TECHNICAL ANALYSIS REPORT

FOR

MINOR PERMIT AQ0214MSS02

Issued to:

Nushagak Electric Cooperative, Inc.

for:

Dillingham Power Plant

Prepared by Scott Faber

Alaska Department of Environmental Conservation
Air Permits Program

Preliminary – November 30, 2020

1. INTRODUCTION

This Technical Analysis Report (TAR) provides the Alaska Department of Environmental Conservation's (Department's) basis for issuing Minor Permit AQ0214MSS02 to Nushagak Electric Cooperative, Inc. (Nushagak) for the Dillingham Power Plant. The minor permit incorporates changes requested by Nushagak and rescinds Minor Permit AQ0214MSS01, including any revisions.

2. STATIONARY SOURCE DESCRIPTION

The Dillingham Power Plant is an existing electric power generating station. Nushagak currently operates the stationary source under Operating Permit AQ0214TVP03.

3. APPLICATION DESCRIPTION

The Department received Nushagak's application for Minor Permit AQ0214MSS02 on June 16, 2017, and application addendums on September 25, 2017, March 28, 2018, and July 12, 2019. Nushagak submitted the application in order to renew the NOx, CO, PM-10, and SO_2 plantwide applicability limits (PALs) and establish a PM-2.5 PAL. The proposed revisions to the CO and PM-10 PALs are as follows:

3.1 Reduce the CO PAL from 160.8 tons per year (tpy) to the current PTE value of 135.5 tpy; and

3.2 Reduce the PM-10 PAL from 20.4 tpy to the current PTE value of 15.1 tpy.

Nushagak also proposes to revise the methods for monitoring actual emissions for determining compliance with the PALs. They propose establishing emission factors for specific ranges of engine load and for two separate operating modes ((Fuel Efficiency or Low-NOx Mode). They also propose to required source testing at three different engine loads rather than four and no longer required testing at 25 percent of engine load.

4. CLASSIFICATION FINDINGS

The Department finds that the application for Minor Permit AQ0214MSS02 is classified under

4.1 18 AAC 50.508(6) because Nushagak requests revisions to the CO and PM-10 PALs, revisions to conditions of Minor Permit AQ0214MSS01 due to renewal of the PALs, and changes to the PAL monitoring methods.

4.2 18 AAC 50.508(3) because Nushagak requests to establish a PAL for PM-2.5.

5. APPLICATION REVIEW FINDINGS

Based on review of the minor permit application, the Department makes the following findings:

5.1 Nushagak submitted the application to renew the PALs in Minor Permit AQ0214MSS01 and revise the CO and PM-10 PALs. There are no new emissions units being installed under the application and no modifications to the stationary source under the application.

5.2 As stated under 18 AAC 50.040(h)(20), the Department adopted the provisions of 40 CFR 52.21(aa) for PALs. Since Nushagak is establishing a PAL, renewing PALs, and revising certain PALs, the requirements of 40 CFR 52.21(aa) are applicable.

5.3 For renewing PALs, the application contains the information listed in 40 CFR 52.21(aa)(3) as required by 18 AAC 50.540(h).

5.4 The application to renew the PALs was timely and complete in accordance with 40 CFR 52.21(aa)(10)(ii) and (iii).

5.5 For establishing the PM-2.5 PAL, the application contains the information listed in 40 CFR 52.21(aa)(3) as required by 18 AAC 50.540(h).

5.6 18 AAC 50.540(h) states the Department may require the application to include a demonstration that emissions under the PAL will not cause or contribute to a violation of ambient air quality standards, if the Department considers it necessary. Nushagak provided an ambient demonstration with the application for Minor Permit AQ0214MSS01, and the proposed PALs for Minor Permit AQ0214MSS02 are set at the same levels or lower. Therefore, a new ambient demonstration is not required.

For establishing the PM-2.5 PAL, Table E below shows PM-2.5 potential to emit (PTE) is significantly reduced from the issuance of Minor Permit AQ0214MSS01. Therefore, an ambient demonstration for PM-2.5 is not required.

5.7 40 CFR 52.21(aa)(10)(i) states the Department shall provide both the proposed PAL level and a written rationale for the proposed PAL level to the public for review and comment. The proposed PAL levels are in Table E below and the rationale for each proposed PAL level follows.

5.7.1 **NOx:** The baseline actual NOx emissions plus the PSD significance level of 40 tpy is 295.1 tpy which is greater than 80 percent of the previous PAL (290.9 tpy). Therefore, in accordance with 40 CFR 52.21(aa)(10)(iv)(a), the Department proposes to set the NOx PAL at the same level as the previous PAL.

5.7.2 **CO:** The baseline actual CO emissions plus the PSD significance level of 100 tpy is 131.2 tpy which is greater than 80 percent of the previous PAL (128.6 tpy). Therefore, in accordance with 40 CFR 52.21(aa)(10)(iv)(a), the Department proposes to set the CO PAL at the same level as the previous PAL.

5.7.3 **PM-10:** The baseline actual PM-10 emissions plus the PSD significance level of 15 tpy is 17.3 tpy which is greater than 80 percent of the previous PAL (16.3 tpy). Therefore, in accordance with 40 CFR 52.21(aa)(10)(iv)(a), the PM-10 PAL may be set at the same level as the previous PAL. However, PM-10 PTE is less than the previous PAL level, so the Department proposes to reduce the PAL to the PTE value of 12.8 tpy in accordance with 40 CFR 52.21(aa)(10)(iv)(c)(1).

5.7.4 **SO_2:** The baseline actual SO_2 emissions plus the PSD significance level of 40 tpy is 82.1 tpy which is greater than 80 percent of the previous PAL (54.2 tpy). Therefore, in accordance with 40 CFR 52.21(aa)(10)(iv)(a), the Department proposes to set the SO_2 PAL at the same level as the previous PAL.

5.8 Previously under Minor Permit AQ0214MSS01, Nushagak calculated actual emissions to determine compliance with the PALs by using the worst case lb/kilowatt-hour emission factor from source testing. To more accurately determine actual emissions, Nushagak will now calculate, under Minor Permit AQ0214MSS02, actual emissions using load-specific emission factors.

5.9 For engines that may be operated in more than one mode (EU IDs 11 through 13 are only allowed to operate in low-NOx mode due to BACT requirements), Nushagak will develop operating mode-specific emission factors through source testing.

5.10 In the minor permit application, Nushagak shows the engines operate at less than 50 percent of full load only two percent of the time. Therefore, average monthly load is expected to remain greater than 50 percent of full load and source testing for PAL pollutants is now required at 50, 75, and 100 percent of full load.

6. EMISSIONS SUMMARY

Table E shows the emissions summary, along with assessable emissions for the stationary source. Emission factors and detailed calculations are provided in Appendix A.

Table E – Emissions Summary, tons per year (tpy)

Parameter	NOx	CO	VOC	PM-10	PM-2.5	SO_2
Previous PTE	363.6	160.8	17.1	20.4	20.4	67.8
AQ0214MSS01 PALs	363.6	160.8	-	20.4	-	67.8
Baseline Actual Emissions	255.1	31.2	-	2.3	2.3	42.1
PSD Significance Level for PAL	40	100	-	15	10	40
Baseline Actual Emissions + PSD Significance Level	295.1	131.2	-	17.3	12.3	82.1
80% of AQ0214MSS01 PAL	290.9	128.6	-	16.3	-	54.2
PTE for PAL Calculations	736.6	162.5	-	12.8	-	146.5
Proposed PAL	363.6	160.8	-	12.8	12.3	67.8
New PTE	363.6	160.8	45.2	12.8	12.3	67.8
Assessable Emissions [a]	364	161	45	13	0	68
Total Assessable	651					

Table Notes:

[a] – Assessable emissions include any pollutant with PTE greater than or equal to 10 tpy. PM-2.5 emissions are included in PM-10 emissions, and PM-10 emissions are assumed to be equal to PM emissions for fuel burning equipment.

7. REVISIONS TO PERMIT CONDITIONS

Table F below lists the conditions of Minor Permit AQ0214MSS01 revised by the Department.

Table F – Comparison of Minor Permit AQ0214MSS01 to Minor Permit AQ0214MSS02 Conditions [1]

AQ0214MSS01 Condition No.	Description of Requirement	AQ0214MSS02 Condition No.	How Condition was Revised
Table 1	Emission unit inventory	Table A	Removed EU IDs 3, 5, and 6 since those emission units have been removed from the stationary source. Added EU IDs 16, 17, and 18 since those units have been installed.
3.1	Initial monitoring for visible emission standard	None	Removed because the Permittee complied with the one-time requirement.
3.2 & 3.3	Monitoring, recordkeeping, and reporting (MR&R) requirements for the state visible emissions standard	None	MR&R is addressed in the Title V permit.

AQ0214MSS01 Condition No.	Description of Requirement	AQ0214MSS02 Condition No.	How Condition was Revised
4.1 & 4.2	MR&R requirements for the state particulate matter emissions standard	None	MR&R is addressed in the Title V permit.
5.1 & 5.2	MR&R requirements for the state sulfur compound emissions standard	None	MR&R is addressed in the Title V permit.
6	Ambient air quality protection	5	Added language to clarify that the requirement applies to EU IDs 10 through 15.
8	NOx PAL	7	Removed "rolling average" and more accurately references a rolling total.
10	Initial emission factor validation requirement for NOx PAL	None	Removed because the Permittee complied with the one-time requirement.
11.1.a	Source test requirement for EU ID 13 for NOx PAL	None	Removed because the Permittee complied with the one-time requirement.
11.1.b	Emissions unit groups for NOx PAL source testing	9.1.a	Now references all emissions unit groups.
11.2	PAL source test requirements	9.2	Clarification for testing at specific engine loads.
12.1	Emissions unit groups for NOx PAL source testing	10.1	Removed the reference to the condition for the initial test, since that condition has been removed.
None	Engine load calculations	13	Added language to specify engine load calculation methods.
Equations 1 through 3	Emission calculations	Equation 1 Equation 2 Equation 3	Added the requirement for the Permittee to use maximum rated capacity for any period of operating time that there is no monitoring data, in accordance with 40 CFR 52.21(aa)(12)(vii).
16.1	Emissions calculations for the first 12 months of the initial PAL	None	No need to re-start the 12-month rolling period at PAL renewal.
17	Emission factors for NOx PAL	16	Removed the reference to the condition for the initial test, since that condition has been removed.
18	Emission factors for NOx PAL	None	Removed because the Permittee complied with the one-time requirement.

AQ0214MSS01 Condition No.	Description of Requirement	AQ0214MSS02 Condition No.	How Condition was Revised
19	Test reports for PAL emission factors	17	Added clarification that emission factors are load-specific rather than worst case. Added a requirement to submit updated tables for all emission factors whenever any emission factor is revised.
Table 2	Approved NOx emission factors for determining PAL compliance	Table B	Removed EU IDs 3, 5, and 6. Added EU IDs 16, 17, and 18 and emission factors. Revised emission factors for other emission units to show most recently approved emission factors. Revised table to address load and operating mode-specific emission factors.
21.2	Source test requirements for new and replaced units	19.2	Clarified that testing is required at three engine loads.
23	PAL monitoring requirements	21	Added language to address engine operating modes.
24	PAL monitoring requirements	None	This requirement is addressed in the recordkeeping section.
25	PAL recordkeeping requirements	22	Removed the footnote for maintaining records in electronic format because that is addressed in the general recordkeeping section for PALs. Added language to address operating modes.
28.1	PAL reporting requirements	25.1	Added language to address engine operating modes.
28.3	Source test reports	None	Removed source test report requirements because they are already contained in the section for general source test requirements.
30	CO PAL	27	Removed “rolling average” and more accurately references a rolling total.
32	Initial emission factor validation requirement for CO PAL	None	Removed because the Permittee complied with the one-time requirement
33.1.a	Source test requirement for EU ID 13 for CO PAL	None	Removed because the Permittee complied with the one-time requirement.
33.1.b	Emissions unit groups for CO PAL source testing	29.1.a	Now references all emissions unit groups.
33.2	PAL source test requirements	29.2	Clarification for testing at specific engine loads.

AQ0214MSS01 Condition No.	Description of Requirement	AQ0214MSS02 Condition No.	How Condition was Revised
34.1	Emissions unit groups for CO PAL source testing	30.1	Removed the reference to the condition for the initial test, since that condition has been removed.
None	Engine load calculations	33	Added language to specify engine load calculation methods.
38.1	Emissions calculations for the first 12 months of the initial PAL	None	No need to re-start the 12-month rolling period at PAL renewal.
39	Emission factors for CO PAL	36	Removed the reference to the condition for the initial test, since that condition has been removed.
40	Emission factors for CO PAL	None	Removed because the Permittee complied with the one-time requirement.
41	Test reports for PAL emission factors	37	Added clarification that emission factors are load-specific rather than worst case. Added a requirement to submit updated tables for all emission factors whenever any emission factor is revised.
Table 3	Approved CO emission factors for determining PAL compliance	Table C	Removed EU IDs 3, 5, and 6. Added EU IDs 16, 17, and 18 and emission factors. Revised emission factors for other emission units to show most recently approved emission factors. Revised table to address load and operating mode-specific emission factors.
43.2	Source test requirements for new and replaced units	39.2	Clarified that testing is required at three engine loads.
45	PAL monitoring requirements	41	Added language to address engine operating modes.
46	PAL monitoring requirements	None	This requirement is addressed in the recordkeeping section.
47	PAL recordkeeping requirements	42	Removed the footnote for maintaining records in electronic format because that is addressed in the general recordkeeping section for PALs. Added language to address operating modes.
50.1	PAL reporting requirements	45.1	Added language to address engine operating modes.

AQ0214MSS01 Condition No.	Description of Requirement	AQ0214MSS02 Condition No.	How Condition was Revised
50.3	Source test reports	None	Removed source test report requirements because they are already contained in the section for general source test requirements.
52	PM-10 PAL	47	Reduced the PM-10 PAL to 12.8 tpy. Removed "rolling average" and more accurately references a rolling total.
54	Initial emission factor validation requirement for PM-10 PAL	None	Removed because the Permittee complied with the one-time requirement
55.1.a	Source test requirement for EU ID 13 for PM-10 PAL	None	Removed because the Permittee complied with the one-time requirement.
55.1.b	Emissions unit groups for PM-10 PAL source testing	49.1.a	Now references all emissions unit groups.
55.2	PAL source test requirements	49.2	Clarification for testing at specific engine loads.
56.1	Emissions unit groups for PM-10 PAL source testing	50.1	Removed the reference to the condition for the initial test, since that condition has been removed.
None	Engine load calculations	53	Added language to specify engine load calculation methods.
60.1	Emissions calculations for the first 12 months of the initial PAL	None	No need to re-start the 12-month rolling period at PAL renewal.
61	Emission factors for PM-10 PAL	56	Removed the reference to the condition for the initial test, since that condition has been removed.
62	Emission factors for PM-10 PAL	None	Removed because the Permittee complied with the one-time requirement.
63	Test reports for PAL emission factors	57	Added clarification that emission factors are load-specific rather than worst case. Added a requirement to submit updated tables for all emission factors whenever any emission factor is revised.
Table 4	Approved PM-10 emission factors for determining PAL compliance	Table D	Removed EU IDs 3, 5, and 6. Added EU IDs 16, 17, and 18 and emission factors. Revised emission factors for other emission units to show most recently approved emission factors. Revised table to address load and operating mode-specific emission factors.

AQ0214MSS01 Condition No.	Description of Requirement	AQ0214MSS02 Condition No.	How Condition was Revised
65.2	Source test requirements for new and replaced units	59.2	Clarified that testing is required at three engine loads.
67	PAL monitoring requirements	61	Added language to address engine operating modes.
68	PAL monitoring requirements	None	This requirement is addressed in the recordkeeping section.
69	PAL recordkeeping requirements	62	Removed the footnote for maintaining records in electronic format because that is addressed in the general recordkeeping section for PALs. Added language to address operating modes.
72.1	PAL reporting requirements	65.1	Added language to address engine operating modes.
72.3	Source test reports	None	Removed source test report requirements because they are already contained in the section for general source test requirements.
74	SO_2 PAL	67	Removed "rolling average" and more accurately references a rolling total.
77.1	Emissions calculations for the first 12 months of the initial PAL	None	No need to re-start the 12-month rolling period at PAL renewal.
80	Fuel oil sampling within 30 days of the effective date of the initial PAL	None	Ongoing fuel sampling requirements remain in place, so there is no need for sampling within 30 days of PAL renewal.
81.1	PAL monitoring requirements	74.1	Removed "or an alternative method approved by the Department." since it would allow bypassing the public process for changing monitoring requirements through off-record requests to change monitoring methods.
85	PAL monitoring requirements	77	Removed "or an alternative method approved by the Department." since it would allow bypassing the public process for changing monitoring requirements through off-record requests to change monitoring methods.
86	PAL recordkeeping requirements	78	Removed the footnote for maintaining records in electronic format because that is addressed in the general recordkeeping section for PALs.

AQ0214MSS01 Condition No.	Description of Requirement	AQ0214MSS02 Condition No.	How Condition was Revised
None	PM-2.5 PAL requirements	81 through 100	Conditions are added to establish the PAL for PM-2.5
None	PAL general recordkeeping requirements	101	Records required by 40 CFR 52.21(aa)(13)(ii).
None	Requirement to keep records on site.	102	Required by 40 CFR 52.21(aa)(7)(viii).
None	PAL general reporting requirements	104.3	Added the requirement to report emissions resulting from deviations or exceedances as required by 40 CFR 52.21(aa)(14)(ii)(c).
90.3	Report certification	None	Requirement is already addressed in another general permit condition.
None	Engine operating modes	105 through 108	Conditions are added to address changing engine operating mode.
91.1 through 91.4	PAL renewal requirements	109.1 through 109.4	Revised the dates required for submitting PAL renewal application.
94.1	Assessable emissions	112.1	Revised the assessable emissions to reflect current PTE.
111.3	Required test methods for PM-10 emissions	129.3	Alternate test method allowed in accordance with Operating Permit AQ0214TVP03 statement of basis.

Table Notes:

[1] This table only includes revised conditions.

8. PERMIT CONDITIONS

The bases for the conditions imposed in Minor Permit AQ0214MSS02 are described below.

Cover Page

18 AAC 50.544(a)(1) requires the Department to identify the stationary source, Permittee, and contact information.

Section 1: Emissions Unit Inventory

Emissions units with requirements in Minor Permit AQ0214MSS02 are listed in Table A of the minor permit. The Permittee must comply with AS 46.14 and 18 AAC 50 when installing replacement emissions units.

Section 2: State Emission Standards

Condition 2, Visible Emissions

The diesel engines are fuel-burning equipment and are subject to 18 AAC 50.055(a)(1) for visible emissions. Monitoring, recordkeeping, and reporting requirements are in the operating permit for the stationary source.

Condition 3, Particulate Matter (PM) Emissions

The diesel engines are fuel-burning equipment and are subject to 18 AAC 50.055(b) for PM emissions. Monitoring, recordkeeping, and reporting requirements are in the operating permit for the stationary source.

Condition 4, Sulfur Compound Emissions

The diesel engines are fuel-burning equipment and are subject to 18 AAC 50.055(c) for SO_2 emissions. Monitoring, recordkeeping, and reporting requirements are in the operating permit for the stationary source.

Section 3: Ambient Air Quality Protection Requirements

Condition 5

Permittee remains subject to the previously established ambient air quality protection requirements in Minor Permit AQ0214MSS01.

Section 4: BACT Requirements

Condition 6

Permittee remains subject to the BACT requirements previously established in Construction Permit 0025-AC003 for EU IDs 11, 12, and 13.

Section 5 through Section 10: PAL Requirements

Conditions 7 through 80

These conditions contain the NOx, CO, PM-10, and SO_2 PAL renewal requirements. Any revisions are as noted in Table F above and any further explanation for why these conditions were originally established may be found in the TAR for Minor Permit AQ0214MSS01.

Conditions 81 through 100

These conditions establish the PAL for PM-2.5 and specify the associated monitoring, recordkeeping, and reporting requirements.

Conditions 101 through 111

These conditions contain general PAL requirements. Conditions 101, 102, and 105 through 108 are added as described in Table F above. The other conditions are carried forward from Minor Permit AQ0214MSS01.

Section 11: Fee Requirements

Conditions 112 and 113

18 AAC 50.544(a)(2) requires the Department to include a requirement to pay fees in accordance with 18 AAC 50.400 through 18 AAC 50.499 in each minor permit issued under 18 AAC 50.542. The Department used Standard Permit Condition I.

Section 12: General Recordkeeping, Reporting, and Certification Requirements

Condition 114, Certification

18 AAC 50.205 requires the Permittee to certify any permit application, report, affirmation, or compliance certification submitted to the Department. This requirement is reiterated as a standard permit condition in 18 AAC 50.345(j). Minor Permit AQ0214MSS02 uses the standard condition language, but also expands it by allowing the Permittee to provide electronic signatures.

Condition 115 Submittals

The condition clarifies where the Permittee should send their reports, certifications, and other submittals required by the permit. The Department included this condition from a practical perspective rather than a regulatory obligation.

Condition 116, Information Requests

AS 46.14.020(b) allows the Department to obtain a wide variety of emissions, design and operational information from the owner and operator of a stationary source. This statutory provision is reiterated as a standard permit condition in 18 AAC 50.345(i), and the Department used this standard language in Minor Permit AQ0214MSS02.

Condition 117, Recordkeeping Requirements

The condition restates the regulatory requirements for recordkeeping, and supplements the recordkeeping defined for specific conditions in the permit.

Condition 118, Excess Emission and Permit Deviation Reports

This condition reiterates the notification requirements in 18 AAC 50.235(a)(2) and 18 AAC 50.240 regarding unavoidable emergencies, malfunctions, and excess emissions. Also, the Permittee is required to notify the Department when emissions or operations deviate from the requirements of the permit. The Department used Standard Condition III, adopted under 18 AAC 50.346(b)(2), but with updated web-links.

Condition 119, Operating Reports

The Department mostly used the Standard Operating Permit Condition VII language adopted under 18 AAC 50.346(b)(6) for the permit condition. However, the Department modified or eliminated the Title V-only aspects in order to make the language applicable for a minor permit.

Condition 120, Air Pollution Prohibited

18 AAC 50.110 prohibits any emission which is injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life or property. The Department used Standard Permit Condition II, adopted under 18 AAC 50.346(a), for Minor Permit AQ0214MSS02.

Section 13: Standard Permit Conditions

Conditions 121 through 126, Standard Permit Conditions

18 AAC 50.544(a)(5) requires each minor permit issued under 18 AAC 50.542 to contain the standard permit conditions in 18 AAC 50.345, as applicable. 18 AAC 50.345(a) clarifies that subsections (c)(1) and (2), and (d) through (o), may be applicable for a minor permit.

The Department included all of the minor permit-related standard conditions of 18 AAC 50.345 in Minor Permit AQ0214MSS02. The Department incorporated these standard conditions as follows:

- 18 AAC 50.345(c)(1) and (2) are incorporated as Condition 121;
- 18 AAC 50.345(d) through (h) are incorporated as Conditions 122 through 126, respectively;
- As previously discussed, 18 AAC 50.345(i) is incorporated as Condition 116 and 18 AAC 50.345(j) is incorporated as Condition 114 of Section 12 of the minor permit; and
- 18 AAC 50.345(k) is incorporated as Condition 127, and 18 AAC 50.345(l) through (o) are incorporated as Conditions 130 through 133, respectively, of Section 14 of the minor permit.

Section 14: General Source Test Requirements

Condition 128, Operating Conditions

This condition reiterates the requirements in 18 AAC 50.220(b) regarding the location and operating conditions for source testing.

Condition 129, Reference Test Methods

This condition reiterates the requirements in 18 AAC 50.220(c) regarding the methods for source testing. Section 14 also includes the previously discussed standard conditions for source testing.

APPENDIX A: EMISSIONS CALCULATIONS

Table A1 presents emission factors, Table A2 presents PTE, and Table A3 presents baseline actual emissions.

Table A1 – PTE Emission Factors (lb/hr)

EU ID	Description	Maximum Rating	NOx		CO		VOC		PM-10/ PM-2.5	
10	Caterpillar - 3516DI	1,135 kW-e	45.60	2013 Source Test	5.50	Vendor Data	1.10	Vendor Data	0.60	Vendor Data
11	Caterpillar - 3512B	1,050 kW-e	24.90	BACT	8.63	Vendor Data	0.74	Vendor Data	0.52	Vendor Data
12	Caterpillar - 3512B	1,050 kW-e	24.90		8.63		0.74		0.52	
13	Caterpillar - 3512B	1,050 kW-e	24.90		8.63		0.74		0.52	
14	Caterpillar - 3512C	1,050 kW-e	18.48	NSPS NTE Limit	2.58	Vendor Data	0.43	Vendor Data	0.294	2013 Source Test
15	Caterpillar - 3512C	1,050 kW-e	18.48		2.58		0.43		0.294	
16	Caterpillar - 3456	455 kW-e	10.92	2010 Source Test	0.55	Vendor Data	0.11	Vendor Data	0.182	2015 Source Test
17	Caterpillar - 3608	2,420 kW-e	-	-	-	-	3.01	Vendor Data	-	-
18	Caterpillar - 3608	2,420 kW-e	-	-	-	-	3.01	Vendor Data	-	-

Table Notes:

1. SO_2 PTE is based on mass balance and a sulfur content of 0.5 percent by weight.
2. Vendor data is used when source test results are less than vendor values due to the large variability in source test results. VOC and PM vendor values for EU IDs 11 through 13 are multiplied by two due to the aftercooler in accordance with explanation provided in the vendor data.
3. Source test results are used when greater than vendor data. For source test emission factors, the lb/kW-hr test results are multiplied by the associated kW values to obtain the greatest lb/hr value.
4. NSPS limits are the not-to-exceed values specified for determining compliance when source testing.
5. Nushagak added EU IDs 17 and 18 to the Dillingham Power Plant via an off-permit change notice submitted to the Department on January 25, 2019. These units were not installed at the time the complete PAL renewal application was submitted on June 15, 2017. Therefore, these units were not part of the facility during 10-year window from which 24-month baseline periods were selected and emissions from these units were not considered when calculating baseline actual emissions and the renewal PALs. VOC PTE for EU IDs 17 and 18 is calculated to accurately determine the facility's assessable emissions.

Table A2 – PTE Summary (tpy)

EU ID	Description	Maximum Rating	NOx	CO	VOC	PM-10/ PM-2.5	SO_2
10	Caterpillar - 3516DI	1,135 kW-e	199.73	24.09	4.82	2.63	24.66
11	Caterpillar - 3512B	1,050 kW-e	109.06	37.80	3.24	2.28	22.30
12	Caterpillar - 3512B	1,050 kW-e	109.06	37.80	3.24	2.28	22.30
13	Caterpillar - 3512B	1,050 kW-e	109.06	37.80	3.24	2.28	22.30
14	Caterpillar - 3512C	1,050 kW-e	80.94	11.30	1.88	1.29	22.42
15	Caterpillar - 3512C	1,050 kW-e	80.94	11.30	1.88	1.29	22.42
16	Caterpillar - 3456	455 kW-e	47.83	2.41	0.48	0.80	10.11
17	Caterpillar - 3608	2,420 kW-e	-	--	13.18	-	-
18	Caterpillar - 3608	2,420 kW-e	-	-	13.18	-	-
Total PAL PTE			**736.62**	**162.50**	**18.79**	**12.83**	**146.50**
Total Assessable PTE			**363.6**	**160.8**	**45.16**	**12.8**	**67.8**

Table Notes:

1. PTE is based on continuous operation (8,760 hours/year).
2. For PAL pollutants, assessable PTE is based on the PALs.

Table A3 – Baseline Actual Emissions Summary (tpy)

EU ID	Description	Maximum Rating	NOx	CO	PM-10	PM-2.5	SO_2
10	Caterpillar - 3516DI	1,135 kW-e	207.25	28.76	1.52	1.52	31.99
11	Caterpillar - 3512B	1,050 kW-e					
12	Caterpillar - 3512B	1,050 kW-e					
13	Caterpillar - 3512B	1,050 kW-e					
14	Caterpillar - 3512C	1,050 kW-e					
15	Caterpillar - 3512C	1,050 kW-e					
16	Caterpillar - 3456	455 kW-e	47.83	2.41	0.80	0.80	10.11
Total			**255.08**	**31.17**	**2.32**	**2.32**	**42.1**

Table Notes:

1. Nushagak calculated baseline actual emissions using the following consecutive 24-month periods:
   NOx: Aug 2007 - July 2009
   CO: June 2007 - May 2009
   PM-10: June 2007 - May 2009
   PM-2.5: June 2007 - May 2009
   SO_2: Nov 2007 - Oct 2009
2. EU ID 16 was installed at the Dillingham Power Plant in November 2009, which is after the selected baseline periods. Therefore, the PTE for EU ID 16 was used to calculate baseline actual emissions in accordance with 40 CFR 52.21(aa)(6)(ii).