	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		
Acid Gas Removal Units 1		
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
Nitrogen Removal Units 1		
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
	Equipment Leaks 1	
	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
	Blowdown Vent Stacks 1	
	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	1.00
	Other large release events 1	
	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
	Combustion Emissions	
	Determine fuel consumption through company records and calculate emissions	
5	Onshore Petroleum and Natural Gas Production reporters 1,7,19,31,72	0.50
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 1,7,19,31,72	0.50
7	Natural Gas Distribution reporters 1,7,19,31,72	0.50
	Crankcase venting 1	
	Gather information and calculate emissions	
5	Onshore Petroleum and Natural Gas Production reporters 7,19,73	2.00
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 7,19,73	2.00
7	Natural Gas Distribution reporters 7,19,73	2.00

1	Onshore Natural Gas Processing reporters 7,19,73	2.00
2	Onshore Natural Gas Transmission Compression reporters 7,19,73	2.00
3	Underground Natural Gas Storage reporters 7,19,73	2.00
4	LNG Import and Export Equipment reporters 7,19,73	2.00
8	LNG Storage reporters 7,19,73	2.00
Dehydrators		
Gather data for simulation run (large dehydrators) (M1)		
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)		
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
Condensate storage tanks (formerly transmission storage tanks) 1		
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
Hydrocarbon liquid Storage Tanks (formerly atmospheric storage tanks)		
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
Dump valves 1		
Yearly inspections of dump valves (per separator)		
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
Thief hatches 1		
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
	Produced water tanks 1	
	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
	Well Venting for Liquids Unloading 1	
	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
	Mud degassing 1	
	Use mudlogging data to calculate emissions (M1)	
5	Onshore Petroleum and Natural Gas Production reporters 68, 69, 70	1.00
	Use emission factor to calculate emissions (M2)	
5	Onshore Petroleum and Natural Gas Production reporters 70,71	0.17
	Plugged wells 1	
	Gather quantites related to plugged wells (quantities of natural gas, crude oil, and condensate produced that is sen	
5	Onshore Petroleum and Natural Gas Production reporters 75,76	0.50
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	12.00
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 46,47	3.00
	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)		
	Acid gas removal units	
	Quarterly gas samples and analyses	
8	LNG Storage reporters 31,48	
4	LNG Import and Export Equipment reporters 31,48	
	Acid gas removal units	
	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	
	Nitrogen removal units	
	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	
	Nitrogen removal units	
	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	
	Glycol dehydrators	
	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	
Centrifugal and Reciprocating Compressors- contractor to perform compressor leak measurements 2		
5	Onshore Petroleum and Natural Gas Production reporters 51,52	
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 51,52	
Hydrocarbon liquid Storage Tanks		
	Simulation software yearly cost	
1	Onshore Natural Gas Processing reporters 49,53	
Pneumatic Devices-measure volumetric flow rate regularly 2		
1	Onshore Natural Gas Processing reporters 54,55,56	
7	Natural Gas Distribution reporters 56,57,58	
2	Onshore Natural Gas Transmission Compression reporters 31,56,58	
3	Underground Natural Gas Storage reporters 31,56,59	
5	Onshore Petroleum and Natural Gas Production reporters 31,55,56	
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 31,55,56	
Pneumatic Pumps-measure volumetric flow rate regularly 2		
5	Onshore Petroleum and Natural Gas Production reporters 31,60,61	
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 31,61,62	
Incremental O&M costs due to new sources 67		
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	
""		
ANNUALIZED CAPITAL COSTS		
Flare stacks - continuous parameter monitoring 3		
1	Onshore Natural Gas Processing reporters 31,63,64,65	
2	Onshore Natural Gas Transmission Compression reporters 31,63,64,65	
3	Underground Natural Gas Storage reporters 31,63,64,65	
4	LNG Import and Export Equipment reporters 31,63,64,65	
5	Onshore Petroleum and Natural Gas Production reporters 31,63,64,65	
9	Onshore Petroleum and Natural Gas Gathering and Boosting reporters 31,63,64,65	
Incremental annualized capital 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	
""		
	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

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

8 Only LNG exporters use AGRU.

9 Assumed activity takes 10 minutes (based on similar activity in December 2010 EIA for GHGRP) and r

10 Assumed activity takes 10 minutes (based on similar activity in December 2010 EIA for GHGRP). (Se

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 r

14 Assumed same average number of NRUs per reporter as AGRUs in RY2019 for each industry segmen

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, th

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 4 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

23Assumed that 40% of reporters with desiccant dehydrators will be required to report blowdown vent sta

24 Assumed 20 hours to gather the necessary data to estimate emissions from other large release events ar

25 Assumed half of reporters would conduct leak surveys and the other half would use population leak fac

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 (See https://www.epa.gov/ghgreporting/regulatory-impact-analysis-ma
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 pe
35 Based on RY2019 data from transmission compression facilities, 515 unique facilities tested for leaks
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 flowmete
38 Assumed inspections take 10 minutes per separator or 10 minute 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
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 E
45 Assumed an average of 3.44 wells per well-pad from NSPS OOOOb TSD.
46 Assumed 5 hours per reporter per year to report by G&B site instead of by county (3 hours of an Engir
47 Assumed an average of 45 sites per Gathering and Boosting facility (15 centralized production, 15 com
48 Assumed testing costs of $400 per AGRU/NRU.
49 Assumed flow measurement activity occurs once per year per AGRU/NRU facility.
50 Based on OGI crew costs, assumed it would cost $300 to show up (travel, + set up) + $150/hr for meas
51 Assumed an average of 6 compressors per reporter (based on average number of reciprocating compres
52 Assumed costs only apply to NOD measurements. Only requiring volumetric measurements for Onsho
53 Assumed one time license costs of E&P Tanks of $600 over the three-year period or $200 per year.
54 Assumed 250 pneumatic devices per facility.
55 Based on average number of pneumatic devices per facility, assumed would test 1/5 of devices every y
56 Assuming the testing crew would cost $300 to show up (travel, + set up) + $150/hr for measurements.
57 Assumed 33 pneumatic devices per facility, same as Transmission Compression facilities.
58 Based on average number of pneumatic devices per facility, assumed would test 1/2 of devices every y
59 Based on average number of pneumatic devices per facility, assumed would test 1/3 of devices every y
60 Based on average number of pneumatic pumps per facility, assumed would test 1/5 of pumps every yea
61 Based on OGI crew costs, I estimate it would cost $300 to show up (travel, + set up) + $150/hr for mea
62 Based on average number of pneumatic pumps per facility, assumed would test 1/2 of pumps every yea
63 Assumed one continuous parameter monitoring device per flare stack.
64 Estimated that 80% of oil and gas industry already monitors flow rate, so the need for continuous para
65 Assumed that continuous parameter monitoring device would cost $5,000 per flare. Assuming 10 year
66 Assumed an additional 0.5 hours per year per reporter to incorporate combustion slip into existing calc
67 There are a total of 755 new sources expected to be required to comply with subpart W as a result of th
68 Assumed 1 hour per well to gather mudlogging data and calculate emissions.
69 Assumed mudlogging is already being used so no costs for measurement equipment. If mudlogging is
70 Assumed half of affected reporters would use Method 1 for mud degassing emissions and half would u

71 Assumed 10 minutes per well to calculate emissions from mud degassing using the emission factor.
72 Assumed an additional 0.5 hours per year to incorporate combustion slip into existing calculations.
73 Assumed 2 hours per year to gather information (determine concentration of CH4 in gas stream enterir
74 Assumed half of reporters would use simulation software for dehydrators and half would use populatio
75 Assumed 0.5 hours per well per site to gather plugged well data annually.
76 Assumed 5% of wells would be plugged per year.

(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
			-	-	-	-	-
2.0	2.00	1	2.0		0.2	0.1	
2.0	2.00	1	2.0		0.2	0.1	
2.2	1.47	1	1.5		0.1	0.1	
2.2	1.47	1	1.5		0.1	0.1	
3.0	0.50	2	1.0		0.1	0.1	
3.0	0.50	3	1.5		0.2	0.1	
2.1	0.88	1	0.9		0.1	0.0	
2.1	0.88	1	0.9		0.1	0.0	
2.0	2.00	1	2.0		0.2	0.1	
0.0	0.00	0	-		-	-	
1.0	1.00	1	1.0		0.1	0.1	
2.0	2.00	1	2.0		0.2	0.1	
2.0	2.00	1	2.0		0.2	0.1	
1.3	0.87	56	48.5		4.9	2.4	
1.0	0.67	1	0.7		0.1	0.0	
2.2	1.47	10	14.7		1.5	0.7	
2.2	1.47	1	1.5		0.1	0.1	
2.2	1.47	1	1.5		0.1	0.1	
1.5	0.25	125	31.3		3.1	1.6	
1.8	0.30	6	1.8		0.2	0.1	
3.0	0.50	27	13.5		1.4	0.7	
3.0	0.50	2	1.0		0.1	0.1	

3.0	0.50	3	1.5		0.2	0.1	
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	
1	0.50	478	239.0		23.9	12.0	
1	0.50	354	177.0		17.7	8.9	
1	0.50	163	81.5		8.2	4.1	
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			
23.5	3.92	164		643.0			
1.6	0.27	22		6.0			
23.5	3.92	160		627.2			

427.0	71.17	738		52,519.8			
114.8	19.14	421		8,057.0			
427.0	71.17	454		32,308.9			
430.7	3.59	367		1,317.2			
45.3	0.38	214		80.8			
430.7	3.59	151		543.2			
536.0	44.67	159	7,116.9		711.7	355.8	
536.0	89.33	159	14,233.8		1,423.4	711.7	
168.9	28.15	319	8,970.5		897.0	448.5	
65.6	65.60	170	11,119.2		1,111.9	556.0	
65.6	10.93	170	1,853.2		185.3	92.7	
t to sale)							
3.3	1.64	478	783.9		78.4	39.2	
1.0	12.00	478	5,736.0	478.0	956.0		
1.0	3.00	354	1,062.0	354.0	354.0		
		53					
		364					

		16					
		0					
		309					
		0					
		2					
		0					
		4					
		7					
						417,821.0	
(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					
1.0		1					
1.0		1.0					
1.0		262					
1.0		142					

1.0		227					
1.0		25					
1.0		287					
2.0		478					
2.0		354					
1.0		151					
250		454					
33		163					
33		624					
73		49					
1,765		478					
407		354					
134		478					
41		354					
		53					
		364					
		16					
		0					
		309					
		0					
		2					
		0					
		4					
		7					
2		454					
1		624					
4		49					
3		11					
157		478					
22		354					
		53					
		364					

		16					
		0					
		309					
		0					
		2					
		0					
		4					
		7					
						417,821.0	

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

Senior Manager's time for oversight and review.

nultiplied by 4 for quarterly activities. (See https://www.epa.gov/ghgreporting/regulatory-impact-analysis-mandatory-reporting-greenhouse-g
ɛ https://www.epa.gov/ghgreporting/regulatory-impact-analysis-mandatory-reporting-greenhouse-gas-emissions-final-rule)

minutes to compile data + 15 minutes to run simulation, per AGRU]. (See https://www.epa.gov/ghgreporting/regulatory-impact-analysis-mar
t and calculation method.

ıe level of effort (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.
ıcks now that emissions from desiccant dehydrators are no longer being reported to subpart W and are no longer exempt from 98.233(i).
ıd minimal time to calculate the emissions.
ctors.

ndatory-reporting-greenhouse-gas-emissions-final-rule).

er facility).
from transmission tanks. Of those 515 facilities, 503 used optical gas imaging to screen for leaks, 1 used flow meters to screen for leaks, and

ers to quantify leaks.

in RY2019 by industry segment.

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

neer's time, 1 hour of a Middle Manager's time and 1 hour of a Technician's time).
mpressor stations, and 15 other).

surements. Assuming 8 hour day for testing for $1,500.
ssors per reporter from RY2019). NOD measurements are only required once every 3 years, so 2 compressors per year over the 3 year period
re Production and Gathering and Boosting if the compressors are subject to NSPS OOOOb. The NSPS only requires measurements when co

ear.
Vent measurements are 15 minute long, so max 4 device measurements/hour, and 25-28 total devices could be measured in an 8 hour day an

ear.
ear.
ar.
asurements. Vent measurements are 5 minutes long, so max 12 device measurements/hour, and something like 50 total pumps could be meas
ar.

meter monitoring is reduced.
life and 7% interest, annualized cost is $712 per flare.
ulations.
his rulemaking and the change in global warming potentials in the supplemental proposal.

not already being used, would use method 2 instead of purchasing measurement equipment.
se Method 2.

ıg the engine, determine total number of crank case vents on reciprocating internal combustion engines, and total operating hours per year foı
ɔn emission factors.

Costs ($)
$0
$0
$0
$0
$258
$258
$0
$189
$189
$0
$129
$194
$0
$113
$113
$0
$0
$258
$0
$129
$258
$258
$0
$6,264
$86
$1,893
$189
$189
$0
$4,033
$232
$1,742
$129

$194
$0
$6,539
$538
$2,710
$113
$113
$0
$33,298
$0
$22,636
$0
$0
$173,768
$370,148
$25,296
$2,581
$84,148
$233,394
$0
$0
$11,616
$13,680
$1,291
$258
$76,920
$26,328
$258
$49,560
$5,162
$3,614
$30,846
$22,844
$10,518
$123,383
$91,375
$42,074

$117,188
$161,068
$12,648
$2,839
$1,291
$0
$0
$36,779
$219,273
$350,527
$37,832
$263,211
$0
$79,665
$8,598
$0
$0
$1,247
$0
$0
$2
$41
$376
$219
$15
$126
$362
$0
$0
$4,294,925
$0
$186,071
$0
$42,360
$0
$50,147
$468
$48,917
$0

$4,095,946
$628,354
$2,519,728
$0
$0
$102,728
$6,303
$42,360
$0
$0
$918,514
$0
$1,837,029
$0
$1,157,739
$1,435,058
$239,176
$101,174
$0
$0
$0
$0
$786,837
$188,238
$1,278,188
$2,150,673

$79,270
$0
$16,411,333
$0
$9,205
$0
$26,499
$179
$41,413,037
(H) Cost/ Year
$3,520
$5,867
$114,000
$7,500
$36,000
$1,500
$1,500
$116,480
$1,600
$35,200
$3,520
$5,867
$114,000
$7,500
$36,000
$1,500
$1,500
$393,000
$213,000

$340,500
$36,750
$430,500
$570,933
$422,825
$30,267
$1,362,000
$161,370
$624,480
$71,600
$10,122,492
$1,727,016
$383,934
$216,780
$1,663,008
$4,868,646
$276,608
$0
$7,364,715
$0
$10,913
$0
$187
$0
$128,355
$123,014
$24,418
$3,915
$10,708,030
$1,108,836
$14,984
$71,758

$7,973
$0
$6,922,137
$0
$0
$0
$0
$0
41,413,036.7
$19,113,421
$41,413,037
$31,784,577
$92,311,035

$50,897,998

ɜas-emissions-final-rule)

ɪdatory-reporting-greenhouse-gas-emissions-final-rule)

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

l of the ICR.

mpressors are in operating or standby pressurized modes.

d would cost about $1,500. Second day costs would be similar, since multi-day monitoring would incur hotel and additional per di

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

r reciprocating internal combustion engines) and calculate emissions.

screen and quantify leaks.

em costs. Based on 25 devices at the site, an average cost of about $60 per device for the vent measurements

otel 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%)

ɔn of these significant changes to subpart W would be equivalnet 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	417,821	$41,413,037	$50,897,998	$92,311,035

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

Total Hours	Annual Average Burden Per Respondent
52,560	102
27,579	27
1,744	26
41	4
277,639	357
1,453	9
133	19
16,886	47
881	17
34	0
417,821	123

Labor Costs	O&M and Capital Costs
$8,768,994	$3,936,094
$2,755,614	$6,028,399
$167,324	$417,348
$4,605	$18,649
$27,957,105	$36,301,841
$163,069	$161,370
$14,714	$20,953
$1,490,222	$4,013,157
$87,596	$187
$3,793	$0
$41,413,037	$50,897,998

Total Costs
$12,705,088
$8,784,013
$584,673
$23,254
$64,258,946
$324,439
$35,667
$5,503,379
$87,783
$3,793
$92,311,035

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

	Annual Average
Respondent Costs	
Number of Respondents	3,077
Total Respondent Labor Hours	417,821
Total Respondent Labor Costs	$41,413,037
Non-labor (Capital and O&M) Costs	$50,897,998
Total Respondent Costs	$92,311,035
Agency Costs	
Total Agency Burden Hours	2,080
Total Agency Labor Costs	$126,730
Total Burden Hours (Respondents + Agency)	419,901
Bottom Line Costs (Respondents + Agency)	$92,437,765