

Washington State

**ENERGY FACILITY SITE EVALUATION COUNCIL**

Satsop Combustion Turbine Project

Prevention of Significant Deterioration / Notice of  
Construction Permit No. EFSEC/2001-01

Amendment 1

**RESPONSIVENESS SUMMARY**

December 9, 2002

## TABLE OF CONTENTS

<b>1</b>	<b>BACKGROUND .....</b>	<b>5</b>
1.1	Request for Amendment 1 to PSD/NOC Approval No. EFSEC/2001-01 .....	5
1.2	Summary of Current Action.....	6
1.3	Changes form the preliminary to final approval of this Amendment. ....	7
<b>2</b>	<b>SUMMARY OF COMMENTS RECEIVED .....</b>	<b>9</b>
2.1	Written Comments .....	9
2.2	Oral Comments of September 4, 2002.....	9
<b>3</b>	<b>RESPONSES TO COMMENTS .....</b>	<b>10</b>
3.1	It would make more sense to have a new hearing focusing on only Phase I permits. ....	10
3.2	The hearing is on Phase I issues but preliminary approvals issued for public comment cover Phase I and II. ....	10
3.3	Proper notice hasn't occurred; [certain citizens] received notice only on the Saturday [before the hearing] which is inadequate time to review.....	10
3.4	Draft permits for only Phase I are not available to review or comment on. ....	11
3.5	No actual permit has been seen [by Mr. Dierker] for the Phase I project.....	11
3.6	The public did not receive adequate notification of the changes to the hearing. ....	11
3.7	There was no public access to Phase I permit information, which was not available at the hearing, nor was it easily accessible prior to the hearing. ....	11
3.8	Request that the permit be rewritten to address only the Phase I project.....	12
3.9	Have Duke reapply for these permits, separating Phase I and Phase II, and hold a new public hearing with adequate prior notice.....	12
3.10	Why issue the permits when Duke may never finish the plant?.....	12
3.11	What if Duke stops for 10 years and then comes back with a different project? Would they need new permits? .....	12
3.12	Combined with the emissions of the Boise Cascade plant in the same business park, the quantity of emissions are of great concern. Even without the Boise Cascade plant, the numbers are too high for comfort. ....	13
3.13	The commenter wants to see baseline data and effects of Phase I on the environment.....	13

**3.14 What are the potential impacts of salt drift on existing wildlife mitigation lands, wildlife areas and farm lands in proximity to the Satsop facilities? In a response to comments on the draft EIS, the Wallula Power Project has agreed to install a recirculating system to reduce PM emissions from cooling towers.....14**

**3.15 What type of studies will the Applicant undertake to determine the extent of salt drift and impacts to wildlife and other sites where drift may be expected? .....14**

**3.16 Concerned with acidic deposition from the CO<sub>2</sub> and CO emissions.....15**

**3.17 The commenter doesn't see SO<sub>2</sub> produced [by the plant] but the plant uses sulfuric acid. Will this be emitted? This doesn't seem to be covered in the preliminary approval.....15**

**3.18 No cumulative impact analysis of greenhouse emissions in the State of Washington.....15**

**3.19 2.4 million tons of CO<sub>2</sub> from this plant is too much.....16**

**3.20 Permit: Page 4, Paragraph 10, Deposition of Nitrogen in Olympic National Park is higher than the NPS threshold for concern. To the extent possible, please explain how the NPS made their conclusion of acceptability. ....16**

**3.21 Permit: Page 4, Paragraph 12. Degradation of visibility due to the Phase 1 and 2 projects are predicted to reduce visibility by more than 5% from current conditions on 2 days in ONP and 1 day in Mt. Rainier NP. In the FLAG report, the Federal Land Managers have indicated that if the predicted impact is greater than 5%, they would request a cumulative visibility impact assessment (unless one had already been done). Why did the NPS not request an assessment? .....17**

**3.22 Permit: Approval Condition 5.1.1 there appears to be an error with the diesel generator NO<sub>x</sub> emission rate. The Tier II emission factor for NO<sub>x</sub> with NMHC is 6.4 gram/kW-hr which converts to 3.2 kg/hr (7.04 lb/hr) for a 500 kW diesel generator. Please verify and modify the NO<sub>x</sub> limit in the permit which is currently written as 2.038 kg/hr (2.86 lb/hr). ....19**

**3.23 Permit: Approval Condition 10.1.1 The emission rate in the draft permit for VOCs from the CGTs is in error. The engineering data from the applicant provides for an emission rate of 8.4 lb/hr (3.8 kg/hr). Please modify the limit from 6.3 kg/ hr to 8.4 kg/hr. ....19**

**3.24 Permit: Approval Condition 11.4.1 To be consistent with the averaging period utilized for particulate matter emission rates for other sources in the permit, please modify the hourly emission rate of 0.10 kg/hr (0.22 lb/hr) for the diesel generators to 2.4 kg/day (5.28 lb/day). ....19**

**3.25 Permit: Approval Condition 14.2 Please confirm that the two startup/shutdown cycles per day limit is for routine operations, as stated in the draft permit, and not applicable during the commissioning period. During the commissioning period, more than two startup/shutdown cycles**

may be necessary on occasion. The averaging periods for the primary pollutant of concern are the 1-hour and 8-hour, hence no daily limit on the number of startup/shutdown cycles is necessary.....19

3.26 Permit: Approval Condition 16 Please add language to the Approval Condition to clarify the definition for "first commercial electricity from a CGT" is based on 40 CFR 72.2's definition as follows: .....20

3.27 Usage of ammonia for NOx control.....20

3.28 Diesel fueled equipment .....20

3.29 Comments supporting issuance of the PSD/NOC permit.....21

3.30 Written submittal of Patrick Menendez.....21

3.31 I live a few miles from the Satsop plant and would like to know exactly how much toxic junk is going to be dumped on me and other areas where I am considering moving. I have been to the library and reviewed their notebook. I copied and reviewed the modeling maps. None of the maps have cities on them so they are worthless. Shouldn't this information be written so people can understand it? Should it be this hard to get information about a plant in my area? The permitting document is not written for citizens to understand so what is the point of making it available at the library? Why did Duke Energy tell me to go to the library? Did they think I wouldn't bother? Why can't they simply tell me? What are they hiding? What don't they want me to share with my community? .....21

# 1 Background

## 1.1 Request for Amendment 1 to PSD/NOC Approval No. EFSEC/2001-01

In November 2001, Energy Northwest and Duke Energy Grays Harbor, LLC, (jointly "Duke Energy") submitted a request to the Energy Facility Site Evaluation Council (EFSEC or Council) to amend the existing Prevention of Significant Deterioration/Notice of Construction (PSD/NOC) permit, No. EFSEC/2001-01, for the Satsop Combustion Turbine Project (Satsop CT Phase I), sited near Elma, in Grays Harbor County, Washington. The original request included the proposed addition of a second 650 megawatt (MW) facility (Satsop CT Phase II) on the existing site, the addition of an emergency generator and emergency fire pump for the existing Phase I, and to allow an increase in the allowable hours of duct firing for Phase I.

Since December 2001, market forces have changed the economic viability of such a larger scale project and in August 2002 during the public comment period for Amendment 1 to PSD/NOC Approval No. EFSEC/2001-01, Duke Energy requested EFSEC to halt any further processing of their Phase II proposal. In addition, Duke Energy announced that they would also defer construction of the Phase I project, but requested that the Council continue review of changes related to the Phase I PSD/NOC permit (emergency generator, emergency fire pump, and an increase in the allowable hours of duct firing). Since that announcement, construction of the Phase I project has continued, though at a reduced pace than originally anticipated.

A preliminary approval of Amendment 1 to PSD/NOC Approval No. EFSEC/2001-01, was issued for public comment on July 29, 2002. Public notice of the comment period and of a public hearing on this matter was performed by publication of a legal notice in the Aberdeen Daily World (8/5/02), The Olympian (8/2/02), and the Montesano Vidette (8/1/02), and by mailing to EFSEC's interested persons list for this project, and EFSEC's minutes and agendas list (July 29, 2002). Copies of the draft permit and associated fact sheet were made available for public reference in the W. H. Abel Memorial Library in Montesano, the EFSEC offices in Olympia, and Ecology's Offices in Lacey, Washington, on EFSEC's web site and to any interested person upon request.

The public comment period closed on September 4, 2002, at the adjournment of the public comment hearing held at the Montesano City Hall, in Montesano, Washington.

The Council received nine written comments, and ten oral comments responding to the preliminary approval<sup>1</sup>. The following pages summarize the comments received and indicate how the concerns expressed are addressed in the final permit issued by the Council. It should be noted that the September 4, 2002 meeting was intended for receipt of both comments on preliminary approval of PSD/NOC permit No. EFSEC/2001-01, Amendment 1, as well as comment on the re-issuance of a National Pollutant Discharge Elimination System (NPDES) for the Phase I facility. Some citizens also offered comment of a more general nature regarding the impacts of the facility and the issuance of these permits. This document responds only to the comments relevant to the PSD/NOC permit amendment.

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<sup>1</sup> Several of the citizens who commented orally also submitted written versions of their testimony.

## **1.2 Summary of Current Action**

The final Amendment 1 being issued covers the existing Phase I project which is comprised of the following major components:

- a) Two General Electric gas combustion turbines (GE 7FA); each turbine having a maximum rating of 1,671 million British thermal units per hour (mmBtu/hr), and each turbine will have a supplementary duct burner with a maximum rating of 505 mmBtu/hr.;
- b) Two heat recovery steam generators (HRSG);
- c) One steam turbine generators (STG) rated 300 MW each;
- d) One auxiliary boilers;
- e) One forced draft cooling tower systems;
- f) One emergency backup diesel generators (new); and
- g) One diesel engine-driven fire water pump (new).

These components are configured in a “power island” comprised of 2 gas turbine/duct burner/HRSG units, one steam turbine, one cooling tower, one auxiliary boiler, one emergency generator, and one emergency fire water pump. Each gas turbine/duct burner/HRSG unit is known as a combined cycle gas turbine (CGT). Each CGT has its own exhaust stack.

The air quality impacts considered in this action were evaluated for the 4 turbine project, comprised of both Phases I and II. The ambient air quality impacts for the Phase I only project were estimated without rerunning the dispersion models. The estimated visibility impacts may be different than would be predicted through re-running the dispersion model. It is not expected that these impacts would be higher than the visibility impacts modeled for the current PSD/NOC approval.

As the impacts from the larger proposed facility were acceptable and the annual emissions from the site are being reduced to half of their previously modeled rates, the actual impact of the project is anticipated to be significantly less than what was modeled.

The existing PSD/NOC approval for this project also contained a number of operational restrictions that Duke Energy had requested to be lifted as part of this amendment to their existing PSD/NOC approval. The dispersion modeling for the larger project evaluated the impact of those restrictions being lifted for the entire 4 turbine (Phase I and II) project.

The permitted, annual emissions from the 2 turbine Phase I project will change as indicated in the following table, and incorporated into the table of potential emissions in Finding 9 of the PSD/NOC approval.

## Comparison of allowable emissions in current approval to those in final Amendment 1.

Pollutant	Current Allowable Emissions, kg/yr (tpy)	Amendment 1 Allowable Emissions kg/yr (tpy)
Nitrogen oxides (NO <sub>x</sub> )	239,496 (264)	223,617 (246) <sup>2</sup>
Carbon monoxide (CO)	384,644 (424)	394,224 (434)
Sulfur dioxide (SO <sub>2</sub> )	9,072 (10) <sup>3</sup>	26,420 (29) <sup>4</sup>
Sulfuric acid mist (H <sub>2</sub> SO <sub>4</sub> )	10,342 (11.4)	17,246 (19)
Volatile organic compounds (VOC)	72,574 (80)	84,702 (93.2)
Particulate matter (PM) and Particulate matter = 10 micrometers (PM <sub>10</sub> )	104,325 (115)	192,044 (211.2)
Ammonia (NH <sub>3</sub> )	109,769 (121)	128,214 (141)

The principle difference in the emissions is the removal from the approval of a limit on the use of duct firing. The current approval limits duct firing to 6760 hours per year for each CGT stack. The amendment will allow duct firing up to 8760 hours per year per CGT stack.

Particulate matter and sulfur dioxide emissions have both increased from the levels in the current permit. The particulate matter emissions have increased due to the 2000 hours per year of operation allowed for the duct burners and as a result of applying a higher total sulfur content in the natural gas (see footnotes 3 and 4). The higher sulfur dioxide emissions and sulfuric acid emissions are due to the revised natural gas sulfur content. This higher sulfur content was considered in the modeling performed for the entire 4 turbine (Phase I and Phase II) project.

### **1.3 Changes from the preliminary to final approval of this Amendment.**

Specific changes to the approval have been made to the findings to reflect the reduced scope of the amendment and to fix typographical errors for the emergency diesel generator emissions in Approval Conditions 5.1, and 11.4.

Duke Energy requested clarifications of what is initial startup for compliance testing purposes in Approval Conditions 14.2 and 16, and to the construction time in Approval Condition 26 to delete reference to a second project phase.

Approval Condition 13 of the current approval which limits the operation of the duct burners is being deleted, while the overall CGT stack emissions are being increased to account for this deletion.

The PSD increment and visibility impacts were also re-evaluated by EFSEC's air quality permit contractor, based on Duke Energy's request to delete the Phase II portion of the project. The re-evaluation better portrays the impacts of the Phase I project in response to comments from the public. The following two tables portray the revised impact information resulting from only permitting the Satsop Phase I project at this time. The impact of Phase I only will be about half the impact predicted for the combined Phase I and II project.

<sup>2</sup> Reduction in NO<sub>x</sub> is due to more accurate calculations not a change in emissions control efficiency.

<sup>3</sup> Based on an annual average natural gas total sulfur content of 0.2 grains/100 scf.

<sup>4</sup> Based on an annual average natural gas total sulfur content of 0.5 grains/100 scf.

The following revised Table 9 from the Fact Sheet indicates the maximum Class I and Class II increment consumed by the Phase I project. Finding 10 of the PSD/NOC approval has been appropriately modified.

TABLE 9  
PREDICTED MAXIMUM AIR QUALITY IMPACTS AND ALLOWABLE PSD INCREMENTS

POLLUTANT	Maximum ambient Class II area impact concentration ( $\mu\text{g}/\text{m}^3$ )	Class II area allowable increment ( $\mu\text{g}/\text{m}^3$ )	Maximum ambient Class I Area impact concentration ( $\mu\text{g}/\text{m}^3$ )	Class I area allowable increment ( $\mu\text{g}/\text{m}^3$ )
Particulate ( $\text{PM}_{10}$ )* Annual 24-Hour	0.27 2.41	17 30	0.00476 0.166	4 8
Nitrogen dioxide* Annual	0.35	25	0.00391	2.5
Sulfur dioxide Annual 24-Hour 3-Hour 1-Hour	0.17 2.10 4.80 12.18	20 91 512 -	0.00051 0.0159 0.1281 -	2 5 25 -

\*Evaluated at a higher emission rate than proposed to be permitted; see July 29, 2002 Fact Sheet and application materials for details.

The visibility impacts have been re-evaluated and the following modified Table 10 from the Fact Sheet indicates the anticipated maximum visibility impacts from the Phase I only project. This is an estimate of the impacts. The actual modeled impacts may be somewhat different due to how the CALPUF model actually handles atmospheric chemistry for sulfur and nitrogen oxides.

TABLE 10  
FEDERAL CLASS I AREAS WITH DAYS HAVING THE PEAK VISIBILITY IMPACTS

Class 1 Area	Date of Impact	Change in light extinction (visibility) due to the phase I and II project	Change in light extinction (visibility) due to the Phase I project	Approximate location of maximum impact
Olympic National Park	10/29/98	8.02%	4.01%	Staircase area and area adjacent to Colonel Bob Wilderness
Olympic National Park	10/30/98	5.64%	2.82%	Staircase area and area adjacent to Colonel Bob Wilderness
Mt. Rainier National Park	9/24/98	6.38%	3.19%	Southwest corner of park

None of the other Class I areas had visibility impacts any higher than these levels. The locations and day of maximum impact did not change, but with the emissions being halved, the magnitude of the visibility impact was reduced.

## 2 Summary of Comments Received

### 2.1 Written Comments

Comment:	See Response:
Michael G. Lufkin, Assistant Attorney General, Counsel for the Environment	3.20, 3.21
Sherry H. Rudrud, Elma, WA	3.19, 3.27, 3.14, 3.15, 3.12,
LeRoy Tipton,	3.29
Marie Piper, Cascade Environmental, on behalf of the Applicant.	3.22, 3.23, 3.24, 3.25, 3.26
James D. Rutz, Hoquiam, WA	3.29
Lisa Schonberg, Olympia, WA	3.18, 3.19
Megan McDonough, Olympia, WA	3.7, 3.9, 3.1, 3.10
Patrick Menendez, Olympia, WA	3.30
Peggy Olsen-Missildine, Elma, WA	3.31

### 2.2 Oral Comments of September 4, 2002

Comment:	See Response:
Jerry Dierker, Olympia, WA	3.2, 3.3, 3.4, 3.16, 3.17, 3.18, 3.19
Michael Tracy, Grays Harbor Economic Development Council	3.29
LeRoy Tipton, Grays Harbor Chamber of Commerce	3.29
Tami Garrow, , Grays Harbor Public Development Authority	3.29
Diane Swickerath, McCleary, WA	3.11, 3.10
Daniel Landin, Olympia, WA	3.16
Megan McDonough, Olympia, WA	3.1, 3.9
Sherry Rudrud, Elma, WA	3.28 (See also Section 1.2)
Mike Lufkin, Assistant Attorney General	3.20. 3.21
Stephen Hepp, Montesano, WA	3.13

### **3 Responses to Comments**

Note: Some of the comments have been paraphrased or generalized to allow direct responses to the concerns expressed. Copies of the original comment letters are available upon request from the Energy Facility Site Evaluation Council, and, for a limited time, will be available for public reference at the W. H. Abel Memorial Library in Montesano, WA.

#### ***3.1 It would make more sense to have a new hearing focusing on only Phase I permits.***

The Phase I project already has a valid PSD/NOC permit approval issued to it effective Nov. 20, 2001. This approval does not expire unless Duke Energy suspends construction for a period of 18 months or more.

EFSEC has taken into consideration commenter's requests for an additional hearing on a modification to the existing PSD/NOC approval focused solely on the changes to the Phase I project. The Council has concluded that little additional substantive information would be elicited by a hearing regarding such changes to the preliminary amended PSD/NOC, i.e. to limit the project to only one power island, add a diesel fueled emergency generator and fire water pump, and to allow an increase in the allowable hours of duct firing. The impacts of such changes would be lower than the impacts of the operation of both Phases I and II, and would still meet all state and federal new source review (NSR) and PSD review requirements.

#### ***3.2 The hearing is on Phase I issues but preliminary approvals issued for public comment cover Phase I and II.***

As noted above in Section 3.1, the differences between the text of the Phase I and II project approval issued for public comment and a Phase I only approval would be minor in nature. The preliminary amendment to the PSD/NOC approval described the project in terms of two equal phases, also called power islands.

#### ***3.3 Proper notice hasn't occurred; [certain citizens] received notice only on the Saturday [before the hearing] which is inadequate time to review.***

The commenter is referring to a press release dated August 26, 2002, that was mailed and e-mailed to the Council's interested person's list for this project. The purpose of the press release was to notify interested persons of Duke Energy's request to EFSEC to suspend review of the Phase II proposal, and to stress that the September 4, 2002, hearing on the Amendment to the PSD/NOC permit was still going to take place.

The issuance of the preliminary approval followed proper public notice requirements, including publication in local news papers, mailing and e-mailing to EFSEC's interested person's list for this project, and distribution of a copy of the preliminary approval to a local library for public reference, as described in Section 1.1 Background.

### ***3.4 Draft permits for only Phase I are not available to review or comment on.***

As explained above, a preliminary approval for the Phase I project alone would be the same as the approval issued for public notice, except that it would have stated the existence of a single power island, and the addition of a diesel fueled emergency generator and fire water pump. The annual emissions from the sources identified in the preliminary approval would have been accordingly half those stated in the preliminary approval issued for public comment.

### ***3.5 No actual permit has been seen [by Mr. Dierker] for the Phase I project.***

The PSD/NOC approval for the Phase I project was issued Nov. 20, 2001 after public comment and hearings in September 2001. The environmental impacts of the Phase I project were evaluated in conjunction with that approval. All the documents related to the 2001 approval were available for public reference at EFSEC's offices. As issued for public comment, this amendment primarily reformatted the previously existing requirements, acknowledged the inclusion of a diesel generator and emergency fire water pump, eliminated a restriction on duct burner operation, and would have allowed Duke Energy to add a second 'power island' identical to the first. All of these changes were evaluated for the air quality impacts of the additional equipment requested by Duke Energy, just like the air quality impacts of the Phase I project were evaluated in 2001. These review materials were available for public review at EFSEC's office, at the Department of Ecology in Lacey, and at the W.H. Abel Memorial Library in Montesano.

### ***3.6 The public did not receive adequate notification of the changes to the hearing.***

Please refer to the response in Section 3.3. EFSEC could not anticipate Duke Energy's request to suspend review of Phase II. EFSEC issued notice of this change as rapidly as possible to make sure that interested persons were aware that their comments on the preliminary approval would be considered as originally planned.

### ***3.7 There was no public access to Phase I permit information, which was not available at the hearing, nor was it easily accessible prior to the hearing.***

The Fact Sheet for the project and the findings for the preliminary approval clearly describe the total project and delineate the equipment utilized in each phase of the project. The preliminary approval gives emissions limitation and monitoring criteria on a per stack basis which allows for a simple summing to determine the total quantity of emissions allowed for each phase of the project. The environmental impact analyses for the project are for both phases and, with the exception of the visibility impacts, can be divided by 2 to determine the Phase I only impacts. The magnitude of the modeled visibility impacts have been reevaluated by EFSEC's air quality permitting contractor. The magnitude of the visibility impacts have been found to decrease to approximately half the levels of the Phase I and II project. The maximum visibility impact from the Phase I project as currently proposed is approximately 4.01%.

As stated above, information on the existing Phase I approval, and the proposed changes to the project was available for public reference at a number of locations including EFSEC's

office, the Department of Ecology in Lacey, and the W.H. Abel Memorial Library in Montesano during normal business and library hours.

### ***3.8 Request that the permit be rewritten to address only the Phase I project.***

As requested by the applicant and the commenter the final approval for this project has been modified to cover solely the Phase I project. The necessary changes to the preliminary approval are outlined above in Section 1.2.

The revised PSD/NOC approval, addressing solely Phase I, will be available for review for 30 days, at the same locations where the preliminary information was available.

### ***3.9 Have Duke reapply for these permits, separating Phase I and Phase II, and hold a new public hearing with adequate prior notice.***

During the public comment period, Duke Energy requested that EFSEC suspend review of Phase II project elements and only address Phase I issues. In accordance with that request, the PSD/NOC approval has been modified to only address amendments to the permit necessary for the current configuration of the Phase I facility.

As stated above, EFSEC considered commenter's requests to hold an additional hearing for Phase I permit modifications alone, and concluded that an additional hearing would not elicit additional substantive information.

### ***3.10 Why issue the permits when Duke may never finish the plant?***

It is necessary to issue the PSD/NOC permit amendment to accommodate the current design of the facility rather than the design that existed in the spring of 2001. The amendment also makes adjustments to the emission monitoring and compliance determination requirements necessary to meet state and federal Air Operating Permit criteria. As the facility is nearly 50% completed, including having the turbines installed on site, and Duke Energy is continuing with construction, even though on a slower schedule than anticipated in August 2002. The amended PSD/NOC permit is necessary to allow construction of the modified project to continue. Duke Energy has given no indication that they will abandon construction of the Phase I facility at this time.

As a regulator, EFSEC does not have the right to decide to stop processing, or refuse issuance of, a permit because the Council doesn't think the applicant will ever start, or complete construction of a project. A permittee may choose to never start construction, or stop construction of a facility for business reasons totally unrelated to environmental issues.

### ***3.11 What if Duke stops for 10 years and then comes back with a different project? Would they need new permits?***

Yes. A PSD/NOC approval is only valid for 18 months and in accordance with EPA guidance, can only be extended twice for a total length of 54 months without a completely new application being filed. The permittee must start construction within the lifetime of the original permit, or

any extensions granted. Additionally each extension requires an evaluation of the Best Available Control Technology to determine. If the best emissions control technology has changed and lower emissions are possible, the regulator is required to incorporate these lower emission limits into the extended permit. This process has occurred on the previous PSD/NOC approval and extensions for the Phase I project at this site. If construction of the Phase I project is suspended for 18 months, and no extensions are requested by the permittee, and granted by EFSEC, construction of the Phase I project would not be authorized until the permittee submitted an application for a new PSD/NOC permit, and such a permit was granted.

***3.12 Combined with the emissions of the Boise Cascade plant in the same business park, the quantity of emissions are of great concern. Even without the Boise Cascade plant, the numbers are too high for comfort.***

The emissions from this facility are as low as, or lower than, other gas turbine based electric generation projects of similar size permitted anywhere in Washington State or the rest of the country. While the emissions may appear to have high numeric values based on common experience, the purpose of New Source Review (NSR) and Prevention of Significant Deterioration (PSD) review is to determine whether there will be significant deterioration of air quality and associated adverse impacts to human health and the environment.

As required by state and federal regulations under PSD review, the Satsop CT Project modeled its emissions to determine whether or not impacts to ambient air quality concentrations would exceed the “significant impact levels” established by EPA. Under PSD regulations, only facilities with impacts in **excess** of significant impact levels are required to include the impacts of other facilities within the significant impact zone. The modeling for the current permit approval demonstrated that the impacts of the Phase I (and Phase II) project would be less than EPA’s significant impact levels. It was in fact determined that the Phase I project would not have any adverse impacts on the ambient air quality in the vicinity of the project, and would comply with all National Ambient Air Quality Standards.

***3.13 The commenter wants to see baseline data and effects of Phase I on the environment.***

This information was presented and available for the Phase I project approval issued November 20, 2001. The records and application materials are available for review at EFSEC’s office.

The air quality effects of the Phase I and II projects has been evaluated and presented in the PSD/NOC application and summarized in the Fact Sheet for the approval. The application materials and related analyses were also available for public review. The impacts for the Phase I and II project proposal were roughly double what the Phase I project would have alone.

**3.14 What are the potential impacts of salt drift on existing wildlife mitigation lands, wildlife areas and farm lands in proximity to the Satsop facilities? In a response to comments on the draft EIS, the Wallula Power Project has agreed to install a recirculating system to reduce PM emissions from cooling towers.**

“Salt drift” from the cooling towers installed at the Satsop Phase I will be fairly limited in scope. The larger particles are not expected to drift more than 40 – 50 meters from the cooling tower. The finer particles will continue to travel with the wind until they either drift out of the air or are removed by rainfall. The cooling tower installed for Satsop Phase I will emit 4.5 tons of particulate matter less than 10 microns in size (PM10) per year. This will not be concentrated in one place but will spread over a relatively large area. These emissions are included in the dispersion modeling performed for the project. A review of the particulate concentration dispersion pattern indicates that the maximum concentrations and fallout will occur on the higher elevation ground on the south side of the Chehalis River. The highest particulate concentrations occur about 5 kilometers (3 miles) southwest of the plant site with another area of impact on high ground to the east and northeast of the plant site.

Even for the 4 turbine project, modeling concluded that local deposition would not be above the US Forest Service “levels of concern” for wilderness areas<sup>5</sup>. It was determined that this level of particulate emissions will pose no threat to human health, welfare, or the environment.

The cooling water recirculating system proposed for the Wallula Power Project is a means to control and reduce the quantity of dissolved solids in the recirculating cooling water of the cooling tower. The system was required at the Wallula Power Project for two reasons: first, a high concentration of solids in the water supply resulted in a higher concentration of solids in the recirculating cooling tower water compared to the Satsop CT facility; and second, the Wallula Power Project is proposed in an area that is designated as in serious nonattainment for PM10, therefore requiring a much higher level of emissions control for that facility (Lowest Achievable Emissions Rate).

**3.15 What type of studies will the Applicant undertake to determine the extent of salt drift and impacts to wildlife and other sites where drift may be expected?**

The PSD/NOC approval does not contain any requirement to study the extent of salt drift or particulate fallout from the project site or its impacts on wildlife areas or other locations.

Should the permittee decide to proceed with the review and permitting of Phase II of this project, they have committed to study and report to EFSEC on possible salt drift impacts to wildlife, wildlife habitat and/or agricultural areas near the project site prior to operation of Phase II<sup>6</sup>.

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<sup>5</sup> Based on an assumption that all of the particulate matter is either nitrate or sulfate.

<sup>6</sup> May 23, 2002, Energy Facility Site Evaluation Council, Mitigated Determination of Non-significance, Pursuant to Chapter 463-47 WAC, WAC 197-11-350 and WAC 197-11-660, For the Satsop Combustion Turbine Project (Phase II), Request for Amendment No. 4 to Site Certification Agreement.

### **3.16 Concerned with acidic deposition from the CO<sub>2</sub> and CO emissions.**

CO<sub>2</sub> and CO (which oxidizes in the atmosphere to become CO<sub>2</sub>) are not active participants in generating acidic deposition. Chemically CO<sub>2</sub> will dissolve in rain droplets, but the amount dissolved is small. If rainfall were an important mechanism to remove CO<sub>2</sub> from the atmosphere, the levels of CO<sub>2</sub> in the atmosphere would not be increasing as they have since the start of the industrial revolution.

More important chemicals from this project that generate acidic deposition are sulfates and nitrates generated in the atmosphere from the nitrogen oxides and SO<sub>2</sub> emitted by the combustion of natural gas in the turbines. These chemicals take a period of time in the atmosphere to convert to their acidic forms and be removed from the atmosphere in rainfall or by dry deposition. The deposition of such sulfates and nitrates was assessed through the PSD preview process for Phases I and II, and the analysis was discussed in the July 29, 2002 Fact Sheet. Since only Phase I is being considered now, the deposition will be reduced to approximately half the rate presented in the Phase I and II project application materials.

### **3.17 The commenter doesn't see SO<sub>2</sub> produced [by the plant] but the plant uses sulfuric acid. Will this be emitted? This doesn't seem to be covered in the preliminary approval.**

The combustion of natural gas in the combustion turbines will produce gaseous SO<sub>2</sub> and sulfuric acid mist which are emitted into the atmosphere. That is why there are emission limitations for these pollutants in the preliminary and final PSD/NOC approval.

Sulfuric acid is used in small quantities as part of the boiler water chemical treatment system and in the cooling water system to adjust water pH and control scaling. These uses of sulfuric acid are small and not subject to regulation under the PSD/NOC approval.

### **3.18 No cumulative impact analysis of greenhouse emissions in the State of Washington**

CO<sub>2</sub>, the principle greenhouse gas emitted by this project, is currently not regulated as an air pollutant through either the New Source Review or PSD programs. A cumulative impact analysis of greenhouse emissions in the State of Washington is not required as part of this permit issuance. However, through the state's existing Site Certification Agreement which authorizes construction and operation of Phase I, EFSEC is already requiring that Duke Energy prepare and submit a report to the Council no later than one year prior to each turbine coming on line, that presents and evaluates possible greenhouse gas and carbon dioxide mitigation techniques, and concentrates on those techniques that can offer cost-effective measures. Duke Energy is also required to prepare, submit and implement a Council-approved greenhouse gas and carbon dioxide mitigation plan<sup>7</sup>.

A report on the quantities and sources of greenhouse gas emissions within Washington State and the rest of the United States is available through the Washington State Department of

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<sup>7</sup> Energy Facility Site Evaluation Council, Resolution No. 298, Technical Amendments Regarding Facility Design and Backup Fuel Source, April 13, 2001.

Community, Trade and Economic Development<sup>8</sup>, and the Environmental Protection Agency<sup>9</sup>. Based on the Duke Energy and EPA information, the Satsop Phase I project will add approximately 1.2 million tons or a 1.2% addition to the 1999 net greenhouse emissions from the state of 93.21 million tons of CO<sub>2</sub>.

**3.19 2.4 million tons of CO<sub>2</sub> from this plant is too much.**

2.4 million tons is the total for the Phase I and II projects. The Phase I project alone would emit half that amount. See the previous response for more details.

**3.20 Permit: Page 4, Paragraph 10, Deposition of Nitrogen in Olympic National Park is higher than the NPS threshold for concern. To the extent possible, please explain how the NPS made their conclusion of acceptability.**

- a. *Did EFSEC independently assess the impacts of nitrogen deposition in the park?*
- b. *Were cumulative impacts from other nitrogen sources considered in the analysis?*

See section 4.3.3 of the July 29, 2002 Fact Sheet issued with the preliminary approval for this project for a more detailed discussion of deposition in Olympic National Park.

The deposition guidance is guidance to the National Park Service (NPS) staff to determine when to investigate or perform more detailed evaluations of the impacts of the nitrogen deposition. In this situation, the predicted value of the deposition was 0.0062 kilograms per hectare per year (kg/ha/yr). This is comparable to the NPS's published threshold for concern of 0.005 kg/ha/yr. Region 6 of the US Forest Service (covering Washington state) has established that the level of nitrogen deposition for Washington state Class 1 areas with coniferous forests and herbaceous plants do not exhibit an adverse effect at deposition levels below 3 kg/ha/yr. As the Olympic National Park (ONP) is a relatively remote location influenced more by marine elements than the population centers of central Puget Sound, and there are no reports of vegetative injury due to air pollution or deposition, the NPS accepted this predicted increase in deposition without requesting further analysis.

The limited response by the NPS on this subject is in the project record. The deposition criteria the NPS has published is not a set of regulatory limits but a set of criteria by which the park service staff decide whether to take any additional actions and what additional actions or information requests to make.

Did EFSEC independently assess the impact? As part of a normal permit application review, EFSEC's air quality permit contractor (the Department of Ecology, Air Quality Program Technical and Engineering Services section) does review the predicted impacts of each application against the available criteria. They did not perform dispersion modeling to confirm the nitrogen deposition impacts, but did review the inputs to, and results of, the applicant's dispersion modeling.

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<sup>8</sup> Kerstetter, James D., Greenhouse Gas Emissions Inventory for Washington State, 1990, Washington State Energy Office, WSEO #93-260

<sup>9</sup> Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2000, (April 2002) US EPA #236-R-02-003.

Were cumulative impacts from other nitrogen sources considered in the analysis? The cumulative effect of this project's emissions on top of all other existing emissions was not specifically evaluated. The impact of this project with the impact of all other projects that have evaluated deposition in Olympic National Park was evaluated to see if the total would exceed the Forest Service 'no effect' value (this value is listed as 3 kg/ha/yr<sup>10</sup>). While the evaluation indicated that the Forest Service "no effect" value was not exceeded, the evaluation was based on data available only within our contractor's office and was not done in a scientifically rigorous manner.

The revised PSD/NOC permit is for only Phase I of this project. The Phase I project has an impact of half the impact of the Phase I and II project. Thus the impact from the modified Phase I project is similar to that evaluated previously, a nitrogen deposition rate of about 0.0031 kg/ha/yr.

**3.21 Permit: Page 4, Paragraph 12. Degradation of visibility due to the Phase 1 and 2 projects are predicted to reduce visibility by more than 5% from current conditions on 2 days in ONP and 1 day in Mt. Rainier NP. In the FLAG report, the Federal Land Managers have indicated that if the predicted impact is greater than 5%, they would request a cumulative visibility impact assessment (unless one had already been done). Why did the NPS not request an assessment?**

- a. **How does this determination comply with the congressional goal in section 169A of the fCAA to "prevention of any future, and the remedying of any existing, impairment in visibility in mandatory class I areas which impairment results from manmade air pollution."**
- b. **To what extent were the cumulative impacts of other facilities considered in the analysis?**

We do not know why the NPS did not request a cumulative visibility impact assessment. The telephone record of the telephone call between Dee Morse of the NPS and Alan Newman of the Department of Ecology (EFSEC's permitting contractor) on their acceptance of the proposed impacts notes that Mr. Morse said if the projected impacts were solely for the Phase II project, they would have requested a cumulative assessment be performed. This is not the first occasion that the NPS has reviewed the impacts of this project on ONP and Mt Rainier NP. The NPS has previously accepted the Phase I project as part of the approval issued in November, 2001, and prior approvals issued to Energy Northwest for earlier versions of this project. The application materials submitted in the summer of 2001 and other previous applications performed the same or similar visibility impact evaluations. The submittal of summer 2001 used the same dispersion model, but a lower sulfur dioxide emission rate than used for this approval amendment. The prior project exhibited the same 3 days with visibility impact above 5%, though at somewhat lower values. The NPS did not request a cumulative impact assessment for that project either.

The Department of Ecology re-evaluated the maximum impact on visibility of the revised Satsop Phase I project. The re-evaluation resulted in maximum visibility impacts based on the Phase I project alone as shown in the following revision to Table 10 of the Fact Sheet:

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<sup>10</sup> Peterson, Janice, Schmoltdt, Daniel, et al, Guidelines for Evaluating Air Pollution Impacts on Class I Wilderness Areas in the Pacific Northwest, General Technical Report PNW-GTR-299, May 1992

TABLE 10  
FEDERAL CLASS I AREAS WITH DAYS HAVING THE PEAK VISIBILITY IMPACTS

Class 1 Area	Date of Impact	Change in light extinction (visibility) due to the phase I and II project	Change in light extinction (visibility) due to the Phase I project	Approximate location of maximum impact
Olympic National Park	10/29/98	8.02%	4.01%	Staircase area and area adjacent to Colonel Bob Wilderness
Olympic National Park	10/30/98	5.64%	2.82%	Staircase area and area adjacent to Colonel Bob Wilderness
Mt. Rainier National Park	9/24/98	6.38%	3.19%	Southwest corner of park

All other visibility impacts portrayed in the application would be equivalently reduced due to the impact of eliminating the Phase II portion of the project.

Additional information on visibility impacts from this project available to EFSEC and the NPS was the results of the Bonneville Power Administration (BPA) Cumulative Impact Study, Phase I and Phase II<sup>11</sup>. This study was performed as part of the BPA's NEPA review in its consideration of allowing new power plants to connect to the BPA transmission system.

How does this determination comply with the congressional goal in section 169A of the fCAA? This determination does not directly conform to the quotation of section 169A of the fCAA in the comment. It more directly conforms with the regulations developed by EPA (in 40 CFR 51, Subpart P) to carry out this goal, by requiring new sources of air pollution to evaluate their visibility impacts and the regulatory agencies to minimize the visibility impact of these new sources as much as possible.

To what extent were the cumulative impacts of other facilities considered in the analysis? The cumulative visibility impact analyses performed by the Bonneville Power Administration were evaluated to determine the impacts of this and other power plant projects evaluated by the BPA. The BPA modeling results indicate that this project's visibility impacts at Olympic National Park are not significantly affected or increased due to the emissions of the other modeled power projects. Impacts of this and the other modeled projects have a minor effect at Mt. Rainier National Park and Alpine Lakes Wilderness.

<sup>11</sup> Phase I Results Regional Air Quality Modeling Study Bonneville Power Administration, August 1, 2001; Phase II Results: Satsop Combustion Turbine Project Contribution to Regional Haze, November 29, 2001.

**3.22 Permit: Approval Condition 5.1.1 there appears to be an error with the diesel generator NOx emission rate. The Tier II emission factor for NOx with NMHC is 6.4 gram/kW-hr which converts to 3.2 kg/hr (7.04 lb/hr) for a 500 kW diesel generator. Please verify and modify the NOx limit in the permit which is currently written as 2.038 kg/hr (2.86 lb/hr).**

The error has been noted and corrected in the approval.

**3.23 Permit: Approval Condition 10.1.1 The emission rate in the draft permit for VOCs from the CGTs is in error. The engineering data from the applicant provides for an emission rate of 8.4 lb/hr (3.8 kg/hr). Please modify the limit from 6.3 kg/hr to 8.4 kg/hr.**

The permit and the comment are in agreement. The difference is in the unit of correction. The permit is written in terms of carbon equivalent. The application materials are written in terms of methane equivalent. The underlying emission test method allows either value to be reported. The permit writer chose to use carbon equivalent.

**3.24 Permit: Approval Condition 11.4.1 To be consistent with the averaging period utilized for particulate matter emission rates for other sources in the permit, please modify the hourly emission rate of 0.10 kg/hr (0.22 lb/hr) for the diesel generators to 2.4 kg/day (5.28 lb/day).**

The comment is reasonable and makes this pollutant consistent with the emission limitation times for the other regulated pollutants from the emergency generators. The gram/kW-hr limitation remains as a short-term emission limitation.

**3.25 Permit: Approval Condition 14.2 Please confirm that the two startup/shutdown cycles per day limit is for routine operations, as stated in the draft permit, and not applicable during the commissioning period. During the commissioning period, more than two startup/shutdown cycles may be necessary on occasion. The averaging periods for the primary pollutant of concern are the 1-hour and 8-hour, hence no daily limit on the number of startup/shutdown cycles is necessary.**

This condition was intended for routine operation of the facility. This condition was not intended to cover the period between first firing of a turbine and the formal power island startup which triggers the initial compliance testing requirements. This has been clarified in the approval by adding a second sentence to condition 14.2 stating: "This limitation does not apply during the period between initial firing of a combustion turbine for testing purposes and the start-up condition specified in Approval Condition 16."

**3.26 Permit: Approval Condition 16 Please add language to the Approval Condition to clarify the definition for "first commercial electricity from a CGT" is based on 40 CFR 72.2's definition as follows:**

***"Commence commercial operation means to have begun to generate electricity for sale, including the sale of test generation."***

**Duke Energy utilizes the term "sync to grid" in their commissioning documents interchangeably with the definition of "commence commercial operation".**

While the Acid Rain program definition is valid for its program purposes, the intent of this condition was to allow some operational and acceptance testing by the owners prior to the date of commercial operation. The condition will be rephrased to read:

- 16 *Initial start-up for determining when the initial compliance testing, CEM system performance testing, and other, non acid rain program purposes is the earlier of the following dates:*
- 16.1 *The earliest date that electrical power is offered for sale (not test generation) from a CGT and its associated steam turbine, or*
  - 16.2 *180 days after the first CGT in the power island has been synchronized to the electrical distribution grid.*

**3.27 Usage of ammonia for NOx control.**

***a. How will ammonia be controlled?***

***b. Spill control***

***c. Deposition of salts in the area of the plant.***

The usage of ammonia in the emissions control system will be controlled through the ammonia feed system. Ammonia emissions from aqueous ammonia tanks are not proposed to be controlled as part of the air quality permit.

Federal air quality regulations require spill plans to be developed for the storage of aqueous ammonia at concentrations above 20%. These spill plans are separately enforceable requirements that are required to be elements of an air operating permit but are not included in a PSD/NOC approval.

If the aqueous ammonia used by Duke Energy is below 20% concentration, then the federal spill plan requirements do not apply. At this point, spill protection is governed by state water pollution control and spill prevention laws and regulations, and requirements already included in the existing Site Certification Agreement for the Phase I facility, again not part of an air quality approval.

Please refer to Sections 3.14 and 3.15 for the response addressing deposition of salts in the area of the plant.

**3.28 Diesel fueled equipment**

***a. Transport and storage of the fuel is dangerous.***

***b. Unconvinced that a 500 hour per year limit is sufficient to protect air quality.***

Transport and storage of diesel fuel for the emergency generator and the fire water pump are not covered by the air quality approval. Spill containment of the onsite diesel storage is an

element of other approvals and requirements contained in the Site Certification Agreement. Transport of diesel fuel is regulated by the federal Department of Transportation.

The 500 hour per year limit is to prevent the diesel generator from being operated continuously. If it were fired continuously, the emissions would rise by 17.5 times (to about 23 tons/year (tpy) of NO<sub>x</sub> and VOC, 17 tpy of CO, and 1 tpy of particulates). The emissions resulting from continuous operation are clearly significant emissions. As this is supposed to be an emergency generator seeing rare and infrequent use other than a 30 minute exercise once to twice a month, 500 hours per year is a normally accepted limitation for emergency generators.

### **3.29 Comments supporting issuance of the PSD/NOC permit.**

Several commenters supported issuance of the Amendment to the PSD./NOC permit, indicating that the permit amendments consisted of addition of a diesel fired emergency generator and fire pump, and that the facility met best available control technology, resulting in emission equal or lower than other similar facilities permitted in Washington State. Thank you for your comments.

### **3.30 Written submittal of Patrick Menendez.**

Mr. Menendez submitted documents generally discussing the business transactions of Duke Energy and past permitting actions of other Duke Energy facilities. Thank you for your comments.

While information about their past business practices and their relationships with other permitting agencies is informative, we cannot directly use this information in making permitting decisions in Washington.

**3.31 *I live a few miles from the Satsop plant and would like to know exactly how much toxic junk is going to be dumped on me and other areas where I am considering moving. I have been to the library and reviewed their notebook. I copied and reviewed the modeling maps. None of the maps have cities on them so they are worthless. Shouldn't this information be written so people can understand it? Should it be this hard to get information about a plant in my area? The permitting document is not written for citizens to understand so what is the point of making it available at the library? Why did Duke Energy tell me to go to the library? Did they think I wouldn't bother? Why can't they simply tell me? What are they hiding? What don't they want me to share with my community?***

Federal and state regulations require the permitting agency to make available copies of the permit application and associated document that were considered in making the preliminary determination available to the public. Notice of the issuance of the preliminary approval included information on the availability of these documents at the W.H. Abel memorial Library in Montesano, WA , so that the public would have access to the information in their community.

As for the level of detail in the application and the resulting language of the preliminary approvals, the Council acknowledges that the information is of a very complex nature. Much of the information in the preliminary approval is very detailed and is to assure that the project will meet the emission limitations in the preliminary approval.

The high level of scientific assessment performed by the applicant in support of their application is required by state and federal regulations and guidance. The information in the application is principally to provide the permitting authority the ability to verify that applicable ambient air quality standards shall not be exceeded, and to ensure that the environment and human health of near-by residents are not threatened by the proposal. The information in the Fact Sheet is intended to provide this information in a condensed form and to explain what was evaluated and considered by the agency in making its preliminary determination. As we are looking at the effects of projects over large areas and in the area around the points of maximum impacts, the level of detail to know what is happening at a specific location may not be adequately detailed to determine the impacts at a specific location. On request, we can assist you in determining the impacts of the project at your specific location.