Table 1: Annual Respondent Burden and Cost – NESHAP for Petroleum Refineries: Catalytic Cracking Units, Cata

Burden item	(A) Person-hours per occurrence	(B) No. of occurrences per respondent per year	(C) Person-hours per respondent per year (C=AxB)	(D) Respondents per year [a]
1. Applications	N/A			
2. Survey and Studies	N/A			
3. Reporting Requirements				
A. Familiarize with rule requirements [c]	2	1	2	142
B. Required activities				
Initial Performance test [d,e]	40	1	40	0
Startup, shutdown, malfunction plan [f]	N/A			
PM Performance Test (internal)[g]	40	1	40	50.3
HCN Performance Test (internal) [d,e,h]	40	1	40	0
Operating, maintenance, and monitoring plan [d]	40	1	40	0
Revise operating, maintenance and monitoring plan [i]	20	1	20	0
RATA for units using CEMs [j]	40	1	40	65
C. Create information	See 3B			
D. Gather existing information	See 3B			
E. Write report				
Notification of construction/ reconstruction	2	1	2	0
Notification of actual startup	2	1	2	0
Notification of special compliance requirements	N/A			
Notification of performance test [d,e]	2	1	2	0
Notification of PM performance test [g]	2	1	2	50.3
Notification of HCN performance test [h]	2	1	2	0
Notification of compliance status [d]	4	1	4	0
Extended compliance request	N/A			
Report of performance test [d]	See 3B			
Semiannual compliance reports [k]	10	2	20	142
Subtotal for Reporting Requirements				
4. Recordkeeping Requirements				
A. Familiarize with rule requirements	See 3A			
B. Plan activities	See 3B			
C. Implement activities	See 3B			
D. Develop record system [l]	N/A			
E. Time to enter information [m, n]				
Records of operations [o]	1	52	52	142
F. Time to train personnel [d, p]	4	1	4	0
G. Time to adjust existing ways to comply with previously applicable requirements	N/A			

H. Time to transmit or disclose information [o]	0.25	1	0.25	142
I. Time for audits	N/A			
Subtotal for Recordkeeping Requirements				
TOTAL LABOR BURDEN AND COST (rounded)[q]				

Total Capital/O&M Costs (rounded)[q]

Grand Total (Labor and Capital/O&M Costs)(rounded)[q]

Assumptions:

[a] We have determined that 142 major petroleum refineries will have one or more affected facilities subject to the standard. This facilities are expected over the next 3 years.

[b] This ICR uses the following labor rates: $141.06 per hour for Executive, Administrative, and Managerial labor; $120.27 per h These rates are from the United States Department of Labor, Bureau of Labor Statistics, June 2019, "Table 2. Civilian Workers column 1, "Total compensation." The rates have been increased by 110 percent to account for the benefit packages available to

[c] Assumed 142 facilities will refamiliarize themselves with the Subpart UUU rule during the upcoming 3-year ICR period.

[d] We have assumed that this activity is a one-time activity that applies only to new sources.

[e] We have assumed that this activity has already occurred for existing sources.

[f] As a result of the December 2015 final rule amendments, the startup, shutdown and malfunction (SSM) exemption has been el can be removed from future ICR supporting statements.

[g] The 2015 final rule requires catalytic cracking unit catalyst regeneration to conduct EPA Reference Method (M5) PM testing compliance option and the PM emissions rate during the most recent test is greater than 0.8 g PM/kg coke burn-off. For units ir that 10 percent of sources will require annual testing. There are 116 FCCUs that will test over the 3 years so each year, approxi years + 116 × 0.1 = 50.3 tests/year.

[h] The 2015 final rule required each catalytic cracking unit to conduct a one-time EPA Reference Method 320 test for HCN by A Therefore, it is assumed that this activity applies only to new units.

[i] The 2015 final rule assumed approximately 101 facilities must revise the OMM Plan due to monitoring requirement changes f to revise the OMM Plan as a one-time activity.

[j] We assume that the burdens associated with RATA testing are roughly equal to those for a performance test (excluding the ad respondents with 253 SRU units (2.41 units/respondent). There are 27 respondents with SRUs using CEMs. Therefore, the num

[k] We have assumed that all sources would be submitting semiannual compliance reports.

[l] We have assumed that these sources will have the record system in place to monitor operations.

[m] We have assumed that depending on the compliance option for the affected facility (i.e., catalytic cracking unit, sulfur recove size of the catalytic cracking unit and control device used (e.g., wet scrubber, electrostatic precipitator and thermal incinerators) monitoring systems and/or continuous parameter monitoring, or choose an alternative option for parameter monitoring.

[n] We have assumed that all respondents would have to keep records of their operations according to the operation and maintena

[o] We have assumed that it will take each respondent approximately one hour to record data per week (52 weeks) and 15 minute

[p] These costs reflect the one-time engineering evaluation and personnel training costs relative to the catalytic reforming unit cat rule. Therefore, it is assumed that this activity now applies only to new units.

[q] Totals have been rounded to 3 significant figures. Figures may not add exactly due to rounding.

ılytic Reforming Units, and Sulfur Recovery Units (40 CFR Part 63, Subpart UUU) (Renewal)

120.27 141.06 58.67

(E)	(F)	(G)	(H)	
Technical person-hours per year (E=CxD)	**Management person-hours per year (Ex0.05)**	**Clerical person- hours per year (Ex0.1)**	**Total Cost per Year $[b]**	
284	14.20	28.40	$37,826	
0	0	0	$0	<- One time test required for new units.
2010.67	100.53	201.07	$267,801	
0.0	0.0	0.0	$0	<- One time test required by 8/15/2017 rule.
0	0	0	$0	
0	0	0	$0	
2600	130	260	$346,294	
0	0	0	$0	
0	0	0	$0	
0	0.00	0.00	$0	<- One time test required for new units.
101	5	10	$13,390	
0	0	0	$0	<- One time test required by 8/15/2017 rule.
0	0	0	$0	
2840	142	284	$378,260	
9,010			**$1,043,570**	
7384	369.2	738.4	$983,475	
0	0	0	$0	<- Line included a one time requirement from 8/
	0			

Type of affected unit	Number of respondents	Number of Units
FCCU	101	116
CRU	114	151
SRU	105	253

520

Note: We estimate that th

35.5	1.78	3.55	$3,459
8,532			**$986,934**
17,500			**$2,030,000**
			$8,780,000
			$10,800,000

37.6 hr/response

s includes 101 sources with 116 FCCU. No new or reconstructed

ıour for Technical labor, and $58.67 per hour for Clerical labor.
, by Occupational and Industry group." The rates are from
› those employed by private industry.

.iminated. Therefore, this requirement is no longer relevant, and

every 5 years, unless the unit is subject to the “NSPS J”
ı excess of that rate, testing is required annually. It was assumed
mately 50.3 performance tests will be conducted (116 units / 3

August 1, 2017, or within 150 days of startup of a new unit.

'or catalytic cracking unit catalyst regeneration; assumed 20 hrs

vance notice requirements). We also assume that there are 105
ıber of SRUs using CEMs is 27 x 2.4 = 65 (rounded).

ery units, and by-pass lines) selected by the respondent and the
), sources are required to either install continuous opacity

ance plan.

es to transmit it semiannually.

alyst regeneration operational changes made in the 2015 final

Number of Respondents using CEMs	Number of units using CEMs
-	-
-	-
27	65

ere are 142 refineries (major sources) with 520 units. This includes 101 sources with 116 FCCU units, 114 sources with 151 CR

'15/2017 rule.

:U units, and 105 sources with 253 SRU units. Of sources with SRU units, we assume 27 sources are using CEMS on 65

units.

Table 2: Average Annual EPA Burden and Cost – NESHAP for Petroleum Refineries: Catalytic Crackin

Activity	(A) Hours per occurrence	(B) Number of occurrence per plant-year	(C) Hours per plant per year (C=AxB)
Report Review			
Notification of construction/reconstruction	N/A		
Notification of actual startup	N/A		
Notification of special compliance requirements	N/A		
Notification of performance test [b]	2	1	2
Notification of PM performance test [c]	2	1	2
Notification of HCN performance test [d]	2	1	2
Notification of compliance status	2	1	2
Review of operation, maintenance, and monitoring plan [b]	4	1	4
Review of revised operation, maintenance, and monitoring plan [e]	2	1	2
Review of repeat performance test report	8	1	8
Review of RATA for CEMS [f]	8	1	8
Review of compliance report	N/A		
Review of semiannual compliance reports [g]	2	2	4
Review of NESHAP waiver application	4	1	4
TOTAL ANNUAL BURDEN AND COST (rounded)[h]			

Assumptions:

[a] This cost is based on the following labor rates: Managerial rate of $66.62 (GS-13, Step 5), Technical rate of
from the Office of Personnel Management (OPM) 2019 General Schedule which excludes locality rates of pay.
available to government employees.

[b] We have assumed that this activity is a one-time activity that applies only to new sources.

[c] The 2015 final rule requires catalytic cracking unit catalyst regeneration to conduct EPA Reference Method (
option and the PM emissions rate during the most recent test is greater than 0.8 g PM/kg coke burn-off. For uni
sources will require annual testing. There are 116 FCCUs that will test over the 3 years, so each year, approxim
tests/year.

[d] The 2015 final rule required each catalytic cracking unit to conduct a one-time EPA Reference Method 320 t
it is assumed that this activity applies only to new units.

[e] The 2015 final rule assumed approximately 101 facilities must revise the OMM Plan due to monitoring requi
review the OMM Plan as a one-time activity.

[f] We assume that the burdens associated with review of RATA testing are roughly equal to those for review of a
(2.41 units/respondent). There are 27 respondents with SRUs using CEMs. Therefore, the number of SRUs usi

[g] We have assumed that all sources would be submitting semiannual compliance reports.

[h] Totals have been rounded to 3 significant figures. Figures may not add exactly due to rounding.

g Units, Catalytic Reforming Units, and Sulfur Recovery Units (40 CFR Part 63, Subpart UUU) (Renewal)

49.44 66.62 26.75

(D)	(E)	(F)	(G)	(H)
Plants per year	**Technical person-hours per year (E=CxD)**	**Management person-hours per year (Ex0.05)**	**Clerical person-hours per year (Ex0.1)**	**Total Cost per Year $[a]**
0	0	0	0	$0
50.3	100.53	5.03	10.05	$5,574.17
0	0	0	0	$0
0	0	0	0	$0
0	0	0	0	$0
0	0	0	0	$0
0	0	0	0	$0
65	520	26	52	$28,831.92
142	568	28.4	56.8	$31,493.33
0	0	0	0	$0
	1,370			**$65,900**

Type of affected unit
FCCU
CRU
SRU

<-New line item, should ha

$49.44 (GS-12, Step 1), and Clerical rate of $26.75 (GS-6, Step 3). These rates are
. The rates have been increased by 60 percent to account for the benefit package

M5) PM testing every 5 years, unless the unit is subject to the "NSPS J" compliance
its in excess of that rate, testing is required annually. It was assumed that 10 percent of
nately 50.3 performance tests will be conducted (116 units / 3 years + 116 × 0.1 = 50.3

est for HCN by August 1, 2017, or within 150 days of startup of a new unit. Therefore,

rement changes for catalytic cracking unit catalyst regeneration; assumed 2 hrs to

a performance test. We also assume that there are 105 respondents with 253 SRU units
ng CEMs is 27 x 2.4 = 65 (rounded).

Number of respondents	Number of Units
101	116
114	151
105	253

ve been included in prior ICR

Capital/Startup vs. Operation and Maintenance (O&M) Costs

(A)	(B)	(C)	(D)	(E)	(F)
Continuous Monitoring Device	Capital/Startup Cost for One Respondent	Number of New Respondents	Total Capital/Startup Cost, (B X C)	Annual O&M Costs for One Respondent	Number of Respondents with O&M
COMS [a] (FCCUs)	$95,700	0	$0	$28,600	25
CPMS [b] (FCCUs)	$18,900	0	$0	$25,350	76
CPMS (CRUs)	$0	0	$0	$17,940 [c]	151[c]
CPMS (SRUs)	$74,000	0	$0	$26,000	78
CEMS [d] (SRUs)	$150,000	0	$0	$34,840	27
PM Performance Test (outsourced) [e]	$0	0	$0	$9,200	50.3
HCN Performance Test (outsourced) [f]	$0	0	$0	$10,000	0
TOTAL [g]			**$0**		

Note: We estimate that there are 142 refineries (major sources) with 520 units. This includes 101 sources with 116 FCCU

[a] COMS – continuous opacity monitoring system

[b] CPMS – continuous parametric monitoring system

[c] We estimate that there are 151 CRUs using CPMS for monitoring, with an O&M cost of $17,940 per CPMS.

[d] CEMS – continuous emission monitoring system. We assume 27 sources with SRU units are using CEMS on 65 units.

[e] The 2015 final rule amendments required facilities with FCCU to conduct EPA Reference Method (M5) PM testing e

[f] The 2015 final rule amendments required a one-time performance test for HCN for catalytic cracking unit catalyst reg

[g] Totals have been rounded to 3 significant figures. Figures may not add exactly due to rounding.

(G) Total O&M, (E X F)
$715,000
$1,926,600
$2,708,940
$2,028,000
$940,680
$462,760
$0
$8,780,000

units, 114 sources with 151 CRU units, and 105 sources with 253 SRU units.

very 5 years, unless the “NSPS J” compliance option is used (i.e., the fixed 20 percent opacity operating limit compli

eneration by August 1, 2017, or within 150 days of startup of a new unit. Therefore, it is assumed that this activity ap

ance alternative), and the PM emissions rate during the most recent test is greater than 0.8 g PM/kg coke burn-off, in wh
plies only to new units. We assume it costs $10,000 per unit to conduct a EPA Method 320 performance test.

ich case the testing frequency will be annually. It was assumed that approximately 10% of sources will require annual tes

sting. In the upcoming 3-year ICR period, we assume that a total of 50.3 units per year will need to have a PM performan

ıce test (116 units/3 years + 116 × 0.1 = 50.3). We assume it costs $9,200 per unit to conduct a EPA Method 5 performan

ıce test.

Total Annual Responses				
(A) Information Collection Activity	(B) Number of Respondents	(C) Number of Responses	(D) Number of Existing Respondents That Keep Records But Do Not Submit Reports	(E) Total Annual Responses E=(BxC)+D
Notification of particulate matter performance test	50.3[a]	1.15[c]	0	57.845
Notification of HCN performance test	0[b]	1.15[c]	0	0
Operation, maintenance, and monitoring plan	0[d]	1	0	0
Particulate matter performance test reports	50.3[a]	1.15[c]	0	57.845
HCN performance test reports	0[b]	1.15[c]	0	0
Engineering assessment for evaluation of catalytic reforming unit operational requirements	0[e]	1	0	0
Notification of performance test [f]	0	1	0	0
Semiannual compliance report	2	142	0	284
Relative accuracy test audits for units using CEMs	27	2.41 [g]	0	65.07
			Total	465