

Washington State
ENERGY FACILITY EVALUATION COUNCIL
Grays Harbor Energy Corporation Units 3 and 4 Project
Prevention of Significant Deterioration/Notice of Construction
Permit No. EFSEC/2009-02
Responsiveness Summary

February 7, 2011

Comment 1:

Teri Franklin gave verbal comments at the November 9, 2010 public meeting. A summary of her comments is below:

1. How much PM 2.5 particulates are emitted. I see PM10, but not PM2.5.
2. I am not really worried about the emissions impacts on distant Class I areas. I am worried about what is going into my garden soils and the feed that my animals are eating. I would like to be informed of what kind of pollutants they are.
3. I am worried that these emissions are going to increase the likelihood of asthma and other respiratory risks in my area.

Response to Comment 1:

A general response to all three topics is stated first, then particular responses to the three topics are presented.

General response: The fuel burned in the gas turbines is natural gas. This is the cleanest type of fuel that can be burned. It has very little if any toxic compounds in it. It is mostly methane, a simple compound that has only one carbon and four hydrogen atoms, along with a small amount of ethane (2 carbons), propane (3 carbons), and butane (4 carbons). This means that when it is burned, the products of combustion will be simple too. This eliminates the problem that other long chain carbon fuels (like wood, diesel oil, and coal) have of forming complicated toxic organic compounds from incompletely burned fuel. Wood can make a lot of PM2.5 particles (like the smell of a wood fire and smoke), and it creates long chain toxic molecules like tars and creosote that can deposit in chimneys and lungs. Diesel oil combustion (especially in diesel engines) can create high levels of toxic particulates. So can burning coal. Burning natural gas poses little potential to form any of these types of combustion products. The small part of natural gas fuel that is not completely burned in the turbines is further cleaned up (about 50% to 90% depending on the molecule) by the oxidation catalyst pollution control. This oxidation catalyst operates similarly to the catalyst in a cars exhaust system to further burn up unburned fuel in the turbine exhaust. The natural gas fuel also has almost no metal content. This means that toxic metal pollutants are essentially absent. This cannot be said for fuel oil or coal, or even wood.

Particular responses:

1. All particulates that are emitted when the turbines combust natural gas will be smaller than 2.5 microns in diameter. Since PM10 includes all particulates less than 10 micrometers in diameter, total PM10 is actually the same as total PM2.5 for this project. Total particulates have two components though: Filterable (collectable on a filter in the stack at the hot stack temperature), and condensable (present in the hot stack as a gas, but

condense to a particle when cooled to atmospheric temperature outside of the stack and then filtered.). The total particulate emissions are limited to 454 pounds per 24 hour period. The filterable subset of particulates is limited to 114 pounds per 24 hour period. Actual measured emissions will be less than these limits.

2. The impact of criteria pollutants¹ from the project was analyzed both for impacts on the local area around the plant (Class II impacts analysis) and the impacts on further away Class I areas (like Olympic and Mt. Rainier National Parks). Each analysis is done for a different purpose. The local area analysis has a strong health related component. The federal National Ambient Air Quality Standards (NAAQS) are set up by the EPA to protect public health and protect the environment.² If the modeled concentrations of the project's criteria pollutant emissions are less than the NAAQS, all regulations judge that these emissions are acceptable for both health and environmental protection. The criteria pollutant emissions from this project easily meet all NAAQS standards.

Toxic pollutant emissions are regulated under Washington state law and the corresponding regulation WAC 173-460.³ This regulation sets up a level of modeled impact that is acceptable for each possible toxic air pollutant. This Acceptable Source Impact Level (ASIL) is a safety screening level value. Below it the impacts are determined not to be of concern. Above it, the health impacts of the pollutant must be evaluated further. This regulatory ASIL screening level is carefully set by a committee of public and professional members that are picked both for their knowledge and to represent the public and other interests. The estimated emissions levels from the project of all toxic compounds (both organic and metallic) were estimated and modeled in the projects application and compared to their ASIL. All toxic pollutant impacts were less than their ASIL. Most were less by an order of magnitude or more, which means they were less than 10% of the screening value. This means that the State of Washington, in its best judgment, determines that the toxics impact of the project is acceptable. In more plain words, the burning of natural gas in these turbines is very clean. It will not create a toxics risk to plants or animals (including humans) as far as our best science can determine.

3. Asthma and respiratory problems are recognized as very important, but the compounds and levels of these compounds that trigger asthma problems are very hard to determine. There are no specific federal or state asthma related regulations for industrial process air permitting. To the best of our knowledge, the emissions from this project have been minimized to reduce possible asthma and respiratory impacts. The particulate levels emitted are as clean or cleaner than any other combustion power plant in the nation because of the use of natural gas fuel in a clean burning modern designed turbine burner, and then additionally treating the exhaust with the oxidation catalyst. This minimizes both particulate and organic compound emissions. Their asthma producing potential would be expected to be very small, probably much less than typically present household triggers such as household dust, cat dander, or molds.

¹ For definition of Criteria Pollutants, see EPA web page at <http://www.epa.gov/airquality/urbanair/>

² See EPA's NAAQS website at <http://www.epa.gov/ttn/naaqs/> for more information.

³ Washington State regulation WAC 173-460 available at <http://apps.leg.wa.gov/wac/default.aspx?cite=173-460>