

# Statement of Basis for the Air Operating Permit—Final

## **Puget Sound Energy Sumas Generating Station**

Sumas, Washington

**January 1, 2011**



*Serving Island, Skagit & Whatcom Counties*

**PERMIT INFORMATION**  
**PUGET SOUND ENERGY, SUMAS GENERATING STATION**  
**1340 Thompson Lane, Sumas, Washington 98295**

**SIC: 4911**

**NAICS: 221**

**EPA AFS: 53-073-60041**

**NWCAA ID: 637-V-W**

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|-------------------------------------|---------------------------------|
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| <b>Permit Modifications</b>         | <b>Modification Date:</b>       |
| None                                | n/a                             |
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| n/a                                 | January 1, 2016                 |
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| July 21, 2009                       | January 1, 2015                 |

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## **1 INTRODUCTION**

Puget Sound Energy is required to obtain an air operating permit for the Sumas Generating Station (PSE Sumas), pursuant to Title V of the 1990 Federal Clean Air Act and Chapter 173-401 of the Washington Administrative Code (WAC). Emissions of air pollutants from PSE Sumas do not exceed the thresholds that require an air operating permit. PSE Sumas must obtain an air operating permit due to applicability of the acid rain provisions of Title 40 Code of Federal Regulations Parts 72 and 75 (40 CFR 72 &75).

The purpose of this Statement of Basis (SOB) is to set forth the legal and factual basis for the conditions set forth in the air operating permit and to provide background information for permit review by interested parties. In accordance with WAC 173-401-700(8), this statement of basis is not a legally enforceable document.

This is the original air operating permit issued for PSE Sumas.

## **2 FACILITY DESCRIPTION**

### **2.1 General Facility Description**

Puget Sound Energy, Inc. (PSE) owns and operates the Sumas Generating Station (PSE Sumas) which is comprised of a single natural gas fired turbine used to generate electricity for the local PSE grid. The generating station has a rated output capacity of 125 megawatts (MW) of electricity. In addition to the combustion turbine, the plant includes a steam turbine generator, a cooling tower and a 500 kilowatt (KW) diesel fired emergency generator. The facility is located on a site of approximately two acres located at 1340 Thompson Lane in Whatcom County, approximately a half mile southwest of the City of Sumas.

On July 25, 2008, PSE purchased the facility from Sumas Cogeneration Company, L.P. (SCCLP), a subsidiary of Northwest Energy Systems Co., LLC. Following the ownership change, PSE began operating the facility on August 22, 2008. Construction of the plant was originally approved by the Northwest Clean Air Agency (NWCAA) on June 25, 1991, under Order of Approval to Construct (OAC) #304. Original construction included the natural gas fired combustion turbine and diesel fired emergency generator. On April 14, 1997, the NWCAA issued OAC #611 approving the construction of a 700 HP natural gas fired boiler at the site. However, SCCLP (now dba Socco Forest Products) has retained ownership of this boiler and it is therefore, not included in this air operating permit.

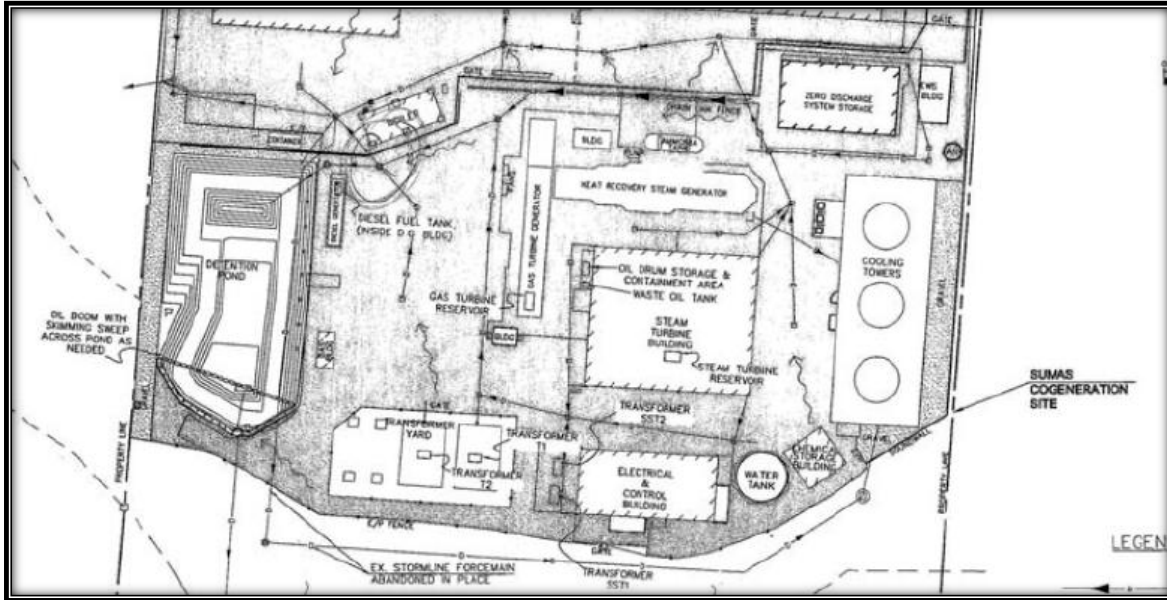
When the facility was purchased by PSE, a regulated utility, it became subject to the acid rain provisions of 40 CFR 72 & 75. Because of acid rain program applicability, the facility became subject to the air operating permit program of 40 CFR 70.



**Figure 1 PSE Sumas Location**

## **2.2 Emission Unit Description**

PSE Sumas is a combined-cycle, co-generation plant powered by a single natural gas-fired combustion turbine (EU-1). The combustion turbine has a maximum fuel consumption rating of 1,138 million British thermal units per hour (MMBtu/hr). The high temperature exhaust produced by the combustion turbine generates steam in the heat recovery steam generator (HRSG). High pressure steam from the HRSG drives a steam turbine generator. Medium pressure steam is injected into the combustion turbine to help control NO<sub>x</sub> emissions. Low pressure steam can be sent to the adjacent lumber mill for kiln drying. The plant includes a non-contact cooling tower where water is evaporated to dissipate heat and condense the steam. The cooling tower is equipped with drift eliminators to reduce water loss. The plant also includes a 500 KW diesel-fired emergency generator (EU-2) that is used to provide backup heat and lighting loads in the event of an electrical power outage in the area.



**Figure 2 PSE Sumas Site Plan**

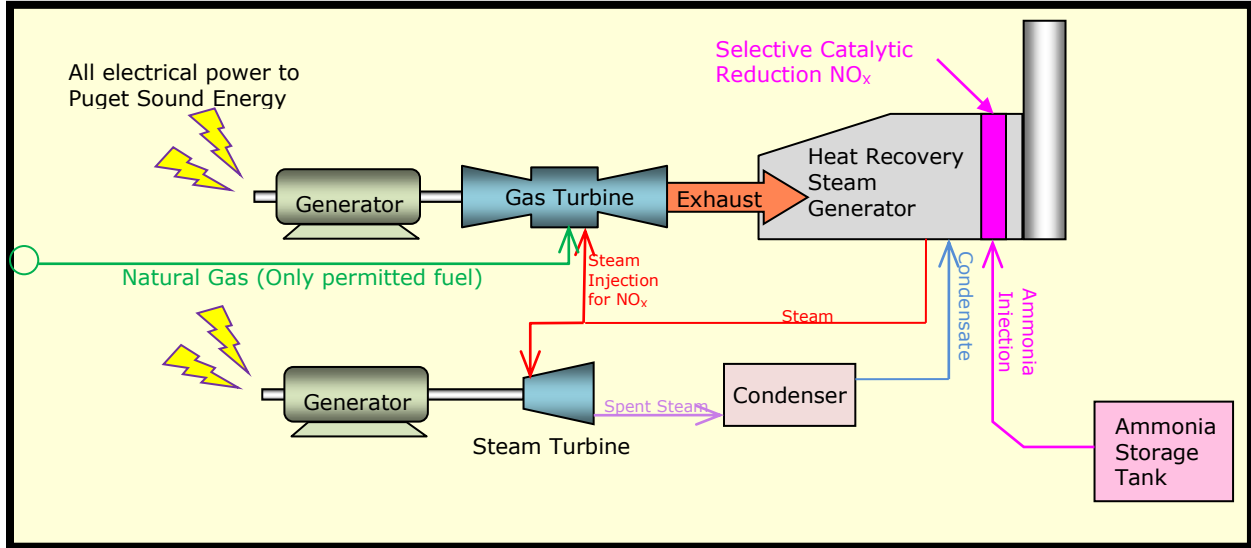
Emissions units are listed in Section 1 of the permit. These include the natural gas fired combustion turbine (EU-1) and emergency diesel fired generator (EU-2). Other, "insignificant emission units" (IEU) are listed in Section 6 of this document.

### **Combustion Turbine (EU-1)**

The General Electric Frame 7EA combustion turbine emits products of combustion including; nitrogen oxides ( $\text{NO}_x$ ), carbon monoxide (CO), particulate matter ( $\text{PM}_{10}$ , and  $\text{PM}_{2.5}$ ), sulfur dioxide ( $\text{SO}_2$ ), and volatile organic compounds (VOC).  $\text{NO}_x$  emissions are controlled using steam injection in the combustion section of the turbine and through selective catalytic reduction (SCR) for the exhaust gas. Ammonia ( $\text{NH}_3$ ) is injected into the SCR bed and any excess ammonia that is not consumed in the reaction is emitted from the stack. These ammonia emissions are commonly referred to as ammonia slip.

Air pollution emission rates for PSE Sumas are based on emission factors derived from source testing, gas sulfur content values, and CEM measurements. OAC #304e contains maximum emission limits for  $\text{NO}_x$ , CO and  $\text{NH}_3$ . These limits represent the facility's federally enforceable potential to emit (PTE) for these pollutants.

Toxic air pollutant (TAP) and hazardous air pollutant (HAP) emission rates from the combustion turbine are based on heat input in millions of British thermal units per hour (MMBtu/hr) and emission factors (pound pollutant per MMBtu) from EPA's AP-42 Section 3.1, Stationary Gas Turbines.



**Figure 3 PSE Sumas Process Flow Diagram**

**Emergency Generator (EU-2)**

Emissions of from the Cummins Turbo 500 kW diesel-fired emergency generator are based on fuel used rates as heat input (MMBtu) and emission factors from EPA's AP-42 Section 3.4, Large Uncontrolled Stationary Diesel Engines. OAC #304e limits generator operation to no more than 132 hours per year.

**2.3 Emissions Inventory**

Tables 1 and 2 show the actual calendar year emissions from PSE Sumas.

**Table 1 Fuel Use Data**

|  | 2004  | 2005  | 2006  | 2007  | 2008  | 2009  |
|--|-------|-------|-------|-------|-------|-------|
| Turbine, nat gas, 10 <sup>6</sup> scf  | 8,218 | 8,127 | 4,358 | 1,804 | 1,718 | 4,252 |
| Generator, diesel, 10 <sup>3</sup> gal | 0     | 0     | 0     | 1     | 1     | 1     |

**Table 2 Criteria Air Pollutant Emissions, Tons per Year**

|                        | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------------------------|------|------|------|------|------|------|
| PM <sub>10</sub> & 2.5 | 17   | 17   | 9    | 19   | 8    | 9    |
| SO <sub>2</sub>        | 9    | 9    | 5    | 2    | 0    | 13   |
| NO <sub>x</sub>        | 71   | 69   | 41   | 18   | 1    | 37   |
| VOC                    | 0    | 0    | 0    | 0    | 1    | 2    |
| CO                     | 1    | 1    | 4    | 6    | 1    | 7    |

|                 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|-----------------|------|------|------|------|------|------|
| NH <sub>3</sub> | 14   | 14   | 15   | 7    | 3    | 26   |

**Table 3 Toxic Air Pollutant Emissions, Pounds per Year**

|              | 2004 | 2005 | 2006  | 2007  | 2008  | 2009  |
|--------------|------|------|-------|-------|-------|-------|
| Benzene      | 101  | 99   | 52    | 52    | 21    | 53    |
| Formaldehyde |      |      | 3,079 | 3,073 | 1,234 | 3,118 |

## 2.4 Permitting History

On January 10, 1991, the NWCAA issued OAC #304 approving construction of the facility comprised of a, 67 MW combined cycle, natural gas-fired combustion turbine with a heat recovery steam generator. NO<sub>x</sub> emissions are controlled with steam injection to the turbine combustion, and SCR for post combustion control. NO<sub>x</sub> emissions are monitored with a continuous emission monitor (CEM). The approval included post-combustion CO control using an oxidation catalyst bed and a CEM to monitor CO emissions. The plant was built with the ability to send low pressure steam to the neighboring Socco Forest Products mill for kiln drying lumber. Ancillary equipment included the 3-cell cooling tower and a 500 KW diesel-fired emergency generator. Subsequently the NOC application was revised to expand the facility to 113 MW capacity, and an amended OAC #304 was issued on June 25, 1991. The plant commenced operation in April 1993. Since initial issuance, OAC #304 has been revised as follows.

On August 8, 1996 the NWCAA issued OAC #304a. This revision allowed an expansion of production capacity to 125 MW, and changed the NO<sub>x</sub> *concentration* limit (ppm) averaging time from hourly to 24-hours, removed the annual operating time limit on the combustion turbine, and the generator specifications were changed to the unit that was installed. Also, carbon monoxide continuous emission requirement was replaced with a requirement to source test for CO every three years.

On November 17, 1997, the NWCAA issued OAC #304b. This revision changed the averaging time on the NO<sub>x</sub> *emission rate* limit (lb/hr) from hourly to 24-hour. It also changed the NO<sub>x</sub> reporting requirement.

On August 3, 1998, the NWCAA issued OAC #304c. This revision allowed removal of the oxidation catalyst bed and CO CEM conditioned upon six months of continuous CO monitoring after the catalyst bed had been removed. The revision also added a 2-hour CO limit exemption during turbine startup. The company successfully demonstrated compliance with the CO limit for the required six-month period after removing the oxidation catalyst bed, and subsequently removed the CO CEM.

On March 27, 2009, the NWCAA issued OAC #304d. This revision was request by

PSE which took ownership of the plant from Sumas Cogeneration Company on July 25, 2008. This ownership transfer triggered requirements for an acid rain permit because PSE is a regulated utility. The Acid Rain program triggered Title V applicability under Section 70.1 of 40 CFR 70, Section 72.70 of 40 CFR 72, and WAC 173-401-300(1)(a)(v). To better prepare the OAC for incorporation into the AOP, PSE requested a variety of OAC revisions including updating the OAC with new owner information; deleting obsolete and completed requirements (VOC and PM/PM<sub>10</sub> limits and their initial source test requirements); adding annual source testing for CO and ammonia; changing the 18.1 pound per hour NO<sub>x</sub> limit from a 24-hour to a calendar day average; and clarifying reporting requirements.

On July 31, 2009 the NWCAA issued OAC #304e. This revision removed the text "pipeline grade" associated with a condition to combust only natural gas in the turbine. For clarification the revision included the definition of "natural gas" as found in 40 CFR 72.

## **2.5 Compliance History**

No notices of violation (NOV) have been issued by the NWCAA to PSE since they took ownership of the plant on July 25, 2008. Only one enforcement action has been issued to the facility by the NWCAA in the past five years. On January 31, 2007, the NWCAA issued NOV warning # 3577 to SCCLP for failure to report an upset or breakdown, which may have resulted in an exceedance of an emission and/or ambient air quality standard, to the NWCAA within 12 hours (NWCAA Section 340).

### **3 BASIS OF REGULATION APPLICABILITY**

#### **3.1 New Source Performance Standards (NSPS)**

##### **40 CFR 60 Subpart GG – Standards of Performance for Stationary Gas**

**Turbines:** The provisions of Subpart GG are applicable to stationary gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules per hour (10 MMBtu/hr), based on the lower heating value of the fuel fired, for which construction, modification, or reconstruction is commenced after October 3, 1977. The combustion turbine at PSE Sumas has a heat input rating over the 10 MMBtu/hr NSPS threshold and was constructed after the applicability date of Subpart GG, therefore this subpart is applicable. Subpart GG includes specific NO<sub>x</sub> and SO<sub>2</sub> limits and requirements for demonstrating ongoing compliance.

The heat recovery steam generator (HRSG) is not subject to NSPS Subparts D, Da, Db or Dc (steam generating units) because PSE Sumas has no capacity to directly fire the HRSG with duct burners.

#### **3.2 National Emission Standards for Hazardous Air Pollutants (NESHAP)**

##### **40 CFR 63 Subpart YYYY—National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines:**

Subpart YYYY establishes emission limitations and operating limitations for hazardous air pollutants from stationary combustion turbines located at major sources of HAP emissions. Under 40 CFR 63, a major source is one that has the potential to emit 10 tons or more per year of any single HAP or 25 tons per year or more of any combination of HAPs. Subpart YYYY does not apply to PSE Sumas because it does not meet the potential to emit any single HAP or total combination of HAPs that would make it a major source under 40 CFR 63.

#### **3.3 Acid Rain Program**

The acid rain Program includes permits, an allowance system, sulfur dioxide options, continuous emission monitoring, excess emissions, and appeal procedures (40 CFR Parts 72, 73, 74, 75, 77, and 78). The acid rain program is authorized to EPA under Title IV of the Federal Clean Air Act with the purpose of reducing SO<sub>2</sub> and NO<sub>x</sub> emissions from utility electric generating plants. These reductions will, in turn, reduce the adverse health and ecological impacts associated with acidic deposition. The EPA promulgated the acid rain provisions in 1993. The combustion turbine (EU-1) at PSE Sumas is an “affected unit” as defined in the acid rain program. The applicable requirements are found in Section 7 of the air operating permit.

#### **3.4 Compliance Assurance Monitoring (CAM)**

The CAM rule (40 CFR 64) applies to each Pollutant Specific Emissions Unit (PSEU)<sup>1</sup> when it is located at a major source that is required to obtain an air operating

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<sup>1</sup> The term “PSEU” means an emissions unit considered separately with respect to each regulated air pollutant. Also the term “control device” means equipment, other than inherent process equipment, that is used to destroy or remove air pollutants prior to discharge to the atmosphere.

permit and the PSEU meets all of the following criteria:

- is subject to an emission limitation or standard,
- uses a control device to achieve compliance, and
- has a potential pre-control emissions greater than or equal to the major source threshold for NO<sub>x</sub>.

The combustion turbine (EU-1) at the PSE Sumas is exempted from the CAM rule by §64.2(b)(1)(vi)<sup>2</sup> because ongoing compliance is determined in the Part 70 permit with a continuous emissions monitor (CEM).

### **3.5 Risk Management Plan (RMP)**

The goal of 40 CFR 68 – Chemical Accident Prevention Provisions, commonly known as Risk Management Plan provisions, is to prevent accidental releases of substances that can cause serious harm to the public and the environment from short-term exposures and to mitigate the severity of releases that do occur. The rule is designed to prevent accidental releases hazardous chemicals into the atmosphere and reduce their potential impact on the public and the environment. For example, if a tank, or pipe at the facility contains hazardous or flammable substances listed in §68.130 in an amount above the “threshold quantity” specified for that substance, the facility operator is required to develop and implement a risk management program.

Although the site initially used anhydrous ammonia to support operation of the SCR, PSE has since substituted an aqueous ammonia solution with an ammonia concentration of 19% by volume. The site de-registered from the RMP and PSM plans in Dec 2009. Because the current operation involves aqueous ammonia with a concentration less than 20%, the facility is not subject to RMP requirements (40 CFR 68.130).

### **3.6 New Source Review (NSR)**

New Source Review (NSR) requires stationary sources of air pollution to obtain approval prior to commencing construction. There are two types of NSR permitting requirements. Major NSR permitting is required under 40 CFR 52 as Prevention of Significant Deterioration (PSD) permitting. These permits are required for large “major” sources that are new or modified as defined in the rule. The PSE Sumas facility does not have a PSD permit because minor NSR permitting during original construction (OAC #304) included federally enforceable emissions limits that effectively prevent the facility from being a “major” source under Part 52.

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<sup>2</sup> The requirements of this part shall not apply to any of the following emission limitations or standards. Emission limitations or standards for which a part 70 or 71 permit specifies a continuous compliance determination method, as defined in §64.1. The exemption provided in this paragraph (b)(1)(vi) shall not apply if the applicable compliance method includes an assumed control device emission reduction factor that could be affected by the actual operation and maintenance of the control device (such as a surface coating line controlled by an incinerator for which continuous compliance is determined by calculating emissions on the basis of coating records and an assumed control device efficiency factor based on an initial performance test; in this example, this part would apply to the control device and capture system, but not to the remaining elements of the coating line, such as raw material usage).

Minor NSR permitting is required under Section 300 of the NWCAA Regulation and issued as an "Order of Approval to Construct" (OAC). The NWCAA issues OACs for non-major sources that are new or modified as defined in the rule. PSE Sumas has one OAC. OAC #304 was issued for original construction of the plant in 1991. This OAC has been revised numerous times to its current revision, OAC #304e, which has been incorporated into the air operating permit. Section 2 of this document contains a complete NSR permit history for PSE Sumas.

### **3.7 Greenhouse Gas Regulation (GHG)**

Greenhouse gases (GHG) are chemicals that contribute to climate change by trapping heat in the atmosphere. The greenhouse gases recognized by EPA and Ecology are: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF<sub>6</sub>). "Hydrofluorocarbons" or "HFCs" means a class of greenhouse gases primarily used as refrigerants, consisting of hydrogen, fluorine, and carbon.

PSE Sumas is required to meet the following federal and state greenhouse gas emission requirements. Because federal GHG rules do not meet the criteria that define "applicable requirements" under Title V (WAC 173-401-200(4)), they are not included in the air operating permit. However, the state GHG rules do meet the definition of Title V "applicable requirements" and therefore are incorporated into the permit.

#### **40 CFR 98, Federal Mandatory Greenhouse Gas Emission Inventory Regulation**

This regulation applies to PSE Sumas due to its GHG emission levels and type of facility. The rule requires annual GHG inventories and reporting starting in calendar year 2010, with reports due to EPA by no later than March 31 of the following year. This regulation is implemented in its entirety by the EPA. This regulation is excluded from appearing in a Title V air operating permit because it does not contain applicable requirements under the Title V program.

#### **Chapter 173-407 WAC, Carbon Dioxide Mitigation Program, Greenhouse Gases Emissions Performance Standard and Sequestration Plans and Programs for Thermal Electric Generating Facilities, Part I WAC 173-407-010 through -070, and Part II, WAC 173-407-100 through -320.**

In accordance with 173-407-120 (4)(c), this regulation applied to PSE Sumas when the facility was purchased by PSE on June 25, 2008. The rule applies because PSE Sumas is a fossil-fueled thermal electric generating facility with station-generating capability of more than 25 megawatts of electricity.

Part II of the rule applies to PSE Sumas and includes a GHG emissions performance standard of ≤ 1,100 pounds of CO<sub>2</sub> equivalent per megawatt-hour generated on a calendar year average basis. The rule specifies that the GHG emissions performance standard is based on total emissions of carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>), each weighted based upon their global warming potential (GWP = 1.0 for CO<sub>2</sub>, 21 for CH<sub>4</sub>, and 310 for N<sub>2</sub>O). The resulting sum is expressed in metric tons of carbon dioxide equivalents (CO<sub>2</sub>e). PSE Sumas has

opted to demonstrate ongoing compliance with this performance standard as follows.

### **Carbon Dioxide (CO<sub>2</sub>)**

Carbon Dioxide (CO<sub>2</sub>) emissions are estimated through fuel carbon content monitoring, emission factors developed during stack testing using Ecology or EPA approved methods, and through other methods meeting the requirements of 40 CFR Sections 75.10 and 75.13 and 40 CFR Part 75 Appendix G. Part 75 requires that fuel consumption in the combustion turbine be continuously monitored using certified volumetric flow meters that are certified initially and have ongoing QA requirements delineated in 40 CFR Part 75, Appendix D to assure accuracy.

PSE Sumas completed four consecutive quarterly stack tests for CO<sub>2</sub> during the 2009 calendar year using Method 3A – *Determination of Oxygen and Carbon Monoxide Concentrations in Emissions from Stationary Sources*. Results from testing are used to determine emission factors for CO<sub>2</sub> based on natural gas fuel consumption rates.

### **Nitrous Oxide (N<sub>2</sub>O) and Methane (CH<sub>4</sub>)**

Nitrous Oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>) emissions are estimated through the use of specific emission factors developed during stack testing using Ecology or EPA approved methods. Testing is required at various loads and during four separate test periods spaced evenly throughout first year of operation under the rule. PSE Sumas completed four consecutive quarterly stack tests for N<sub>2</sub>O and CH<sub>4</sub> during the 2009 calendar year using EPA Method 320 - *Measurement of Vapor Phase Organic & Inorganic Emissions by Extractive Fourier Transform Infrared (FTIR) Spectrometry* with the results being used to determine emission factors for those GHGs.

### **PROPOSED Chapter 173-441 WAC, Reporting of Emissions of Greenhouse Gases**

If and when finalized, this rule will require greenhouse gas reporting for owners or operators of a source that emits at least 10,000 metric tons of greenhouse gases annually. PSE Sumas would be an effected source under this proposed rule. The proposed rule is similar to the existing Federal Mandatory Greenhouse Gas Emission Inventory Regulation (40 CFR 98). Proposed Chapter 173-441 WAC would need to be incorporated into the air operating permit if, and when, it becomes final.

## **4 GENERAL ASSUMPTIONS OF THE PERMIT**

### **4.1 Permit Content**

Applicable requirements that were satisfied by a single past action on the part of the source are not included in the permit, but are discussed in the statement of basis. An example would be performance testing to demonstrate compliance with applicable emission limitations as a requirement of initial startup. Also, regulations that require action by a regulatory agency, but not of the regulated source, are not included as applicable permit conditions.

### **4.2 One-Time Requirements**

The following actions were noted as having been completed as required by Notice of Construction Approvals or Federal New Source Performance Standards:

- Initial NSPS notifications and performance testing and initial performance testing required under OAC #304 were done long before the facility was purchased by Puget Sound Energy.
- PSE Sumas notified NWCAA that the Sumas Cogeneration Company, L.P. was transferring ownership of the gas-fired electrical cogeneration facility to Puget Sound Energy in compliance with Section 323.3 of the NWCAA Regulation.
- PSE Sumas submitted a Certificate of Representation to EPA on October 15, 2008 pursuant to 40 CFR 72.24.
- PSE Sumas submitted a CEMS Monitoring Plan for the Sumas Generating Station, pursuant to 40 CFR 75.53 on December 30, 2008.
- PSE Sumas provided notification of initial certification testing of the monitoring system at the Sumas Generating Station under the Acid Rain Rules, pursuant to 40 CFR 75.61(a)(1) on December 30, 2008. Testing was to take place from January 20 through 26 of 2009.
- PSE Sumas submitted an Acid Rain Permit application to EPA on May 28, 2009 pursuant to 40 CFR 72.30 and 72.31.
- PSE Sumas submitted an air operating permit application to NWCAA on July 21, 2009. Additional information was submitted in response to NWCAA request on August 20, 2009.
- PSE Sumas performed a series of four, equally-spaced quarterly tests for determination of the GHG gases N<sub>2</sub>O and CH<sub>4</sub> and establishment of emission factors as required by WAC 173-407-120, -140, and -230, and Section 367 and Appendix A of the NWCAA Regulation. Tests were performed during 2009, with the final testing performed on November 5<sup>th</sup> and 6<sup>th</sup>, 2009.
- PSE Sumas submitted a request for a new source review determination for the Aqueous Ammonia Conversion Project. The project includes converting the existing anhydrous ammonia storage, handling and injection system to an aqueous ammonia system. NWCAA determined that the project would not

require a NOC application, so long as the facility continues to comply with existing ammonia emission limits, and the project is completed by no later than March 7, 2011. The project has been completed.

#### **4.3 Federal Enforceability**

Federally enforceable requirements are terms and conditions required under the Federal Clean Air Act (FCAA) or under any of its promulgated regulations. NWCAA and state regulations may become federally enforceable by formal approval and incorporation into the State Implementation Plan (SIP). Federally enforceable requirements are enforceable by the EPA and citizens. All applicable requirements in the permit including standard terms and conditions, generally applicable requirements, and specifically applicable requirements are federally enforceable unless they are identified in the permit as enforceable only by the state. Two different versions (identified by the date) of the same regulatory citation may apply to the source if SIP approval/delegation lags behind changes made to the Washington Administrative Code (WAC) or to the NWCAA Regulation. For Washington Administrative Code (WAC) regulations, the date listed in parenthesis in the air operating permit represents the State Effective date. For NWCAA regulations, the date represents the most recent NWCAA Board of Directors adoption date, which is identified as the "Passed" or "Amended" date in the NWCAA Regulation. The date associated with an OAC or PSD permit represents the latest issuance date of that order. For Federal rules, the date is the rule's most recent promulgation date.

Chapter 173-401 WAC is not federally enforceable although the requirements of this regulation are based on federal requirements for the air operating permit program. Upon issuance of the permit, the terms based on Chapter 173-401 WAC will become federally enforceable for the source.

#### **4.4 Gap Filling**

There are some air pollution rules and regulations and OAC conditions that do not specifically call out sufficient monitoring, reporting, or recordkeeping methods(s) to demonstrate compliance with the applicable requirement. In these cases, the permitting agency may develop site-specific MR&R requirements that the source must follow. The inclusion of the customized MR&R requirements is called "gap filling". The facility has many specific monitoring, reporting and recordkeeping requirements for continuous emission monitors and for periodic reporting. In some instances, however, gap filling has been used. For instance, nuisance rules and opacity requirements have site specific gap-filled obligations for the source. If gap filling has been incorporated for a requirement of the AOP, the MR&R for that term will state "directly enforceable" above the gap filled text.

#### **4.5 Future Requirements**

No pending requirements that may apply to PSE Sumas at a later date are included in the permit. Some requirements that are not applicable until triggered by an action, such as the requirement to file an application prior to constructing a new source, are addressed within the standard terms and conditions section of the

permit. PSE certified in the PSE Sumas air operating permit application that the facility will meet any future applicable requirements on a timely basis.

#### **4.6 Compliance Options**

Puget Sound Energy did not request emissions trading provisions or specify more than one operating scenario in the air operating permit application, therefore, the permit does not address these options as allowed under WAC 173-401-650. This permit does not condense overlapping applicable requirements (streamlining), nor does it provide any alternative emission limitations.

## **5 PERMIT ELEMENTS, BASIS FOR TERMS AND CONDITIONS**

The PSE Sumas air operating permit is divided into the following sections:

- Permit Information
- Attest
- Table of Contents
- Section 1 Emission unit Identification
- Section 2 Standard Terms and Conditions
- Section 3 Standard Terms and Conditions for NSPS
- Section 4 Generally Applicable Requirements
- Section 5 Specifically Applicable Requirements
- Section 6 Acid Rain Permit
- Section 7 Inapplicable Requirements

### **5.1 Permit Information**

The Information Page of the permit identifies the source and provides general information about the permit, the responsible corporate official, and the agency personnel responsible for permit preparation, review and issuance.

### **5.2 Attest**

The Attest Page provides authorization for the source to operate under the terms and conditions contained in the permit.

### **5.3 Section 1 Emission Unit Identification**

Section 1 lists emission units, emission points and control devices present at PSE Sumas. Additional information about the facility may be found in the operating permit application and in supplementary files.

### **5.4 Section 2 Standard Terms and Conditions**

The Standard Terms and Conditions section of the permit contains administrative requirements and prohibitions that do not have ongoing compliance monitoring requirements. The citations giving legal authority to the Standard Terms and Conditions are provided in the section. At times, requirements are paraphrased. In this case the language of the cited regulation takes precedence over the paraphrased summary. For understanding and readability, the terms and conditions have been grouped by function. Similar requirements from State and NWCAA regulations are grouped together where possible. There are several requirements included that are not applicable until triggered. Examples of these would be the requirement to file a "Notice of Construction and Application for Approval" (NOC).

### **5.5 Section 3 Standard Terms and Conditions for NSPS**

The Standard Terms and Conditions for New Source Performance Standards (NSPS) contains applicable requirements from 40 CFR 60 Subpart A - General Provisions.

## **5.6 Sections 4 and 5 Generally and Specifically Applicable Requirements**

Requirements that limit emissions and broadly apply to all sources within the jurisdiction of the NWCAA are identified in Section 4 - Generally Applicable Requirements. Requirements that limit emissions and apply specifically to emission units at PSE Sumas are identified in Section 5 - Specifically Applicable Requirements. Both section tables are organized by pollutant type for better readability. The first column contains the term number followed by the pollutant type. The second column identifies the regulatory citation. The third column provides a brief description of the applicable requirements for informational purposes and is not enforceable. The fourth column identifies monitoring, recordkeeping and reporting requirements in accordance with WAC 173-401-605(1), -615(1) & (2) and, is enforceable except that insignificant emission units are exempt from all MR&R. Test methods associated with each applicable requirement or in accordance with WAC 173-401-615(1)(a) are included in this column.

Many generally applicable requirements do not specify test and/or monitoring methods within the text of the regulation or statute even though WAC 173-401-615 requires the permit to feature monitoring and recordkeeping adequate to demonstrate compliance with such requirements. In these cases, site-specific monitoring methods (gap filling) were developed based on the characteristics of the facility, the nature of the underlying requirement, the requirements of WAC 173-401-615 and EPA guidance on monitoring.

Opacity limitations are visually monitored using EPA Method 9 or Ecology Method 9a, as required by the underlying requirement. Opacity measurements are taken by PSE staff on a monthly basis when turbine operates. Additional monitoring is conducted when operators observe visual emissions. If opacity is greater than the applicable emission standard, immediate corrective action is required and an upset condition shall be reported to NWCAA. All Method 9 or 9a opacity readings must be taken by an individual holding a valid Certification of Completion for Plume Evaluation Training from the Washington State Department of Ecology or other authorized training facility.

Sulfur emission limits of all units contained in the Generally and Specifically Applicable Requirements section of the permit are inherently met if the turbines burn only natural gas containing less than 20 grain/100 SCF sulfur. This is reflected in the July 2004 NSPS Subpart GG revisions which allow the source to keep documentation from its natural gas supplier that the fuel has less than 20 grains/100 SCF sulfur in lieu of testing or perform initial testing demonstrating that the natural gas meets the definition.

Requirements pertaining to operation and maintenance, nuisance, fugitive emissions and odor may be met through adherence to PSE Sumas internal operation and maintenance (O&M) plan and a commitment to timely complaint response and follow-up corrective action. It should be noted that PSE Sumas O&M plan is not included as part of their air operating permit.

**5.7 Section 7 Acid Rain Permit**

The acid rain permit and certificate of representation for the combustion turbine (EU-1) at PSE Sumas are contained in this section of the air operating permit.

**5.8 Section 6 Inapplicable Requirements**

Washington Administrative Code 173-401-640 allows a determination regarding inapplicable requirements. This section contains a list of inapplicable requirements and the causal basis.

## 6 INSIGNIFICANT EMISSIONS UNITS

Some categorically exempt insignificant emission units (IEU) as defined in WAC 173-401-532 are present at PSE Sumas and are not listed in the permit. Emission units at PSE Sumas that have been determined to be insignificant on the basis of size or production rate, as defined in WAC 173-401-533 are listed in Table 4, and are not listed in the permit.

**Table 4 Insignificant Emission Units**

| Emission unit                      | Description  | Why IEU  | Citation              |
|------------------------------------|--|--|-----------------------|
| Cooling tower                      | Non-contact 3-cell cooling tower   | Processing non-contact cooling water   | WAC 173-401-532(121)  |
| Diesel storage tanks               | One 1,000 gallon tank  | Operation, loading and unloading of VOC storage tanks (including gasoline storage tanks), ten thousand gallons capacity or less, with lids or other appropriate closure, vapor pressure not greater than 80mm Hg at 21°C | WAC 173-401-533(2)(c) |
| Natural gas piping                 | Fuel supply line   | Less than threshold quantities   | WAC 173-401-530       |
| Aqueous ammonia storage tank       | One 12,000 gallon tank   | Less than threshold quantities   | WAC 173-401-530       |
| Misc. wastewater collection pumps  | 50-150 gallons each  | Less than threshold quantities   | WAC 173-401-530       |
| Facility operation and maintenance | Normal operation and maintenance, exclusive of fuel, associated with the operation of a combustion turbine | Less than threshold quantities   | WAC 173-401-530       |
| General welding                    | Welding for general maintenance and construction   | Less than one ton of welding rod/day   | WAC 173-401-533(2)(i) |
| Emergency Generator cooling system | Non-contact, antifreeze based cooling system for generator   | Not in contact with process streams, not using chromium-based corrosion inhibitors   | WAC 173-401-533(2)(m) |
| Space and hot water heaters        | Natural gas or propane fired space heaters and hot water heaters.  | Less than 5 MMBtu/hour heat input  | WAC 173-401-533(2)(r) |
| Storage,                           | Distillate fuels have  | Vapor pressure less than 5   | WAC 173-              |

| Emission unit                             | Description                                  | Why IEU   | Citation               |
|---|--|---|------------------------|
| loading and unloading of distillate fuels | very low vapor pressures.                    | mm Hg @ 21°C (0.1 psia )  | 401-533 (2)(t)         |
| Site drainage retention pond              | Storm water and oily water collection system | Industrial Stormwater General Permit issued by Ecology. Used for removing suspended solids and oil. | WAC 173-401-533 (3)(d) |

## **7 PUBLIC DOCKET**

Copies of PSE Sumas air operating permit, permit application and any technical support documents are available at the following locations:

Online:

[www.nwcleanair.org](http://www.nwcleanair.org)

Office:

Northwest Clean Air Agency  
1600 South Second Street  
Mount Vernon, WA 98273-5202

360-428-1617 (call for an appointment to review)

## 8 DEFINITIONS AND ACRONYMS

Definitions are assumed to be those found in the underlying regulation. A short list of definitions has been included to cover those that may not have been previously defined.

An "applicable requirement" is a provision, standard, or requirement in any of the listed regulations or statutes as it applies to an emission unit at a stationary source.

An "emission unit" is any part or activity of a stationary source that emits or has the potential to emit pollutants.

"Permit" means for the purposes of the air operating permit program an air operating permit issued pursuant to Title V of the 1990 Federal Clean Air Act.

"Technology-Based Emission Standard" means a standard, the stringency of which is based on determinations of what is technologically feasible considering relevant factors.

"State" means for the purposes of the air operating permit program the NWCAA or the Washington State Department of Ecology.

The following is a list of Acronyms and definitions used in the Air Operating Permit and/or Statement of Basis:

|                       |  |
|-----------------------|--|
| AOP .....             | Air Operating Permit                           |
| ASTM .....            | American Society for Testing and Materials     |
| CFR.....              | Code of Federal Regulations                    |
| BACT.....             | Best Available Control Technology              |
| BHP.....              | Brake horse power                              |
| Btu .....             | British Thermal Units                          |
| CO .....              | carbon monoxide                                |
| dscf.....             | dry standard cubic feet                        |
| FCAA.....             | Federal Clean Air Act                          |
| GHG .....             | Greenhouse Gas                                 |
| ISO .....             | International Organization for Standardization |
| KW.....               | Kilowatt                                       |
| MMBtu.....            | Million British Thermal Units                  |
| MR&R .....            | monitoring, recordkeeping and reporting        |
| MW .....              | Megawatt                                       |
| NH <sub>3</sub> ..... | ammonia  |
| NO <sub>x</sub> ..... | nitrogen oxides                                |
| NSPS.....             | New Source Performance Standard                |

NSR ..... New Source Review  
NWCAA..... Northwest Clean Air Agency  
OAC ..... Order of Approval to Construct  
PSE ..... Puget Sound Energy  
ppmdv..... parts per million by volume (dry basis)  
ppmw ..... parts per million by weight  
RCW..... Revised Code of Washington  
scf ..... standard cubic foot  
SCR ..... Selective catalytic reduction  
SIP ..... State Implementation Plan  
STP ..... standard temperature and pressure (14.7 psia and 60°F)  
SO<sub>2</sub> ..... sulfur dioxide  
VE..... Visual emissions  
WAC..... Washington Administration Code  
WDOE ..... Washington State Department of Ecology

## 9 PUBLIC COMMENTS TO DRAFT AOP

The following comments were received during the 30-day draft AOP comment period pursuant to WAC 173-401-800(3). The draft AOP was issued on October 28, 2010 with the comment period ending no sooner than November 27, 2010.

### **Puget Sound Energy**

Received by email November 27, 2010:

*Comment 1:* For permit terms 4.11 through 4.15 on page 36 of the draft AOP, the Monitoring, Recordkeeping and Reporting requirements (MR&R) list Ecology Method 9A as the compliance method. However, permit term 5.2 on page 38 & 39 of the draft AOP, the MR&R requirements lists EPA Method 9 as the compliance method. This creates some confusion as both methods use different criteria for determining compliance. In order to make the requirements clear, PSE believes that the draft AOP could be better clarified if the following sentence was added to the MR&R requirements for permit terms 4.11 through 4.15

Combustion units with specifically applicable permit terms in Section 5 for opacity and particulate matter shall be monitored in accordance with Section 5 requirements only.

***Response to Comment 1: No changes made. Requirements in Section 5 apply in addition to requirements in Section 4; Section 5 requirements do not supersede Section 4 requirements.***

*Comment 2:* On page 40 of the draft AOP, under permit term 5.6 NH<sub>3</sub>, the limits listed in the Description Column are incorrectly listed at 6 ppmvd at 15% O<sub>2</sub> and ISO. In the OAC the NH<sub>3</sub> limit is listed at 10.0 ppmvd at 15% O<sub>2</sub> and ISO. This needs to be corrected in the draft AOP for the permit limits to match.

***Response to Comment 2: The NH<sub>3</sub> limit in Term 5.6 was corrected to 10 ppmvd at 15% O<sub>2</sub> and ISO, to match the corresponding requirement in Condition 1.d. of OAC 304e.***

*Comment 3:* On page 41 of the draft AOP, under permit term 5.8 Reporting, and terms 5.4 & 5.5 NO<sub>x</sub> on Page 40, we request that the following sentence be added to these terms

Report excess NO<sub>x</sub> emissions in monthly report.

PSE requests this addition as this will help simplify the reporting requirements by aligning the exceedance reporting timeline with the existing monthly reporting timeline.

***Response to Comment 3: No changes made. Requirements for reporting excess NO<sub>x</sub> emissions are contained in Sections 2.4.6, 2.4.7, and 2.4.8 of the AOP, which are summarized below:***

- ***Section 2.4.6 (WAC 173-401-615(3)(b)) applies anytime you have a deviation of a permit term, and requires reporting ASAP where the deviation represents a potential threat to human health or safety, or as part of the next routine monitoring report or no later than within 30 days after the end of the month in which the deviation is discovered, whichever is sooner.***
- ***Section 2.4.7 (NWCAA 340.1, 340.2, and 340.3) applies whenever a breakdown or upset condition occurs which results in or may have resulted in an exceedance of an emission and/or ambient air quality standard, and requires reporting ASAP and in no event more than 12 hours to the NWCAA. This must be followed up by a full report within 30 days after the end of the calendar month in which the upset occurred.***

- **Section 2.4.8 (NWCAA 341) ) applies whenever a startup or shutdown is scheduled which may result in an exceedance of an emission standard, and requires notification of NWCAA prior to the startup or shutdown. If the startup or shutdown does result in the exceedance of an emission standard the permittee must submit a full report within 30 days after the end of the calendar month in which the startup or shutdown occurred.**

**All of these requirements apply all the time. The requested sentence could contravene one or more of the requirements in Sections 2.4.6, 2.4.7, and 2.4.8 of the AOP.**