

Grays Harbor Energy Center Fact Sheet

Grays Harbor Energy, LLC

No. EFSEC/2001-01, Amendment 4

RECEIVED

JUN 28 2018

ENERGY FACILITY SITE
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Background

EFSEC has the authority to issue both PSD and minor air permits. During development of the Air Operating Permit for this facility, EFSEC's contractor, the Olympic Region Clean Air Agency (ORCAA), identified a number of inconsistencies and questions on implementation of various terms of the PSD permit, Amendment 3 for the Grays Harbor Energy Center (GHE). These were communicated to EFSEC in October 2008 and subsequently shared with Grays Harbor Energy.

On August 7, 2009, GHE submitted a request to modify various provisions of the PSD approval. These permit modifications included modification of numerical emission limits on the combustion turbines during start-up and shutdown periods based on the requirements of PSD regulations. Along with their proposed revisions to Amendment 3, Grays Harbor Energy provided explanations for their requests. EFSEC reviewed their requests and carried forward the majority in Amendment 4 to the PSD approval (Amendment 4).

Additionally, ORCAA identified additional editorial and clarifying changes to the PSD approval that were not included in the request from GHE. These changes have been incorporated into Amendment 4 and include the following:

1. Correcting misalignments and errors in required testing and monitoring methods.
2. Clarifying which methods from 40 CFR Part 75, Appendix D apply for SO₂ and H₂SO₄ compliance determinations and monitoring.
3. Aligning testing schedules to be uniform throughout the permit.
4. Removing cumulative annual emissions limits for emergency and fire pump engines.
5. Clarifying start-up and shutdown operations.
6. Correctly incorporating federal standards for engines from 40 CFR 63 Subpart ZZZZ.

For the fourth amendment, EFSEC concludes that:

- a. The request was deemed administratively complete on April 1, 2010.
 - i. No requested change would result in an increase in an allowable emission rate. Therefore, the Best Available Control Technology (BACT) review was not modified.
 - ii. The sulfur monitoring has been adjusted to match actual operating conditions and availability of fuel supplier information. The ability to determine compliance is not affected by these changes.
 - iii. The allowable time for combustion turbine cold start-up has been lengthened from four hours per turbine to 300 minutes per turbine in response to actual meteorological conditions at the Grays Harbor Energy Center site compared to the design meteorological conditions used by the prior owner/permittee, and in response to a review of the start-up procedures provided by the turbine manufacturer in its operation and maintenance manual. The climate for the site is colder than anticipated

by the design conditions, so the turbines require more time to start up the gas and steam turbines compared to the design temperature. Both the actual start-up conditions and actual site design characteristics that affect start-up were unavailable during initial permitting.

- iv. A carbon monoxide (CO) BACT limit of 3.0 ppmdv @ 15 percent O₂, on a 1-hour average was established in the original PSD permit based on the application of good combustion practice. The CO limit applicable to the combined cycle gas turbines (CGTs) was revised to 2.0 ppmdv @ 15 percent O₂, on a 1-hour average to comply with EPA Region 10 Administrative Order on Consent, No. CAA-10-2001-0097, dated March 2001. This has resulted in a permitted reduction in site wide CO emissions from 477 tpy to 146 tpy or a reduction of more than 300 tpy of CO.
- v. EFSEC and GHE agreed that the CGTs are subject to emission limitation, monitoring, and reporting requirements in 40 CFR 60 Subpart GG.
- vi. The requirement to comply with normal operation emissions limits during start-up and shutdown for nitrogen oxides (NO_x), CO, and volatile organic compounds (VOCs) has been replaced with added start-up and shutdown emissions limits. Cold, warm, and hot start-ups and shutdown have been defined.
- vii. The applicant has requested that: once per year, each CGT may need to be tested to confirm that the over-speed protection is functioning properly (less than 90 minutes). The permit will have this test account for one start-up/shutdown.

These changes have been explained in detail below.

Ecology, on behalf of EFSEC, drafted a response to the Grays Harbor request. This response was issued the end of September 2009 and included a draft revision to the permit and additional questions related to the request. Grays Harbor's consultant provided additional information on December 28, 2009. The company supplied additional information on March 25, 2010 (in a letter dated March 10, 2010). Based on these additional submittals, the request to revise the permit was determined to be administratively complete on April 1, 2010. At that time, EFSEC worked on the proposed permit amendment, and then, EPA region X took the lead as a coauthor. EPA Region X modified the proposed permit based on multiple reviews of federal requirements from EPA headquarters. EFSEC then finalized the proposed amendment with input from Ecology, EPA, ORCAA, and the applicant regarding start-up/shutdown requirements.

Most recently, the company provided their BACT analysis and underlying data of the start-up and shutdown periods associated with the combustion turbines on September 23, 2014.

Additional meetings were held on June 28, July 19, and October 5, 2017, with EFSEC, ORCAA, the applicant, and Ecology to clarify various issues.

What changes to the permit conditions were requested?

Grays Harbor Energy requested a number of minor editorial and clarifying changes be made to a number of approval conditions. ORCAA identified many of the same changes plus a number of additional clarifying changes. Many changes are simple deletions of any unnecessary words,

addition of an averaging period, or clarification of a reference to a federal requirement. As such, these are considered by EFSEC to be administrative changes to the PSD approval.

Other changes requested are not considered administrative and are discussed in more detail below. However, none of the changes incorporated into Amendment 4 could lead to an increase in emissions or reduction in the ability of GHE or EFSEC to determine compliance with any emission limitation, or reduce the stringency of those limitations. Each non-administrative change is discussed below along with the rationale for EFSEC to include or deny the request in the amended approval.

1. Overall Units of Measurement

Current air regulatory orders contain only English units and the metric units have been dropped from this order.

2. Conditions 3 & 4 – Fuel Sulfur Content

A numerical limit (500 ppm sulfur) was established in the permit based on regulation at the time the GHE application was considered complete in April 2010. After 2015, the law limited the sulfur content of diesel oil available in Washington to 15 ppm sulfur. Therefore, although the 500 ppm limit remains in the permit, actual sulfur emissions will be lower. Because so little diesel oil is used at the plant, the change in the sulfur content of diesel oil will result in less than 1.0 tpy reduction in SO₂ emissions from diesel oil combustion at the plant.

3. Condition 5 – Added Exemption for Start-up and Shutdown

In the past, emissions occurring during start-up and shutdown were excluded from penalties per WAC 173-400-107. The current permit adds enforceable emission limits that must be met during start-up and shutdown (Condition 11). The permit also clarifies that the emission limits in Condition 5 apply, “except during start-up and shutdown as provided in Condition 11.” The emissions limits added to Condition 11 are discussed below.

4. Condition 5 – Stack Testing Schedules Aligned

Stack testing schedules for all the limits in Condition 5 were aligned to a 5-year schedule for consistency and to harmonize with the 5-year permit renewal schedule required under Title V.

To achieve a uniform 5-year mandatory testing schedule, the requirement that testing revert to annual when any test indicates noncompliance, was deleted from all conditions containing it. EFSEC and its contractors felt the ratcheting schedule was overly prescriptive, and complicated because it was not applied uniformly to all required testing. Additionally, EFSEC has the authority to require testing at any time. Therefore, more frequent testing is not precluded by simplifying and aligning the testing schedules to once every five years.

5. Condition 5 – Ongoing Compliance with Hourly Emission Limits

The requirements of Approval Condition 18.6 were added to the Section 5 language regarding ongoing compliance with the hourly emissions limit when pollutant concentration is determined continuously (NO_x, CO, and NH₃). Those requirements state how the exhaust rate is to be calculated based on EPA method 19.

6. Condition 5.1.1 – NO_x Mass Rate Limit Applies to Each CGT

Changes were made to consistently refer to each GE 7FA combustion turbine and its associated duct burner and HRSG as a Combined Cycle Gas Turbine (CGT). Also, the phrase, “For CGTs 1 and 2, emissions from each exhaust stack,” was added to the beginning of Condition 5. These changes help clarify that the emissions limits in Condition 5 apply to all emissions from each CGT regardless of operating scenario, except for start-up and shutdown as explained above. Therefore, the limits apply to duct firing, combustion turbine firing alone, or operating the CGTs in a combined cycle mode. The applicant indicated that the unit could not operate during duct firing alone.

The phrase “when duct firing” was eliminated from Condition 5.1.1. The phrase, “when duct firing” in Condition 5.1.1 restricted the hourly NO_x rate limit to only operating scenarios when the duct burners were firing, resulting in a void or no NO_x limit when just the combustion turbine was operating. The phrase “when duct firing” in Condition 5.1.1 also resulted in a less stringent hourly NO_x rate limit, and a more complex compliance monitoring situation because different modes of operation needed to be distinguished.

Applying the Condition 5 limits to emissions in each CGT stack allows the phrase, “when duct firing” in Condition 5.1.1 to be deleted, resulting in more stringent application of the hourly NO_x rate limit and enabling more straightforward compliance monitoring because the limits apply regardless of the operating scenario, except start-up and shutdown as explained above.

7. Condition 5.1.5 – NO_x Emission Testing

This section was added to clarify how the initial compliance test was determined per 40 CFR Subpart GG and EPA Reference Method 20. EFSEC may choose to use this method in the future.

8. Conditions 5.3, 5.4 and 6.3¹ - Natural Gas Fuel Sulfur Determination

The company initially requested that the permit reference the natural gas sulfur monitoring methods in 40 CFR 60 Subpart GG generically rather than referencing specific paragraphs in the subpart. Upon further discussion and demonstration to the company of the measured concentrations of sulfur in the natural gas coming from Canada carried by the Northwest Pipeline, the company agreed to modify the request to ask that the permit reference the methods in 40 CFR Part 75 used for Acid Rain Program reporting.

The text has been changed to reference the Part 75 methods, or use of monthly grab samples analyzed by methods identified in Part 75, Appendix D. Condition 5.3 was also revised to require monthly sampling and analysis of the gas burned and mass balance calculations for determining ongoing compliance with both long- and short-term average SO₂ rate limits. In addition, the more specific sections from Appendix D to 40 CFR Part 75 are referenced to clarify what sampling and analysis methods should be used for ongoing compliance determination and monitoring.

¹ All references to permit approval conditions refer to their numbering in Amendment 3.

Changes were also made in Condition 5.3 to clarify that EPA Reference Method 8 stack testing is a compliance determination method that can be used only for the hourly average SO₂ rate limit, and not for both the short- and long-term SO₂ limits as worded in Amendment 3. These changes were made because stack test results alone cannot be used for determining compliance with long-term average limits.

To apply stack test results for determining compliance with a long-term average limit, the stack test results must either be assumed as constant over the averaging period, or must be converted to an emissions factor and then applied over the averaging period using fuel use data. Assuming the measured stack test rate of SO₂ is constant over the averaging period is erroneous because this assumption evaluates a long-term limit as if it were a short-term limit. Using the stack test to derive an emissions factor and then applying it to fuel use data to calculate a long-term average is possible, but not accurate considering the variability of sulfur in the gas delivered to GHE.

Conditions 5.4 and 6.3 were amended similarly to Condition 5.3.

9. Condition 5.5, 5.6, and 6 – Emission Testing (Pounds per Hour Limits)

Method 19 was added to the emissions testing to clarify how exhaust flow shall be determined during the emission test. This is consistent with the method used for the hourly emissions with the CEMS.

10. Condition 5.6 – Particulate Matter Daily Limit Changed to Hourly

A 24-hour mass rate PM limit in Condition 5.6.1 has no value because a particulate CEMS was not required and, therefore, the 24-hour PM rate cannot be monitored. Also, it is highly impractical to test for because testing would need to last a full 24 hours for a single run. Therefore, the 24-hour limit was converted to an equivalent hourly limit in this condition.

Also, Condition 5.6.6 was deleted because applying a source test derived emission factor to evaluate an hourly emissions rate limit would not result in any more insight beyond simply comparing the stack test results directly with the limit, provided the testing was conducted at or near the maximum heat rate. Condition 5.6.6 does not add any value to compliance assurance monitoring and was deleted.

11. Condition 6.2 – Delete Reference to 100 Percent Load

Reference to 100 percent load in Condition 6.2 was deleted because it has the unintended consequence of restricting the limit to just 100 percent load operating scenarios and because it is not needed. Also, worst-case emissions scenarios might not coincide with 100 percent load and it is implied that testing be conducted at worst-case scenarios.

12. Condition 6.6.1 – Opacity Determination

The language was clarified to “observations are to be performed daily for a month.” If readings are less than the standard for a month, then monitoring frequency is reduced to weekly. We do not expect this source to have visible emissions. Therefore, reduced monitoring is consistent with current approvals of boilers and heaters.

13. Conditions 7 & 8 – Limits Replaced with Reference to Federal Engine Requirements

The emissions limits in Conditions 7 and 8 were removed and replaced with a general reference to the requirements in 40 CFR 63 Subpart ZZZZ. For ongoing compliance, owners and operators are required to maintain engines per the manufacturer's recommended maintenance plans and to combust low-sulfur diesel. Emergency service engines are additionally required to limit engine testing hours to less than 50 hours per year. Emissions testing is required only if an engine is rebuilt. These engines were installed prior to the NSPS triggering date. (Fire water pump/engine 300 BHP – 2001, Emergency generator/engine 400 KW – 2002.)

14. Condition 9.1.3 and 9.1.4 – Cooling Tower PM/PM₁₀ Emissions

The company requested an increase in the allowable PM emissions to allow them to increase the total dissolved solids content of the tower and its blowdown to reduce the quantity of water discharged. Based on subsequent discussions with the company, they dropped this initial request. The company also expressed some concern over clarity of the compliance provisions.

Discussion and Response

The company withdrew its request to modify the allowable PM emissions from the cooling tower. Based on discussions with the company, EFSEC has clarified this condition and added the formula from the application and the Fact Sheet to the approval conditions. The formula is used to calculate the cooling tower emissions limitation.

15. Condition 10 – Annual Limits Diesel Emergency Generator Deleted

The annual emissions limits for the diesel emergency generator engine were removed from Condition 10. Annual emissions from the engine are limited by limiting the generator to operating only during power outages and limiting testing of the engine to less than 50 hours per year. These provide ample assurance that annual emissions from the engine will not cause or contribute to violations of any ambient standards.

16. Conditions 5 and 19 (Annual Tests and RATA Testing)

The company asked EFSEC to harmonize all combustion turbine testing frequency and CEM relative accuracy test audit (RATA) testing frequency with actual operating conditions of the facility. The company also wished to make the emission testing requirements consistent with the testing requirements in other combustion turbine projects permitted by EFSEC.

Discussion and Response

EFSEC discussed the requests with the facility officials, and through clarification of the references to federal criteria, agreed to establish RATA conditions that will avoid requiring the company starting the facility solely for the purposes of performing a RATA test.

A new Condition 19 is proposed to clarify the frequency of RATA testing. The referenced requirements in 40 CFR Part 75, Appendix B allow for a RATA test once every four operating

quarters with a frequency of no less often than once every eight calendar quarters. The term “operating quarter” is defined in 40 CFR 72.2 to be a quarter with at least 168 hours of operation.

17. Condition 11 Regarding Emission Limits During Turbine Start-up and Shutdown

The existing permit does not provide relief from short-term emission limits during turbine start-up and shutdown events, and does not clarify what “short-term” means. Grays Harbor requested clarification of what “short-term” emission limits refer to. Also, under the PSD program, BACT emission limits must be met on a continual basis at all levels of operation. Grays Harbor could not meet the normal operating BACT limits during start-up and shutdown periods. Therefore, the new permit establishes separate BACT limits for NO_x, CO, and VOC that apply during start up and shutdown.

Grays Harbor Energy also requested changes in the duration allowed for cold start-ups contained in Condition 11.5 from the current four hours to 300 minutes to address cold start-up in the winter. The company also requested provisional emission factors for start-up and shutdown to be removed and CEM information used instead for NO_x and CO.

Discussion and Response

We have attempted to clarify the term “short-term” emission limitations as they apply to the combustion turbines. The term “short-term emission limitation” is modified to clarify that it applies to those limits with 1-hour, 3-hour, and 24-hour averages. Only NO_x, CO, and VOC have 1-hour average emission limitations, while NO_x also has a 24-hour average limitation. These are the only pollutants for which a different set of emission standards has been developed to cover start-up conditions. The text of the start-up condition has been modified to identify the specific emission limitations that are not applicable during CGT start-up and shutdown.

The company has requested the start-up period to be extended. The start-up period ends based on one of three operating conditions, originally intended to prevent a turbine from being in “start-up” mode for extended periods during the initial years of plant operation when discontinuous plant operation was anticipated. The least restrictive of the conditions is the maximum hours allowed to be in start-up mode.

The company presented new information that demonstrates why the original 4-hour start-up mode cannot be consistently met, especially during winter conditions. The steam and combustion turbines are not enclosed in buildings, which is typical of other combined cycle combustion turbines in Washington. As a result, the equipment is open to the weather within its weatherproof acoustic shielding. The limited amount of insulation provided is primarily for soundproofing rather than thermal protection. During the winter, the turbines are exposed to ambient daytime high temperatures averaging below 50°F along with rain and wind conditions. The design by Duke Energy for this facility was a stock design that anticipated locating the turbine in an area where ambient temperatures did not average below 50°F.

The issued permit provides a set of default emission factors to use for start-up emissions until CEM or stack test information is available for use. Information is now available from the company to reset these provisional limitations with actual limits. These actual limits are based on the information provided by the company in December 2009, May 2010, and July 2010, supplemented by information acquired from the company’s reports to the EPA Clean Air

Markets Division. This information indicates that there is reason to adjust the default start-up emission values and make them cold start-up limits. This is one of two approaches to establishing cold start-up emissions limits that have been used by other states and EPA in PSD permits to account for start-up and shutdown periods of operation.

The evaluation of the 12 start-up periods available in the CAMD records (plus the information supplied by the company and its consultant) indicates that the NOX and CO emission limitations contained in Approval Condition 5 cannot be reliably achieved during unit start-up.

The NOX BACT start-up emission limitation is based on the third highest NOX emissions rate (175 lb/hr) converted to the 5-hour start-up period. The first turbine will take up to five hours, but the second turbine starts operation in about two hours, starting about two hours after the first unit has begun operation. This is documented in the “GHE start-up history version 1” spreadsheet submitted by the company and their submittals of September 23, 2014, and January 22, 2015. The limit proposed is based on actual emissions as measured by the CEMs installed on the turbines. The CO BACT start-up limitation is based on a similar analysis using the third highest actual emissions value. These limits only apply to the CGTs as the duct burners are prohibited from operating during start-up or shutdown periods per Condition 11.9.

A review of the data indicated the highest NOX emissions during start-up were 884 lb on April 27, 2011. Therefore, the proposed start-up emission limit was set at 900 lb per turbine start-up. Yearly emissions were estimated for all three modes of start-up up to the maximum NOX limits for the turbine. The limiting case was 105 hot mode start-ups, resulting in limiting yearly CO emissions from each turbine to 71.6 tpy. This is a reduction in allowable emissions of over 330 tpy. Grays Harbor Energy supplied emissions test data for carbon monoxide and VOC’s that indicated a 1.2 factor for VOCs/carbon monoxide emissions. Therefore, the 600 lb/start-up/shutdown was developed based on 500 lbs/startup/shutdown event for carbon monoxide time the 1.2 factor.

Pollutant	Emission Limit per Turbine per Start-up/shutdown
NO _x	900 lb/start-up/shutdown
CO	500 lb/start-up/shutdown
VOC	600 lb/start-up/shutdown

On November 4, 2013, in a letter to EFSEC, Grays Harbor Energy established the operating temperatures of the oxidation and SCR catalysts along with the dry-low-NO_x burners associated with the combustion turbine as required by PSD permit Amendment 3, Approval Condition 11.8. This information has been included in Amendment 4, Condition 11.5 to make these operating limits enforceable as a practical manner as these conditions are part of how the beginning and end of the start-up and shutdown periods are defined.

18. Conditions 5.8 and 6.6, Visible Emission Monitoring

Grays Harbor expresses concern about use of daily EPA Method 9 readings or use of a COM on the combustion turbines and auxiliary boiler. The company proposes instead a version of EPA Method 22 that has been utilized by ORCAA in their permits as a replacement for daily Method 9 observations. The proposal is to reduce visible emissions monitoring from once per day to once per “operating month.”

Discussion and Response

For opacity monitoring of the auxiliary boiler, we have changed the requirement to use a once per day survey method when operating. If the survey method detects visible emissions, then the company must investigate the cause of the emissions and repair the problem or take EPA Method 9 observations for determining compliance. For the combustion turbines, the text has been clarified that a continuous opacity monitor may be used as a direct substitute for visible emissions reading. Method 9 may also be used for opacity monitoring of the combustion turbine exhaust.

19. Conditions 7.1.3 and 7.2.3, Operating Records

The conditions of the existing permit require records of some operating parameters used to establish compliance with emission requirements. One in particular is hours of operation, which is not a component of the calculation of hourly emissions.

Response

The determination of hourly emissions from the diesel engines is based on an emission factor based in part on the engine speed and the duration each hour that the engine is operated. In Conditions 3.2, 7.1 and 8.2, the permit also contains an hourly limit on the annual use of each diesel engine of 500 hours (Maintenance and testing of 50 hour per year).

The engine operating time is to determine compliance with the annual operating hours' limitation and for determination of compliance with the annual emission limitation in Condition 10. We propose to modify the pertinent paragraphs of Conditions 7 and 8 to clarify that the record of hours of operation is for compliance with Conditions 3.2 and 10.

20. Condition 15

The company wishes to delete the requirement to install sampling ports and platforms on the diesel engines. In addition, the engine compliance method specified refers to EPA's "in-use" requirements, not emission testing.

Discussion and Response

The condition is modified to require installation of ports and safe access if emission testing of a diesel engine is requested in writing by EFSEC.

21. Throughout Permit: Request to Delete Redundant Emission Limitations, PPM, and kg/hr (tpy)

The company sees having mass and concentration limits as duplicative and increasing complexity. They note other recently permitted combustion turbine projects do not have both mass and concentration limits. They also note that if compliance with ambient impacts has been determined based on worst-case emission estimates, a mass limitation is not required and a concentration limit is sufficient.

Discussion and Response

The concentration and mass emission limitations are not duplicative or redundant. Each serves a different purpose. Concentration limits in general assure proper operation of the control equipment. Mass limitations assure that the ambient air quality is protected, and that short-term and seasonal variations that affect operation are accounted for. For example, the CO and NO_x mass limitations (1- and 24-hr averaging periods) were intended to cover emissions during warm and cold start-up conditions without having to establish a specific concentration limitation that applies during start-up. The hourly emission limit in Condition 5.1.1 considers the additional NO_x emitted during duct firing (while still complying with the concentration limit) and assumes that duct firing does not occur during start-up.

We propose to leave the emission limitations unchanged.

Other Changes Made to the Approval Order

- 22. Condition 5.7.3 regarding ammonia limitation during start-up and shutdown operations** is deleted. The condition is unnecessary since during start-up, there will be no ammonia applied to the flue gas until the catalyst has reached operating temperature (one of the defined points ending start-up). Additionally, shutdown is a rapid process taking relatively little time, again with ammonia injection ending when the catalyst is too cool to operate or there is no fuel being fired in the CGT. The 24-hour averaging period for the emission limitation also eliminates the need for the ammonia limitation during start-up and shutdown events.
- 23. Condition 15** has been modified to clarify that sampling ports and platforms on the diesel generators are required only when requested. The CGTs and auxiliary boiler have stack testing requirements and will need test ports installed as part of initial construction.
- 24. Condition 22 (now 23)** requiring the company to have an Operation and Maintenance manual and to have a Start-Up, Shutdown, and Malfunction Procedures manual has been simplified by removal of extraneous text.

EPA Comments on the Draft Revision 4

EPA reviewed the proposed revisions and requested additional support for specific monitoring requirements contained in the approval.

- 25.** EPA commented that Finding 20 needs to be revised to reflect that the CO BACT limit applicable to the combustion turbines should be 2.0 ppmvd based on a 1-hour average, and that 40 CFR Subpart Da for an affected facility that commenced construction, reconstruction, or modification after February 28, 2005, but before May 4, 2011, is applicable to both Heat Recovery Generators systems used with duct burners.

Response

Ecology/EFSEC proposes to add these findings to Finding 20. In addition, Approval Condition 5.2.1 was revised to reflect the 2.0 ppmvd CO limit.

The CO limit was revised from 3.0 to 2.0 ppm to comply with the Region 10 Administrative Order on Consent, CAA-10-2001-0097, dated March 2001 (see page 8, paragraphs 11 and 13 as excerpted below). The Order requires that this facility comply with a CO limit of 2.0 ppm, 1-hour average prior to commencing commercial operation. Existing emissions data (performance tests and CEMS data) from this facility appears to show that the existing turbines and duct burners operating with an oxidation catalyst are achieving emission levels of 0.1 to 0.3 ppm on an hourly basis. Paragraph 11 of the proposed permit: *"In its PSD permit application, Duke Energy and Energy Northwest shall request that the carbon monoxide emission from each CTG/HRSG of the Satsop CT Project not exceed 2.0 ppmvd corrected to 15% O₂ calculated on an hourly average."*; and Paragraph 13 of the proposed permit: *"Duke Energy and Energy Northwest shall not commence commercial operation of the Satsop CT Project until it receives a new PSD permit at least as protective as the conditions in paragraphs 7-12."* The BACT cost analysis was not updated.

40 CFR Subpart GG applies to the turbine engine (compressor, combustor, and turbine sections). The duct burners are subject to 40 CFR Subpart Da for an affected facility that commenced construction, reconstruction, or modification after February 28, 2005, but before May 4, 2011, because Grays Harbor Energy (owner) did not undertake and complete a continuous program of construction of the HRSGs and duct burners until on or about February 2007.

- 26.** EPA commented that **Approval Condition 6, Monitoring Requirements** for the auxiliary boiler do not seem to provide a means to assure continuous compliance with the daily emission limitation and BACT.

Response

Ecology/EFSEC proposes to use periodic stack testing using EPA reference method testing to determine and assure compliance with these emission limitations. This level of monitoring is commensurate with the scale of the emissions from the unit. In the permit writer's experience, small boilers of this size do not exhibit a great deal of variability in operating characteristics or emissions. As limited in Condition 10, the emissions from the auxiliary boiler are small. On its

own, this boiler would not be subject to state NSR because the emissions are below the *de minimis* emission rates in state rule.

The various periodic stack testing conditions for the auxiliary boiler are amended to add “every five years or as requested by EFSEC.”

27. EPA commented on Approval Condition 9.1.3.2, relating to determining compliance with the cooling tower emission limitation.

Response

There is no Condition 9.1.3.2 in the proposed revision to the permit. This condition in Amendment 3 was replaced by amended Condition 9.1.4, which requires a monthly calculation of emissions based on the formula contained in the condition. Cooling tower total dissolved solids concentration and recirculating water flow rate are the primary factors affecting PM emissions from the cooling tower.

28. EPA commented on Approval Condition 23.1 (22.1 in Revision 3) concerning the requirement for an Operation and Maintenance manual and a Start-up, Shutdown, and Malfunction Procedures manual.

Response

The permit continues to require Grays Harbor Energy to have these documents. The revision deletes a listing of example considerations to include in the manuals. The revision continues to require manuals to be maintained at the plant site and be subject to EFSEC review on request.

If excess emissions occur (as required to be reported by Approval Condition 22 in the proposed revised permit), a determination of whether the procedures in these manuals was followed is part of the process to determine whether a violation subject to enforcement occurred.

29. EPA provided a letter from Donald Dossett dated June 28, 2016, regarding NSPS applicability.

Response

Section 13 of the Finding section includes the NSPS applicability for the various equipment.

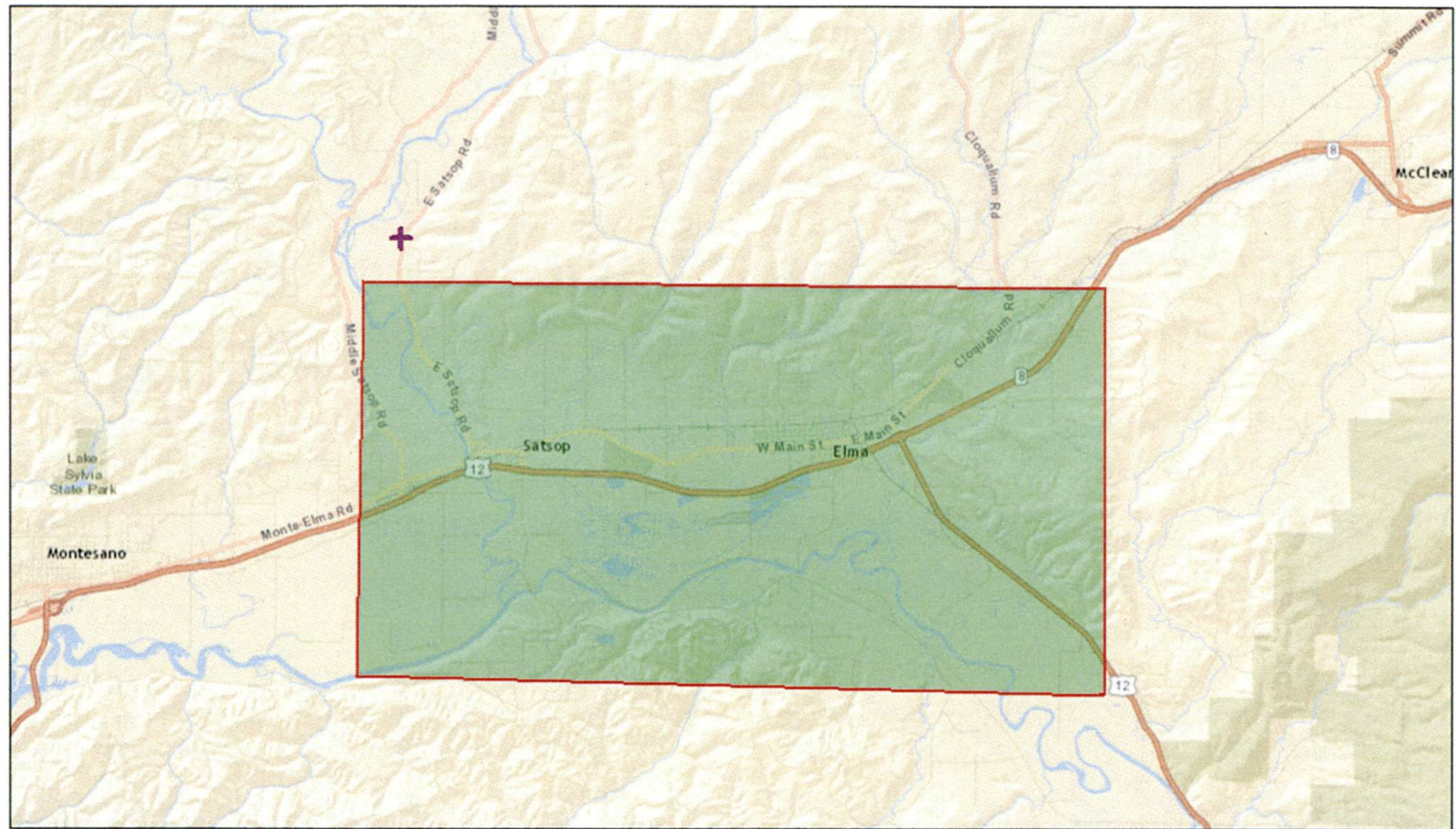
Changes from Permit Writer (Ecology)

30. Environmental Justice

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EFSEC conducts EJ review to ensure no group of people bears a disproportionate share of the negative environmental consequences as the result of the permitting action.

The initial step in this review is to identify any affected populations or communities of concern. EFSEC used EPA's environmental justice screening and mapping tool EJSCREEN. The area of the map shown below, which includes a total of 42 square miles (Elma/Satsop Area) was selected for the analysis.

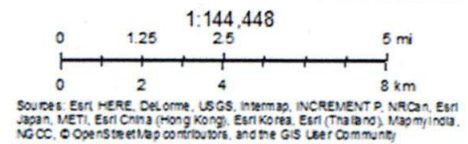
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July 27, 2017

Digitized Polygon

Digitized Point



The EJSCREEN American Community Survey (ACS) report estimates that approximately 12 percent of the population in the area consists of minorities, with approximately two percent of the total population speaking English “less than well.” A copy of the ACS report with more detailed information will be filed as part of the supporting documentation for the project.

The NAAQS analysis indicates that the project is protective of the community as a whole and no other review is needed. It also appears that a majority of the population in the selected area can understand and speak English proficiently. EFSEC is not expecting any communication barrier to posting notice on the legal page of the predominant newspaper in the Elma area. EFSEC also determines that an enhanced outreach effort is not needed due to the nature and scope of this project.

- 31.** This permit amendment modifies a PSD permit originally issued before various newer NAAQS were established and appropriate Significance Impact Levels (SIL). This permit amendment does not increase emissions, therefore, a new BACT and ambient analysis is not required. The NAAQS that apply are the NAAQS that were in effect on original permit date of November 2, 2001.
- 32.** On June 29, 2017, EFSEC was given full delegation of the PSD program by EPA. Therefore, at this time, EPA is not required to cosign the PSD permit. The language in the draft permit was modified to address this change.

33. STATE ENVIRONMENTAL POLICY ACT

Under Washington State rules, a final PSD permit shall not be issued for a project until the applicant has demonstrated that State Environmental Policy Act (SEPA) review has been completed for the project. Energy Facility Site Evaluation Council (EFSEC) is the lead agency for SEPA for this project. EFSEC issued a SEPA Determination on April 6, 2001, to amend the existing National Environmental Policy Act (NEPA) Environmental impact statement (EIS) for this project. The scope of the project is the same as in April of 2001, and this amendment does not increase emissions. Therefore, no additional action is required. EFSEC concludes that the applicant has adequately demonstrated compliance with SEPA requirements.

- 34. Americans with Disabilities Act (ADA)** – To request ADA accommodation or materials in a format for the visually impaired, call Mike Mills at (360) 407-6800 (Voice), or (TTD) (360) 956-2218.

35. PUBLIC INVOLVEMENT

This PSD permitting action is subject to a minimum 30-day public comment period under WAC 173-400-740. A newspaper public notice announcing the public comment period was published in the Montesano Vidette on Thursday May 16, 2018. In accordance with WAC 173-400-740(2)(a), application materials, and other related information were made available for public inspection at two locations:

EFSEC
1300 S. Evergreen Park Dr. S.W.
P.O. Box 47250
Olympia, WA 98504-7250

W.H. Able Memorial Library
125 S. Main St.
Montesano, WA 98563

The permit documents were posted on EFSEC's website:
<http://www.efsec.wa.gov/Satsop/Permits.html>

The public comment period closed on June 14, 2018. EFSEC did not receive a request for a hearing or any public comments.

36. AGENCY CONTACT

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