

ICR Labor Category	BLS Citation	Labor Rates for the
		Wages & Salaries (2021\$)
Middle Manager	NAICS 211 (Oil and Gas Extraction); SOC 11-1021 (Gen & Op Mngr)	\$76.54
Senior Manager	NAICS 211 (Oil and Gas Extraction); SOC 11-3051 (Industrial Production Managers)	\$82.03
Engineers	NAICS 211 (Oil and Gas Extraction); SOC 17-2112 (Ind. Engineers)	\$68.30
Technicians	NAICS 211 (Oil and Gas Extraction); SOC 17-3024 (Electro-Mechanical Technicians)	\$48.35
Lawyer	NAICS 211 (Oil and Gas Extraction); SOC 23-1011 (Lawyers)	\$99.27

Updated labor rates--4/12/23

2018 Renewal ICR (Proposal)	
Loaded Hourly Rates for Renewal ICR (2021\$)	
	\$123.46
	\$132.31
	\$110.10
	\$77.99
	\$158.83

	Year 1-3	(A) Hours per Occurrence
1. APPLICATIONS (Not Applicable)		
2. SURVEY AND STUDIES (Not Applicable)		
3. ACQUISITION, INSTALLATION, AND UTILIZATION OF TECHNOLOGY AND SYSTEMS		
4. REPORT REQUIREMENTS		
A1. Read Rule, Instructions, Guidance Documents for Subpart W		
Incremental costs accounted for at the end of this section		
A2. Read Rule, Instructions, Guidance Documents for Subpart A		
Incremental costs accounted for at the end of this section		
B. Required Activities		
<i>Acid Gas Removal Units 1</i>		
Gather CEMS data for e-GGRT reporting (M1)		
8	LNG Storage reporters 4,5,6,7	1.00
4	LNG Import and Export Equipment reporters 4,5,6,7,8	1.00
Conduct quarterly gas sampling (M2)		
8	LNG Storage reporters 5,6,7,9	0.67
4	LNG Import and Export Equipment reporters 5,6,7,8,9	0.67
Perform engineering calculation (M3)		
8	LNG Storage reporters 5,7,10,11	0.17
4	LNG Import and Export Equipment reporters 5,7,8,12	0.17
Perform simulation run using AspenTech HYSYS®, or API 4679 AMINECalc (M4)		
8	LNG Storage reporters 6,7,13	0.42
4	LNG Import and Export Equipment reporters 6,7,8,13	0.42
<i>Nitrogen Removal Units 1</i>		
Gather CEMS data for e-GGRT reporting (M1)		
1	Onshore Natural Gas Processing reporters 4,7,14,15	1.00
5	Onshore Petroleum and Natural Gas Production reporters 4,7,14,15	1.00
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 4,7,14,15	1.00
8	LNG Storage reporters 4,7,14,15	1.00
4	LNG Import and Export Equipment reporters 4,7,14,15	1.00
Conduct quarterly gas sampling (M2)		
1	Onshore Natural Gas Processing reporters 7,9,13,15	0.67
5	Onshore Petroleum and Natural Gas Production reporters 7,9,13,15	0.67
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 7,9,13,15	0.67
8	LNG Storage reporters 7,9,13,15	0.67
4	LNG Import and Export Equipment reporters 7,9,13,15	0.67
Perform engineering calculation (M3)		
1	Onshore Natural Gas Processing reporters 7,10,14,15	0.17
5	Onshore Petroleum and Natural Gas Production reporters 7,10,14,15	0.17
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 7,10,14,15	0.17
8	LNG Storage reporters 7,10,14,15	0.17
4	LNG Import and Export Equipment reporters 7,10,14,15	0.17
Perform simulation run using AspenTech HYSYS®, or API 4679 AMINECalc (M4)		

1	Onshore Natural Gas Processing reporters 7,13,14,15	0.42
5	Onshore Petroleum and Natural Gas Production reporters 7,13,14,15	0.42
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 7,13,14,15	0.42
8	LNG Storage reporters 7,13,14,15	0.42
4	LNG Import and Export Equipment reporters 7,13,14,15	0.42
<i>Equipment Leaks 1</i>		
Conduct Leak Detection Surveys and Perform Emission Calculations		
10	Natural Gas Transmission Pipeline reporters 7,16,25	4.00
Determine emissions using population counts		
10	Natural Gas Transmission Pipeline reporters 17,18,25	4.50
<i>Blowdown Vent Stacks 1</i>		
Calculate emissions		
1	Onshore Natural Gas Processing reporters 7,19,20,22,23	1.00
5	Onshore Petroleum and Natural Gas Production reporters 7,19,21,22	1.00
3	Underground Natural Gas Storage reporters 7,19,20,22	1.00
8	LNG Storage reporters 7,19,20,22	1.00
7	Natural Gas Distribution reporters 7,19,21,22,23	1.00
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 7,19,21,22	1.00
<i>Other large release events 1</i>		
Collect the necessary data and calculate emissions		
1	Onshore Natural Gas Processing reporters 7,24,26,28	20.00
2	Onshore Natural Gas Transmission Compression reporters 7,24,26,28	20.00
3	Underground Natural Gas Storage reporters 7,24,26,28	20.00
4	LNG Import and Export Equipment reporters 7,24,26,28	20.00
5	Onshore Petroleum and Natural Gas Production reporters 7,24,27,29	20.00
7	Natural Gas Distribution reporters 7,24,27,29	20.00
8	LNG Storage reporters 7,24,26,28	20.00
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 7,24,27,29	20.00
10	Natural Gas Transmission Pipeline reporters 7,24,27,29	20.00
11	Offshore Petroleum and Natural Gas Production reporters 7,24,26,28	20.00
<i>Combustion Emissions</i>		
Determine fuel consumption through company records and calculate emissions		
5	Onshore Petroleum and Natural Gas Production reporters 1,7,19,31,45,60	1.00
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 1,7,19,31,47,60	1.00
7	Natural Gas Distribution reporters 1,7,19,31,60	1.00
Edits to 98.36(c)(1) and 98.26(c)(3)		
1	Onshore Natural Gas Processing reporters 7,69,70	10.00
2	Onshore Natural Gas Transmission Compression reporters 7,69,71	10.00
3	Underground Natural Gas Storage reporters 7,69,72	10.00
4	LNG Import and Export Equipment reporters 7,69,73	10.00
8	LNG Storage reporters 7,69,74	10.00
<i>Crankcase venting 1</i>		
Gather information and calculate emissions		
5	Onshore Petroleum and Natural Gas Production reporters 7,19,61	2.00
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 7,19,61	2.00

7	Natural Gas Distribution reporters 7,19,61	2.00
1	Onshore Natural Gas Processing reporters 7,19,61	2.00
2	Onshore Natural Gas Transmission Compression reporters 7,19,61	2.00
3	Underground Natural Gas Storage reporters 7,19,61	2.00
4	LNG Import and Export Equipment reporters 7,19,61	2.00
8	LNG Storage reporters 7,19,61	2.00
<i>Dehydrators</i>		
Gather data for simulation run (large dehydrators) (M1) 62		
1	Onshore Natural Gas Processing reporters 17,30,31	1
5	Onshore Petroleum and Natural Gas Production reporters 17,30,31	1
2	Onshore Natural Gas Transmission Compression reporters 1,5,17,30	1
3	Underground Natural Gas Storage 1,5,17,30	1
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 1,5,17,30	1
Equipment counts and population emission factors (small dehydrators) (M2) 62		
2	Onshore Natural Gas Transmission Compression reporters 1,5,10,17,30	0.17
3	Underground Natural Gas Storage 1,5,10,17,30	0.17
<i>Condensate storage tanks (formerly transmission storage tanks) 1</i>		
Underground Storage		
3	Screen for leaks using optical gas imaging instrument 7,32,34,35,36	0.17
3	Screen for leaks using acoustic leak detection device 7,32,34,35,36	0.17
3	Screen and quantify leaks using calibrated bag 7,33,34,35,36	0.25
3	Screen and quantify leaks using flow meter 7,33,34,35,36	0.17
3	Screen and quantify leaks using high volume sampler 7,33,34,35,36	0.25
3	Quantify leaks using high volume sampler after screening with optical gas imaging instrument or flow meter 7,33,34,35,36	0.25
3	Quantify leaks using acoustic leak detection after screening with optical gas imaging instrument or flow meter 7,33,34,35,36	0.25
3	Quantify leaks using calibrated bags after screening with optical gas imaging instrument or flow meter 7,33,34,35,36	0.25
3	Quantify leaks using flowmeter after screening with optical gas imaging instrument or flow meter 7,33,34,35,36	0.25
3	Calculate emissions 7,33,34,35,36,37	0.17
<i>Hydrocarbon liquid Storage Tanks (formerly atmospheric storage tanks) 1</i>		
Determine emissions by calculating flashing emissions with software program, such as AspenTech HYSYS® or API 4697 E&P Tank (M1)		
1	Onshore Natural Gas Processing reporters 5,7,30	0.50
Determine emissions by sampling and analyzing separator oil composition (M2)		
1	Onshore Natural Gas Processing reporters 5,7,30	0.02
Determine emissions using equipment counts and population emission factors (M3)		
1	Onshore Natural Gas Processing reporters 5,7,30	0.01
<i>Dump valves 1</i>		
Yearly inspections of dump valves (per tank)		
5	Onshore Petroleum and Natural Gas Production reporters 5,17,38	0.17
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 5,17,38	0.17
1	Onshore Natural Gas Processing reporters 5,17,38	0.17
<i>Thief hatches 1</i>		

	Yearly inspections of thief hatches (per tank)	
5	Onshore Petroleum and Natural Gas Production reporters 17,38,39	0.17
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 17,38,39	0.17
1	Onshore Natural Gas Processing reporters 17,38,39	0.17
	<i>Produced water tanks 1</i>	
	Determine emissions using equipment counts and population emission factors	
5	Onshore Petroleum and Natural Gas Production reporters 17,30,31,40	0.01
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 17,30,31,40	0.01
1	Onshore Natural Gas Processing reporters 17,30,31,40	0.01
	<i>Well Venting for Liquids Unloading 1</i>	
	Measure flow rate (M1)	
5	Onshore Petroleum and Natural Gas Production reporters 7,30,31,41	0.08
	Calculate emissions (M1)	
5	Onshore Petroleum and Natural Gas Production reporters 7,30,31,41	0.17
	Determine well counts, number of events, well depth, calculate pressure, calculate flow (M2 and M3)	
5	Onshore Petroleum and Natural Gas Production reporters 7,30,31,42,43	0.17
	<i>Mud degassing 1</i>	
	Use mudlogging data to calculate emissions (M1)	
5	Onshore Petroleum and Natural Gas Production reporters 7,31,56,57,58	1.00
	Use emission factor to calculate emissions (M2)	
5	Onshore Petroleum and Natural Gas Production reporters 7,31,58,59	0.17
	<i>Plugged wells 1</i>	
	Gather quantities related to plugged wells (quantities of natural gas, crude oil, and condensate produced that is sent to flare)	
5	Onshore Petroleum and Natural Gas Production reporters 63,64	1.00
	<i>Flare Stacks--determine feed gas composition annually</i>	
5	Onshore Petroleum and Natural Gas Production reporters 75,76,77	0.17
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 75,78	0.17
	<i>Flare stacks - pilot monitoring 2</i>	
1	Onshore Natural Gas Processing reporters 31, 64, 65	12.00
2	Onshore Natural Gas Transmission Compression reporters 31,64, 65	12.00
3	Underground Natural Gas Storage reporters 31, 64, 65	12.00
4	LNG Import and Export Equipment reporters 31, 64, 65	12.00
5	Onshore Petroleum and Natural Gas Production reporters 31, 64, 65	12.00
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 31, 64, 65	12.00
	C. Create Information (Included in 4B)	
	D. Gather Existing Information (Included in 4E)	
	E. Write Report	
	Changing to reporting at the well-pad level or site ID	
5	Onshore Petroleum and Natural Gas Production reporters 44,45	75.00
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 46,61,67	36.00
	Annual Compliance Reporting through e-GGRT and QA	
	Incremental costs accounted for at the end of this section	
	5. RECORDKEEPING REQUIREMENTS	
	A. Read Instructions (Included in 4A)	
	B. Plan Activities (Included in 4B)	
	C. Implement Activities (Included in 4B)	

D. Recordkeeping		
E. Time to Transmit or Disclose Information (included in 4E)		
F. Time to Train Personnel (included in 4A)		
G. Time for Audits (Not Applicable)		
Incremental labor costs due to new sources		
1	Onshore Natural Gas Processing reporters	
2	Onshore Natural Gas Transmission Compression reporters	
3	Underground Natural Gas Storage reporters	
4	LNG Import and Export Equipment reporters	
5	Onshore Petroleum and Natural Gas Production reporters	
7	Natural Gas Distribution reporters	
8	LNG Storage reporters	
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters	
10	Natural Gas Transmission Pipeline reporters	
11	Offshore Petroleum and Natural Gas Production reporters	
TOTAL ANNUAL LABOR BURDEN AND COST		
Year 1-3		(A) Hours per Occurrence
ANNUAL COSTS (O&M)		
<i>Acid gas removal units</i>		
Quarterly gas samples and analyses		
8	LNG Storage reporters 31,48	
4	LNG Import and Export Equipment reporters 31,48	
<i>Acid gas removal units</i>		
Flow rate measurement for simulation (M4)		
1	Onshore Natural Gas Processing reporters 5,49,50	
5	Onshore Petroleum and Natural Gas Production reporters 5,49,50	
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 5,49,50	
8	LNG Storage reporters 5,49,50	
4	LNG Import and Export Equipment reporters 5,49,50	
<i>Nitrogen removal units</i>		
Quarterly gas samples and analyses (M2)		
1	Onshore Natural Gas Processing reporters 14,48	
5	Onshore Petroleum and Natural Gas Production reporters 14,48	
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 14,48	
8	LNG Storage reporters 14,48	
4	LNG Import and Export Equipment reporters 14,48	
<i>Nitrogen removal units</i>		
Flow rate measurement for simulation		
1	Onshore Natural Gas Processing reporters 14,49,50	
5	Onshore Petroleum and Natural Gas Production reporters 14,49,50	
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 14,49,50	

8	LNG Storage reporters 14,49,50	
4	LNG Import and Export Equipment reporters 14,49,50	
<i>Glycol dehydrators</i>		
Flow rate measurement for simulation (M1)		
1	Onshore Natural Gas Processing reporters 5,49,50	
5	Onshore Petroleum and Natural Gas Production reporters 5,49,50	
2	Onshore Natural Gas Transmission Compression reporters 5,49,50	
3	Underground Natural Gas Storage 5,49,50	
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 5,49,50	
<i>Centrifugal and Reciprocating Compressors--contractor to perform compressor leak measurements on new compressor s</i>		
1	Onshore Natural Gas Processing reporters 68	
2	Onshore Natural Gas Transmission Compression reporters 68	
3	Underground Natural Gas Storage reporters 68	
4	LNG Import and Export Equipment reporters 68	
8	LNG Storage reporters 68	
5	Onshore Petroleum and Natural Gas Production reporters 68	
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 68	
<i>Hydrocarbon liquid Storage Tanks</i>		
Simulation software yearly cost		
1	Onshore Natural Gas Processing reporters 49,51	
<i>Pneumatic Pumps-measure volumetric flow rate regularly 2</i>		
5	Onshore Petroleum and Natural Gas Production reporters 31,52,53	
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 31,53,54	
Flare stacks - annual feed gas sampling and analysis		
5	Onshore Petroleum and Natural Gas Production reporters 76,77	
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 79	
Incremental O&M costs due to new sources 55		
1	Onshore Natural Gas Processing reporters	
2	Onshore Natural Gas Transmission Compression reporters	
3	Underground Natural Gas Storage reporters	
4	LNG Import and Export Equipment reporters	
5	Onshore Petroleum and Natural Gas Production reporters	
7	Natural Gas Distribution reporters	
8	LNG Storage reporters	
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters	
10	Natural Gas Transmission Pipeline reporters	
11	Offshore Petroleum and Natural Gas Production reporters	
YEAR 1-3 COSTS		
TOTAL ANNUAL LABOR BURDEN AND COST		
""		
TOTAL ANNUALIZED CAPITAL COST		
TOTAL ANNUAL LABOR COST		
TOTAL ANNUAL O&M COSTS		
TOTAL ANNUAL COSTS (Labor, O&M, and annualized capital)		

Assumptions

- 1 New emission source for the listed industry segment(s).
- 2 New measurement requirements for the listed industry segment(s).
- 3 New equipment purchase requirements for the listed industry segment(s).
- 4 Assumed 1 hour per year to gather CEMS data.
- 5 Number of occurrences per respondent based on maximum average number reported by segment and by c
- 6 Assumed 1 reporter would use this method.
- 7 For each hour of an Engineer's time, assumed 0.1 hours of a Middle Manager's time and 0.05 hours of a S
- 8 Only exporters use AGRU.
- 9 Assumed activity takes 10 minutes (based on similar activity in December 2010 EIA for GHGRP) and mu
- 10 Assumed activity takes 10 minutes (based on similar activity in December 2010 EIA for GHGRP).
- 11 Assumed 2 reporters would use this method.
- 12 Assumed 3 reporters would use this method.
- 13 Assumed same amount of time per AGRU as for dehydrators in December 2010 EIA for GHGRP [10 mi
- 14 Assumed same average number of NRUs per reporter as AGRUs in RY2019 for each calculation method
- 15 Assumed same number of reporters have NRUs as AGRUs in RY2019 for each calculation method.
- 16 Assumed 4 hours per year per respondent to schedule contractor, review contractor results, etc.
- 17 Activity conducted by a technician.
- 18 Assumed 4.5 hours in first year. Assumed 10% of 4.5 hours in subsequent years. After the first year, the
- 19 Assumed activity occurs once per year per reporter.
- 20 Assumed 4 hours per reporter per year to perform calculations for blowdown vent stacks.
- 21 Assumed 6 hours per reporter per year to perform calculations for blowdown vent stacks.
- 22 Assumed that each facility would calculate emissions using 98.233(u) and 98.233(v) and assign to the eq
- 23 Assumed that 40% of reporters with desiccant dehydrators will be required to report blowdown vent stac
- 24 Assumed 20 hours to gather the necessary data to estimate emissions from other large release events and
- 25 Assumed half of reporters would conduct leak surveys and half of reporters would use population leak fa
- 26 Assumed one large release event per year.
- 27 Assumed two large release events per year.
- 28 Assumed 1% of reporters have a large release event to report each year.
- 29 Assumed 3% of reporters have large release events to report each year.
- 30 LOE from December 2010 EIA.
- 31 Number of occurrences per respondent based on average number reported by segment for RY2019.
- 32 Assumed 10 minutes per tank.
- 33 Assumed 15 minutes per tank.
- 34 Used average number of transmission tanks per reporter for underground storage segment (1.5 tanks per
- 35 Based on RY2019 data from transmission compression facilities, 515 unique facilities tested for leaks fr
- 36 Used same ratios from transmission tanks for underground storage condensate storage tanks.
- 37 This is the sum of reporters using high volume samplers to quantify leaks and reporters using flowmeters
- 38 Assumed inspections take 10 minutes per tank.
- 39 Number of occurrences based on total number of tanks reported in RY2019.
- 40 Assumed the same number of produced water tanks per reporter as hydrocarbon storage tanks reported ir
- 41 Assumed 1/3 of reporters would use M1.
- 42 Assumed 2/3 of reporters would use M2 or M3.
- 43 Assumed 10 minutes per well.
- 44 Assumed 15 hours per reporter per year to report by well-pad instead of by sub-basin (12 hours of an En

- 45 Assumed an average of 3.44 wells per well-pad from NSPS OOOOb TSD and 32 well-pads per sub-basin
- 46 Assumed 5 hours per reporter per year to report by G&B site instead of by county (3 hours of an Engineer)
- 47 Assumed an average of 45 sites per Gathering and Boosting facility (15 centralized production, 15 compressor)
- 48 Assumed testing costs of \$400 per AGRU/NRU.
- 49 Assumed activity occurs once per year per reporter for simulation software.
- 50 Assumed one-time costs of Aspen HYSYS of \$2,000 or \$666.67 per year over the three years of the ICR
- 51 Assumed one time license costs of E&P Tanks of \$600 over the three-year period or \$200 per year.
- 52 Based on average number of pneumatic pumps per facility, assumed would test 1/5 of pumps every year.
- 53 Based on OGI crew costs, I estimate it would cost \$300 to show up (travel, + set up) + \$150/hr for measurement
- 54 Based on average number of pneumatic pumps per facility, assumed would test 1/2 of pumps every year.
- 55 There are a total of 755 new sources expected to be required to comply with subpart W as a result of this
- 56 Assumed 1 hour per well to gather mudlogging data and calculate emissions.
- 57 Assumed mudlogging is already being used so no costs for measurement equipment. If mudlogging is not
- 58 Assumed half of affected reporters would use Method 1 for mud degassing emissions and half would use Method 2
- 59 Assumed 10 minutes per well to calculate emissions from mud degassing using the emission factor.
- 60 Assumed an additional 1.0 hours per year to incorporate combustion slip into existing calculations.
- 61 Assumed 2 hours per year to gather information (determine concentration of CH₄ in gas stream entering the flare)
- 62 Assumed half of reporters would use simulation software for dehydrators and half would use population
- 63 Assumed 1.0 hours per site to gather plugged well data annually.
- 64 Assumed an hour of a technician's time per flare to inspect the pilot light
- 65 Assumed pilot light inspection occurs once per month.
- 66 Assumed 90 hours per reporter per year to report by well-pad instead of by sub-basin (75 hours of an Engineer)
- 67 Assumed 36 hours per reporter and twice per year to report by G&B site instead of by county (30 hours of an Engineer)
- 68 Assumed an average of 2 compressors per reporter would be in one of the new compressor source modes
- 69 Assumed 2 hours per year per each aggregation of units/common pipe reported under Subpart C. Assumed
- 70 Based on 2019 data, 447 facilities in this industry segment reported 581 total CS, GP, and CP units to subpart
- 71 Based on 2019 data, 612 facilities in this industry segment reported 576 total CS, GP, and CP units to subpart
- 72 Based on 2019 data, 41 facilities in this industry segment reported 54 total CS, GP, and CP units to subpart
- 73 Based on 2019 data, 11 facilities in this industry segment reported 12 total CS, GP, and CP units to subpart
- 74 Based on 2019 data, 5 facilities in this industry segment reported 8 total CS, GP, and CP units to subpart
- 75 Assumed sampling was equal to calculation (10 minutes per flare stack).
- 76 Assumed 30% of sub-basins are involved in a custody transfer where gas samples are taken monthly. On
- 77 Assumed 9 sub-basins per facility.
- 78 Assumed analysis is per facility instead of per flare.

1.6	0.67	76	50.7		5.1	2.5
2.0	0.83	5	4.2		0.4	0.2
2.1	0.88	24	21.0		2.1	1.1
2.1	0.88	1	0.9		0.1	0.0
2.1	0.88	1	0.9		0.1	0.0
3.0	12.00	22	258.0		25.8	12.9
3.0	13.50	22		290.3		
4.0	4.00	337	1,346.4		134.6	67.3
6.0	6.00	478	2,868.0		286.8	143.4
4.0	4.00	49	196.0		19.6	9.8
4.0	4.00	5	20.0		2.0	1.0
4.0	4.00	163	652.0		65.2	32.6
6.0	6.00	301	1,808.4		180.8	90.4
1.0	20.00	4.5	90.0		9.0	4.5
1.0	20.00	5.3	106.0		10.6	5.3
1.0	20.00	0.5	10.0		1.0	0.5
1.0	20.00	0.1	2.0		0.2	0.1
2.0	40.00	14.9	596.0		59.6	29.8
2.0	40.00	5.1	204.0		20.4	10.2
1.0	20.00	0.1	2.0		0.2	0.1
2.0	40.00	9.6	384.0		38.4	19.2
2.0	40.00	1.0	40.0		4.0	2.0
1.0	20.00	1.4	28.0		2.8	1.4
3	3.44	15,296	52,618.2		5,261.8	2,630.9
1	1.00	15,930	15,930.0		1,593.0	796.5
1	1.00	163	163.0		16.3	8.2
1	13.00	454	5,902.0		590.2	295.1
1	9.40	624	5,865.6		586.6	293.3
1	13.20	49	646.8		64.7	32.3
1	10.90	11	119.9		12.0	6.0
2	16.00	5	80.0		8.0	4.0
1	2.00	478	956.0		95.6	47.8
1	2.00	354	708.0		70.8	35.4

1	2.00	163	326.0		32.6	16.3
1	2.00	454	908.0		90.8	45.4
1	2.00	624	1,248.0		124.8	62.4
1	2.00	49	98.0		9.8	4.9
1	2.00	11	22.0		2.2	1.1
1	2.00	5	10.0		1.0	0.5
1.8	1.80	262		471.6		
19.8	19.80	142		2,811.6		
19.8	19.80	227		4,494.6		
19.8	19.80	25		485.1		
11.8	11.76	287		3,375.0		
27.0	4.50	227		1,021.5		
27.0	4.50	25		110.3		
1.5	0.24	39	9.7		1.0	0.5
1.5	0.24	0	-		-	-
1.5	0.37	0	-		-	-
1.5	0.24	0	0.0		0.0	0.0
1.5	0.37	1	0.3		0.0	0.0
1.5	0.37	8	2.9		0.3	0.1
1.5	0.37	5	1.7		0.2	0.1
1.5	0.37	0	0.1		0.0	0.0
1.5	0.37	3	1.0		0.1	0.0
1.5	0.24	11	2.8		0.3	0.1
439.8	219.90	151	33,278.2		3,327.8	1,663.9
571.6	9.53	151	1,441.7		144.2	72.1
430.7	3.59	151		543.2		
427.0	71.17	738		52,519.8		
114.8	19.14	421		8,057.0		
427.0	71.17	160		11,384.9		

			53				
			364				
			16				
			0				
			309				
			0				
			2				
			0				
			4				
			7				
						1,902,792.0	
(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent/ Year (A x B)	(D) Respondents/ Year	Engineer Hours/Year (C x D)	Technician Hours/Year	Middle Manager Hours/Year	Senior Manager Hours/Year	Lawyer Hours/Year
8.8		1					
8.8		1					
1.0		76.0					
1.0		5.0					
1.0		24.0					
1.0		1					
1.0		1.0					
5.2		56.0					
4.0		1.0					
8.8		10.0					
8.8		1.0					
8.8		1.0					
1.0		76.0					
1.0		5.0					
1.0		24.0					

--	--	--	--	--	--	--	--

calculation method for RY2019 for other industry segments for this emission source.

Senior Manager's time for oversight and review.

Multiplied by 4 for quarterly activities.

minutes to compile data + 15 minutes to run simulation, per AGRU].

l.

LOE will only involve accounting for changes from the previous year.

Equipment type that represents the largest portion of the emissions by equipment or event type.

It is noted that emissions from desiccant dehydrators are no longer being reported to subpart W and are no longer exempt from 98.233(i).

Minimal time to calculate the emissions.

Factors.

facility).

of transmission tanks. Of those 515 facilities, 503 used optical gas imaging to screen for leaks, 1 used flow meters to screen for leaks, and 11

to quantify leaks.

for RY2019 by industry segment.

(1 hour of a Senior Engineer's time, 2 hours of a Middle Manager's time and 1 hour of a Technician's time).

n and 9 sub-basins per facility from subpart W data.

er's time, 1 hour of a Middle Manager's time and 1 hour of a Technician's time).

ressor stations, and 15 other).

urements. Vent measurements are 5 minutes long, so max 12 device measurements/hour, and something like 50 total pumps could be measur

rulemaking and the change in global warming potentials in the supplemental proposal.

it already being used, would use method 2 instead of purchasing measurement equipment.

Method 2.

he engine, determine total number of crank case vents on reciprocating internal combustion engines, and total operating hours per year for re emission factors.

gineer's time, 7.5 hours of a Middle Manager's time and 7.5 hours of a Technician's time).

of an Engineer's time, 3 hours of a Middle Manager's time and 3 hours of a Senior Manager's time).

;

ed 5 fuel units per aggregation of units/common pipe reported.

bpart C, resulting in an average of 1.3 aggregations of units/common pipe per facility reported under Subpart C.

bpart C, , resulting in an average of 0.94 aggregations of units/common pipe per facility reported under Subpart C.

art C, resulting in an average of 1.32 aggregations of units/common pipe per facility reported under Subpart C.

art C, resulting in an average of 1.09 aggregations of units/common pipe per facility reported under Subpart C.

C, resulting in an average of 1.6 aggregations of units/common pipe per facility reported under Subpart C.

ly 70% requires sampling.

\$6,761
\$556
\$2,802
\$117
\$117
\$34,430
\$23,406
\$179,678
\$382,736
\$26,156
\$2,669
\$87,010
\$241,332
\$12,011
\$14,146
\$1,335
\$267
\$79,537
\$27,224
\$267
\$51,245
\$5,338
\$3,737
\$7,021,936
\$2,125,868
\$21,752
\$0
\$787,626
\$782,768
\$86,316
\$16,001
\$10,676
\$127,579
\$94,483

\$43,505
\$121,173
\$166,546
\$13,078
\$2,936
\$1,335
\$38,030
\$226,730
\$362,449
\$39,119
\$272,163
\$82,375
\$8,891
\$1,290
\$0
\$0
\$3
\$42
\$388
\$227
\$15
\$131
\$374
\$4,440,996
\$192,399
\$43,801
\$4,235,250
\$649,724
\$918,087

\$4,235,249
\$649,724
\$2,605,424
\$106,222
\$6,517
\$43,801
\$949,753
\$1,899,506
\$1,197,114
\$1,483,864
\$331,758
\$209,229
\$66,979
\$5,516
\$869,955
\$23,225
\$25,160
\$30,966
\$53,470,757
\$4,947,806
\$4,828,062
\$1,716,285

\$1,602,708
\$2,632,836
\$116,648
\$0
\$61,214,637
\$0
\$13,550
\$0
\$26,693
\$186
\$169,446,958
(H) Cost/ Year
\$3,640
\$6,066
\$117,877
\$7,755
\$37,224
\$1,551
\$1,551
\$120,442
\$1,654
\$36,397
\$3,640
\$6,066
\$117,877
\$7,755
\$37,224

\$1,551
\$1,551
\$406,366
\$220,244
\$352,080
\$38,000
\$445,141
\$426,090
\$649,632
\$59,282
\$11,116
\$2,470
\$590,351
\$437,205
\$31,296
\$396,992
\$224,153
\$984,957
\$102,574
\$1,556,798
\$4,890,074
\$272,993
\$0
\$1,483,855
\$0
\$12,038
\$0
\$187
\$0
169,446,958
\$0
\$169,446,958
\$14,103,716
\$183,550,674



1 used high volume sampling for screening and quantifying leaks. No facilities used calibrated bags or acoustic leak detection to scr

ed in an 8 hour day and would cost about \$1,500. Second day costs would be similar, since multi-day monitoring would incur hotel

reciprocating internal combustion engines) and calculate emissions.

een and quantify leaks.

and additional per diem costs. Based on 50 pumps at the site, an average cost of about \$30 per device for the vent measurements.

Information Collection Activity	Annual Responses
W. Petroleum and Natural Gas Systems	1
TOTAL	1

Information Collection Activity	Annual Responses
W. Petroleum and Natural Gas Systems	1
TOTAL	1

Labor Rates
 Managerial \$ 60.93

Previous estimate was 5 FTE for 10 segments. Assumed that the additic

Total Annual Burden Hours	Labor Cost (\$K)
2,080	\$127
2,080	\$127

Total Annual Burden	Labor Cost
2,080	\$126,730
2,080	\$126,730

(GS-13, Step 1, + 60%)

on of these significant changes to subpart W would be equivalent to one

Non-Labor Cost (\$K)	Total Annual Cost (\$K)
\$0	\$127
\$0	\$127

Non-Labor Cost	Total Annual Cost
\$0	\$126,730
\$0	\$126,730

109000

FTE.

Agency in \$K

Agency in \$

Information Collection Activity
--

W. Petroleum and Natural Gas Systems

TOTAL

Information Collection Activity
--

W. Petroleum and Natural Gas Systems

TOTAL

Annual Responses	Total Annual Burden
1	10400
1	10400

Annual Responses	Total Annual Burden
1	10400
1	10400

Labor Cost	Non-Labor Cost
\$545	\$0
\$545	\$0

Labor Cost	Non-Labor Cost
\$544,648	\$0
\$544,648	\$0

Total Annual Cost
\$545
\$545

Total Annual Cost
\$544,648
\$544,648

Agency in \$K

Agency in \$

Years 1-3	Number of Respondents	Total Labor Hours	Labor Costs	Non-Labor Costs (Annualized Capital/Startup and O&M)	Total Costs
	3,077	1,902,792	\$169,446,958	\$14,103,716	\$183,550,674

Industry Segment	Annual Number of Respondents
Onshore Petroleum and Natural Gas Production	777
Offshore Petroleum and Natural Gas Production	141
Onshore Petroleum and Natural Gas Gathering and Boosting	361
Onshore Natural Gas Processing	515
Onshore Natural Gas Transmission Compression	1,008
Natural Gas Transmission Pipeline	53
Underground Natural Gas Storage	68
LNG Import and Export Equipment	11
LNG Storage	7
Natural Gas Distribution	164
TOTAL	3,077

Total Hours	Annual Average Burden Per Respondent
1,618,079	2,082
34	0
117,979	327
121,589	236
38,716	38
881	17
3,144	46
563	51
262	37
1,547	9
1,902,792	618

Labor Costs	O&M and Capital Costs
\$142,067,785	\$3,693,563
\$3,922	\$0
\$10,767,359	\$1,319,919
\$11,873,365	\$2,776,745
\$4,064,345	\$5,891,787
\$89,867	\$187
\$319,173	\$370,275
\$51,729	\$26,350
\$29,922	\$24,890
\$179,491	\$0
\$169,446,958	\$14,103,716

Total Costs
\$145,761,348
\$3,922
\$12,087,278
\$14,650,110
\$9,956,131
\$90,054
\$689,448
\$78,079
\$54,812
\$179,491
\$183,550,674

Total Annual Burden Hours	Labor Costs (\$2021)
2,080	\$126,730

	Annual Average
Respondent Costs	
Number of Respondents	3,077
Total Respondent Labor Hours	1,902,792
Total Respondent Labor Costs	\$169,446,958
Non-labor (Capital and O&M) Costs	\$14,103,716
Total Respondent Costs	\$183,550,674
Agency Costs	
Total Agency Burden Hours	2,080
Total Agency Labor Costs	\$126,730
Total Burden Hours (Respondents + Agency)	1,904,872
Bottom Line Costs (Respondents + Agency)	\$183,677,404