Operator Survey

☐ I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete.

☐ I am authorized to make this submission on behalf of the owners and operators of the facility or facilities, as applicable, for which the submission is made.

_____

Print Name

_____ _____

Signature Date

Attachment 1C: Draft Part 1 Questionnaire Definitions Sheet

Oil and Gas Information Collection Request

Part 1. Production Operator Survey

Term	Definition
API Well ID	The uniquely assigned number for a well on the property. Custody of the API Well ID Number standard was transferred in 2010 to the PPDM Association and is now known as the US Well ID.
Atmospheric storage tank	A class of storage tanks that store materials at approximately atmospheric pressure. Atmospheric storage tanks may store liquids at ambient temperatures or at elevated temperatures (e.g., "heater treaters").
Barrel	A common unit of measurement for the volume of crude oil produced or processed. The volume of a barrel is equivalent to 42 US gallons.
Basin	Geologic provinces as defined by the American Association of Petroleum Geologists (AAPG) Geologic Note: AAPG-CSD Geologic Provinces Code Map: AAPG Bulletin, Prepared by Richard F. Meyer, Laure G. Wallace, and Fred J. Wagner, Jr., Volume 75, Number 10 (October 1991) (incorporated by reference, see §98.7) and the Alaska Geological Province Boundary Map, Compiled by the American Association of Petroleum Geologists Committee on Statistics of Drilling in Cooperation with the USGS, 1978.
Centrifugal compressor	Any machine for raising the pressure of a gaseous stream by drawing in low pressure gas and discharging significantly higher pressure gas by means of mechanical rotating vanes or impellers. Screw, sliding vane, and liquid ring compressors are not centrifugal compressors for the purposes of this information collection request.
Compressor	Any machine for raising the pressure of a gaseous stream by drawing in low pressure gas and discharging significantly higher pressure gas.
Condensate	Hydrocarbon liquid separated from natural gas that condenses due to changes in the temperature, pressure, or both, and remains liquid at standard conditions.
Crude oil	A mixture of hydrocarbons that exists in liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities. Depending upon the characteristics of the crude stream, it may also include small amounts of non-hydrocarbons produced from oil, such as sulfur and various metals, drip gases, and liquid hydrocarbons produced from tar sands, gilsonite, and oil shale.
Equipment	The set of articles or physical resources used in an operation or activity.
Facility	Any stationary source or group of stationary sources located on one or more contiguous or adjacent properties in actual physical contact or separated solely by a public roadway or other public right-of-way and under common ownership or common control.
Gas-to-oil-ratio (GOR)	The ratio of the volume of natural gas that comes out of solution when crude oil is extracted from a well to the volume of crude oil produced (after the natural gas comes out of solution) at standard conditions.
Hydraulic fracturing	The process of directing pressurized fluids containing any combination of water, proppant, and any added chemicals to penetrate tight formations, such as shale or coal formations, that subsequently require high rate, extended flowback to expel fracture fluids and solids during completions.

Attachment 1C: Draft Part 1 Questionnaire Definitions Sheet

Term	Definition
Hydraulic refracturing	Conducting a subsequent hydraulic fracturing operation at a well that has previously undergone a hydraulic fracturing operation.
Natural gas	A naturally occurring mixture or process derivative of hydrocarbon and non-hydrocarbon gases found in geologic formations beneath the earth's surface, of which its constituents include, but are not limited to methane, heavier hydrocarbons and carbon dioxide. Natural gas may be field quality, pipeline quality, or process gas.
Onshore	All facilities except those that are located in the territorial seas or on the outer continental shelf.
Onshore petroleum and natural gas production facility	Any onshore facility that contains a well drilled for the purpose of producing crude oil or natural gas, and includes all equipment used in the production, extraction, recovery, lifting, stabilization, separation, storing or treating of crude oil and/or natural gas (including condensate) located at the facility.
Owner or operator	Any person who owns, leases, operates, controls, or supervises an affected facility or a stationary source of which an affected facility is a part.
Producing well	A well for which crude oil or natural gas are actively flowing from a subsurface reservoir and through the wellhead valve.
Reciprocating compressor	A piece of equipment that increases the pressure of a gaseous stream by positive displacement, employing linear movement of the driveshaft.
Separator	A process tank specifically designed to separate gaseous fluids from liquid fluids produced from a well or as received via a pipeline. Generally, separators are operated at pressures greater than ambient air pressure.
Storage tank or vessel	A tank or other vessel that contains an accumulation of crude oil, condensate, intermediate hydrocarbon liquids, or produced water, and that is constructed primarily of nonearthen materials (such as wood, concrete, steel, fiberglass, or plastic) which provide structural support.
US Well ID	The uniquely assigned number for a well on the property (formerly known as the API Well ID).
Well	A hole drilled for the purpose of producing crude oil or natural gas, or a well into which fluids are injected.
Well site	One or more areas that are directly disturbed during the drilling and subsequent operation of, or affected by, production facilities directly associated with any oil well, natural gas well, or injection well and its associated well pad.

Attachment 2A: Draft Part 2 Questionnaire Introduction/Instruction Sheet

Oil and Gas Information Collection Request

Part 2. Detailed Facility Survey

Introduction

This workbook contains the instructions and information collection forms used to collect information regarding processes, emission sources and controls used at existing oil and gas facilities. A brief description of each worksheet and their color-coded function is provided below.

Worksheets

Name	Details
	INSTRUCTIONS
Intro	Overview of spreadsheets and general instructions
Acronyms	Provides listing of acronyms used in the sheets
Definitions	Provides definitions of key terms used on the sheets
	FACILITY LEVEL INFORMATION – *everyone should complete this section if your facility received a Part 2, Detailed Facility Survey request. Well operators, complete this form only for facilities that contain wells that were identified for this Part 2 survey. You should only complete this form once for a facility that contains one or more wells identified for this Part 2 survey.*
Facility	General facility contact and operating information. This form should be completed first as some of this information may be used in emission source-specific sheets.
	EMISSION SOURCE-SPECIFIC INFORMATION – *complete these sheets only if the source or equipment is present at the facility required to complete this Part 2 survey. Generally these forms should be completed with information readily available without additional testing except as noted below*.
Well Sites - Pads	Information sheet for well-related emission sources, applicable only for production facilities. Include information for all wells at the facility (including abandoned or injection wells)
Tanks Separators	Source-specific information sheet for separators and storage tanks located at the facility. This information should be completed for all storage vessels at the facility, including produced water, condensate, or hydrocarbon storage vessels except for pressure vessels and tanks used to store fresh (unused) ethylene glycol storage tanks. *If feed material composition measurement data are not available, you must perform feed material compositional analysis according to the method specified in Section 4 of this sheet.*
Pneumatics	Source-specific information sheet for pneumatic devices, including pneumatic controllers, pneumatic isolation valve actuators, and pneumatic pumps. *You must complete the pneumatic device counts in Section 2 of this form based on actual counts at the facility if natural gas-driven pneumatic devices are used. If this information is not readily available, you must visit the site and determine the actual pneumatic device count. You must also complete the information on isolation valve actuations based on company records and emission estimates per actuation based on actuator design information and supply pressure in Section 4 of this form if natural gas-driven*

	pneumatic devices are used.
AGRU	Source-specific information sheet for acid gas removal (or sweetening) units.
Dehyd	Source-specific information sheet for dehydration units.
Comp	Source-specific information sheet for compressors (including vapor recovery compressors)
EqLeaks	Source-specific information sheet for equipment component leaks. *You must complete the equipment component counts in Section 2 of this form based on actual counts at the facility. If this information is not readily available, you must visit the site and determine the actual equipment component counts*.
Blowdown	Source-specific information sheet for equipment/pipeline blowdowns. Complete form based on available information for 2015. *If your facility is first required to track this information in 2016, you may estimate 2015 blowdown events/emissions as twice the events/emissions determined in January through June 2016*.
	CONTROL DEVICE INFORMATION – complete this sheet only if flares, combustors, vapor recovery units, or other "add-on" control devices are used at the facility
ControlDevice	Information collection sheet for control devices, such as flares, incinerators, and vapor recovery units

Useful Tips

Printing

It may be useful to print out this sheet as well as the "Acronyms" and "Definitions" sheet for easy reference while completed the various forms. The blue tabs are formatted for printing; the other tabs are not formatted for printing.

Shading

Cells with grey shading are for table headers and calculated values. These cells are locked and cannot be altered. You should not need to enter data in these cells.

Cells with black shading are cells that are input cells that not expected to be required based on answers to a related response. Values can be entered in these cells, but generally, black shading indicated that a response is not needed.

Cells with white/no shading are input cells. These cells should be completed based on the number of sources of a given type present at the facility.

Drop down pick lists

Many input values have predetermined lists of potential answers. A small triangle will appear on the right side of the cell that contains a pick list. Click on the triangle and the candidate options will appear. Select the best option of those provided. Some lists include "Other (specify)". Please provide further information to describe the type of unit/device.

Attachment 2A: Draft Part 2 Questionnaire Introduction/Instruction Sheet

Data validation errors

Certain inputs have built-in data validation checks. For example, if a fraction is requested and you try to enter “98” for 98% rather than “0.98”, an error message will appear noting that the value expected must be between 0 and 1. If you have questions regarding the source of an error, please call the information help line at (888) 888-8888.

Attachment 2B: Draft Part 2 Questionnaire Acronym Sheet

Oil and Gas Information Collection Request

Part 2. Detailed Facility Survey

Acronym List for Detailed Facility Survey

Acronym	Definition
AAPG	American Association of Petroleum Geologists
AGRU	acid gas removal unit
API	American Petroleum Institute
Bbl	barrel
Btu	British thermal unit
CARB	California Air Resources Board
CFR	Code of Federal Regulations
CH4	methane
CO2	carbon dioxide
EOR	enhanced oil recovery
g	gram
G&B	gathering and boosting
GHG	greenhouse gas
GHGRP	Greenhouse Gas Reporting Program (40 CFR part 98)
GOR	gas-to-oil ratio
Hg	mercury
Lb	pounds
lb/hr	pounds per hour
MW	molecular weight
NG	natural gas
NGL	natural gas liquids
psig	pounds per square inch gauge pressure
scf	standard cubic feet
scf/hr	standard cubic feet per hour
scfm	standard cubic feet per minute
VOC	volatile organic compound
°F	degrees Fahrenheit
°K	degrees Kelvin

Oil and Gas Information Collection Request

Part 2. Detailed Facility Survey

Key Terms and Definitions for Detailed Facility Survey

Term	Definition
API Well ID	The uniquely assigned number for a well on the property. Custody of the API Well ID Number standard was transferred in 2010 to the PPDM Association and is now known as the US Well ID.
Acid gas removal unit	A process unit that separates hydrogen sulfide and/or carbon dioxide from sour natural gas using liquid or solid absorbents or membrane separators. Also commonly referred to as a sweetening unit.
Air-assisted flare	A flare that intentionally introduces air at or near the flare tip through nozzles or other hardware conveyance for the purposes including, but not limited to, protecting the design of the flare tip, promoting turbulence for mixing or inducing air into the flame.
API gravity	A specific gravity scale developed by the American Petroleum Institute (API) for measuring the relative density of various petroleum liquids, expressed in degrees. The formula for determining API gravity is: API gravity = (141.5/SG at 60°F) - 131.5, where SG is the specific gravity of the fluid.
Artificial lift	Any system that adds energy to the fluid column in a wellbore with the objective of initiating and improving production from the well. Artificial-lift systems use a range of operating principles, including rod pumping, gas lift and electric submersible pump.
Associated gas	The natural gas which originates at wellheads that also produce hydrocarbon liquids and occurs either in a discrete gaseous phase at the wellhead or is released from the liquid hydrocarbon phase by separation.
Barrel	A common unit of measurement for the volume of crude oil produced or processed. The volume of a barrel is equivalent to 42 US gallons.
Basin	Geologic provinces as defined by the American Association of Petroleum Geologists (AAPG) Geologic Note: AAPG-CSD Geologic Provinces Code Map: AAPG Bulletin, Prepared by Richard F. Meyer, Laure G. Wallace, and Fred J. Wagner, Jr., Volume 75, Number 10 (October 1991) (incorporated by reference, see §98.7) and the Alaska Geological Province Boundary Map, Compiled by the American Association of Petroleum Geologists Committee on Statistics of Drilling in Cooperation with the USGS, 1978.
Blowdown	To vent gas from a well, process unit, or pipeline to reduce the pressure of the system.
Candlestick flare	A flare that has an elevated flare stack and open (exposed) flame.
Casing	Large-diameter steel pipe lowered into an openhole and cemented in place during the construction process to stabilize the wellbore.
Centrifugal compressor	Any machine for raising the pressure of a gaseous stream by drawing in low pressure gas and discharging significantly higher pressure gas by means of mechanical rotating vanes or impellers. Screw, sliding vane, and liquid ring compressors are not centrifugal compressors for the purposes of this information collection request.

Attachment 2C: Draft Part 2 Questionnaire Definitions Sheet

Term	Definition
Coal bed methane	Natural gas, predominantly methane, generated during coal formation and adsorbed in coal.
Coal seam	A stratum of coal thick enough to be profitably mined
Components (or equipment components)	Those parts of major process equipment that are typically included in leak detection and repair programs to reduce equipment leak emissions. *Equipment components* include, but are not limited to: valves, pumps, connectors (including flanges), meters, open-ended lines, and pressure relief devices.
Compressor	Any machine for raising the pressure of a gaseous stream by drawing in low pressure gas and discharging significantly higher pressure gas.
Compressor station	Any permanent combination of one or more compressors that move natural gas at increased pressure from fields, in transmission pipelines, or into storage.
Condensate	Hydrocarbon liquid separated from natural gas that condenses due to changes in the temperature, pressure, or both, and remains liquid at standard conditions.
Continuous bleed pneumatic controller	A pneumatic controller that uses a continuous flow of pneumatic supply gas to the process control device (e.g., level control, temperature control, pressure control) where the supply gas pressure is modulated by the process condition, and then flows to the valve controller where the signal is compared with the process set-point to adjust gas pressure in the valve actuator. For the purposes of this paper, continuous bleed controllers are further subdivided into two types based on their bleed rate. A low continuous bleed controller has a bleed rate of less than or equal to 6 standard cubic feet per hour (scf/hr). A high continuous bleed controller has a bleed rate of greater than 6 scf/hr.
Crude oil	A mixture of hydrocarbons that exists in liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities. Depending upon the characteristics of the crude stream, it may also include small amounts of non-hydrocarbons produced from oil, such as sulfur and various metals, drip gases, and liquid hydrocarbons produced from tar sands, gilsonite, and oil shale.
Custody transfer	The transfer of natural gas after processing and/or treatment in the producing operations, or from storage vessels or automatic transfer facilities or other such equipment, including product loading racks, to pipelines or any other forms of transportation.
Darcy	A standard unit of measure of permeability. One darcy describes the permeability of a porous medium through which the passage of one cubic centimeter of fluid having one centipoise of viscosity flowing in one second under a pressure differential of one atmosphere where the porous medium has a cross-sectional area of one square centimeter and a length of one centimeter. A millidarcy (mD) is one thousandth of a darcy and is a commonly used unit for reservoir rocks.
Directional well	A wellbore that has a planned deviation from primarily vertical so as to require the use of special tools or techniques to ensure that the wellbore path hits a particular subsurface target, typically located away from (as

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Term	Definition
	opposed to directly under) the surface location of the well.
Equipment	The set of articles or physical resources used in an operation or activity.
Enclosed flare/combustor	A flare or combustion device that uses a large stack enclosure to contain the devices flame within the stack enclosure. The bottom of the stack enclosure may be open or have openings to allow ambient air flow into the stack enclosure and the flare/flame tips are located near the base of the enclosure. This device is differs from a thermal oxidizer or incinerator due to the lack of a defined volume combustion chamber.
Enhanced oil recovery (or EOR)	The implementation of various techniques for increasing the amount of crude oil that can be extracted from an oil field, including gas injection, thermal injection, chemical injection, and plasma-pulse technology.
Facility	Any stationary source or group of stationary sources located on one or more contiguous or adjacent properties in actual physical contact or separated solely by a public roadway or other public right-of-way and under common ownership or common control.
Field quality natural gas	Natural gas as produced at the wellhead or feedstock natural gas entering the natural gas processing plant.
Flare	A combustion device, whether at ground level or elevated, that uses an open flame to burn combustible gases with combustion air provided by uncontrolled ambient air around the flame.
Flowback	The process of allowing fluids and entrained solids to flow from a natural gas well following a treatment, either in preparation for a subsequent phase of treatment or in preparation for cleanup and returning the well to production. The term *flowback* also means the fluids and entrained solids that emerge from a natural gas well during the flowback process. The *flowback period* begins when material introduced into the well during the treatment returns to the surface following hydraulic fracturing or refracturing. The *flowback period* ends when either the well is shut in and permanently disconnected from the flowback equipment or at the startup of production. The flowback period includes the initial flowback stage and the separation flowback stage.
Gas liquid ratio	The ratio of the volume of natural gas that comes out of solution when liquid is stored at standard conditions. The liquid may be crude oil, condensate or produced water.
Gas-to-oil-ratio (GOR)	The ratio of the volume of natural gas that comes out of solution when crude oil is extracted from a well to the volume of hydrocarbon liquids (oil/condensate) produced after the natural gas comes out of solution at standard conditions.
Gas reservoir	A reservoir that produces natural gas or that produces natural gas and hydrocarbon liquids (oil and condensate) such that the gas-to-oil ratio of the material extracted from the reservoir is 100,000 scf/barrel of more.
Gas well	A well that produces natural gas or that produces natural gas and hydrocarbon liquids (oil and condensate) such that the gas-to-oil ratio is 100,000 scf/barrel of more.
Heater Treater	A storage vessel that uses heat to break oil-water emulsions so the oil can be accepted by the pipeline or transport.
High permeability gas	A natural gas reservoir with a permeability exceeding 0.1 millidarcy.

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Term	Definition
reservoir	
Horizontal well	A subset of the more general term "directional well" used where the departure of the wellbore from vertical exceeds about 80 degrees.
Hydraulic fracturing	The process of directing pressurized fluids containing any combination of water, proppant, and any added chemicals to penetrate tight formations, such as shale or coal formations, that subsequently require high rate, extended flowback to expel fracture fluids and solids during completions.
Hydraulic refracturing	Conducting a subsequent hydraulic fracturing operation at a well that has previously undergone a hydraulic fracturing operation.
Incinerator	An apparatus for burning waste material, especially industrial waste, at high temperatures until it is reduced to ash. Incinerators may be used to treat solid, liquid or gaseous waste and typically have a fixed volume combustion chamber.
Intermittent bleed controller	A pneumatic controller that does not have a continuous bleed, but rather vents only when the controller is actuated.
Isolation valve	A valve in a fluid handling system that stops the flow of process media to a given location, usually for maintenance or safety purposes.
Liquefied natural gas (LNG)	Natural gas (primarily methane) that has been liquefied by reducing its temperature to -260 degrees Fahrenheit at atmospheric pressure.
Liquefied natural gas (LNG) storage facility mean	Any onshore site other than an LNG import and export facility that liquefies natural gas, stores LNG in storage vessels, and/or re-gasifies LNG.
Liquids unloading	The process of removing water or condensate build-up from producing gas wells. Also known as "gas well deliquification" or "gas well dewatering."
LNG import and export facility	Any site, whether onshore or offshore, that either receives imported LNG via ocean transport, stores LNG, re-gasifies LNG, and delivers re-gasified natural gas to a natural gas transmission or distribution system or that receives natural gas, liquefies natural gas, stores LNG, and transfers the LNG via ocean transportation to any location, including locations in the United States.
Maximum average daily throughput means	The earliest calculation of daily average throughput during the 30-day potential-to-emit evaluation period employing generally accepted methods.
Natural gas (NG)	A naturally occurring mixture or process derivative of hydrocarbon and non-hydrocarbon gases found in geologic formations beneath the earth's surface, of which its constituents include, but are not limited to methane, heavier hydrocarbons and carbon dioxide. Natural gas may be field quality, pipeline quality, or process gas.
Natural gas liquids	The hydrocarbons, such as ethane, propane, butane, and pentane that are extracted from field quality natural gas.
Natural gas transmission pipeline facility	A site consisting of a Federal Energy Regulatory Commission rate-regulated Interstate pipeline, a state rate-regulated Intrastate pipeline, or a pipeline that falls under the “Hinshaw Exemption” as referenced in section 1(c) of the Natural Gas Act, 15 U.S.C. 717-717 (w)(1994) used for the long distance transport of natural gas (excluding processing).
Net heating value	The energy released as heat when a compound undergoes complete combustion with oxygen to form gaseous carbon dioxide and gaseous water

Attachment 2C: Draft Part 2 Questionnaire Definitions Sheet

Term	Definition
	(also referred to as lower heating value).
Oil reservoir	A reservoir that contains predominately hydrocarbon liquids (crude oil) such that the gas-to-oil ratio of the material extracted from the well is less 100,000 scf/barrel
Oil well	A well that produces crude oil or that produces crude oil and associated gas such that the gas-to-oil ratio is less 100,000 scf/barrel
Onshore	All facilities except those that are located in the territorial seas or on the outer continental shelf.
Onshore natural gas processing plant (or facility)	Any onshore processing site engaged in the extraction of natural gas liquids from field quality natural gas, fractionation of mixed natural gas liquids to natural gas products, or both. A Joule-Thompson valve, a dew point depression valve, or an isolated or standalone Joule-Thompson skid is not a natural gas processing plant.
Onshore natural gas transmission compressor station	Any onshore site whose primary function is to move natural gas from production facilities, gathering and boosting facilities, natural gas processing plants, or other transmission compressor stations through transmission pipelines to natural gas distribution pipelines, LNG storage facilities, or into underground storage using a combination of compressors. *Onshore natural gas transmission compressor station* may include equipment for liquids separation, and tanks for the storage of water and hydrocarbon liquids. *Onshore natural gas transmission compressor stations* do not include facilities that also perform production, gathering, or processing of crude oil or natural gas.
Onshore petroleum and natural gas gathering and boosting facility	Any onshore site with gathering pipelines and other equipment used to collect petroleum and/or natural gas from onshore petroleum and natural gas production facilities and to compress, dehydrate, sweeten, or transport the crude oil and/or natural gas to a natural gas processing facility, a natural gas transmission pipeline or to a natural gas distribution pipeline.
Onshore petroleum and natural gas production facility	Any onshore facility that contains a well drilled for the purpose of producing crude oil or natural gas, and includes all equipment used in the production, extraction, recovery, lifting, stabilization, separation, storing or treating of crude oil and/or natural gas (including condensate) located at the facility.
Owner or operator	Any person who owns, leases, operates, controls, or supervises an affected facility or a stationary source of which an affected facility is a part.
Permeable gas reservoir	A natural gas reservoir that has a permeability greater than 0.1 millidarcy.
Plunger lift	A type of gas-lift method that uses a plunger that goes up and down inside the tubing and is used to remove water and condensate from a well. The plunger provides an interface between the liquid phase and the lift gas, minimizing liquid fallback.
Pneumatic controller	An automated pneumatic device used for maintaining a process condition such as liquid level, pressure, pressure difference and temperature.
Pneumatic device	Any device which generates or is powered by compressed air or natural gas which includes pneumatic controllers, pneumatic valve actuators, and pneumatic pumps.
Pneumatic pump	Devices that use gas pressure to drive a fluid by raising or reducing the

Attachment 2C: Draft Part 2 Questionnaire Definitions Sheet

Term	Definition
	pressure of the fluid by means of a positive displacement, a piston or set of rotating impellers.
Pressure vessels	Vessel that are designed to store compressed gases or liquids, such as LNG, at pressures of 30 psig or higher without emissions to the atmosphere.
Producing well	A well for which crude oil or natural gas are actively flowing from a subsurface reservoir and through the wellhead valve.
Production tubing	See "tubing"
Reciprocating compressor	A piece of equipment that increases the pressure of a gaseous stream by positive displacement, employing linear movement of the driveshaft.
Rotary vane actuator	A type of pneumatic actuator that uses a system of chambers and vanes to produce rotational force on a shaft. The chambers typically contain a hydraulic fluid and pneumatic pressure is used to displace the hydraulic fluid from one chamber to apply pressure on one side of the shaft, which forces hydraulic fluid and venting of pneumatic gas from the other chamber. Also known as a displacement-type actuator.
Separator	A process tank specifically designed to separate gaseous fluids from liquid fluids produced from a well or as received via a pipeline. Generally, separators are operated at pressures greater than ambient air pressure.
Shale gas	Natural gas that is found trapped within shale formations, which are formations of fine-grained, clastic sedimentary rock composed of mud that is a mix of flakes of clay minerals and tiny fragments (silt-sized particles) of other minerals, especially quartz and calcite that is characterized by breaks along thin laminae or parallel layering or bedding less than one centimeter in thickness, called fissility.
Snap acting controller	A controller that acts as an on/off switch and is either fully open or fully closed. Snap acting controllers, when functioning properly, do not have a continuous gas bleed and vent gas only when actuating are, therefore, designed as intermittent bleed pneumatic devices.
Specific gravity	The ratio of the density of a fluid compared to the density of 4 °C water (i.e., 1.00 g/cm^3).
Standard conditions	A temperature of 288.5°K (60°F) and a pressure of 1 atmosphere (29.92 inches Hg or 14.7 pounds per square inch).
Stationary source	Any building, structure, facility, or installation which emits or may emit any air pollutant.
Steam-assisted flare	A flare that intentionally introduces steam prior to or at the flare tip through nozzles or other hardware conveyance for the purposes including, but not limited to, protecting the design of the flare tip, promoting turbulence for mixing or inducing air into the flame.
Storage tank or vessel	A tank or other vessel that contains an accumulation of crude oil, condensate, intermediate hydrocarbon liquids, or produced water, and that is constructed primarily of nonearthen materials (such as wood, concrete, steel, fiberglass, or plastic) which provide structural support. For the purposes of this ICR, pressure vessels (vessels designed to operate at pressures of 30 psig or higher) are not considered storage tanks.
Sub-basin category, for onshore natural	A unique combination of wells with the surface coordinates within the boundaries of an individual facility and subsurface completion in one or more

Attachment 2C: Draft Part 2 Questionnaire Definitions Sheet

Term	Definition
gas and petroleum production	of each of the following five formation types: Oil, high permeability gas, shale gas, coal seam, or other tight gas reservoir rock. The distinction between high permeability gas and tight gas reservoirs shall be designated as follows: High permeability gas reservoirs with >0.1 millidarcy permeability, and tight gas reservoirs with ≤0.1 millidarcy permeability. Permeability for a reservoir type shall be determined by engineering estimate. Wells that produce only from high permeability gas, shale gas, coal seam, or other tight gas reservoir rock are considered gas wells; gas wells producing from more than one of these formation types shall be classified into only one type based on the formation with the most contribution to production as determined by engineering knowledge. All wells that produce hydrocarbon liquids (with or without gas) and do not meet the definition of a gas well in this sub-basin category definition are considered to be in the oil formation. All emission sources that handle condensate from gas wells in high permeability gas, shale gas, or tight gas reservoir rock formations are considered to be in the formation that the gas well belongs to and not in the oil formation.
Thermal oxidizer	An apparatus with a fixed volume combustion chamber for burning waste gases at high temperatures. A thermal oxidizer is an incinerator designed to handle only gaseous waste streams.
Thief hatch	An opening in the top of a storage vessel that allows tank access for collecting (liquid or sediment) samples or measuring (liquid or sediment) levels.
Throttling controller	A controller that can provide a variable signal based on the deviation from the desired set point. A throttling controllers generally have continuous bleeds; however, certain controller designs, such as a force balance piston device, only bleeds when it is out of the neutral position and may, therefore, be considered an intermittent device.
Tight gas reservoir	A natural gas reservoir (other than coal seam or shale formation) with a permeability of 0.1 millidarcy or less.
Total compressor power rating	The nameplate capacity of the compressor power output of the compressor drive.
Tubing (or production tubing)	A tube installed within the casing and used as the primary conduit through which reservoir fluids are produced to surface.
Turbine operated actuator	A type of pneumatic actuator that uses a small turbine to actuate a valve, moos commonly a gate valve. Pneumatic gas is used to spin the turbine blades and the turbine shaft turns gears that actuates the gate valve system.
Underground natural gas storage facility	A site used for subsurface storage (include storage in depleted gas or oil reservoirs and salt dome caverns) of natural gas that has been transferred from its original location for the primary purpose of load balancing (the process of equalizing the receipt and delivery of natural gas).
Unassisted flare	A flare that does not have special nozzles or other hardware conveyance designed to intentionally supply air or steam prior at or near the flare tip.
Underground storage vessel	A storage vessel stored below ground.
US Well ID	The uniquely assigned number for a well on the property (formerly known as the API Well ID).
Vertical well	A well that is not turned horizontally at depth, allowing access to oil and gas

Attachment 2C: Draft Part 2 Questionnaire Definitions Sheet

Term	Definition
	reserves located directly beneath the surface access point.
Volatile organic compounds (VOC)	Any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. Compounds that have been determined to have negligible photochemical reactivity, such as methane and ethane, are excluded from the define
Well	
Well bore length	The nominal length of the well from the wellhead to the termination of the well bore in the reservoir. For vertical wells, well bore length and well depth are equivalent. For directional or horizontal wells, well bore length will be greater than well depth.
Well completion	The process that allows for the flowback of petroleum or natural gas from newly drilled wells to expel drilling and reservoir fluids and tests the reservoir flow characteristics, which may vent produced hydrocarbons to the atmosphere via an open pit or tank.
Well depth	The vertical distance from the wellhead to the termination of the well bore in the reservoir.
Well head (or wellhead)	The piping, casing, tubing and connected valves protruding above the earth's surface for an oil and/or natural gas well. The wellhead ends where the flow line connects to a wellhead valve. The wellhead does not include other equipment at the well site except for any conveyance through which gas is vented to the atmosphere.
Well shut-in pressure	The surface force per unit area exerted at the top of a wellbore when the wellhead valve is closed.
Well site	One or more areas that are directly disturbed during the drilling and subsequent operation of, or affected by, production facilities directly associated with any oil well, natural gas well, or injection well and its associated well pad.
Workover	The process of performing major maintenance or remedial treatments on producing petroleum and natural gas wells to try to increase production. This process includes production tubing replacement, hydraulic refracturing, and snubbing and other well-intervention techniques.
Zero bleed pneumatic controller	A pneumatic controller that does not bleed the pneumatic gas to the atmosphere. These pneumatic controllers are self-contained devices that release gas to a downstream pipeline instead of to the atmosphere.

Attachment 2D: Draft Part 2 Questionnaire Facility Sheet

Oil and Gas Information Collection Request

Part 2. Detailed Facility Survey

1.) Parent Company General Information

Legal Name:	
Number of Employees:	
Dun and Bradstreet Number:	
Parent Company Physical Address:	
Parent Company Physical City:	
Parent Company Physical State:	
Parent Company Physical Zip:	
Parent Company Mailing Address:	
Parent Company Mailing City:	
Parent Company Mailing State:	
Parent Company Mailing Zip:	
Parent Company Contact Name:	
Parent Company Contact Title:	
Parent Company Contact Phone:	
Parent Company Contact Phone 2:	
Parent Company Contact Email:	
Parent Company Contact Email 2:	

2.) Facility General Information

Facility Name:	
Assigned Facility ICR ID:	
Facility Type:	
Are greenhouse gas (GHG) emissions from this facility reported under 40 CFR part 98 subpart W?	
Facility GHGRP ID, if applicable:	
Physical Address:	
Physical City:	
Physical State:	
Physical Zip:	
Physical County:	
Latitude (degrees decimal)	
Longitude (degrees decimal)	
Mailing Address:	
Mailing City:	
Mailing State:	
Mailing Zip:	
Contact Name:	
Contact Title:	
Contact Phone:	
Contact Phone 2:	

Attachment 2D: Draft Part 2 Questionnaire Facility Sheet

Contact Email:	
Contact Email 2:	
Is this facility manned while in operation?	
Does the facility have electricity available?	
Year the facility first began operations	
Number of months the facility operated in 2015	
Quantity of natural gas received by the facility in the 2015 calendar year (thousand standard cubic feet). For production facilities, this is the quantity extracted from all wells. For storage facilities, this is the quantity place into storage.	
Quantity of natural gas leaving the facility (sales) in the 2015 calendar year (thousand standard cubic feet).	
Quantity of all hydrocarbon liquids (crude oil and condensate, including NGLs) received by the facility in the 2015 calendar year (barrels). For production facilities, this is the quantity extracted from all wells.	
Quantity of all hydrocarbon liquids (crude oil and condensate, including NGLs) leaving the facility (sales) in the 2015 calendar year (barrels).	
Miles of natural gas transmission pipeline	

Attachment 2E: Draft Part 2 Questionnaire Well Site Sheet

Oil and Gas Information Collection Request

Part 2. Detailed Facility Survey

1. Well Site Information:

Facility ID (pulled from Facility sheet)	
Distance from field office (miles).	
Distance to the nearest natural gas transmission pipeline or gathering and boosting pipeline (miles).	
How frequently is well site visited by field office personnel?	
Is land owned or leased?	
List current environmental regulations to which the well site must comply. Select all that apply.	
What is the average age of the wells at the well site?	
How are produced waters managed?	
Number of wells at the well site.	

2. General Well Information - Complete for each well at the well site.

US Well ID Number	
Basin ID	
County and State in which the Sub-basin is Located	
Well Drilling Type	
Sub-basin Formation Type	
Sub-basin ID	
Well Type	
Well depth (feet)	
Well bore length (feet)	
Well shut-in pressure (psig)	
Well casing inside diameter (inches)	
Well tubing inside diameter (inches)	
Natural gas production rate from well (daily average over last 30 days of operation) (Mscf/day)	
Where is produced gas monitored?	
Oil and condensate production rate from well (daily average over last 30 days of operation) (bbl/day)	
Where is oil/condensate flow monitored?	
Date of last production for shut-in or abandoned wells (dd/mm/yyyy)	
Produced Gas Composition in first 30 days production - CO_2 (% by vol)	
Produced Gas Composition in first 30 days production - CH_4 (% by vol)	
Produced Gas Composition in first 30 days production - C_2H_6 (% by vol	
Produced Gas Composition in first 30 days production - VOC (% by vol	
Produced Gas Composition in calendar year 2015 or last year of operation - CO_2 (% by vol)	

Produced Gas Composition in calendar year 2015 or last year of operation - CH_4 (% by vol)	
Produced Gas Composition in calendar year 2015 or last year of operation - C_2H_6 (% by vol)	
Produced Gas Composition in calendar year 2015 or last year of operation - VOC (% by vol)	
Current Produced Gas Composition - CO_2 (% by vol)	
Current Produced Gas Composition - CH_4 (% by vol)	
Current Produced Gas Composition - C_2H_6 (% by vol)	
Current Produced Gas Composition - VOC (% by vol)	
Gas to Oil Ratio in first 30 days production	
Gas to Oil Ratio in calendar year 2015 or last year of operation	
Current Gas to Oil Ratio	
Oil Producing Wells Only - API gravity of produced oil	
Oil Producing Wells Only - Disposition of casing head gas	

3. Well Completion and Workover Information - Complete for each well at the well site.

US Well ID Number	
Date Well Completed	
Type of Well Completion	
Date of Last Workover	
Type of Well Workover	
Anticipated date of next workover	
Controls used for workovers	

4. Well Testing, Venting and Liquids Unloading Information - Complete for each well at the well site.

US Well ID Number	
Date of last well testing/venting	
Anticipated date of next well testing	
Annual hours for well testing (hours)	
Controls used for well testing	
Primary technique used for liquids unloading?	
Number of well venting events for liquids unloading in past year (or since completion if <1 year old)	
Controls used for well venting for liquids unloading	
Year Installed (for plunger lift, velocity tubing, or other assist method)	
Total Capital Installed Cost ($)	
Annual Operating and Maintenance Costs ($/yr in 2015)	

Attachment 2F: Draft Part 2 Questionnaire Tanks Separator Sheet

Oil and Gas Information Collection Request

Part 2. Detailed Facility Survey

1. Facility Information:

Facility ID (pulled from Facility sheet)	
Number of Separators at the Facility	
Number of Atmospheric Storage Tanks <10 bbl/day at the facility	
Number of Atmospheric Storage Tanks ≥10 bbl/day at the facility	

2. General Tank / Separator Information - Complete for each Tank / Separator:

Tank/Separator ID	
Vessel Type	
List current environmental regulations to which the well site must comply. Select all that apply.	
Vessel height (ft)	
Vessel diameter (ft)	
Average vessel hydrocarbon throughput (bbl/day)	
Average vessel water throughput (bbl/day)	
Is there a continuous monitor for the following: Gaseous flow rate to vessel?	
Is there a continuous monitor for the following: Liquid feed flow rate to vessel?	
Is there a continuous monitor for the following: Vessel operating pressure?	
Is there a continuous monitor for the following: Liquid level in vessel?	
Is there a continuous monitor for the following: Liquid flow rate from vessel?	
Is there a continuous monitor for the following: Gaseous flow from vessel?	

3. Feed Material Characteristics - Complete for each Tank / Separator:

Tank/Separator ID	
Type of feed material	
Specify tank material, if “Other (specify)” is selected	
Reid vapor pressure of feed material (psig)	
Pressure of feed material (psig)	
Temperature of feed material (°F)	
Specific gravity of feed material (relative to water at 4 °C)	
Average temperature of liquids in vessel (°F)	
Average operating pressure of vessel (psi)	

Attachment 2F: Draft Part 2 Questionnaire Tanks Separator Sheet

4. Feed Material Composition - Complete the following table with direct measurement data for each atmospheric tank and for each separator for which the separated gas is not recovered for sales. If you have performed testing of the feed material composition using the California Environmental Protection Agency Air Resources Board's Test Procedure for Determining Annual Flash Emission Rate of Methane from Crude Oil, Condensate, and Produced Water[1] (CARB Method) within the last 12 months, complete the following table based on the test results in-hand. If you have not performed testing of the feed material composition following the reference CARB Method, you must sample and analyze the tank / separator feed material according to the CARB Method and report the results of the test in the following table. Not applicable to diesel or gasoline fuel storage tanks.

Separator ID from which sample is collected (Enter "temporary" if a temporary separator was used)	
Tank ID(s) for which this material is used as feed. [Use a comma "," to separate Tank IDs if material is sent to more than one tank.]	
CH_4 (wt %)	
C_2H_6 (wt %)	
CO_2 (wt %)	
VOC (wt %)	
C3 (wt %)	
C4 (wt %)	
C5 (wt %)	
C6 (wt %)	
C7 (wt %)	
C8 (wt %)	
C9 (wt %)	
C10+ (wt %)	
Benzene (wt %)	
Toluene (wt %)	
Ethylbenzene (wt %)	
Xylene (wt %)	
O_2 (wt %)	
N_2 (wt %)	
H_2S (wt %)	
MW (g/g-mole)	
Gas Liquid Ratio (scf/bbl)	
Liquid Type used in Gas Liquid Ratio	

[1.] Available at: http://www.arb.ca.gov/cc/oil-gas/meetings/Draft_Regulatory_Language_4-22-15.pdf

Attachment 2F: Draft Part 2 Questionnaire Tanks Separator Sheet

5. Leakage, Controls and Inspection - Complete for each Tank / Separator:

Tank/Separator ID	
Disposition of natural gas (or other off-gas)	
Dump valve inspection frequency	
Thief hatch and similar equipment leak inspection frequency	
Type of thief hatch	
Pressure release setting for thief hatch or other pressure relief device, as applicable (psig)	
Hours dump valve stuck in 2015	
Were any direct measurements of emissions from vessel taken in last 5 years?	

6. Direct Emissions Measurements - Complete for each Tank / Separator, as applicable, for which emissions measurement data are available.

Tank/Separator ID	
Source Description	
Source NG emission rate (scf/hr)	

Attachment 2G: Draft Part 2 Questionnaire Pneumatics Sheet

Oil and Gas Information Collection Request

Part 2. Detailed Facility Survey

1. Facility Information:

Facility ID (pulled from Facility sheet)	

2. Pneumatic Controllers/Devices/Pumps Inventory, provide the count of each of the following:

Facility ID (pulled from Facility sheet)	
Snap acting, intermittent bleed controllers - Number of Natural Gas-Driven Devices	
Throttling low continuous bleed controllers - Number of Natural Gas-Driven Devices	
Throttling high continuous bleed controllers - Number of Natural Gas-Driven Devices	
Throttling intermittent bleed controllers - Number of Natural Gas-Driven Devices	
Throttling no-bleed controllers (discharge to downstream gas line) - Number of Natural Gas-Driven Devices	
Rotary vane isolation valve actuators - Number of Natural Gas-Driven Devices	
Turbine operated isolation valve actuators - Number of Natural Gas-Driven Devices	
Chemical injection piston pumps - Number of Natural Gas-Driven Devices	
Chemical injection diaphragm pumps - Number of Natural Gas-Driven Devices	
Liquid Circulation (Kimray) pumps - Number of Natural Gas-Driven Devices	
Snap acting, intermittent bleed controllers - Number of Air-Driven Devices	
Throttling low continuous bleed controllers - Number of Air-Driven Devices	
Throttling high continuous bleed controllers - Number of Air-Driven Devices	
Throttling intermittent bleed controllers - Number of Air-Driven Devices	
Throttling no-bleed controllers (discharge to downstream gas line) - Number of Air-Driven Devices	
Rotary vane isolation valve actuators - Number of Air-Driven Devices	
Turbine operated isolation valve actuators - Number of Air-Driven Devices	
Chemical injection piston pumps - Number of Air-Driven Devices	
Chemical injection diaphragm pumps - Number of Air-Driven Devices	
Liquid Circulation (Kimray) pumps - Number of Air-Driven Devices	

Attachment 2G: Draft Part 2 Questionnaire Pneumatics Sheet

3. General Pneumatic Controllers/Devices/Pumps Information:

How does the facility determine if a device is intermittent or continuous bleed?	
How does the facility determine if a continuous bleed device is high or low bleed?	
What work practices does the facility employ to identify malfunctioning controllers (e.g., intermittent devices continuously venting)?	
How many controllers were found malfunctioning in the past year?	
What is the natural gas supply pressure for the pneumatic devices (psig)?	
Were any direct measurements of emissions from pneumatic devices taken in past 5 years?	

4. Isolation Valve Actuations in 2015. Provide the following information based on controller design, manufacturer's information, and company records for each natural gas driven pneumatic isolation valve actuator.

Isolation Valve/Actuator ID	
Isolation Valve Actuator Type	
Actuator Size (include description, if "other" selected for type)	
Cumulative Number of Actuation Cycles in 2015 (or most recent operating year).	
Estimated Device Consumption Rate (scf/actuation)	

5. Direct Measurements - Complete for each Natural Gas-Driven Pneumatic Controllers/Devices/Pumps, as applicable, for which measurement data are available.

Source Description or ID	
Pneumatic Device Type	
Measurement Method	
Number of Devices [included in measurement]	
Measured NG emission rate [for all devices included in measurement] (scf/hr)	

Attachment 2H: Draft Part 2 Questionnaire Acid Gas Removal Unit (AGRU) Sheet

Oil and Gas Information Collection Request

Part 2. Detailed Facility Survey

1. Facility Information:

Facility ID (pulled from Facility sheet)	
Number of acid gas removal units at the facility	

2. General AGRU Information - Complete for each AGRU:

Unit ID	
AGRU Type	
List current environmental regulations to which the well site must comply. Select all that apply.	
Relative selectivity of H_2S over CH_4 (Mass ratio)	
Relative selectivity of CO_2 over CH_4 (Mass ratio)	
Average volumetric flow rate of feed natural gas (scfm)	
H_2S concentration if feed gas (% by vol)	
CO_2 concentration in feed gas (% by vol)	
Average volumetric flow rate of treated natural gas (scfm)	
H_2S concentration if treated gas (% by vol)	
CO_2 concentration in treated gas (% by vol)	
Primary purpose of AGR	
Disposition of removed H_2S	
Disposition of removed CO_2	
Were any direct measurements of emissions from vessel taken in past 5 years?	

3. Direct Emissions Measurements - Complete for each AGRU for which emissions measurement data are available.

Source Description	
H_2S (lb/hr)	
SO_2 (lb/hr)	
CO_2 (lb/hr)	
CH_4 (lb/hr)	
Ethane (lb/hr)	
VOC (lb/hr)	

Attachment 2I: Draft Part 2 Questionnaire Dehydrator (Dehyd) Sheet

Oil and Gas Information Collection Request

Part 2. Detailed Facility Survey

1. Facility Information:

Facility ID (pulled from Facility sheet)	
Number of dehydrators at the facility	

2. General Dehydrator Information - Complete for each Dehydrator:

Unit ID	
Dehydrator Type	
List current environmental regulations to which the well site must comply. Select all that apply.	
Average volumetric flow rate of feed natural gas (scfm)	
H_2O concentration if feed gas (% by vol)	
CO_2 concentration in feed gas (% by vol)	
CH_4 concentration in feed gas (% by vol)	
Average volumetric flow rate of treated natural gas (scfm)	
H_2O concentration if treated gas (% by vol)	
CO_2 concentration in treated gas (% by vol)	
CH_4 concentration in treated gas (% by vol)	
Were any direct measurements of emissions from any dehydrator (glycol or desiccant) taken in past 5 years?	

3. Glycol Dehydrator Information - Complete for each Glycol Dehydrator:

Unit ID	
Does the unit have a flash tank separator?	
If yes, provide methane recovery efficiency (percent)	
If yes, provide disposition of recovered methane.	
Glycol reboiler/regenerator fuel gas type	
Glycol reboiler/regenerator fuel gas consumption rate (scfm)	
Disposition of reboiler/regenerator exhaust	
Emission reduction work practices used	

Attachment 2I: Draft Part 2 Questionnaire Dehydrator (Dehyd) Sheet

4. Direct Emissions Measurements - Complete for each dehydrator for which emissions measurement data are available.

Unit ID	
Source Description	
CO_2 (lb/hr)	
CH_4 (lb/hr)	
Ethane (lb/hr)	
VOC (lb/hr)	

Attachment 2J: Draft Part 2 Questionnaire Equipment Leaks (EqLeaks) Sheet

Oil and Gas Information Collection Request

Part 2. Detailed Facility Survey

1. Facility Information:

Facility ID (pulled from Facility sheet)	
List current environmental regulations to which the well site must comply. Select all that apply.	
Does the facility conduct routine inspections to identify leaking equipment components?	
If yes, provide the following information by component type: Gas or Light Liquid Valves - Frequency of inspections.	
If yes, provide the following information by component type: Gas or Light Liquid Connectors - Frequency of inspections.	
If yes, provide the following information by component type: Gas or Light Liquid Pressure-relief Valves - Frequency of inspections.	
If yes, provide the following information by component type: Pumps - Frequency of inspections.	
If yes, provide the following information by component type: Other components in gas or light liquid service - Frequency of inspections.	
If yes, provide the following information by component type: Heavy liquid components - Frequency of inspections.	
If yes, provide the following information by component type: Gas or Light Liquid Valves - Monitoring method used.	
If yes, provide the following information by component type: Gas or Light Liquid Connectors - Monitoring method used.	
If yes, provide the following information by component type: Gas or Light Liquid Pressure-relief Valves - Monitoring method used.	
If yes, provide the following information by component type: Pumps - Monitoring method used.	
If yes, provide the following information by component type: Other components in gas or light liquid service - Monitoring method used.	
If yes, provide the following information by component type: Heavy liquid components - Monitoring method used.	

2. Equipment Leak Inventory Information - Provide component counts by service type for all components meeting the specified criteria.

Gas Service Valves - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Gas Service Connectors (other than flanges) - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	

Attachment 2J: Draft Part 2 Questionnaire Equipment Leaks (EqLeaks) Sheet

Gas Service Flanges - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Gas Service Open-ended Lines - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Gas Service Pressure-relief Valves - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Gas Service Pumps - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Gas Service Meters - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Gas Service Vapor Recovery Compressors - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Gas Service Other - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
LNG Service Valves - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
LNG Service Connectors (other than flanges) - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
LNG Service Flanges - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
LNG Service Open-ended Lines - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
LNG service Pressure-relief Valves - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
LNG Service Pumps - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
LNG Service Vapor Recovery Compressors - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	

Attachment 2J: Draft Part 2 Questionnaire Equipment Leaks (EqLeaks) Sheet

Light Crude Service Valves - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Light Crude Service Connectors - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Light Crude Service Open-ended Lines - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Light Crude Service Pressure-relief Valves - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Light Crude Service Pumps - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Light Crude Service Flanges - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Light Crude Service Other - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Heavy Crude Service Valves - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Heavy Crude Service Connectors - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Heavy Crude Service Open-ended Lines - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Heavy Crude Service Pressure-relief Valves - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Heavy Crude Service Pumps - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Heavy Crude Service Flanges - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	
Heavy Crude Service Other - Total Number of Components contacting a process fluid that contains 5 percent by weight of any of the following pollutants: VOC, CH4, CO2	

Attachment 2J: Draft Part 2 Questionnaire Equipment Leaks (EqLeaks) Sheet

For natural gas processing plants only: Gas Service Valves - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Gas Service Connectors (other than flanges) - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Gas Service Flanges - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Gas Service Open-ended Lines - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Gas Service Pressure-relief Valves - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Gas Service Pumps - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Gas Service Meters - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Gas Service Vapor Recovery Compressors - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Gas Service Other - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: LNG Service Valves - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: LNG Service Connectors (other than flanges) - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: LNG Service Flanges - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: LNG Service Open-ended Lines - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: LNG service Pressure-relief Valves - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	

Attachment 2J: Draft Part 2 Questionnaire Equipment Leaks (EqLeaks) Sheet

For natural gas processing plants only: LNG Service Pumps - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: LNG Service Vapor Recovery Compressors - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Light Crude Service Valves - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Light Crude Service Connectors - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Light Crude Service Open-ended Lines - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Light Crude Service Pressure-relief Valves - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Light Crude Service Pumps - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Light Crude Service Flanges - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Light Crude Service Other - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Heavy Crude Service Valves - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Heavy Crude Service Connectors - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Heavy Crude Service Open-ended Lines - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Heavy Crude Service Pressure-relief Valves - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Heavy Crude Service Pumps - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	

Attachment 2J: Draft Part 2 Questionnaire Equipment Leaks (EqLeaks) Sheet

For natural gas processing plants only: Heavy Crude Service Flanges - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
For natural gas processing plants only: Heavy Crude Service Other - Total Number of Components contacting a process fluid that is at least 10 percent VOC by weight	
Gas Service Valves - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Gas Service Connectors (other than flanges) - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Gas Service Flanges - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Gas Service Open-ended Lines - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Gas Service Pressure-relief Valves - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Gas Service Pumps - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Gas Service Meters - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Gas Service Vapor Recovery Compressors - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Gas Service Other - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
LNG Service Valves - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
LNG Service Connectors (other than flanges) - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
LNG Service Flanges - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
LNG Service Open-ended Lines - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
LNG service Pressure-relief Valves - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
LNG Service Pumps - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
LNG Service Vapor Recovery Compressors - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Light Crude Service Valves - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Light Crude Service Connectors - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	

Attachment 2J: Draft Part 2 Questionnaire Equipment Leaks (EqLeaks) Sheet

Light Crude Service Open-ended Lines - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Light Crude Service Pressure-relief Valves - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Light Crude Service Pumps - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Light Crude Service Flanges - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Light Crude Service Other - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Heavy Crude Service Valves - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Heavy Crude Service Connectors - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Heavy Crude Service Open-ended Lines - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Heavy Crude Service Pressure-relief Valves - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Heavy Crude Service Pumps - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Heavy Crude Service Flanges - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Heavy Crude Service Other - Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	
Gas Service Valves - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Gas Service Connectors (other than flanges) - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Gas Service Flanges - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Gas Service Open-ended Lines - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Gas Service Pressure-relief Valves - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Gas Service Pumps - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Gas Service Meters - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Gas Service Vapor Recovery Compressors - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Gas Service Other - Total Number of Components Found Leaking During Most Recent Monitoring Survey	

Attachment 2J: Draft Part 2 Questionnaire Equipment Leaks (EqLeaks) Sheet

LNG Service Valves - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
LNG Service Connectors (other than flanges) - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
LNG Service Flanges - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
LNG Service Open-ended Lines - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
LNG service Pressure-relief Valves - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
LNG Service Pumps - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
LNG Service Vapor Recovery Compressors - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Light Crude Service Valves - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Light Crude Service Connectors - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Light Crude Service Open-ended Lines - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Light Crude Service Pressure-relief Valves - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Light Crude Service Pumps - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Light Crude Service Flanges - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Light Crude Service Other - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Heavy Crude Service Valves - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Heavy Crude Service Connectors - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Heavy Crude Service Open-ended Lines - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Heavy Crude Service Pressure-relief Valves - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Heavy Crude Service Pumps - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Heavy Crude Service Flanges - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Heavy Crude Service Other - Total Number of Components Found Leaking During Most Recent Monitoring Survey	
Gas Service Valves - Definition of Leak used for Monitoring Components	

Attachment 2J: Draft Part 2 Questionnaire Equipment Leaks (EqLeaks) Sheet

Gas Service Connectors (other than flanges) - Definition of Leak used for Monitoring Components	
Gas Service Flanges - Definition of Leak used for Monitoring Components	
Gas Service Open-ended Lines - Definition of Leak used for Monitoring Components	
Gas Service Pressure-relief Valves - Definition of Leak used for Monitoring Components	
Gas Service Pumps - Definition of Leak used for Monitoring Components	
Gas Service Meters - Definition of Leak used for Monitoring Components	
Gas Service Vapor Recovery Compressors - Definition of Leak used for Monitoring Components	
Gas Service Other - Definition of Leak used for Monitoring Components	
LNG Service Valves - Definition of Leak used for Monitoring Components	
LNG Service Connectors (other than flanges) - Definition of Leak used for Monitoring Components	
LNG Service Flanges - Definition of Leak used for Monitoring Components	
LNG Service Open-ended Lines - Definition of Leak used for Monitoring Components	
LNG service Pressure-relief Valves - Definition of Leak used for Monitoring Components	
LNG Service Pumps - Definition of Leak used for Monitoring Components	
LNG Service Vapor Recovery Compressors - Definition of Leak used for Monitoring Components	
Light Crude Service Valves - Definition of Leak used for Monitoring Components	
Light Crude Service Connectors - Definition of Leak used for Monitoring Components	
Light Crude Service Open-ended Lines - Definition of Leak used for Monitoring Components	
Light Crude Service Pressure-relief Valves - Definition of Leak used for Monitoring Components	
Light Crude Service Pumps - Definition of Leak used for Monitoring Components	
Light Crude Service Flanges - Definition of Leak used for Monitoring Components	
Light Crude Service Other - Definition of Leak used for Monitoring Components	
Heavy Crude Service Valves - Definition of Leak used for Monitoring Components	
Heavy Crude Service Connectors - Definition of Leak used for Monitoring Components	
Heavy Crude Service Open-ended Lines - Definition of Leak used for Monitoring Components	

Heavy Crude Service Pressure-relief Valves - Definition of Leak used for Monitoring Components	
Heavy Crude Service Pumps - Definition of Leak used for Monitoring Components	
Heavy Crude Service Flanges - Definition of Leak used for Monitoring Components	
Heavy Crude Service Other - Definition of Leak used for Monitoring Components	

3. For Onshore petroleum and natural gas production facility only, also provide the following equipment counts:

Natural gas production Wellheads - Total Number of Equipment	
Natural gas production Separators - Total Number of Equipment	
Natural gas production Meters/piping - Total Number of Equipment	
Natural gas production Compressors - Total Number of Equipment	
Natural gas production In-line heaters - Total Number of Equipment	
Natural gas production Dehydrators - Total Number of Equipment	
Crude oil production Wellheads - Total Number of Equipment	
Crude oil production Separators - Total Number of Equipment	
Crude oil production Heater-treaters - Total Number of Equipment	
Crude oil production Headers - Total Number of Equipment	
Has this facility performed emissions testing for equipment leaks in the last five years?	

4. Direct Emissions Measurements - Complete for each component or equipment type, as applicable, for which emissions measurement data are available.

Source Description	
Service type	
Equipment type	
Component type	
Measurement method	
Measured Emissions Rate (scf/hr)	
Measurement date	
Measurement cost ($)	

Attachment 2K: Draft Part 2 Questionnaire Compressor (Comp) Sheet

Oil and Gas Information Collection Request

Part 2. Detailed Facility Survey

1. Facility Information:

Facility ID (pulled from Facility sheet)	
Number of reciprocating compressors at the facility	
Number of centrifugal compressors at the facility	

2. General Compressor Information - Complete for each Compressor:

Facility ID (pulled from Facility sheet)	
Number of reciprocating compressors at the facility	
Number of centrifugal compressors at the facility	
Unit Name/ID	
Compressor Type	
List current environmental regulations to which the well site must comply. Select all that apply.	
Power output of compressor driver (hp)	
Engine Type	
Fuel Type	
Emissions Tier	
Are there add-on emissions controls or recovery used on any of the compressor vent sources?	
If yes, identify the compressor sources controlled/recovered.	
If yes, what types of controls?	
Were direct emissions measurements made for compliance with the GHGRP in 40 CFR part 98, subpart W?	
If yes, please provide the Compressor ID or Unique Name used in the RY 2015 report (if different than the ID provided in this form).	
If no, please provide the total time the compressor was in operating-mode in RY 2015. (hours)	
If no, please provide the total time the compressor was in standby-pressurized-mode in RY 2015. (hours)	
If no, please provide the total time the compressor was in not-operating-depressurized-mode in RY 2015. (hours)	
If no, have direct measurements been performed on this compressor in the last 5 years?	

Attachment 2K: Draft Part 2 Questionnaire Compressor (Comp) Sheet

3. Direct Emissions Measurements - Complete for each compressor for which emissions measurement data are available and are not already reported to the GHGRP.

Unit Name/ID	
Operating Mode	
Measurement Type	
Measurement method for as found tests	
Is the measurement method prior to or after commingling with non-compressor emission sources?	
For continuous measurement, did the measured volume include blowdowns?	
Emission Rate (scf/hr) as found	
Emission Rate MMScf/yr (continuous)	

4. Centrifugal Compressor Specific Information - Complete for each Centrifugal Compressor:

Unit Name/ID	
If wet, provide the number of wet seals	
If wet seals were replaced with dry seals on or after 1/1/2010, provide the date of the replacement	
If wet seals were replaced with dry seals on or after 1/1/2010, provide the cost. ($)	

5. Reciprocating Compressor Specific Information - Complete for each Reciprocating Compressor:

Unit Name/ID	
Date of last rod packing replacement	
Cost of last rod packing replacement ($)	
Frequency of rod packing replacement	

Attachment 2L: Draft Part 2 Questionnaire Blowdown Sheet

Oil and Gas Information Collection Request

Part 2. Detailed Facility Survey

1. Facility Information:

Facility ID (pulled from Facility sheet)	
Did the facility blowdown any equipment or piping in 2015?	
If yes, provide the number of events by category: Facility piping (except gathering or transmission pipelines).	
If yes, provide the cumulative volume of natural gas blown down (scf) by category: Facility piping (except gathering or transmission pipelines).	
If yes, were any controls used for blowdown releases by category: Facility piping (except gathering or transmission pipelines).	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Flares by category: Facility piping (except gathering or transmission pipelines).	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Thermal oxidizer/Incinerator by category: Facility piping (except gathering or transmission pipelines).	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Use as fuel (heater, boiler, or engine) by category: Facility piping (except gathering or transmission pipelines).	
If yes and controlled, provide cumulative volume of blowdown gas controlled by recovering for sale by category: Facility piping (except gathering or transmission pipelines).	
If yes and controlled, provide cumulative volume of blowdown gas controlled by other method by category: Facility piping (except gathering or transmission pipelines).	
If yes, provide the number of events by category: Gathering or Transmission Pipeline venting.	
If yes, provide the cumulative volume of natural gas blown down (scf) by category: Gathering or Transmission Pipeline venting.	
If yes, were any controls used for blowdown releases by category: Gathering or Transmission Pipeline venting.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Flares by category: Gathering or Transmission Pipeline venting.	

Attachment 2L: Draft Part 2 Questionnaire Blowdown Sheet

If yes and controlled, provide cumulative volume of blowdown gas controlled by Thermal oxidizer/Incinerator by category: Gathering or Transmission Pipeline venting.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Use as fuel (heater, boiler, or engine) by category: Gathering or Transmission Pipeline venting.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by recovering for sale by category: Gathering or Transmission Pipeline venting.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by other method by category: Gathering or Transmission Pipeline venting.	
If yes, provide the number of events by category: Compressors.	
If yes, provide the cumulative volume of natural gas blown down (scf) by category: Compressors.	
If yes, were any controls used for blowdown releases by category: Compressors.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Flares by category: Compressors.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Thermal oxidizer/Incinerator by category: Compressors.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Use as fuel (heater, boiler, or engine) by category: Compressors.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by recovering for sale by category: Compressors.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by other method by category: Compressors.	
If yes, provide the number of events by category: Scrubbers/strainers.	
If yes, provide the cumulative volume of natural gas blown down (scf) by category: Scrubbers/strainers.	
If yes, were any controls used for blowdown releases by category: Scrubbers/strainers.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Flares by category: Scrubbers/strainers.	

Attachment 2L: Draft Part 2 Questionnaire Blowdown Sheet

If yes and controlled, provide cumulative volume of blowdown gas controlled by Thermal oxidizer/Incinerator by category: Scrubbers/strainers.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Use as fuel (heater, boiler, or engine) by category: Scrubbers/strainers.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by recovering for sale by category: Scrubbers/strainers.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by other method by category: Scrubbers/strainers.	
If yes, provide the number of events by category: Pig launchers and receivers.	
If yes, provide the cumulative volume of natural gas blown down (scf) by category: Pig launchers and receivers.	
If yes, were any controls used for blowdown releases by category: Pig launchers and receivers.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Flares by category: Pig launchers and receivers.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Thermal oxidizer/Incinerator by category: Pig launchers and receivers.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Use as fuel (heater, boiler, or engine) by category: Pig launchers and receivers.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by recovering for sale by category: Pig launchers and receivers.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by other method by category: Pig launchers and receivers.	
If yes, provide the number of events by category: Emergency shutdowns (regardless of equipment).	
If yes, provide the cumulative volume of natural gas blown down (scf) by category: Emergency shutdowns (regardless of equipment).	
If yes, were any controls used for blowdown releases by category: Emergency shutdowns (regardless of equipment).	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Flares by category: Emergency shutdowns (regardless of equipment).	

Attachment 2L: Draft Part 2 Questionnaire Blowdown Sheet

If yes and controlled, provide cumulative volume of blowdown gas controlled by Thermal oxidizer/Incinerator by category: Emergency shutdowns (regardless of equipment).	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Use as fuel (heater, boiler, or engine) by category: Emergency shutdowns (regardless of equipment).	
If yes and controlled, provide cumulative volume of blowdown gas controlled by recovering for sale by category: Emergency shutdowns (regardless of equipment).	
If yes and controlled, provide cumulative volume of blowdown gas controlled by other method by category: Emergency shutdowns (regardless of equipment).	
If yes, provide the number of events by category: Other equipment not specified.	
If yes, provide the cumulative volume of natural gas blown down (scf) by category: Other equipment not specified.	
If yes, were any controls used for blowdown releases by category: Other equipment not specified.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Flares by category: Other equipment not specified.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Thermal oxidizer/Incinerator by category: Other equipment not specified.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by Use as fuel (heater, boiler, or engine) by category: Other equipment not specified.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by recovering for sale by category: Other equipment not specified.	
If yes and controlled, provide cumulative volume of blowdown gas controlled by other method by category: Other equipment not specified.	
Were hot taps or other practices used to reduce/eliminate need for some blowdown events?	
If yes, provide the number of events by hot taps	
If yes, provide the cumulative volume of blowdown avoided by using hot taps (scf)	
If yes, provide the number of events that use pipeline pump down techniques	
If yes, provide the cumulative volume of blowdown avoided by using pipeline pump down techniques (scf)	

Attachment 2L: Draft Part 2 Questionnaire Blowdown Sheet

If yes, provide the miles of pipeline that use flexible membrane liners (pipelines)	
If yes, provide the cumulative volume of blowdown avoided by using flexible membrane liners (pipelines) (scf)	
If yes, provide the frequency of inspection/repair of leaking (not fully sealed) PRD and blowdown valves	
If yes, provide the cumulative volume of blowdown avoided by inspection/repair of leaking (not fully sealed) PRD and blowdown valves (scf)	
If yes, provide the number of events by other (specify)	
If yes, provide the cumulative volume of blowdown avoided by using other (scf)	

Oil and Gas Information Collection Request

Part 2. Detailed Facility Survey

1. Facility Information:

Facility ID (pulled from Facility sheet)	
Number of control devices at the facility	

2. General Control Device Information - Complete for each Control Device:

Control Device ID	
Control Device Type	
Release height (ft)	
Stack diameter (ft)	
Net Heating Value of NG Stream (Btu/scf)	
Maximum Flow Capacity for Device (scfm)	
Typical NG Flow to Device (scf/hr)	
Fraction of time control device is operated (lit) while NG flow is present	
Design Fractional Control Efficiency of Device	
For thermal control devices, type of Ignition source	
For thermal control device, is there louvers, dampers, or other means of controlling ambient inlet air	
For air assisted flares, type of air supply fan	

3. Control Device Cost Information - Complete for each Control Device:

Control Device ID	
Year Installed	
Purchased Equipment Costs ($)	
Total Capital Installed Cost ($)	
Annual Operating and Maintenance Cost ($/yr in 2015)	
Natural Gas Consumption Rate (MMscf/yr)	

Attachment 3A: Industry Burden and Cost for Responding to the Part 1 Questionnaire

	Hours and Costs Per Respondent/ Activity[1]						Occur-rences/ Respon-dent/ Year[3]	O & M Cost	Number of Respond.[3]	Total Hours and Costs	
	Engineer	Operator	Mgr.[2]	Cler.[2]	Total Respon-dent Hours/ Activity	Total Labor Cost/ Activity				Total Hours/ Year	Total Cost/ Year
	$148.95	$65.10	$176.95	$47.08							
	per hour	per hour	per hour	per hour							
Collection activities											
1.Read instructions	0.25		0.01	0.03	0.29	$41	1	$0	22,500	6,469	914,093
2. Compile requested information and complete forms	4		0.20	0.40	4.60	$650	1	$0	22,500	103,500	14,625,495
3. Acknowledge and submit information	0.25		0.01	0.03	0.29	$41	1	$1	22,500	6,469	936,593
TOTAL										116,438	$16,476,182

1. Labor rates and associated overhead costs were based on May 2015 raw labor rates for the Mining: Oil and Gas Extraction Sector (NAICS 211000), loaded using a factor of 110%. The resulting loaded of hourly rates are: $176.95 for management personnel, $148.95 for engineering personnel, $65.10 for plant operator personnel, and $47.08 for clerical personnel. These values were taken from the Bureau of Labor Statistics Occupational Employment Statistics Survey Web site and reflect the latest values available (May 2015) and are available at: http://www.bls.gov/oes/current/naics3_211000.htm.

2. Management hours are assumed to be 5 percent of technical (engineering + operator) hours, and clerical hours are assumed to be 10 percent of technical hours.

3. Based on the number of operators identified in the Drilling Information database.

Attachment 3B: Industry Burden and Cost for Responding to the Part 2 Questionnaire

	Hours and Costs Per Respondent/ Activity[1]						Occur-rences/ Respon-dent/ Year[3]	O & M Cost	Number of Respond.[4]	Total Hours and Costs	
	Engineer	Operator	Mgr.[2]	Cler.[2]	Total Respon-dent Hours/ Activity	Total Labor Cost/ Activity				Total Hours/ Year	Total Cost/ Year
	$148.95	$65.10	$176.95	$47.08							
	per hour	per hour	per hour	per hour							
Collection activities											
1.Read instructions	3		0.15	0.30	3.45	$488	1	$0	3,385	11,678	1,650,243
2. Compile requested information and complete form											
2A. Facility Info	1.5		0.08	0.15	1.73	$244	1	$0	3,385	5,839	825,122
2B. Well Sites	3		0.15	0.30	3.45	$488	1	$0	1,917	6,614	934,569
2C. Tanks/Separators	2		0.10	0.20	2.30	$325	1	$0	2,820	6,486	916,531
2D. Pneumatics	2		0.10	0.20	2.30	$325	1	$0	2,122	4,881	689,673
2E. AGRU	1		0.05	0.10	1.15	$163	1	$0	1,259	1,448	204,594
2F. Dehydrators	1		0.05	0.10	1.15	$163	1	$0	1,500	1,725	243,758
2G. Compressors	2		0.10	0.20	2.30	$325	1	$0	2,032	4,674	660,422
2H. Equipment Leaks	2		0.10	0.20	2.30	$325	1	$0	3,385	7,786	1,100,162
2I. Blowdown Events	1		0.05	0.10	1.15	$163	1	$0	3,385	3,893	550,081
2J. Control Devices	1		0.05	0.10	1.15	$163	1	$0	2,815	3,237	457,453
3. Perform on-site tasks (component counts and feed material sampling)											
3A. Pneumatic counts		4	0.20	0.40	4.60	$315	1	$0	2,122	9,761	667,628
3B. Equipment counts		6	0.30	0.60	6.90	$472	1	$0	3,385	23,357	1,597,493
3C. Tank feed sampling		4	0.20	0.40	4.60	$315	1	$0	2,820	12,972	887,234
4. Feed sample analysis and results review per sample	0.25		0.01	0.03	0.29	$41	4	$1,000	2,820	3,243	11,738,266
5. Submit information	1		0.05	0.10	1.15	$163	1	$0	3,385	3,893	550,081
TOTAL										111,485	$23,673,312

1. Labor rates and associated overhead costs were based on May 2015 raw labor rates for the Mining: Oil and Gas Extraction Sector (NAICS 211000), loaded using a factor of 110%. The resulting loaded of hourly rates are: $176.95 for management personnel, $148.95 for engineering personnel, $65.10 for plant operator personnel, and $47.08 for clerical personnel. These values were taken from the Bureau of Labor Statistics Occupational Employment Statistics Survey Web site and reflect the latest values available (May 2015) and are available at: http://www.bls.gov/oes/current/naics3_211000.htm.

2. Management hours are assumed to be 5 percent of technical (engineering + operator) hours, and clerical hours are assumed to be 10 percent of technical hours.

3. One time survey so most occurrences are 1. Assumed 4 tank feed samples would be taken for analysis; the cost of each analysis was estimated to be $1,000.

4. Number of respondents are dependent on the industry segment based on the targeted number of respondents and the type of equipment at each facility. All facilities would have to complete the Facility, Equipment Leaks, and Blowdown Event forms and 3,170 total facility respondents are being targeted. Only production facilities will have well sites, and there are 1,705 production facility respondents. Storage tanks were estimated to be at every production, gathering and boosting (G&B), processing, and transmission compression (TC) industry segments (1705+357+244+301 =2,607) and pneumatic devices were assumed to be used at 80% of production facilities and 50 percent of G&B, processing, TC, and transmission pipeline facilities (0.8*1705+0.5*(357+244+301+273) =1,952). Acid gas removal units (AGRU) were assumed to be at 50 percent of production, G&B, and processing facilities ((1705+357+244)/2)=1153). Dehydrators are expected to be at every processing plant, 50% of production and G&B facilities, and 20% of TC, underground storage, and LNG facilities (244+(1705+357)*0.5+(301+200+79+11)*0.2=1393). Compressors were assumed to be at 50% of production facilities and processing plants and at all G&B, TC, underground storage, and LNG facilities (0.5*(1705+244)+357+301+200+79+11= 1923). Control devices were assumed to be at all production, G&B, and processing facilities and 50% of TC, underground storage and LNG facilities (1705+357+244+0.5*(301+200+79+11)=2602).

Attachment 4: Agency Burden and Cost

	Hours and Costs Per Respondent/Activity[1]			Total Respon. Hours/ Activity	Total Labor Cost/ Activity	Occur-rences/ Respon-dent/ Year	O & M Cost	Total Hours and Costs		
	Tech.	Mgr.[2]	Cler.[2]					Number of Respond.	Total Hours/ Year	Total Cost/ Year
	$53.42	$88.30	$30.11							
	per hour	per hour	per hour							
Collection activities										
A. Part 1 Questionnaire										
1. Develop Questionnaire	20	1	2	23	$1,217	1	$0	1	23	$1,217
2. Send Questionnaire[3]	0	0	0.05	0.05	$2	1	$5.12	22,500	1,125	$149,074
3. Key-in hard copy submittals[4]	0	0	1	1	$30	1	$0	4,500	4,500	$135,495
4. Review and Analyze Responses[5]	0.25	0.0125	0.025	0.29	$15	1	$0	22,500	6,469	$342,259
B. Part 2 Questionnaire										
1. Develop Questionnaire	80	4	8	92	$4,868	1	$0	1	92	$4,868
2. Send Questionnaire[3]	0	0	0.05	0.05	$2	1	$6.53	4,505	225	$36,200
3. Review and Analyze Responses[6]	1	0.05	0.1	1.15	$61	1	$0	3,385	3,893	$205,964
C. Respondent Support										
1. Answer respondent questions on Part 1[7]	0.25	0.0125	0.025	0.29	$15	1	$0	2,250	647	$34,226
1. Answer respondent questions on Part 2[8]	0.25	0.0125	0.025	0.29	$15	1	$0	3,385	973	$51,491
TOTAL									17,947	$960,793

1. Labor rates for EPA personnel were used for all public-sector personnel, including employees of State agencies. Source for EPA labor rates: Department of Personnel Management, "Salary Table 2015-GS," https://www.opm.gov/policy-data-oversight/pay-leave/salaries-wages/salary-tables/pdf/2015/GS_h.pdf. For the managerial labor rate, level GS-15, step 5 was used; for the technical labor rate, level GS-12, step 5 was used; for the clerical labor rate, level GS-7, step 5 was used. All agency labor rates include a multiplier of 1.6 to account for overhead and fringe benefit costs.

2. Management hours are assumed to be 5 percent of technical hours, and clerical hours are assumed to be 10 percent of technical hours.

3. The Agency assumes that only clerical labor will be used to send the letter, and that instructions and a link to the electronic survey will be mailed via USPS using certified mail with electronic return receipt. Part 1 assumed to be 1 oz, small envelope; Part 2 assumed to be 2 oz and use a 9"x12" envelope.

4. Hard-copy submittals are assumed to be entered by clerical staff only. It is assumed that 20 percent of respondents submit hard copy responses.

5. The Agency estimates that it will require 0.25 hours to review and analyze each Part 1 response.

6. The Agency estimates that it will require 1 hour to review and analyze each Part 2 response.

7. The Agency assumes that 10 percent of respondents to Part 1 will have one question. A response to each question is estimated to require 0.25 technical hours, on average.

8. The Agency assumes that the average respondent to Part 2 questionnaire will have one question. A response to each question is estimated to require 0.25 technical hours, on average.