Appendix F:

Burden and Cost for General Stationary Combustion Sources

(Subpart C)

June 2019

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Appendix F-1. Detailed Unit Burden and Costs for GHGRP Reporters Subject to Subpart C Only—Year 1

Year 1	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent/ Year (A x B)	(D) Respondents/ Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
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 C [1,2,3]	5	1	5	1,998	9,990				$713,786
A2. Read Rule, Instructions, Guidance Documents for Subpart A [2,3,4]	2	1	2	1,998	3,996				$285,514
B. Required Activities									
Activity covering Tier 1 Methodology									
Conduct annual review of company records to determine mass or volume of fuel combusted [2,5,6]	5	1	5	1,016	5,078				$362,815
Conduct annual review of billing records to determine natural gas consumption in therms or mmBtu [2,5,6]	5	1	5	811	4,056				$289,778
Activity covering Tier 2 Methodology									
Conduct annual review of company records to determine mass or volume of fuel combusted [5,7]	5	1	5	661	3,304				$236,086
Activity covering Tier 3 Methodology									
Conduct annual review of company records to determine mass or volume of fuel combusted [5,8]	5	1	5	76	381				$27,241
Tier 1 Methodology for combustion emissions reported under subpart C									
Perform engineering calculation to determine CO_2 emissions using Eq C-1, C-1a, or C-1b, using default high heat values and/or default emission factors [6,9,10]	0.2	2.6	0.4	1,568	690				$49,296
Perform engineering calculation to determine CH_4 and N_2O emissions using Eq C-8, Eq C-8a, or Eq C-8b [6,10,11]	0.3	2.6	0.9	1,568	1,380				$98,593
Tier 2 Methodology for combustion emissions reported under subpart C									
Conduct sampling to determine high heat value for each type of fuel or fuel mixture [7,12]		2.4		621					
Daily measurements [14,15]	0	2.1	0.0	62	0				$0
Hourly measurements [15,17]	0	2.0	0.0	7	0				$0
Monthly measurements [18,19]	6	2.2	13.0	401	5,222				$373,110
Quarterly measurements [20,21]	2	3.6	7.3	18	131				$9,358

Year 1	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent/ Year (A x B)	(D) Respondents/ Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
Semiannual measurements [22,23]	1	3.9	3.9	18	70				$4,981
Weekly measurements [23,24]	26	1.7	43.3	10	412				$29,432
Other measurement methods [18,26]	6	5.1	30.7	105	3,206				$229,050
Perform engineering calculation to determine CO2 emissions using Eq C-2a, along with Eq C-2b or Eq C-2c. [9,12]	0.2	2.6	0.4	661	282				$20,148
Perform engineering calculation to determine CH4 and N2O emissions using Eq C-9a or Eq 9b [11,12]	0.3	2.6	0.9	661	564				$40,295
Tier 3 Methodology for combustion emissions reported under subpart C									
Conduct sampling to determine carbon content for each type of fuel or fuel mixture [8,27]		2.1		76					
Daily measurements [15,28]	0	1.0	0.0	2	0				$0
Hourly measurements [15,29]	0	2.0	0.0	2	0				$0
Monthly measurements [18,30]	6	1.9	11.3	25	283				$20,215
Quarterly measurements [20,31]	2	1.1	2.3	7	16				$1,147
Semiannual measurements [22,32]	1	3.4	3.4	5	17				$1,219
Weekly measurements [24,33]	26	1.8	45.5	8	365				$26,094
Other measurement methods [18,34]	6	8.0	48.1	27	1,304				$93,182
Determine annual volume of liquid or gaseous fuel using fuel flow meters [35,36,37]	0.5	1.3	0.6	45	29				$2,064
Determine annual average molecular weight of gaseous fuel [35,38,39]	0.5	0.7	0.3	24	8				$566
Perform engineering calculation to determine CO_2 emissions using Eq C-3, Eq C-4, or Eq C-5. [8,9,27]	0.2	2.1	0.4	76	27				$1,934
Perform engineering calculation to determine CH_4 and N_2O emissions using Eq C-8 [11,27]	0.3	2.1	0.7	76	54				$3,869
Tier 4 Methodology for combustion emissions reported under subpart C									
Gather CEMS data for e-GGRT reporting and QA [40,41]	20	4	80	70	5,570				$397,951
Alternative Part 75 Methodology for combustion emissions reported under subpart C									
Perform engineering calculation to determine CO_2 emissions using Appendix D and G (98.33(a)(5)(i)), LME calculation method (98.33(a)(5)(ii), or CEMS calculation method (98.33(a)(5)(iii)) [9,42]	0.2	3.1	0.5	34	18				$1,263
C. Create Information (Included in 4B)									

Year 1	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent/ Year (A x B)	(D) Respondents/ Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
D. Gather Existing Information (Included in 4E)									
E. Write Report									
Annual Compliance Reporting through e-GGRT and data QA [3,43]	10	1	10	1,998	19,980		1998	1998	$1,674,784
5. RECORDKEEPING REQUIREMENTS									
A. Read Instructions (Included in 4A)									
B. Plan Activities (Included in 4B)									
C. Implement Activities (Included in 4B)									
D. Recordkeeping [3,44]	5	1	5	1,998	9,990		999	999	$837,392
E. Time to Transmit or Disclose Information (included in 4E)									
F. Time to Train Personnel (included in 4A)									
G. Time for Audits (Not Applicable)									
TOTAL ANNUAL LABOR BURDEN AND COST					76,422		2997	2997	$5,831,163
ANNUAL O&M COSTS									
Sampling costs for Tier 2 units [7,15,46]									
Monthly samples and analyses [19]		2.2		401					$348,131
Quarterly samples and analyses [21]		3.6		18					$26,194
Semiannual samples and analyses [23]		3.9		18					$27,884
Weekly samples and analyses [25]		1.7		10					$6,337
Other measurement methods samples and analyses [26]		5.1		105					$213,716
Sampling costs for Tier 3 units [8,15,27,46]									
Monthly samples and analyses [30]		1.9		25					$18,862
Quarterly samples and analyses [31]		1.1		7					$3,211
Semiannual samples and analyses [32]		3.4		5					$6,822
Weekly samples and analyses [33]		1.8		8					$5,619
Other measurement methods samples and analyses [34]		8.0		27					$86,943
Flow meter costs for Tier 3 units [47,48]		1.3		2					$6,594
Sampling costs for Biogenic Testing									
Annual gas samples and analyses [49,50]		2.3		85					$1,125,864
Recordkeeping [51]		1		1998					$99,900
ANNUALIZED CAPITAL COSTS									
CEMS costs for Tier 4 units [52,53]		2.0		3					$115,030
TOTAL ANNUAL COSTS (Labor, O&M, and annualized capital)									$7,922,272

Appendix F-2. Detailed Unit Burden and Costs for GHGRP Reporters Subject to Subpart C Only—Year 2

Year 2	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent / Year (A x B)	(D) Respondents / Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
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 C [1,2,3]	5	1	5	2,093	10,465				$747,724
A2. Read Rule, Instructions, Guidance Documents for Subpart A [2,3,4]	2	1	2	2,093	4,186				$299,090
B. Required Activities									
Activity covering Tier 1 Methodology									
Conduct annual review of company records to determine mass or volume of fuel combusted [2,5,6]	5	1	5	1,064	5,319				$380,066
Conduct annual review of billing records to determine natural gas consumption in therms or mmBtu [2,5,6]	5	1	5	850	4,249				$303,556
Activity covering Tier 2 Methodology									
Conduct annual review of company records to determine mass or volume of fuel combusted [5,7]	5	1	5	692	3,461				$247,311
Activity covering Tier 3 Methodology									
Conduct annual review of company records to determine mass or volume of fuel combusted [5,8]	5	1	5	80	399				$28,536
Tier 1 Methodology for combustion emissions reported under subpart C									
Perform engineering calculation to determine CO_2 emissions using Eq C-1, C-1a, or C-1b, using default high heat values and/or default emission factors [6,9,10]	0.2	2.6	0.4	1,643	723				$51,640
Perform engineering calculation to determine CH_4 and N_2O emissions using Eq C-8, Eq C-8a, or Eq C-8b [6,10,11]	0.3	2.6	0.9	1,643	1,445				$103,281
Tier 2 Methodology for combustion emissions reported under subpart C									
Conduct sampling to determine high heat value for each type of fuel or fuel mixture [7,12]		2.4		651					
Daily measurements [14,15]	0	2.1	0.0	65	0				$0
Hourly measurements [15,17]	0	2.0	0.0	8	0				$0
Monthly measurements [18,19]	6	2.2	13.0	420	5,470				$390,850
Quarterly measurements [20,21]	2	3.6	7.3	19	137				$9,803
Semiannual measurements [22,23]	1	3.9	3.9	19	73				$5,218
Weekly measurements [23,24]	26	1.7	43.3	10	432				$30,832
Other measurement methods [18,26]	6	5.1	30.7	110	3,358				$239,941
Perform engineering calculation to determine CO2 emissions using Eq C-2a, along with Eq C-2b or Eq C-2c. [9,12]	0.2	2.6	0.4	692	295				$21,106
Perform engineering calculation to determine CH4 and	0.3	2.6	0.9	692	591				$42,211

Year 2	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent / Year (A x B)	(D) Respondents / Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
N2O emissions using Eq C-9a or Eq 9b [11,12]									
Tier 3 Methodology for combustion emissions reported under subpart C									
Conduct sampling to determine carbon content for each type of fuel or fuel mixture [8,27]		2.1		80					
Daily measurements [15,28]	0	1.0	0.0	2	0				$0
Hourly measurements [15,29]	0	2.0	0.0	2	0				$0
Monthly measurements [18,30]	6	1.9	11.3	26	296				$21,177
Quarterly measurements [20,31]	2	1.1	2.3	7	17				$1,202
Semiannual measurements [22,32]	1	3.4	3.4	5	18				$1,277
Weekly measurements [24,33]	26	1.8	45.5	8	383				$27,334
Other measurement methods [18,34]	6	8.0	48.1	28	1,366				$97,612
Determine annual volume of liquid or gaseous fuel using fuel flow meters [35,36,37]	0.5	1.3	0.6	47	30				$2,163
Determine annual average molecular weight of gaseous fuel [35,38,39]	0.5	0.7	0.3	25	8				$593
Perform engineering calculation to determine CO_2 emissions using Eq C-3, Eq C-4, or Eq C-5. [8,9,27]	0.2	2.1	0.4	80	28				$2,026
Perform engineering calculation to determine CH_4 and N_2O emissions using Eq C-8 [11,27]	0.3	2.1	0.7	80	57				$4,053
Tier 4 Methodology for combustion emissions reported under subpart C									
Gather CEMS data for e-GGRT reporting and QA [40,41]	20	4	80	73	5,834				$416,873
Alternative Part 75 Methodology for combustion emissions reported under subpart C									
Perform engineering calculation to determine CO_2 emissions using Appendix D and G (98.33(a)(5)(i)), LME calculation method (98.33(a)(5)(ii), or CEMS calculation method (98.33(a)(5)(iii)) [9,42]	0.2	3.1	0.5	36	19				$1,323
C. Create Information (Included in 4B)									
D. Gather Existing Information (Included in 4E)									
E. Write Report									
Annual Compliance Reporting through e-GGRT and data QA [3,43]	10	1	10	2,093	20,930		2093	2093	$1,754,415
5. RECORDKEEPING REQUIREMENTS									
A. Read Instructions (Included in 4A)									
B. Plan Activities (Included in 4B)									
C. Implement Activities (Included in 4B)									
D. Recordkeeping [3,44]	5	1	5	2,093	10,465		1046.5	1046.5	$877,208
E. Time to Transmit or Disclose Information (included in 4E)									
F. Time to Train Personnel (included in 4A)									
G. Time for Audits (Not Applicable)									
TOTAL ANNUAL LABOR BURDEN AND COST					80,056		3139.5	3139.5	$6,108,421

Year 2	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent / Year (A x B)	(D) Respondents / Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
ANNUAL O&M COSTS									
Sampling costs for Tier 2 units [7,15,46]									
Monthly samples and analyses [19]		2.2		420					$364,684
Quarterly samples and analyses [21]		3.6		19					$27,440
Semiannual samples and analyses [23]		3.9		19					$29,210
Weekly samples and analyses [25]		1.7		10					$6,639
Other measurement methods samples and analyses [26]		5.1		110					$223,878
Sampling costs for Tier 3 units [8,15,27,46]									
Monthly samples and analyses [30]		1.9		26					$19,759
Quarterly samples and analyses [31]		1.1		7					$3,363
Semiannual samples and analyses [32]		3.4		5					$7,147
Weekly samples and analyses [33]		1.8		8					$5,886
Other measurement methods samples and analyses [34]		8.0		28					$91,077
Flow meter costs for Tier 3 units [47,48]		1.3		2					$6,594
Sampling costs for Biogenic Testing									
Annual gas samples and analyses [49,50]		2.3		89					$1,179,396
Recordkeeping [51]		1		2093					$104,650
ANNUALIZED CAPITAL COSTS									
CEMS costs for Tier 4 units [52,53]		2.0		7					$230,059
TOTAL ANNUAL COSTS (Labor, O&M, and annualized capital)									$8,408,203

Appendix F-3. Detailed Unit Burden and Costs for GHGRP Reporters Subject to Subpart C Only—Year 3

Year 3	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent / Year (A x B)	(D) Respondents / Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
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 C [1,2,3]	5	1	5	2,188	10,940.00				$781,663
A2. Read Rule, Instructions, Guidance Documents for Subpart A [2,3,4]	2	1	2	2,188	4,376.00				$312,665
B. Required Activities									
Activity covering Tier 1 Methodology									
Conduct annual review of company records to determine mass or volume of fuel combusted [2,5,6]	5	1	5	1,112	5,560.76				$397,317
Conduct annual review of billing records to determine natural gas consumption in therms or mmBtu [2,5,6]	5	1	5	888	4,441.35				$317,334
Activity covering Tier 2 Methodology									
Conduct annual review of company records to determine mass or volume of fuel combusted [5,7]	5	1	5	724	3,618.43				$258,537
Activity covering Tier 3 Methodology									
Conduct annual review of company records to determine mass or volume of fuel combusted [5,8]	5	1	5	84	417.51				$29,831
Tier 1 Methodology for combustion emissions reported under subpart C									
Perform engineering calculation to determine CO_2 emissions using Eq C-1, C-1a, or C-1b, using default high heat values and/or default emission factors [6,9,10]	0.2	2.6	0.4	1,717	755.55				$53,984
Perform engineering calculation to determine CH_4 and N_2O emissions using Eq C-8, Eq C-8a, or Eq C-8b [6,10,11]	0.3	2.6	0.9	1,717	1,511.11				$107,969
Tier 2 Methodology for combustion emissions reported under subpart C									
Conduct sampling to determine high heat value for each type of fuel or fuel mixture [7,12]		2.4		680					
Daily measurements [14,15]	0	2.1	0.0	68	0.00				$0
Hourly measurements [15,17]	0	2.0	0.0	8	0.00				$0
Monthly measurements [18,19]	6	2.2	13.0	440	5,718.56				$408,591
Quarterly measurements [20,21]	2	3.6	7.3	20	143.43				$10,248
Semiannual measurements [22,23]	1	3.9	3.9	20	76.34				$5,454

Year 3	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent / Year (A x B)	(D) Respondents / Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
Weekly measurements [23,24]	26	1.7	43.3	10	451.10				$32,231
Other measurement methods [18,26]	6	5.1	30.7	115	3,510.59				$250,832
Perform engineering calculation to determine CO2 emissions using Eq C-2a, along with Eq C-2b or Eq C-2c. [9,12]	0.2	2.6	0.4	724	308.80				$22,064
Perform engineering calculation to determine CH4 and N2O emissions using Eq C-9a or Eq 9b [11,12]	0.3	2.6	0.9	724	617.59				$44,127
Tier 3 Methodology for combustion emissions reported under subpart C									
Conduct sampling to determine carbon content for each type of fuel or fuel mixture [8,27]		2.1		84					
Daily measurements [15,28]	0	1.0	0.0	2	0.00				$0
Hourly measurements [15,29]	0	2.0	0.0	2	0.00				$0
Monthly measurements [18,30]	6	1.9	11.3	27	309.84				$22,138
Quarterly measurements [20,31]	2	1.1	2.3	8	17.58				$1,256
Semiannual measurements [22,32]	1	3.4	3.4	5	18.68				$1,335
Weekly measurements [24,33]	26	1.8	45.5	9	399.93				$28,575
Other measurement methods [18,34]	6	8.0	48.1	30	1,428.17				$102,043
Determine annual volume of liquid or gaseous fuel using fuel flow meters [35,36,37]	0.5	1.3	0.6	50	31.64				$2,261
Determine annual average molecular weight of gaseous fuel [35,38,39]	0.5	0.7	0.3	27	8.68				$620
Perform engineering calculation to determine CO_2 emissions using Eq C-3, Eq C-4, or Eq C-5. [8,9,27]	0.2	2.1	0.4	84	29.65				$2,118
Perform engineering calculation to determine CH_4 and N_2O emissions using Eq C-8 [11,27]	0.3	2.1	0.7	84	59.30				$4,237
Tier 4 Methodology for combustion emissions reported under subpart C									
Gather CEMS data for e-GGRT reporting and QA [40,41]	20	4	80	76	6,099.29				$435,794
Alternative Part 75 Methodology for combustion emissions reported under subpart C									
Perform engineering calculation to determine CO_2 emissions using Appendix D and G (98.33(a)(5)(i)), LME calculation method (98.33(a)(5)(ii), or CEMS calculation method (98.33(a)(5)(iii)) [9,42]	0.2	3.1	0.5	38	19.36				$1,383
C. Create Information (Included in 4B)									
D. Gather Existing Information (Included in 4E)									

Year 3	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent / Year (A x B)	(D) Respondents / Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
E. Write Report									
Annual Compliance Reporting through e-GGRT and data QA [3,43]	10	1	10	2,188	21,880.00		2188	2188	$1,834,047
5. RECORDKEEPING REQUIREMENTS									
A. Read Instructions (Included in 4A)									
B. Plan Activities (Included in 4B)									
C. Implement Activities (Included in 4B)									
D. Recordkeeping [3,44]	5	1	5	2,188	10,940.00		1094	1094	$917,024
E. Time to Transmit or Disclose Information (included in 4E)									
F. Time to Train Personnel (included in 4A)									
G. Time for Audits (Not Applicable)									
TOTAL ANNUAL LABOR BURDEN AND COST					83,689.24		3282	3282	$6,385,678
ANNUAL O&M COSTS									
Sampling costs for Tier 2 units [7,15,46]									
Monthly samples and analyses [19]		2.2		440					$381,237
Quarterly samples and analyses [21]		3.6		20					$28,685
Semiannual samples and analyses [23]		3.9		20					$30,536
Weekly samples and analyses [25]		1.7		10					$6,940
Other measurement methods samples and analyses [26]		5.1		115					$234,039
Sampling costs for Tier 3 units [8,15,27,46]									
Monthly samples and analyses [30]		1.9		27					$20,656
Quarterly samples and analyses [31]		1.1		8					$3,516
Semiannual samples and analyses [32]		3.4		5					$7,471
Weekly samples and analyses [33]		1.8		9					$6,153
Other measurement methods samples and analyses [34]		8.0		30					$95,211
Flow meter costs for Tier 3 units [47,48]		1.3		2					$6,594
Sampling costs for Biogenic Testing									
Annual gas samples and analyses [49,50]		2.3		93					$1,232,928
Recordkeeping [51]		1		2188					$109,400
ANNUALIZED CAPITAL COSTS									
CEMS costs for Tier 4 units [52,53]		2.0		10					$345,089
TOTAL ANNUAL COSTS (Labor, O&M, and annualized capital)									$8,894,134

Appendix F-4. Footnotes Applicable to Appendix F-1, Appendix F-2, and Appendix F-3

Note: Figures may not add exactly due to rounding.
1 Assumed 5 hours per reporter per year to read rule.
2 Assumed activity occurs once per year per reporter.
3 There are 1808 facilities that reported only subpart C in RY2017, with an additional 95 new reporters per year.
4 Assumed 2 hours per reporter per year to read rule.
5 Assumed 5 hours per year to review company records.
6 There are 1419 facilities that reported only subpart C under Tier 1 in RY2017, with an additional 75 new reporters per year. 1016 of those facilities reported using Eq C-1 and 811 facilities reported using Eq C-1a and/or Eq C-1b.
7 There are 598 facilities that reported only subpart C under Tier 2 in RY2017, with an additional 31 new reporters per year. 621 of those facilities reported using Eq C-2a and 52 facilities reported using Eq C-2c.
8 There are 69 facilities that reported only subpart C under Tier 3 in RY2017, with an additional 4 new reporters per year. 38 of those facilities reported using Eq C-3, 21 facilities reported using Eq C-4, and 24 facilities reported using Eq C-5.
9 Assumed 10 minutes per pollutant per fuel [1 pollutant].
10 Using RY2017 data, there are 0.56 fuels per facility using Eq C-1a; 0.37 fuels per facility using Eq C-1b; 1.71 fuels per facility using Eq. C-1.
11 Assumed 10 minutes per pollutant per fuel [2 pollutants].
12 Using RY2017 data, there are 2.43 fuels per facility using Eq C-2a and 0.13 fuels per facility using Eq C-2c.
13 [reserved]
14 Using RY2017 data, 10% of Tier 2 Eqn. C-2a facilities perform daily measurements for an average of 2.1 fuels per facility.
15 Assumed that hourly and daily sampling is done automatically via continuous, on-line equipment and, therefore, no lab analyses are required.
16 [reserved]
17 Using RY2017 data, 1.2% of Tier 2 Eq C-2a facilities perform hourly measurements for an average of 2 fuels per facility.
18 Assumed 0.5 hour per fuel and 12 measurements per year.
19 Using RY2017 data, 65% of Tier 2 Eq C-2a facilities perform monthly measurements for an average of 2.2 fuels per facility.
20 Assumed 0.5 hour per fuel and 4 measurements per year.
21 Using RY2017 data, 2.9% of Tier 2 Eq C-2a facilities perform quarterly measurements for an average of 3.6 fuels per facility.
22 Assumed 0.5 hour per fuel and 2 measurements per year.
23 Using RY2017 data, 2.9% of Tier 2 Eq C-2a facilities perform semiannual measurements for an average of 3.9 fuels per facility.
24 Assumed 0.5 hour per fuel and 52 measurements per year.
25 Using RY2017 data, 1.5% of Tier 2 Eq C-2a facilities perform weekly measurements for an average of 1.7 fuels per facility.
26 Other measurement methods include once per fuel lot, upon addition of oil to the storage tank, and other specified measurement methods. Using RY2017 data, 17% of Tier 2 C-2a facilities perform measurements at one of these frequencies for an average of 5.1 fuels per facility."
27 Using RY2017 data, there are 2.13 fuels per respondent using Tier 3 methodology.
28 Using RY2017 data, 2.6% of Tier 3 facilities perform daily measurements for an average of 1 fuel per facility.
29 Using RY2017 data, 2.6% of Tier 3 facilities perform hourly measurements for an average of 2 fuels per facility.
30 Using RY2017 data, 33% of Tier 3 facilities perform monthly measurements for an average of 1.9 fuels per facility.
31 Using RY2017 data, 9.2% of Tier 3 facilities perform quarterly measurements for an average of 1.1 fuels per facility.
32 Using RY2017 data, 6.6% of Tier 3 facilities perform semiannual measurements for an average of 3.4 fuels per facility.
33 Using RY2017 data, 11% of Tier 3 facilities perform weekly measurements for an average of 1.8 fuels per facility.
34 Other measurement methods include once per fuel lot, upon addition of oil to the storage tank, and other specified measurement methods. Using RY2017 data, 36% of Tier 3 facilities perform measurements at one of these frequencies for an average of 8 fuels per facility.
35 Assumed 0.5 hours per fuel to determine the annual volume of fuel or annual average molecular weight of gaseous fuel.
36 Using RY2017 data, there are 1.28 liquid or gaseous fuels per respondent using Tier 3 methodology.
37 Using RY2017 data, there are 41 facilities reporting only subpart C which used liquid or gaseous fuel, with an additional 2 new reporters per year.
38 Using RY2017 data, there are 0.65 gaseous fuels per respondent using Tier 3 methodology.

39 Using RY2017 data, there are 22 facilities reporting only subpart C used gaseous fuel, with an additional 1 new reporter per year.
40 Assumed 20 hours per quarter to gather and QA the CEMS data.
41 Using RY2017 data, there are 63 facilities reporting only subpart C used Tier 4, with an additional 3 new reporters per year.
42 Using RY2017 data, there are 31 facilities reporting only subpart C used Alternative Part 75 methodology, with an additional 2 new reporters per year. There are 3.1 fuels per Alternative Part 75 facility.
43 Assumed 10 technical hours, 1 clerical hour, and 1 manager hour per reporter per year to submit report through e-GGRT and QA the data.
44 Assumed 5 technical hours, 0.5 clerical hours, and 0.5 manager hours per reporter per year to maintain records.
45 Number of occurrences per respondent based on average number of fuels reported for Tier 2 C-2a units in RY2017.
46 Assumed testing cost of $400 per fuel.
47 Number of occurrences per respondent based on average number of fuels reported by segment for new Tier 3 C-4 and C-5 units in RY2017. Assumed meter is installed upon startup of new units.
48 Assumed operational cost of $2,400 per fuel per flow meter.
49 Number of occurrences per respondent based on average number of units with reported biogenic testing results per reporter in RY2017.
50 Assumed testing cost of $5660 per unit. Assumed that direct emissions measurements infrastructure is already installed (e.g., ports and platforms).
51 Assumed $50 per reporter per year, which includes the cost of file cabinets, hard drives, and cloud file storage for the GHGRP records required to be maintained.
52 Number of occurrences per respondent based on average number of units reported per facility for new Tier 4 facilities in RY2017. Assumed facilities with units installed before Year 1 of this ICR have completed their annualized capital payments.
53 Assumed capital cost of $124,000 per unit per CEMS device, which is an annualized cost of $17,654.81 (annualized at 10 years, 7% interest). Assumed new Tier 4 reporters would add both a CO2 analyzer and a volumetric flow monitor to an existing CEMS device.

Appendix F-5. Detailed Unit Burden and Costs for GHGRP Reporters Subject to Subpart C Plus Another Subpart(s)—Year 1

Year 1	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent/ Year (A x B)	(D) Respondents/ Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
1. APPLICATIONS (Not Applicable)									
2. SURVEY AND STUDIES (Not Applicable)									
3. ACQUISITION, INSTALLATION, AND UTILIZATION OF TECHNOLOGY AND SYSTEMS									
4. REPORT REQUIREMENTS									
A. Read Rule, Instructions, Guidance Documents [1,2,3]	5	1	5	3,790	18,950				$1,353,978
B. Required Activities									
Activity covering Tier 1 Methodology									
Conduct annual review of company records to determine mass or volume of fuel combusted [1,2,4]	5	1	5	1,857	9,284				$663,324
Conduct annual review of billing records to determine natural gas consumption in therms or mmBtu [1,2,4]	5	1	5	511	2,557				$182,717
Activity covering Tier 2 Methodology									
Conduct annual review of billing records to determine natural gas consumption in therms or mmBtu [1,2,5]	5	1	5	1,998	9,989				$713,688
Activity covering Tier 3 Methodology									
Conduct annual review of company records to determine mass or volume of fuel combusted [1,2,6]	5	1	5	256	1,279				$91,358
Tier 1 Methodology for combustion emissions reported under subpart C									
Perform engineering calculation to determine CO_2 emissions using Eq C-1, C-1a, or C-1b, using default high heat values and/or default emission factors [4,7,8]	0.2	2.7	0.5	2,164	975				$69,690
Perform engineering calculation to determine CH_4 and N_2O emissions using Eq C-8, Eq C-8a, or Eq C-8b [4,8,9]	0.3	2.7	0.9	2,164	1,951				$139,380
Tier 2 Methodology for combustion emissions reported under subpart C									
Conduct sampling to determine high heat value for each type of fuel or fuel mixture [5,10]		2.6		1,996					
Daily measurements [12,13]	0	2.0	0.0	325	0				$0
Hourly measurements [13,14]	0	2.4	0.0	79	0				$0
Monthly measurements [15,16]	6	2.8	16.8	1,031	17,357				$1,240,127
Quarterly measurements [17,18]	2	2.3	4.6	139	641				$45,832

Year 1	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent/ Year (A x B)	(D) Respondents/ Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
Semiannual measurements [19,20]	1	1.7	1.7	194	335				$23,948
Weekly measurements [21,22]	26	2.0	51.4	45	2,333				$166,677
Other measurement methods [15,23]	6	8.0	47.8	182	8,668				$619,306
Perform engineering calculation to determine CO_2 emissions using Eq C-2a, along with Eq C-2b or Eq C-2c. [5,7,10]	0.2	2.6	0.4	1,998	873				$62,389
Perform engineering calculation to determine CH_4 and N_2O emissions using Eq C-9a or Eq 9b [5,9,10]	0.3	2.6	0.9	1,998	1,746				$124,778
Tier 3 Methodology for combustion emissions reported under subpart C									
Conduct sampling to determine carbon content for each type of fuel or fuel mixture [6,24]		6.3		256					
Daily measurements [13,25]	0	6.9	0.0	56	0				$0
Hourly measurements [13,26]	0	12.3	0.0	9	0				$0
Monthly measurements [15,27]	6	3.4	20.2	70	1,418				$101,342
Quarterly measurements [17,28]	2	1.9	3.8	11	44				$3,139
Semiannual measurements [19,29]	1	1.0	1.0	4	4				$314
Weekly measurements [21,30]	26	7.0	181.6	65	11,813				$844,013
Other measurement methods [15,31]	6	4.0	24.0	40	949				$67,812
Determine annual volume of liquid or gaseous fuel using fuel flow meters [32,33,34]	0.5	5.9	2.9	213	625				$44,638
Determine annual average molecular weight of gaseous fuel [32,35,36]	0.5	5.8	2.9	201	578				$41,322
Perform engineering calculation to determine CO_2 emissions using Eq C-3, Eq C-4, or Eq C-5. [6,7,24]	0.2	6.3	1.1	256	270				$19,261
Perform engineering calculation to determine CH_4 and N_2O emissions using Eq C-8 [6,9,24]	0.3	6.3	2.1	256	539				$38,521
Tier 4 Methodology for combustion emissions reported under subpart C									
Gather CEMS data for e-GGRT reporting [37,38]	20	4	80	69	5,508				$393,544
Alternative Part 75 Methodology for combustion emissions reported under subpart C									
Perform engineering calculation to determine CO_2 emissions using	0.2	3.9	0.7	34	22				$1,588

Year 1	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent/ Year (A x B)	(D) Respondents/ Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
Appendix D and G (98.33(a)(5)(i)), LME calculation method (98.33(a)(5)(ii), or CEMS calculation method (98.33(a)(5)(iii)) [7,39]									
C. Create Information (Included in 4B)									
D. Gather Existing Information (Included in 4E)									
E. Write Report									
Annual Compliance Reporting through e-GGRT and QA [3,40]	10	1	10	3,790	37,900		3790	3790	$3,176,892
5. RECORDKEEPING REQUIREMENTS									
A. Read Instructions (Included in 4A)									
B. Plan Activities (Included in 4B)									
C. Implement Activities (Included in 4B)									
D. Recordkeeping [3,41]	5	1	5	3,790	18,950		1895	1895	$1,588,446
E. Time to Transmit or Disclose Information (included in 4E)									
F. Time to Train Personnel (included in 4A)									
G. Time for Audits (Not Applicable)									
TOTAL ANNUAL LABOR BURDEN AND COST					155,558		5685	5685	$11,818,024
ANNUAL TESTING COSTS (O&M)									
Sampling costs for Tier 2 units [5,13,43]									
Monthly samples and analyses [16]		2.8		1,031					$1,157,105
Quarterly samples and analyses [18]		2.3		139					$128,292
Semiannual samples and analyses [20]		1.7		194					$134,067
Weekly samples and analyses [22]		2.0		45					$35,889
Other measurement methods samples and analyses [23]		8.0		182					$577,845
Sampling costs for Tier 3 units 6 [13,24,43]									
Monthly samples and analyses [27]		3.4		70					$94,557
Quarterly samples and analyses [28]		1.9		11					$8,788
Semiannual samples and analyses [29]		1.0		4					$1,758
Weekly samples and analyses [30]		7.0		65					$181,733
Other measurement methods samples and analyses [31]		4.0		40					$63,273
Flow meter costs for Tier 3 units [44,45]		5.9		9					$127,389
Sampling costs for Biogenic Testing									
Annual gas samples and analyses [46,47]		4.0		32					$717,521
Recordkeeping [48]		1		3,790					$189,500
ANNUALIZED CAPITAL COSTS									
CEMS costs for Tier 4 units [49,50]		1.8		3					$90,977

Year 1	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent/ Year (A x B)	(D) Respondents/ Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
TOTAL ANNUAL COSTS (Labor, O&M, and annualized capital)									$15,326,718

Appendix F-6. Detailed Unit Burden and Costs for GHGRP Reporters Subject to Subpart C Plus Another Subpart(s)—Year 2

Year 2	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent/ Year (A x B)	(D) Respondents/ Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
1. APPLICATIONS (Not Applicable)									
2. SURVEY AND STUDIES (Not Applicable)									
3. ACQUISITION, INSTALLATION, AND UTILIZATION OF TECHNOLOGY AND SYSTEMS									
4. REPORT REQUIREMENTS									
A. Read Rule, Instructions, Guidance Documents [1,2,3]	5	1	5	3951	19,755				$1,411,495
B. Required Activities									
Activity covering Tier 1 Methodology									
Conduct annual review of company records to determine mass or volume of fuel combusted [1,2,4]	5	1	5	1936	9,678				$691,502
Conduct annual review of billing records to determine natural gas consumption in therms or mmBtu [1,2,4]	5	1	5	533	2,666				$190,479
Activity covering Tier 2 Methodology									
Conduct annual review of billing records to determine natural gas consumption in therms or mmBtu [1,2,5]	5	1	5	2083	10,413				$744,006
Activity covering Tier 3 Methodology									
Conduct annual review of company records to determine mass or volume of fuel combusted [1,2,6]	5	1	5	267	1,333				$95,239
Tier 1 Methodology for combustion emissions reported under subpart C									
Perform engineering calculation to determine CO_2 emissions using Eq C-1, C-1a, or C-1b, using default high heat values and/or default emission factors [4,7,8]	0.2	2.7	0.5	2256	1,017				$72,650
Perform engineering calculation to determine CH_4 and N_2O emissions using Eq C-8, Eq C-8a, or Eq C-8b [4,8,9]	0.3	2.7	0.9	2256	2,034				$145,301
Tier 2 Methodology for combustion emissions reported under subpart C									
Conduct sampling to determine high heat value for each type of fuel or fuel mixture [5,10]		2.6		2080					
Daily measurements [12,13]	0	2.0	0.0	339	0				$0
Hourly measurements [13,14]	0	2.4	0.0	83	0				$0
Monthly measurements [15,16]	6	2.8	16.8	1075	18,094				$1,292,808
Quarterly measurements [17,18]	2	2.3	4.6	145	669				$47,779
Semiannual measurements [19,20]	1	1.7	1.7	202	349				$24,965

Year 2	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent/ Year (A x B)	(D) Respondents/ Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
Weekly measurements [21,22]	26	2.0	51.4	47	2,432				$173,757
Other measurement methods [15,23]	6	8.0	47.8	189	9,036				$645,614
Perform engineering calculation to determine CO_2 emissions using Eq C-2a, along with Eq C-2b or Eq C-2c. [5,7,10]	0.2	2.6	0.4	2083	910				$65,039
Perform engineering calculation to determine CH_4 and N_2O emissions using Eq C-9a or Eq 9b [5,9,10]	0.3	2.6	0.9	2083	1,821				$130,079
Tier 3 Methodology for combustion emissions reported under subpart C									
Conduct sampling to determine carbon content for each type of fuel or fuel mixture [6,24]		6.3		267					
Daily measurements [13,25]	0	6.9	0	59	0				$0
Hourly measurements [13,26]	0	12.3	0	9	0				$0
Monthly measurements [15,27]	6	3.4	20.2	73	1,479				$105,647
Quarterly measurements [17,28]	2	1.9	3.8	12	46				$3,273
Semiannual measurements [19,29]	1	1.0	1.0	5	5				$327
Weekly measurements [21,30]	26	7.0	181.6	68	12,314				$879,867
Other measurement methods [15,31]	6	4.0	24.0	41	989				$70,693
Determine annual volume of liquid or gaseous fuel using fuel flow meters [32,33,34]	0.5	5.9	2.9	222	651				$46,534
Determine annual average molecular weight of gaseous fuel [32,35,36]	0.5	5.8	2.9	210	603				$43,077
Perform engineering calculation to determine CO_2 emissions using Eq C-3, Eq C-4, or Eq C-5. [6,7,24]	0.2	6.3	1.1	267	281				$20,079
Perform engineering calculation to determine CH_4 and N_2O emissions using Eq C-8 [6,9,24]	0.3	6.3	2.1	267	562				$40,158
Tier 4 Methodology for combustion emissions reported under subpart C									
Gather CEMS data for e-GGRT reporting [37,38]	20	4	80	72	5,742				$410,261
Alternative Part 75 Methodology for combustion emissions reported under subpart C									
Perform engineering calculation to determine CO_2 emissions using Appendix D and G (98.33(a)(5)(i)), LME calculation method (98.33(a)(5)(ii), or CEMS calculation method (98.33(a)(5)(iii)) [7,39]	0.2	3.9	0.7	35	23				$1,655

Year 2	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent/ Year (A x B)	(D) Respondents/ Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
C. Create Information (Included in 4B)									
D. Gather Existing Information (Included in 4E)									
E. Write Report									
Annual Compliance Reporting through e-GGRT and QA [3,40]	10	1	10	3,951	39,510		3951	3951	$3,311,847
5. RECORDKEEPING REQUIREMENTS									
A. Read Instructions (Included in 4A)									
B. Plan Activities (Included in 4B)									
C. Implement Activities (Included in 4B)									
D. Recordkeeping [3,41]	5	1	5	3,951	19,755		1976	1976	$1,655,923
E. Time to Transmit or Disclose Information (included in 4E)									
F. Time to Train Personnel (included in 4A)									
G. Time for Audits (Not Applicable)									
TOTAL ANNUAL LABOR BURDEN AND COST					162,166		5926.5	5926.5	$12,320,056
ANNUAL TESTING COSTS (O&M)									
Sampling costs for Tier 2 units [5,13,43]									
Monthly samples and analyses [16]		2.8		1,075					$1,206,259
Quarterly samples and analyses [18]		2.3		145					$133,742
Semiannual samples and analyses [20]		1.7		202					$139,763
Weekly samples and analyses [22]		2.0		47					$37,413
Other measurement methods samples and analyses [23]		8.0		189					$602,392
Sampling costs for Tier 3 units 6 [13,24,43]									
Monthly samples and analyses [27]		3.4		73					$98,574
Quarterly samples and analyses [28]		1.9		12					$9,161
Semiannual samples and analyses [29]		1.0		5					$1,832
Weekly samples and analyses [30]		7.0		68					$189,453
Other measurement methods samples and analyses [31]		4.0		41					$65,960
Flow meter costs for Tier 3 units [44,45]		5.9		9					$127,389
Sampling costs for Biogenic Testing									
Annual gas samples and analyses [46,47]		4.0		33					$748,001
Recordkeeping [48]		1		3,951					$197,550
ANNUALIZED CAPITAL COSTS									
CEMS costs for Tier 4 units [49,50]		1.8		6					$181,955
TOTAL ANNUAL COSTS (Labor, O&M, and annualized capital)									$16,059,501

Appendix F-7. Detailed Unit Burden and Costs for GHGRP Reporters Subject to Subpart C Plus Another Subpart(s)—Year 3

Year 3	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent/ Year (A x B)	(D) Respondents/ Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
1. APPLICATIONS (Not Applicable)									
2. SURVEY AND STUDIES (Not Applicable)									
3. ACQUISITION, INSTALLATION, AND UTILIZATION OF TECHNOLOGY AND SYSTEMS									
4. REPORT REQUIREMENTS									
A. Read Rule, Instructions, Guidance Documents [1,2,3]	5	1	5	4112	20,560				$1,469,012
B. Required Activities									
Activity covering Tier 1 Methodology									
Conduct annual review of company records to determine mass or volume of fuel combusted [1,2,4]	5	1	5	2015	10,073				$719,680
Conduct annual review of billing records to determine natural gas consumption in therms or mmBtu [1,2,4]	5	1	5	555	2,775				$198,240
Activity covering Tier 2 Methodology									
Conduct annual review of billing records to determine natural gas consumption in therms or mmBtu [1,2,5]	5	1	5	2167	10,837				$774,324
Activity covering Tier 3 Methodology									
Conduct annual review of company records to determine mass or volume of fuel combusted [1,2,6]	5	1	5	277	1,387				$99,120
Tier 1 Methodology for combustion emissions reported under subpart C									
Perform engineering calculation to determine CO_2 emissions using Eq C-1, C-1a, or C-1b, using default high heat values and/or default emission factors [4,7,8]	0.2	2.7	0.5	2348	1,058				$75,611
Perform engineering calculation to determine CH_4 and N_2O emissions using Eq C-8, Eq C-8a, or Eq C-8b [4,8,9]	0.3	2.7	0.9	2348	2,116				$151,222
Tier 2 Methodology for combustion emissions reported under subpart C									
Conduct sampling to determine high heat value for each type of fuel or fuel mixture [5,10]		2.6		2165					
Daily measurements [12,13]	0	2.0	0.0	352	0				$0
Hourly measurements [13,14]	0	2.4	0.0	86	0				$0
Monthly measurements [15,16]	6	2.8	16.8	1119	18,831				$1,345,489
Quarterly measurements [17,18]	2	2.3	4.6	151	696				$49,726
Semiannual measurements [19,20]	1	1.7	1.7	210	364				$25,982

Year 3	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent/ Year (A x B)	(D) Respondents/ Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
Weekly measurements [21,22]	26	2.0	51.4	49	2,531				$180,838
Other measurement methods [15,23]	6	8.0	47.8	197	9,404				$671,922
Perform engineering calculation to determine CO_2 emissions using Eq C-2a, along with Eq C-2b or Eq C-2c. [5,7,10]	0.2	2.6	0.4	2167	947				$67,690
Perform engineering calculation to determine CH_4 and N_2O emissions using Eq C-9a or Eq 9b [5,9,10]	0.3	2.6	0.9	2167	1,895				$135,380
Tier 3 Methodology for combustion emissions reported under subpart C									
Conduct sampling to determine carbon content for each type of fuel or fuel mixture [6,24]		6.3		277					
Daily measurements [13,25]	0	6.9	0.0	61	0				$0
Hourly measurements [13,26]	0	12.3	0.0	10	0				$0
Monthly measurements [15,27]	6	3.4	20.2	76	1,539				$109,952
Quarterly measurements [17,28]	2	1.9	3.8	12	48				$3,406
Semiannual measurements [19,29]	1	1.0	1.0	5	5				$341
Weekly measurements [21,30]	26	7.0	181.6	71	12,816				$915,721
Other measurement methods [15,31]	6	4.0	24.0	43	1,030				$73,574
Determine annual volume of liquid or gaseous fuel using fuel flow meters [32,33,34]	0.5	5.9	2.9	231	678				$48,431
Determine annual average molecular weight of gaseous fuel [32,35,36]	0.5	5.8	2.9	218	627				$44,833
Perform engineering calculation to determine CO_2 emissions using Eq C-3, Eq C-4, or Eq C-5. [6,7,24]	0.2	6.3	1.1	277	292				$20,897
Perform engineering calculation to determine CH_4 and N_2O emissions using Eq C-8 [6,9,24]	0.3	6.3	2.1	277	585				$41,794
Tier 4 Methodology for combustion emissions reported under subpart C									
Gather CEMS data for e-GGRT reporting [37,38]	20	4	80	75	5,976				$426,979
Alternative Part 75 Methodology for combustion emissions reported under subpart C									
Perform engineering calculation to determine CO_2 emissions using Appendix D and G (98.33(a)(5)(i)), LME calculation method (98.33(a)(5)(ii), or CEMS calculation method (98.33(a)(5)(iii)) [7,39]	0.2	3.9	0.7	37	24				$1,723
C. Create Information (Included in 4B)									

Year 3	(A) Hours per Occurrence	(B) Occurrences/ Respondent/Year	(C) Hours/ Respondent/ Year (A x B)	(D) Respondents/ Year	(E) Technical Hours/ Year (C x D)	Legal Hours/Year	Clerical Hours/ Year	Manager Hours/ Year	(H) Cost/ Year
D. Gather Existing Information (Included in 4E)									
E. Write Report									
Annual Compliance Reporting through e-GGRT and QA [3,40]	10	1	10	4,112	41,120		4112	4112	$3,446,802
5. RECORDKEEPING REQUIREMENTS									
A. Read Instructions (Included in 4A)									
B. Plan Activities (Included in 4B)									
C. Implement Activities (Included in 4B)									
D. Recordkeeping [3,41]	5	1	5	4,112	20,560		2056	2056	$1,723,401
E. Time to Transmit or Disclose Information (included in 4E)									
F. Time to Train Personnel (included in 4A)									
G. Time for Audits (Not Applicable)									
TOTAL ANNUAL LABOR BURDEN AND COST					168,774		6168	6168	$12,822,088
ANNUAL TESTING COSTS (O&M)									
Sampling costs for Tier 2 units									
Monthly samples and analyses [16]		2.8		1,119					$1,255,413
Quarterly samples and analyses [18]		2.3		151					$139,192
Semiannual samples and analyses [20]		1.7		210					$145,458
Weekly samples and analyses [22]		2.0		49					$38,938
Other measurement methods samples and analyses [23]		8.0		197					$626,939
Sampling costs for Tier 3 units 6 [13,24,43]									
Monthly samples and analyses [27]		3.4		76					$102,591
Quarterly samples and analyses [28]		1.9		12					$9,534
Semiannual samples and analyses [29]		1.0		5					$1,907
Weekly samples and analyses [30]		7.0		71					$197,173
Other measurement methods samples and analyses [31]		4.0		43					$68,648
Flow meter costs for Tier 3 units [44,45]		5.9		9					$127,389
Sampling costs for Biogenic Testing									
Annual gas samples and analyses [46,47]		4.0		34					$778,482
Recordkeeping [48]		1		4,112					$205,600
ANNUALIZED CAPITAL COSTS									
CEMS costs for Tier 4 units [49,50]		1.8		9					$272,932
TOTAL ANNUAL COSTS (Labor, O&M, and annualized capital)									$16,792,284

Appendix F-8. Footnotes Applicable to Appendix F-5, Appendix F-6, and Appendix F-7

Note: Figures may not add exactly due to rounding.
1 Assumed 5 hours per reporter per year to read rule.
2 Assumed activity occurs once per year per reporter.
3 There are 3468 facilities that reported subpart C plus another subpart(s) in RY2017, with an additional 161 new reporters per year.
4 There are 1980 facilities that reported subpart C plus another subpart(s) under Tier 1 in RY2017, with an additional 92 new reporters per year. 1857 of those facilities reported using Eq C-1 and 511 facilities reported using Eq C-1a and/or Eq C-1b.
5 There are 1828 facilities that reported subpart C plus another subpart(s) under Tier 2 in RY2017, with an additional 85 new reporters per year. 1996 of those facilities reported using Eq C-2a and 3 facilities reported using Eq C-2c.
6 There are 234 facilities that reported subpart C plus another subpart(s) under Tier 3 in RY2017, with an additional 11 new reporters per year. 56 of those facilities reported using Eq C-3, 12 facilities reported using Eq C-4, and 201 facilities reported using Eq C-5.
7 Assumed 10 minutes per pollutant per fuel [1 pollutant].
8 Using RY2017 data, there are 0.18 fuels per facility using Eq C-1a; 0.15 fuels per facility using Eq C-1b; 2.37 fuels per facility using Eq. C-1.
9 Assumed 10 minutes per pollutant per fuel [2 pollutants].
10 Using RY2017 data, there are 2.62 fuels per facility using Eq C-2a and 0.002 fuels per facility using Eq C-2c.
11 [reserved]
12 Using RY2017 data, 16% of Tier 2 Eqn. C-2a facilities perform daily measurements for an average of 2 fuels per facility.
13 Assumed that hourly and daily sampling is done automatically via continuous, on-line equipment and, therefore, no lab analyses are required.
14 Using RY2017 data, 4% of Tier 2 Eq C-2a facilities perform hourly measurements for an average of 2.4 fuels per facility.
15 Assumed 0.5 hour per fuel and 12 measurements per year.
16 Using RY2017 data, 52% of Tier 2 Eq C-2a facilities perform monthly measurements for an average of 2.8 fuels per facility.
17 Assumed 0.5 hour per fuel and 4 measurements per year.
18 Using RY2017 data, 7% of Tier 2 Eq C-2a facilities perform quarterly measurements for an average of 2.3 fuels per facility.
19 Assumed 0.5 hour per fuel and 2 measurements per year.
20 Using RY2017 data, 9.7% of Tier 2 Eq C-2a facilities perform semiannual measurements for an average of 1.7 fuels per facility.
21 Assumed 0.5 hour per fuel and 52 measurements per year.
22 Using RY2017 data, 2.3% of Tier 2 Eq C-2a facilities perform weekly measurements for an average of 2 fuels per facility.
23 Other measurement methods include once per fuel lot, upon addition of oil to the storage tank, and other specified measurement methods. Using RY2017 data, 9% of Tier 2 C-2a facilities perform measurements at one of these frequencies for an average of 8 fuels per facility.
24 Using RY2017 data, there are 6.32 fuels per respondent using Tier 3 methodology.
25 Using RY2017 data, 22% of Tier 3 facilities perform daily measurements for an average of 6.9 fuel per facility.
26 Using RY2017 data, 3.4% of Tier 3 facilities perform hourly measurements for an average of 12.3 fuel per facility.
27 Using RY2017 data, 27% of Tier 3 facilities perform monthly measurements for an average of 3.4 fuel per facility.
28 Using RY2017 data, 4.5% of Tier 3 facilities perform quarterly measurements for an average of 1.9 fuel per facility.
29 Using RY2017 data, 1.7% of Tier 3 facilities perform semiannual measurements for an average of 1 fuel per facility.
30 Using RY2017 data, 25% of Tier 3 facilities perform weekly measurements for an average of 7 fuel per facility.
31 Other measurement methods include once per fuel lot, upon addition of oil to the storage tank, and other specified measurement methods. Using RY2017 data, 15% of Tier 3 facilities perform measurements at one of these frequencies for an average of 4 fuel per facility.
32 Assumed 0.5 hours per fuel to determine the annual volume of fuel or annual average molecular weight of gaseous fuel.
33 Using RY2017 data, there are 5.86 liquid or gaseous fuels per respondent using Tier 3 methodology.
34 Using RY2017 data, there are 195 facilities reporting subpart C plus another subpart(s) which used liquid or gaseous fuel, with an additional 9 new reporters per year.
35 Using RY2017 data, there are 5.75 gaseous fuels per respondent using Tier 3 methodology.
36 Using RY2017 data, there are 184 facilities reporting subpart C plus another subpart(s) used gaseous fuel, with an additional 9 new reporters per year.
37 Assumed 20 hours per quarter to gather and QA the CEMS data.

38 Using RY2017 data, there are 63 facilities reporting subpart C plus another subpart(s) used Tier 4, with an additional 3 new reporters per year.
39 Using RY2017 data, there are 31 facilities reporting subpart C plus another subpart(s) used Alternative Part 75 methodology, with an additional 1 new reporter per year. There are 3.94 fuels per Alternative Part 75 facility.
40 Assumed 10 technical hours, 1 clerical hour, and 1 manager hour per reporter per year to submit report through e-GGRT and QA the data.
41 Assumed 5 technical hours, 0.5 clerical hours, and 0.5 manager hours per reporter per year to maintain records.
42 Number of occurrences per respondent based on average number of fuels reported for Tier 2 C-2a units in RY2017.
43 Assumed testing cost of $400 per fuel.
44 Number of occurrences per respondent based on average number of fuels reported by segment for new Tier 3 C-4 and C-5 units in RY2017. Assumed meter is installed upon startup of new units.
45 Assumed capital cost of $2,400 per fuel per flow meter.
46 Number of occurrences per respondent based on average number of units with reported biogenic testing results per reporter in RY2017.
47 Assumed testing cost of $5660 per unit. Assumed that direct emissions measurements infrastructure is already installed (e.g., ports and platforms).
48 Assumed $50 per reporter per year, which includes the cost of file cabinets, hard drives, and cloud file storage for the GHGRP records required to be maintained.
49 Number of occurrences per respondent based on average number of units reported per facility for new Tier 4 facilities in RY2017. Assumed facilities with units installed before Year 1 of this ICR have completed their annualized capital payments.
50 Assumed capital cost of $124,000 per unit per CEMS device, which is an annualized cost of $17,654.81 (annualized at 10 years, 7% interest). Assumed new Tier 4 reporters would add both a CO2 analyzer and a volumetric flow monitor to an existing CEMS device.

Appendix F-9. Summary of Burden and Costs for General Stationary Combustion Sources to Comply with Subpart C – by Year

Year	No. Respondents	Total Labor Cost	Capital Cost	O&M Cost	Total Cost
Year 1	5,788	$17,649,187	$206,007	$3,529,895	$23,248,989
Year 2	6,044	$18,428,476	$412,014	$3,682,063	$24,467,704
Year 3	6,300	$19,207,766	$618,021	$3,834,232	$25,686,418
Total	**18,132**	**$55,285,429**	**$1,236,042**	**$11,046,190**	**$73,403,112**
Average	**6,044**	**$18,428,476**	**$412,014**	**$3,682,063**	**$24,467,704**