Washington State
Energy Facility Site Evaluation Council

As required by

the Washington State Administrative Procedures Act

Chapter 34.05 RCW

CONCISE EXPLANATORY STATEMENT

AND

RESPONSIVENESS SUMMARY

FOR THE ADOPTION OF

CHAPTER463-80 WAC
CARBON DIOXIDE MITIGATION PROGRAM FOR THERMAL ELECTRIC GENERATING FACILITIES

AND

CHAPTER 463-85 WAC
GREENHOUSE GASES EMISSIONS PERFORMANCE STANDARD AND SEQUESTRATION PLANS AND PROGRAMS FOR BASELOAD ELECTRIC GENERATING FACILITIES

06/24/08

As required by the Washington State Administrative Procedures Act, RCW 34.05.

CONCISE EXPLANATORY STATEMENT

AND

RESPONSIVENESS SUMMARY

FOR THE ADOPTION OF

CHAPTER 463-80 WAC
Carbon Dioxide Mitigation Program for Thermal Electric Generating Facilities

AND

CHAPTER 463-85 WAC
Greenhouse Gases Emissions Performance Standard and Sequestration Plans and Programs for Baseload Electric Generating Facilities

Prepared by:

Allen Fiksdal

Washington State Energy Facility Site Evaluation Council

in conjunction with

Nancy Pritchett, Air Quality Program

Washington State Department of Ecology

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This publication is based on the Concise Explanatory Statement and Responsiveness Summary for Amendments to Chapter 173-218 and 173-407 WAC prepared by the Department of Ecology, June 2008.

Concise Explanatory Statement
Proposed Rule Language for
Chapters 463-80 and 463-85 WAC

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Concise Explanatory Statement
Proposed Rule Language for
Chapters 463-80 and 463-85 WAC

Preface:

As required by RCW 80.80.040(10) the Energy Facility Site Evaluation Council (EFSEC) and the Department of Ecology (Ecology) were required to adopt rules in coordination with each other. In adopting these rules EFSEC chose to adopt rules under Chapter 80.70 and 80.80 as separate chapters (Chapter 463-80 and 463-85 WAC respectively). Ecology, who had previously adopted rules under Chapter 80.70 RCW (Chapter 173-407 WAC) chose to amend its rule and refer to the rules adopted under Chapter 80.70 RCW as Part I of Chapter 173-407, and those rules adopted under Chapter 80.80 RCW as Parts II and III.

Ecology took the lead in developing the rules, however EFSEC was part of discussions and coordinated with Ecology throughout this process. EFSEC's proposed rules are for the most part exactly the same as Ecology's. The differences are primarily due to the differences in jurisdiction over the size of electric power facilities for which Chapters 80.70 and 80.80 RCW apply. EFSEC's jurisdiction is for thermal electric generation facilities that are 350 megawatts or greater where Ecology's jurisdiction is for those electrical generation facilities less than 350 megawatts. Because some of Ecology's rules are specific to those facilities it regulates (less than 350 megawatts) EFSEC did not include those specific sections. As a result, some of the numbering of the sections and subsections in EFSEC's rules may not be identical to those in WAC 173-407 Parts I and II. In addition because Chapter 80.80 RCW contained sections relating the Washington Department of Community, Trade and Economic Development, the Utilities and Transportation Commission and their working with Ecology, EFSEC did not adopt any rules that are similar to WAC 173-407 Part III.

EFSEC and Ecology issued joint public notices and held joint public hearings and EFSEC considers all the comments to Ecology's rule to be comments on EFSEC's rule. In preparation of this Concise Explanatory Statement, EFSEC and Ecology have again cooperated and the responses to comments and changes to the rules are the same except where there were specific comments regarding sections particular to either EFSEC or Ecology's authority or jurisdiction, or where EFSEC has no legal or administrative role.

ACRONYMS AND ABBREVIATIONS

AKART	All known, available, and reasonable methods of prevention, control, and treatment
AOP	Air Operating Permit
API	American Petroleum Institute
AQP	Air Quality Program
CCS	Carbon Capture and Sequestration
CFR	Code of Federal Regulations
CEM	Continuous Emission Monitors
DOE	Department of Ecology
E2SHB	Engrossed Second Substitute House Bill
EPA	Environmental Protection Agency
EPS	Emissions Performance Standard
EFSEC	Energy Facility Site Evaluation Council
ESSB	Engrossed Substitute Senate Bill
GHG	Greenhouse gas(es)
GSU	Geologic Storage Unit
IOGCC	Interstate Oil and Gas Compact Commission
MWh	Megawatt Hour
NOC	Notice of Construction
PSE	Puget Sound Energy
RCW	Revised Code of Washington
UIC	Underground Injection Control
USDW	Underground Sources of Drinking Water
WAC	Washington Administrative Code
WQP	Water Quality Program
WSPA	Western States Petroleum Association

CONCISE EXPLANATORY STATEMENT

I. Introduction

- **Identify the reasons for adopting these rules (RCW 34.05.325(6)(a)(i)):**

The purpose of adoption of Chapter 463-80 is to implement the mitigation of carbon dioxide emitted by thermal electric power generation facilities.

The Legislature passed Chapter 80.70 RCW in 2004 with the intent to establish statewide mitigation of carbon dioxide from electrical generation facilities. The mitigation was to be accomplished through one or a combination of payment to a third party, direct purchase of permanent carbon credits, or investment in an applicant-controlled carbon dioxide mitigation projects. In addition the Energy Facility Site Evaluation Council (EFSEC) was directed to develop of list of qualified organizations to carry out third party carbon dioxide mitigation.

The purpose of adoption of Chapter 463-85 is to implement a greenhouse gases (GHG) emissions performance standard (EPS) for baseload electric generation.

The Legislature passed Chapter 80.80 RCW in 2007 with the intent to establish statutory goals for statewide reductions in GHG emissions. The Legislature further intended Chapter 80.80 RCW to authorize immediate actions in the electric power generation sector for the reduction of GHG emissions. To accomplish this, EFSEC, in coordination with Ecology, was directed to adopt a GHG EPS by rule for all baseload electric generation for electric utilities entering into long-term financial commitments on or after July 1, 2008.

EFSEC developed Chapter 46-80 WAC based on Chapter 173-407 previously adopted by Ecology. Ecology also amended Chapter 173-407 for minor corrections to the carbon dioxide mitigation (Part I) and implemented and enforces the GHG EPS as Parts II and III.

EFSEC assumed all comments received by Ecology pertaining to Chapter 173-407 applied to Chapters 463-80 and 463-85 WAC. EFSEC used the same commenter designation as Ecology.

- **Identify the adoption date of rule and effective date of rule.**

The adoption date of the rule is June 24, 2008, as required in RCW 80.80. The effective date is 31 days after the rule is filed with the Code Reviser.

II. Describe Differences Between Proposed and Final Rule

- **Describe the differences between the text of the proposed rule as published in the Washington State Register and the text of the rule as adopted, other than editing changes. State the reasons for the differences (RCW 34.05.325(6)(a)(ii)):**

The Administrative Procedure Act (Chapter 34.05 RCW) requires EFSEC to provide reasons for changing language in the rules between the proposed rule text published in the Washington State Register with the CR-102 and the text of the rules as adopted. This section of the Concise Explanatory Statement fulfills this requirement.

The changes are listed in the order that they appear within the rule text. Deletions appear as red strikethrough text and additions appear as green underlined text. The reason for each change, as well as the source of the change, is provided. Minor editing changes (i.e. punctuation or grammatical corrections) are not included.

Chapter 463-80 WAC – Carbon Dioxide Mitigation Program, for Thermal Electric Generating Facilities

1. WAC 463-80-030 Carbon dioxide mitigation program applicability.

   (2)(a) An application was received after July 1, 2004; and
   (b) The station-generating capability is 350 MWe or greater; or
   (c) The facility is a fossil-fueled floating thermal electric generation facility subject to regulation by the energy facility site evaluation council.

   Reason: The change is for clarification.

2. WAC 463-80-100 Independent qualified organization use of funds.

   (4) An organization found by EFSEC to have violated subsections (~~2~~1) or (~~3~~2) of this section and removed from EFSEC's list of independent qualified organizations may not apply or request listing on EFSEC's list for a period of four years after removal from the list.

   Reason: These changes were made to correct the citation.

Chapter 463-85 WAC – Greenhouse Gases Emissions Performance Standard and Sequestration Plans and Programs for Thermal Electric Generating Facilities Implementing Chapter 80.80 RCW

3. WAC 463-85-110 Definitions.

   The following definitions ~~are applicable~~ apply when these terms are used in the provisions of ~~for~~ this chapter.

   Reason: The change is for clarification.

4. WAC 463-485-110 Definitions.

   "Baseload electric generation" means electric generation from a power plant that is designed and intended to provide electricity at an annualized plant capacity factor of at least sixty percent. For a cogeneration facility, the sixty percent annual capacity factor applies to only the electrical production intended to be supplied for sale. For purposes of this rule, designed means originally specified by the design engineers for the power plant or generating units (such as simple cycle combustion turbines) installed at a power plant; and intended means allowed for by the current permits for the power plant, recognizing the capability of the installed equipment or intent of the owner or operator of the power plant.

   Reason: The additional text related to design and intent is added in response to a request by commenter W-23 to clarify the meaning of this phrase. The clarification is in line with EFSEC's and Ecology's understanding of the language as used in the law and as we have used it within the proposed rule.

5. WAC 463-85-110 Definitions.

   "Baseload electric generation facility" means the power plant that provides baseload electric generation.

   Reason: This definition was added to conform to the Ecology rule in response to a request by commenter W-20.

6. WAC 463-85-110 Definitions.

   "Electric generating unit" (EGU) is the equipment required to convert the thermal energy in a fuel into electricity. In the case of a steam electric generation unit, ~~it is comprised~~ the EGU consists of all equipment ~~from~~ involved in fuel delivery to the plant site, ~~through an~~ as well as individual boilers, any installed emission control equipment, and ~~ending with the~~

~~generation of electricity in a dedicated~~ any steam turbine/generators dedicated to generating electricity. Where a steam turbine generator is supplied by two or more boiler units, all boilers contributing to that steam turbine/generator comprise a single electric generating unit. All combustion units/boilers/combined cycle turbines that produce steam for use in a single steam turbine/generator unit are part of the same electric generating unit.

Examples:

(a) For an integrated gasification combined cycle combustion turbine plant, the EGU consists ~~it is comprised~~ of all equipment ~~from~~ involved in fuel delivery to the unit, as well as all equipment used in the fuel conversion and ~~through the~~ combustion processes, any installed emission control equipment, and all equipment used for ~~ending with~~ the generation of electricity.

(b) For a combined cycle natural gas fired combustion turbine, ~~it is~~ the EGU begins at the point where natural gas is delivered to the plant site and ends with the generation of electricity from the combustion turbine and from steam produced and used on a steam turbine.

(c) An EGU also includes ~~F~~fuel cells fueled by hydrogen produced (1) in a reformer utilizing nonrenewable fuels or (2) by a gasifier producing hydrogen from nonrenewable fuels.

Reason: Clarification by EFSEC and Ecology staff. The meaning and intent of the section is not changed.

7. WAC 463-85-110 Definitions.

"Renewable resources" means ~~a~~ electricity generation facilities fueled by renewable fuels plus electricity generation facilities fueled by:

(a) Water;
(b) Wind;
(c) Solar energy;
(d) Geothermal energy; or
(e) Ocean thermal, wave, or tidal power.

Reason: Clarification by Ecology staff. The meaning and intent of the section is not changed.

8. WAC 463-85-110 Definitions.

"Upgrade" means any modification made for the primary purpose of increasing the electric generation capacity of a baseload electric generation facility or unit. ~~Upgrade includes the installation, replacement or modification of equipment that increases the heat input or fuel usage as specified in existing generation air quality permits in effect as of July 22, 2007.~~ Upgrade does not include:

(a) Routine or necessary maintenance;
(b) Installation of emission control equipment;
(c) Installation, replacement, or modification of equipment that improves the heat rate of the facility; or
(d) Installation, replacement, or modification of equipment for the primary purpose of maintaining reliable generation output capability that does not increase the heat input or fuel usage as specified in existing generation air quality permits as of July 22, 2007, but may result in incidental increases in generation capacity.

Reason: Clarification. The text is deleted in response to a suggestion by commenters W-8 and W-9 that the sentence is confusing and is not needed. Based on comments received, the definition was modified to have a structure more like that of the law. This change does not change the determination that a change that increases fuel input would trigger the need to comply with the emission performance standard.

9. WAC 463-85-120 Facilities subject to the G~~g~~reenhouse gases emissions performance standard ~~applicability~~.

(1) This rule is applicable to all baseload electric generation facilities and units and baseload electric cogeneration facilities and units that:
(a) Are new and are permitted for construction and operation after June 30, 2008, that utilize fossil fuel or nonrenewable fuels for all or part of their fuel requirements.
(b) Are existing and that commence operation on or before June 30, 2008, when the facility or unit's owner or operator engages in an action listed in subsection (3) or (4) of this section.
(2) This rule is not applicable to any baseload electric generation facility or unit or baseload electric cogeneration facility or unit that is designed and intended to utilize a renewable fuel to provide at least ninety percent of its total annual heat input.
(3) A baseload electric generation facility or an individual electric generating unit at a baseload electric generation facility is required to meet the emissions performance standard in effect when:
(a) The new baseload electric generation facility or new electric generating unit at an existing baseload electric generation facility is issued a notice of construction approval or a site certification agreement;
(b) The existing facility or a unit is upgraded; or
(c) The existing facility or a unit is subject to a new long-term financial commitment.
(4) A baseload electric cogeneration facility or unit is required to meet the emissions performance standard in effect when:
(a) The new baseload electric cogeneration facility or new baseload electric cogeneration unit is issued a notice of construction approval or a site certification agreement;

(b) The existing facility or unit is upgraded; or
(c) The existing facility or unit is subject to a change in ownership.
(5) A new baseload electric generation facility or unit or new baseload electric cogeneration facility or unit becomes an existing baseload electric generation facility or unit or baseload electric cogeneration facility or unit the day it commences commercial operation.

Reason: The word "new" is added to WAC 463-85-120(5) as suggested by commenter W-9 to increase clarity of when an existing facility is required to meet the GHG EPS.

Commenter W-9 also noted that "cogeneration facilities and units" was used interchangeably with "baseload cogeneration facility or unit". We have edited this section, as well as the remaining sections in the rule, to consistently use "baseload electric generation facility" and "baseload electric cogeneration facility". We also edited the rule to ensure consistent use of "facility" and "unit".

10. WAC 463-85-130 Emissions performance standard.

(1) Beginning July 1, 2008, all baseload electric generation facilities and units and baseload electric cogeneration facilities and units subject to WAC 463-85-120 are not allowed to emit to the atmosphere ~~total~~ regulated greenhouse gases at a rate greater than one thousand one hundred pounds per megawatt-hour, annual average.

Reason: Commenter W-9 recommended adding "subject to WAC 463-85-120 to ensure that certain regulatory requirements in sections -130 to -240 apply to "all baseload electric generation and cogeneration facilities and units." Commenter W-9 recommended changing "total" to "regulated" to be consistent with the definition of regulated greenhouse gases. EFSEC and Ecology agreed with these clarifications.

11. WAC 463-85-130 Emissions performance standard.

(3) All baseload electric cogeneration facilities and units in operation on or before June 30, 2008, and operating exclusively on natural gas, waste gas, a combination of natural and waste gases, or a renewable fuel, are deemed to be in compliance with the emissions performance standard until the facility or unit is subject to a new ownership interest or is upgraded. For purposes of WAC 463-85-130, exclusive use of renewable fuel shall mean at least ninety percent of total annual heat input by a renewable fuel.

Reason: In response to Commenter W-7, new text in Subsection 3 clarifies that the reference to operating exclusively on renewable fuels in WAC 463-85-130(3) is intended to be consistent with WAC 463-85-120(2).

12. WAC 463-85-140 Calculating greenhouse gases emissions and determining compliance for baseload electric generation facilities.

WAC 463-85-140 Calculating greenhouse gases emissions and determining compliance for baseload electric generation facilities.

(1) The owner or operator of a baseload electric generation facility or unit that must demonstrate compliance with the emissions performance standard in WAC 463-85-130(1) shall ~~demonstrate compliance annually, using the data identified below~~collect the following data:

(a) Fuels and fuel feed stocks.

(i) All fuels and fuel feed stocks used to provide energy input to the baseload electric generation facility or unit.

(ii) Fuel usage and heat content, which are ~~is~~to be monitored, and reported as directed by WAC 463-85-230.

(b) Electrical output in MWh as measured and recorded per WAC 463-85-230.

(c) Regulated greenhouse gases emissions from the baseload electric generation facility or unit as monitored, reported and calculated in WAC 463-85-230.

(d) Adjustments for use of renewable resources. ~~The owner or operator of a baseload electric generation facility or unit may adjust its greenhouse gases emissions to account for the usage of renewable resources.~~ If the owner or operator of a baseload electric generation facility or unit adjusts its greenhouse gases emissions to account for the use of renewable resources, greenhouse gases emissions are reduced based on the ratio of the annual heat input from all fuels and fuel feed stocks and the annual heat input from use of nonrenewable fuels and fuel feed stocks. Such adjustment will be based on records of fuel usage and representative heat contents approved by ecology.

(2) By January 31 of each year, the owner or operator of each baseload electric generation facility or unit subject to the monitoring and compliance demonstration requirements of this rule will:

(a) Use the data collected under subsection (1) above to c~~C~~alculate the pounds of regulated greenhouse gases emissions emitted per MWh of electricity produced during the prior calendar year by dividing the regulated greenhouse gases emissions by the total MWh produced in that year; and

(b) Submit that calculation and all supporting information to EFSEC ~~or ecology as appropriate~~.

Reason: Clarification by EFSEC and Ecology staff. The meaning and intent of the section is not changed. To be consistent, similar changes were made to WAC 463-85-150, Calculating Greenhouse Gases Emissions and Determining Compliance for Baseload Electric Cogeneration Facilities, but are not listed in the Responsiveness Summary.

13. WAC 463-85-200 Requirement for and timing of sequestration plan or sequestration program submittals.

(2) A sequestration program for a source that begins sequestration on or before the start of commercial operation is required to be submitted when:

Reason: Clarification by EFSEC and Ecology staff. This text was added to clarify when this section is applicable and to be consistent with the wording in the introduction in Subsection (1) of WAC 463-85-200.

14. WAC 463-85-210 ~~Requirements for geologic~~ Types of permanent sequestration plans.

Reason: Change of section title to be consistent with Ecology rules.

15. WAC 463-85-220 Requirements for nongeologic permanent sequestration plans and sequestration programs.

In order to meet the emissions performance standard, all baseload electric generation facilities or individual units that are subject to this rule, and must use nongeologic sequestration of ~~sequester~~ greenhouse gases to meet the emissions performance standard, will submit sequestration plans or sequestration programs for approval to EFSEC or ecology, as appropriate.
(1) Sequestration plans and sequestration programs must include:
(a) Financial requirements. As a condition of plant operation, e~~E~~ach owner or operator of a baseload electric generation facility or unit or baseload electric cogeneration facility or unit utilizing ~~other~~ nongeologic sequestration as a method to comply with the emissions performance standard in WAC 173-407-130 is required to provide a letter of credit ~~as a condition of plant operation~~ sufficient to ensure successful implementation, closure, and post-closure activities identified in the sequestration plan or sequestration program, including construction and operation of necessary equipment, and any other significant costs.

…

(1)(a)(ii) Closure and post-closure financial assurances. The owner or operator shall establish a closure and a post-closure letter of credit to cover all closure and post-closure expenses respectively. The owner or

operator must designate EFSEC as the beneficiary to carry out the closure and post-closure activities. The value of the closure and post-closure accounts shall cover all costs of closure and post-closure care identified in the closure and post-closure plan. The closure and post-closure cost estimates shall be revised annually to include any changes in the sequestration project and to include cost changes due to inflation. The obligation to maintain the account for closure and post-closure care survives the termination of any permits and the cessation of injection. The requirement to maintain the closure and post-closure accounts is enforceable regardless of whether the requirement is a specific condition of the permit.

(1)(b) The application for approval of a sequestration plan or sequestration program shall include (but is not limited to) the following:

…

(1)(c) In order to monitor the effectiveness of the implementation of the sequestration plan or sequestration program, the owner or operator shall submit a detailed monitoring plan that will ensure detection of ~~be able to detect~~ failure of the sequestration method to place the greenhouse gases into a sequestered state. The monitoring plan will be sufficient ~~to detect losses of sequestered greenhouse gases at a level of no greater than twenty percent of the leakage rate allowed in~~ to provide reasonable assurance that the project meets the definition of permanent sequestration. The monitoring shall continue for the longer of twenty years beyond ~~either~~ the end of placement of the greenhouse gases into a sequestration containment system, or twenty years beyond the date upon which it is determined that all of the greenhouse gases ~~has~~ have achieved a state at which ~~it is~~ they are now stably sequestered in that environment.

(1)(d) If the sequestration plan or sequestration program fails to sequester greenhouse gases as provided in the plan or program, the owner or operator of the baseload electric generation facility or unit or baseload electric cogeneration facility or unit is no longer in compliance with the emissions performance standard.

(2) **Public notice and comment.** EFSEC must provide public notice and a public comment period before approving or denying any sequestration plan or sequestration program ~~plan~~.
(a) Public notice. Public notice shall be made only after all information required by the permitting authority has been submitted and after applicable preliminary determinations, if any, have been made. The applicant or other initiator of the action must pay the cost of providing public notice. Public notice shall include analyses of the effects on the local, state and global environment in the case of failure of the

sequestration plan or sequestration program ~~plan~~. The sequestration plan or sequestration program must be available for public inspection in at least one location near the proposed project.

(2)(b)(i) The public comment period must be at least thirty days long or may be longer as specified in the public notice.

Reasons: Changes in the first paragraph WAC 463-85-220 and in Subsection (1)(a) were made by EFSEC and Ecology staff to clarify that this section applies only to nongeologic sequestration, as described in the section title. "Baseload electric" is added in response to commenter W-9).

Clarifying changes in (1)(a)(ii) are made in response to suggestions from commenter W-25.

Several commenters expressed concern about the use of "twenty percent" in WAC 463-85-220(1)(c). EFSEC and Ecology agree that this leak detection rate should be determined at the time of the permit issuance and is deleting the reference to twenty percent and adding the "reasonable assurance" text. The other text changes are made to clarify poorly written text in the proposed rule.

Clarification by EFSEC and Ecology staff in (2)(b)(i) are to make it clear that the minimum length of a comment period is 30 days but that a longer comment period may be specified in the public notice.

EFSEC and Ecology staff added references to sequestration plan and or sequestration program throughout this section, as appropriate, to clarify that this section applies to both sequestration plans and sequestration programs.

16. WAC 463-85-230 Emissions and electrical production monitoring, recordkeeping and reporting requirements.

(1)(b) Useful thermal energy output: ~~Determine q~~Quantity of energy supplied to nonelectrical production uses ~~through~~ determined by monitoring ~~of~~ both the energy supplied and the unused energy returned by the thermal energy user or uses. The required monitoring ~~This~~can be accomplished through:

(i) Measurement of the mass, pressure, and temperature of the supply and return streams ~~of the mass pressure and temperature~~ of the steam or thermal fluid~~.~~; or

(c) Regulated greenhouse gases emissions.

(i) The regulated greenhouse gases emissions are the emissions of regulated greenhouse gases from the main plant exhaust stack and any bypass stacks or flares. For baseload electric generation facilities or units and baseload electric cogeneration facilities or units utilizing CO2 controls and sequestration to comply with the greenhouse gases emissions

performance standard, direct and fugitive CO2 emissions from the CO2 separation and compression process are included.

(ii) Carbon dioxide (CO_2).

(A) For baseload electric generation facilities or units and baseload electric cogeneration facilities or units subject to WAC 463-85-120, producing 350 MW or more of electricity, CO_2 emissions will be monitored by a continuous emission monitoring system meeting the requirements of 40 CFR ~~Part~~ Sections 75.10~~,~~ and 75.13 and 40 CFR Part 75 Appendix F. If allowed by the requirements of 40 CFR Part 72, a facility may estimate CO_2 emissions through fuel carbon content monitoring and methods meeting the requirements of 40 CFR ~~Part~~ Sections 75.10 and 75.13 and 40 CFR Part 75 Appendix G.

(B) When the monitoring data from a continuous emission monitoring system does not meet the completeness requirements of 40 CFR Part 75, the baseload electric generation facility operator or operator will substitute data according to the process in 40 CFR Part 75.

(D) Continuous emission monitors for CO_2 will be installed at a location meeting the requirements of 40 CFR Part 75, Appendix A. The CO_2 and flow monitoring equipment must meet the quality control and quality assurance requirements of 40 CFR Part 75, Appendix B.

(iii) Nitrous oxide (N_2O).

(A) For baseload electric generation facilities or units or baseload electric cogeneration facilities or units subject to WAC 173-407-120 producing 25 MW or more of electricity, N_2O emissions shall be determined as follows:~~.~~

(I) For the first year of operation, N_2O emissions are estimated by use of emission factors as published by the Environmental Protection Agency, the federal Department of Energy's Energy Information Agency, or other authoritative source as approved by ecology for use by the facility.

(II) For succeeding years, N_2O emissions will be estimated through use of generating unit specific emission factors derived through use of emissions testing using ecology or Environmental Protection Agency approved methods. The emission factor shall be derived through testing N_2O emissions from the stack at varying loads and through at least four separate test periods spaced evenly throughout the first year of commercial operation.

(2)(a) Facilities or units subject to the reporting requirements of 40 CFR Part 75. Annual emissions of CO_2, N_2O and CH_4 will be reported to ecology EFSEC ~~and the air quality permitting authority with jurisdiction over the facility~~ by January 31 of each calendar year for emissions that occurred in the previous calendar year. The report may be an Excel™ or CSV format copy of the report submitted to EPA per 40 CFR Part 75 with the emissions for N_2O and CH_4 appended to the report.

Reason: Clarification by EFSEC and Ecology staff. The meaning and intent of these sections were not changed. Similar edits were made to subsection (1)(c)(iv) and (v), but are not repeated here.

III. Summarize Comments – Responsiveness Summary

- **Summarize all comments received regarding the proposed rule and respond to comments by category or subject matter. You must indicate how the final rule reflects agency consideration of the comments or why it fails to do so (RCW 34.05.325(6)(a)(iii)):**

Comments received on the proposed rule are presented below and are organized by rule section. There is a separate index table for written comments and verbal testimony received. You can find the responses to each comment by going to page numbers referenced in the tables.

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W-1	Sandra Cannon		14, 22, 30, 34, 51, 54, 59
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W-5	Carole J. Washburn	Washington Utilities and Transportation Commission	NA
W-6 (also see V-5)	Norm Osterman		15, 34, 40, 51, 54
W-7	Gary Sitzman	Kimberly-Clark Corp.	41 43, 44, 46
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W-9	Ken Johnson	Weyerhaeuser	28, 35, 38, 41, 43, 46, 47, 48, 50, 55
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W-12	Steve Crookshank	American Petroleum Institute (API)	NA
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W-16	Fred Eames	CCS Alliance	NA

W-17	Don Brookhyser	Cogeneration Coalition of Washington	19, 20
W-18	Michaeleen Mason	Western States Petroleum Association (WSPA)	NA
W-19	Brad Riordan		17, 30, 50, 54, 59, 62
W-20	Mark Anderson	CTED	20, 22, 30, 49, 61
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W-22	Michael Early	Industrial Customers of NW Utilities	NA
W-23	Tom DeBoer	Puget Sound Energy	29, 33, 38, 39
W-24	Robert VanVoorhees and Sarah Wade		NA
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V-3	JP Kemmick	Cascade Climate Network	15
Spokane Hearing 4/10/08			
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V-5	Norm Osterman	Coal Plant Working Group	34, 51, 54, 59
V-6	Jenna Bicknell		26, 34, 35, 59
V-7	Brad Riordan		17, 30, 35, 54, 59
V-8	Bart Haggin		15, 21
V-9	Buell Hollister		NA
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V-11	John Osborn	Sierra Club – Upper Columbia River Group	16, 21, 22, 35

Chapter 463-80 WAC – Carbon Dioxide Mitigation Program, for Thermal Electric Generating Facilities

GENERAL COMMENTS:

There were no general comments to this proposed rule.

Chapter 463-85 WAC – Greenhouse Gases Emissions Performance Standard and Sequestration Plans and Programs for Baseload Electric Generating Facilities

GENERAL COMMENTS:

Comments W-1, W-3 and W-10
Our communities will be directly affected by the quality of these regulations, and by the climate change, pollution, and other consequences of further use of coal plants for electrical generation.

We urge you to adopt the most stringent standards available to you to protect current residents, as well as our children and grandchildren, and also their grandchildren from unwise and unsustainable actions that would support our lifestyle at the expense of the health and wellbeing of future generations.

AND

Comment W-2
Climate change is the biggest challenge we all face for this and the next couple generations. Washington's "Emissions Performance Standards for Power Plants that Emit Greenhouse Gases" are a step in the right direction. Thank-you for walking over these thorns for us and our kids.

AND

Comment W-4
Stringent air quality regulations are needed now. Eastern Washington needs a law that clearly defines the maximum air quality limits for the industry but especially for the protection of our communities. I urge you to adopt the most restrictive standards available to you and to make all regulations crystal clear so the energy industry understands that it's moral obligation is to the health and well-being of current and future residents including Mother Earth and not solely to the company's profit margin. If they won't commit to being good stewards of the environment by adhering to your (hopefully) very strict standards, then they shouldn't be allowed in Washington State.

AND

Comment W-6
The Coal Plant Working Group steadfastly opposes the building of more coal-fueled plants. That said, we do feel that EFSEC and the Department of Ecology need to write regulations which work to protect the health and safety of the public and the environment. We do feel more can be done and urge you to redouble your efforts in these last several months of your rule revision process to ensure that, to the best of your ability, you are protecting the environment and the health and well being of citizens now and for generations to come.

AND

Comment W-28
My dominant comment is that the most significant issue is NOT addressed so I consider this DOE exercise a sham. **Yes, a sham**. The dominant issue: Because global climate change is such a significant problem, there should not be any action by the WA Department of Ecology (DOE) to minimize or in any way undermine SB 6001 and HB 2815: your draft rule purports to do just that!!!!

AND

Comment V-3
By supporting new coal infrastructure in Washington, we are effectively supporting a new coal infrastructure nationally and weakening our leadership in progressive climate change legislation. We cannot forget the price of coal impacted communities wherever they are and watch whether they are Washington residents or not. Coal has become an increasingly difficult sale in Washington due to our emissions standards and I applaud that but I also urge you to avoid falling for clean coal as a global warming solution. To anyone who says that coal must be part of our clean energy future, I say they are severely underestimating the potential of the human race for innovation in the face of challenge and know we can and must do better.

AND

Comment V-8
I agree with most of the people that have already spoken, but I would like to point out that when we are talking about the kinds of programs that we are talking about today, we are talking about clean coal. The idea that there can be such a thing as clean coal. As a matter of fact, there is adequate evidence that that is not possible in a practical way. So, coal is not just harmful because of the emissions that is comes from, but it is harmful because of the kinds of things that it creates in the mining of it. It seems to me that the best that we can expect here

is a level that would be from these plants if they are ever produced to be the same as the levels that are recommended for the natural gas generation plants.

AND

Comment V-11
Finally, I think a point that is critical for those of us who live on the East side of the Cascade crest is that we not ended up developing laws and implement regulations that create or worsen the problems of Eastern Washington as an environmental sacrifice for the state. We are already dealing with the legacy of Hanford, mining wastes that contaminant Lake Roosevelt and the Spokane River and Lake Coeur d'Alene Basin. We are at risk of becoming a center for energy production, pollution of agricultural lands and the pollution of our ground waters as well as worsening of global warming.

EFSEC and Ecology response:
ESSB 6001 directed EFSEFC and Ecology to adopt rules to implement and enforce the GHG EPS. EFSEC and Ecology believe that the proposed rule establishes stringent standards to meet the legislative intent in ESSB 6001 to "authorize immediate actions in the electric power generation sector for the reduction of greenhouse gases emissions". The rule is applicable statewide and will protect communities in both eastern and western Washington. While the rule does not prohibit new coal-fueled plants, any coal plant proposed to be built in Washington will have to comply with the EPS under this rule. Washington is one of the first states to adopt a GHG EPS standard for power plants. As other states follow Washington's lead in reducing GHG emissions, the benefits will begin to accrue on the national level. Development of new laws is up to the legislature and citizens need to work with their elected representatives to assure the laws they pass do not result in worsening existing environmental problems in Washington.

It is estimated that the amount of electricity produced by a power plant is reduced to support the carbon capture and sequestration. The reduction in electricity available for sale is reduced between 10 and 30 percent, depending on the specific power plant design. Needless to say that reduces the cost effectiveness of new coal power plants. It allows new coal plants, but requires that they do their part to reduce GHG emissions to a rate similar to that of older natural gas fired combustion turbine based power plants. This puts the coal plants at an economic disadvantage compared to new natural gas fired combustion turbine power plants. The economic impact statement that accompanies this rule indicates that the cost of carbon capture and sequestration is cost prohibitive.

Comment W-4
I would like to see the rules expanded to provide:
c. that existing power plants in Washington State must be retrofitted to meet new standards or phased out on a DOE stated timeline with no exceptions. This

would be similar to but much more important than updating or phasing out aging infrastructure systems because outdated power plants create the most air pollution of any industry.

AND

Comment W-19
Existing plants must be retrofitted to meet new standards or phased out on a DOE stated timeline with no exceptions. To state that these plants cannot be upgraded is to set the table for the same conversation ten years down the road on new plants going in under 6001. This is not acceptable and regulations should be expanded to deal with the old plants.

AND

Comment V-7
Washington State must be retrofitted to meet new standards or phased out on a DOE stated timeline with no exceptions. To state that these plants cannot be upgraded is to set the table for the same conversation ten years down the road on new plants going in under 6001. This is not acceptable and regulations should be expanded to deal with old plants.

EFSEC and Ecology response:

Your proposal is beyond the scope of the authorizing legislation. ESSB 6001 specifically applies to new long term financial commitments and new plants built after July 1, 2008.

Comment W-4
e. that very specific regulations be crafted to deal with the disposal of toxic chemicals removed from the emissions by high tech scrubbers. Each toxic chemical needs to have it's own disposal regulation and detailed regimen in the manner of the regulations required for asbestos disposal.

EFSEC and Ecology response:
Your proposal is beyond the scope of the authorizing legislation. However, proper disposal of solid and hazardous wastes are dealt with in other regulations issued and enforced by the Department of Ecology. Ch. 173-303 WAC is Ecology's rule for dangerous waste.

Comment W-4
f. that regulations be written to require the detailed monitoring of air quality for Eastern Washington communities and establishing baseline limits which include all pollution sources. No new industries with toxic emissions should be allowed

within a community airshed (100 mile radius) if the emissions will further degrade the air quality from the baseline limit. For example, Walla Walla has terrible air quality. We are surrounded by mountains on 3 sides, have many inversions with "dead air" days, are downwind of Boardman Coal plant/Hermiston power plant/Boise plant, and have many days of windborne dirt/dust/smoke from farming plus local cars, trucks, heavy equipment etc. but there are no air quality regulations that would prevent the additional pollution from a coal-fueled power plant in Wallula and/or an ethanol refinery in Boardman, Oregon even though both plants are within the Walla Walla airshed.

EFSEC and Ecology response:
Your proposal is beyond the scope of the authorizing legislation. However, monitoring that you suggest is carried on in many areas of the state and nation for criteria pollutants. Criteria pollutants are: ozone, particulate matter, carbon monoxide, nitrogen dioxide, sulfur dioxide and lead. Routine monitoring of particulate emissions is carried out in locations considered to be either representative of a larger area or areas where specific air quality problems due to particulate emissions are known or suspected. Other criteria pollutants are monitored as required by federal guidance or in areas suspected of having ambient air quality issues with that pollutant.

However the monitoring of other toxic pollutants is not routinely carried out due to the high cost of monitoring and technical difficulties with the monitoring equipment. As a result, routine monitoring of toxic air pollutants is not done except in a few well defined locations in the country. Emissions of toxic air pollutants are accounted for by using dispersion modeling and emissions inventories of permitted sources. In both cases when permitting of a new source of air pollution requires assessing the impact on the impacted communities using the best data we have on what the current ambient air contains and the emissions from the proposed facility.

Comment W-13
2) When this rule become effective, will SRCAA be required to place these requirements into Waste-to-Energy's Air Operating Permit as applicable requirements? Since the statutory authority for Chapter 173-407 WAC is not from the Washington Clean Air Act, it appears that the GHG emission performance standard would not be an applicable requirement under the AOP program. Please confirm if this is a correct interpretation.

EFSEC and Ecology response:
The requirements of Chapters 463-80 and 463-85 WAC are based on RCW 80.70 and 80.80. These laws are not part of the Clean Air Act, and as such are not directly applicable requirements for an Air Operating Permit. The provisions are applicable when triggered.

Chapter 463-80 WAC requirements are incorporated in air quality permits issued under the authority of Chapters 70.94 and 80.50 RCW and as noted in WAC 463-80-020 "Site Certification Agreement" and "Total Carbon Dioxide Emissions", and WAC 463-80-060(1). Thus, when the requirement to mitigate the increase in CO2 emissions is triggered, the approval of the mitigation plan must be approved by EFSEC. Once approved, the mitigation requirement becomes an applicable requirement.

Chapter 463-85 WAC requirements are to be enforced using enforcement authorities in Chapter 80.50 RCW (WAC 463-85-240). For ease of enforcement of the requirements, it is best if they are included in a Site Certification Agreement (thence in the AOP as a state only requirement). However, this rule does not contain a requirement to include the EPS or the associated recordkeeping, monitoring, and reporting requirements of the rule within the air operating permit or an NOC. We would encourage a permit writer and source to include the EPS, and the monitoring, recordkeeping, and reporting provisions of Chapter 463-85 WAC be included or referenced in a Site Certification Agreement as a state only requirement.

Comment W-17

Compliance should be a one-time determination, not an annual review. CCW strongly disagrees with the approach in Sections 140 and 230 that requires annual compliance and on-going monitoring. Compliance should be a one-time activity and not subject to regular review and on-going monitoring. Section 8 of SB 6001 provides the Washington Utilities and Transportation Commission will determine compliance once, either in a general rate case or upon application by a utility.

The commenter continues with additional text that since the power plants are subject to power contracts that are subject to a one time review by the WUTC and that an independent generator providing electricity to a WUTC regulated entity under a long term-contract must have assurance that it will be allowed to fulfill its contract terms.

EFSEC and Ecology response:

The comment is limited in scope to independent generators subject to long term contracts with electric utilities regulated by the WUTC and does not recognize that the WUTC role in RCW 80.80 is to assure the contracts comply with the provisions of the law and the regulatory scheme developed by EFSEC and Ecology.

RCW 80.80.040 contains terms specifically related to power plants located within Washington, and not necessarily tied to power sales contracts with Washington state electric power retailers (public or private). The EFSEC and Ecology is clearly given the authority to develop methods to determine compliance with the EPS and to provide for enforcement with noncompliance with the standard.

EFSEC and Ecology will not impinge on the authority or prerogatives of the WUTC or the public utility governing boards in their oversight of compliance of long-term contracts with the greenhouse gas performance standard. Ecology will assist EFSEC and the local air pollution authorities in their compliance oversight and enforcement of the standard in air quality permits issued to electric generation plants subject to this law.

It is a common practice under air quality law to require regulated sources to determine compliance with emission standards on a continuing or intermittent basis. Thus the rules we have proposed are based on determining that the electric generation plant owner/operator assures compliance with the performance standard on an annual basis.

Comment W-17

Refinery gas should not be included in calculating the emissions rate.

EFSEC and Ecology response:

We respectfully disagree. Refinery gas has, in the intervening years since FERC determined refinery gas need not be included in its efficiency calculation, become a valuable commodity at Washington State's refineries. Refinery gas is increasingly being used internally to the refineries to fuel process heaters and boilers in order to reduce emissions of SO2 and NOx. Refinery gas has become such a valuable internal fuel that refineries have installed wet gas compressors to compress the gas prior to going to the plant flare system simply in order to recover the fuel value of the refinery gas within the plant. Such recovery includes sending the compressed gas to the refinery gas treatment system to remove reduced sulfur compounds. Clearly if the oil refineries continue to view refinery gas as a 'waste' why would they go to such lengths to recover it for use?

Refinery gas is derived from the oil refining process and as such is clearly a fossil fuel. EFSEC and Ecology will continue to treat it as a fossil fuel for all emissions control purposes, including greenhouse gas emissions calculations.

Comment W-20

1. It is sometimes difficult to understand how these rules relate to one another. At times it seems like the Ecology rule is broader, in that it covers its own jurisdiction, other local jurisdictions, and EFSEC jurisdiction. At other times and places it appears to cover just its own and local jurisdictions, but not EFSEC's. These rules (Ecology's and EFSEC's) were very difficult to read together, because of the occasional and sometimes subtle differences.

    a. We would recommend one last careful reading of the rule to ensure that your intended approaches are consistent.
    b. Where the text can be identical we urge you to make it so. We understand that numbering will be different on occasion, because one or

the other agency may have requirements that differ, but subsection titles and text, unless substantively different should be identical. This only makes sense and would make the rules more reader friendly, a key goal of any rulemaking.

c. It would also be useful at some place, perhaps in multiple places, to state explicitly how the two agencies rules are related. For example, Ecology might state "These rules implement Chapter 80.70 RCW and cover all requirements under the jurisdiction of Ecology and local governments, and EFSEC where requirements are the same as for Ecology and local governments. Rules implementing Chapter 80.70 RCW that are specific to EFSEC only are codified in Chapter 463-80 WAC." Language of this sort would make it more clear what each WAC deals with and how they relate to each other.

EFSEC and Ecology response:

Differences between the EFSEC rules and the Ecology rules, beyond the numbering of sections, are as you stated mostly the same. Where the rule text is different, there are reasons for that difference that deal with the underlying statutes that authorize the creation of each agency. The suggestion that we are more explicit is not taken at this time. The rule text says that the EFESC rule is for power plants 350 megawatts and greater and the Ecology rule is for power plants below 350 megawatts. This should be enough to direct an interested source to the correct rule. We would prefer to deal with public inquiries via phone or e-mail. In that way we can answer additional questions that will surely pop up.

Comment V-8

I am very discouraged the way that this hearing has been conducted. The publicity was inaccurate and the timeline situation was confusing. The equipment was not pre-tested so that it was going to be working properly so the hearing was held up because of that. And it just seems to me that this is so frequently with these public hearings that they are set up rather haphazardly, so that people are discouraged from attending and participating in public hearings.

EFSEC and Ecology response:

We are always interested in improving on our public process. We thank you for your feedback on the hearing procedures and will make adjustments in the future, as needed, to avoid the potential for confusion or delays.

Comment V-11

I would be concerned that we need to develop regulations that adequately protect the public and the public purse, and assure that liability lies with the polluting industry.

EFSEC and Ecology response:

We agree with your concerns. It is our aim to do exactly what you have asked us to do. In order to assure that liability remains with industry, both WAC 173-218-115 and WAC 173-407-220 have requirements for providing financial assurances (a letter of credit) that money is available "as a condition of plant operation sufficient to ensure successful implementation, closure, and postclosure activities identified in the sequestration plan, including construction and operation of necessary equipment, and any other significant costs."

Comment V-11

Also, we need to look at how the state would intervene should standards not be met. I think it has been raised already if companies make a major investment the science is inadequate, standards are exceeded, is the state prepared to intercede.

ESFEC and Ecology response:

If the power plant does not meet the EPS the state is prepared to act with enforcement tools found in WAC 463-85-240.

SECTION 005 Work in unison:

Comments W-1, W-3, W-4, W-10, W-25

This group of commenters all support retention of the proposed rule language regarding "work in unison". They view the requirements of RCW 80.70 and RCW 80.80 (aka 6001) as separate requirements. Commenter W-25 specifically notes that if the legislature intended to repeal portions of RCW 80.70, that it would have specifically done so. This commenter also notes (as does commenter W-11) that the two laws address greenhouse gases in very different ways.

EFSEC and Ecology response:

Thank you for your comments.

Comment W-20

On page 12, at the beginning of PART II, at WAC 173-407-110 Policy and Purpose of Part II, there is no restatement of the rules working in unison. EFSEC includes the "working in unison" language in both its rules. Perhaps because it is in the same rule Ecology does not restate it. For consistency with the EFSEC rules, and for clarity when looking at either section in the Ecology rule, we think that Ecology should consider restating in Part II what was stated in Part I.

EFSEC and Ecology response:

WAC 173-407-005 Work in unison applies to Parts I-III of Chapter 173-407 WAC. It is located prior to Part I and references the sections located in Part I that apply to Chapter 80.70 RCW and the sections in Part II and Part III that apply to Chapter 80.80 RCW.

Comment W-11

Our understanding of the commenter's position is that Ecology has reversed the proper order of application of the requirements of RCW 80.70 and RCW 80.80 regarding mitigation of CO_2 emissions (per RCW 80.70) and meeting of the greenhouse gas emission performance standard (per RCW 80.80). The commenter indicates the economic hardship of the Ecology proposed approach on its client, who is anticipating application to construct a new power plant in the near future.

The commenter proposed that the rule text be:

- modified to be clear that if sequestration to meet the greenhouse gas emission performance standard is also full compliance with the mitigation requirements of RCW 80.70, or
- that section 005 should be deleted in its entirety since greenhouse gas regulatory requirements are changing rapidly and these 2 laws and their implementing rules are likely to be superseded in the next few year .

EFSEC and Ecology response[1]:

The commenter correctly points out one of the difficulties in following the Legislatures directive that the two laws are to work in unison. To quote the commenter

> "Applying 80.80 and 80.70 in unison is difficult because they regulate different things through different means. First, 80.80 and 80.70 regulate different universes of pollutants. Specifically, 80.70 regulates exclusively CO2, while 80.80 regulates all six Kyoto greenhouse gas categories. Second, 80.80 and 80.70 require differing temporal outcomes. 80.70 requires a source to mitigate a portion of its CO_2 emissions. This can be achieved either through payment of $1.62 [ed. $1.60] per tonne to a third party or through self-directed mitigation projects. … 80.80, on the other hand, requires that a source either never emit above a particular level of greenhouse gases or that the source extract and sequester GHGs emitted by the project adequate to ensure compliance with the EPS over the life of the project."

The commenter goes on further in his comments to discuss why in their case the term 'work in unison' should be applied in manner a which if applied outside of the context of their specific project proposal's outlines would fail to give full effect to the two laws separate requirements.

The pertinent section in RCW 80.80.005(e) reads as follows:

> "A greenhouse gases emissions performance standard will work in unison with the states carbon dioxide mitigation policy, chapter 80.70 RCW and

[1] EFSEC agrees with the Ecology explanation. The references to specific Ecology rules sections should be considered as references to the same sections in Chapters 463-80 and 463-85 WAC.

its related rules, for fossil-fuel thermal electric generation facilities located in the state;"

In the text of the law, the legislature states as a fact that the two laws will work in unison and no strained or forced regulatory approaches will be required to apply them to fossil fueled thermal electric generating plants. EFSEC and Ecology have followed the principle that since the Legislature did not provide any further direction on how the two laws work in unison, that the requirements of each law are to be met individually. .

The current proposed rule language says:

> "WAC 173-407-005 Work in unison. The requirements of this chapter, WAC 173-407-010 through 173-407-070 are based upon chapter 80.70 RCW and are separate and distinct from the requirements found in this chapter, WAC 173-407-100 through 173-407-320 that are based upon chapter 80.80 RCW. These two requirements are required to work in unison with each other in a serial manner. The first requirement is the emissions performance standard. Once that standard is met, the requirements of chapter 80.70 RCW (WAC 173-407-010 through 173-407-070) are applied."

Assuming that Ecology is the local jurisdiction issuing the Notice of Construction Order of Approval to the commenter's project, Ecology's interpretation of how this text would apply in the context of the commenter's proposal is as follows:

1. Emissions of total greenhouse gases would be limited by a condition of the Order of Approval.[2]
2. Costs over the lifetime of the project to sequester greenhouse gasses in excess of the performance standard are calculated.
3. The dollar value (per requirements of RCW 80.70 and WAC 173-407, Part I) of the CO_2 that is proposed to be actually emitted to the atmosphere is determined.
4. The sequestration is considered under WAC 173-407, Part I, as a self directed mitigation program.
5. As self directed mitigation program, if the dollar value of the costs to sequester greenhouse gas emissions is greater than the value of the mitigation requirement of RCW 80.70, then both laws have been complied with.
6. If the value of the self directed mitigation program is greater than the costs to sequester then additional mitigation is required as either a self directed

[2] Inclusion of the greenhouse gas emission performance standard or a lower emission limitation in the Order of Approval is the method that would be used to assure the ability of ecology to enforce non-compliance with the standard. Inclusion of the limitation in an Order of Approval makes it an enforceable limitation that is looked at when determining the quantity of emissions subject to mitigation under RCW 80.70.

mitigation program, payment to an independent qualified organization, or through purchase of greenhouse gas credits.

In the commenter's case, they state that they would operate their coal based IGCC project to meet a GHG emission rate of about 650 – 700 lb/MWh (about 65 % reduction in GHG emissions). The mitigation requirement would be based on the emissions actually anticipated/permitted in an air quality permit to occur. If we assume the emissions will be 650 lb/MWh and the facility produces 750 net MWh, the quantity of CO_2 to be mitigated under RCW 80.70 and WAC 173-407, Part I would be $12,150,200.[3]

If the costs, over the lifetime of the project, to sequester CO_2 in excess of the performance standard would exceed this $12 million dollar value, then t the mitigation requirement of RCW 80.70 will be met.

Removal of section 005 would leave the intent of the agency on how the two laws are to work in unison ambiguous to affected electric generation facilities. The determination of how they work together would be subject to policy determination by the agency and not open to public scrutiny or comment.

EFSEC and Ecology appreciate the commenter's concerns, but respectfully disagrees with both the commenter's reading of the provision, and the commenter's recommended solution. We do not read the provision as currently drafted as barring additional sequestration beyond the GHG EPS being used for the purposes of mitigation under RCW 80.70. For example, if a facility was obligated to meet a performance standard of 1,100 lbs/MW-hr under RCW 80.80, but chose to sequester through 700 lbs/MW-hr, the mitigation requirement of RCW 80.70 would be met.

EFSEC and Ecology were specifically directed by the language of RCW 80.80 to ensure that RCW 80.80 "works in unison" with RCW 80.70. Given this directive, We are unable to remain silent on the issue in the rule language as the commenter suggests.

Chapter 463-80 WAC

SECTION 005 Work in unison

No comments

[3] This contrasts to the commenter's proposal that the RCW 80.70 emissions would be the emission performance standard. This is could occur if the permitting agency only limits the greenhouse gas emissions to the performance standard, rather than the lower proposed emissions.

SECTION 010 Policy and purpose:

No comments

SECTION 020 Definitions:

No comments

SECTION 030 Carbon dioxide mitigation program applicability:

No comments

SECTION 040 Carbon dioxide mitigation program costs:

No comments

SECTION 050 Calculating total carbon dioxide emissions to be mitigated:

No comments

SECTION 060 Carbon dioxide mitigation plan requirements and options:

Comment V-6
I am also concerned about mitigation through payment. It makes me very nervous. And, I wonder how we can pay a Portland based company to mitigate when air quality in another region is being directly impacted. This is not an acceptable mitigation tool in my mind.

EFSEC and Ecology response:
The provisions of Chapter 80.70 RCW (passed in 2004) require new qualifying power plants to mitigate some of their carbon dioxide emissions. One of the mitigation options that the law allows is for payment to a third party. The intent was that if a power plant could not conduct their own mitigation project, or if it made better economic sense to have another entity do the mitigation, the power plant would have the ability to contract with an independent third party to do the mitigation for the power plant. The company in Portland, which you refer to, is the only contractor who has stepped up to the task so far. Others may in the future. You raised the notion that mitigation should occur where the emissions are released. Because the global climate change problem is indeed global and there are no local direct health consequences, it is not required or necessary that the emissions point and the mitigation take place in the same local. We agree

that if the impacts would be in the vicinity of the plant that this would be where the mitigation should take place.

SECTION 070 Carbon dioxide mitigation option statement and mitigation plan submittal:

No comments

SECTION 080 Enforcement:

No comments

SECTION 090 Independent qualified organization list.

No comments

SECTION 100 Independent qualified organization use of funds

No comments

SECTION 110 Independent qualified organization oversight.

No comments

SECTION 120 Biennial reports.

No comments

SECTION 130 Severability.

No comments

Chapter 463-85 WAC

SECTION 005 Work in unison

No comments

SECTION 100 Policy and purpose:

No comments

SECTION 110 Definitions to Part II:

Definition of "baseload electric generation"
Comment W-9
The proposed characterization of a 'cogeneration facility' in this definition is ambiguous and is perhaps not consistent with statutory intent. The result may cause cogeneration facilities to improperly be considered as "baseload electric generation facilities" Ecology should simply utilize the definition of baseload electric generation provided in the statute, and not seek to fill assumed regulatory gaps with the creation of new terms and definitions.

The commenter goes on to note that there is a separate definition in the law for cogeneration facility and that cogeneration facility is used t in other locations in the law to distinguish these operations form baseload electric generation facilities. The commenter also questions the authority of Ecology to develop the text included in the proposed rule.

The commenter also believes that the usage of the concept of 'capacity factor' is alien to the cogeneration world and should not be applied to these facilities and units.

EFSEC and Ecology response:
As with much of this law, statutory intent can be ambiguous and often in contradiction to the plain language of the law. The definition of cogeneration facility clearly includes the commenter's facility, a facility where steam is produced in a number of boilers using fossil and biomass fuels. The steam is used to power steam turbine/generators and is used to provide mechanical power and process needs in other portions of the industrial facility.

Since this facility and many other similar cogeneration facilities provide electricity for sale on a continuing basis, they function as baseload generation. There are other facilities that are by design intent baseload generation that find users for waste heat energy in order to qualify for the special treatment that cogeneration facilities receive under FERC regulations.

We note that RCW 80.80.040 only grandfathers cogeneration facilities using natural gas or waste gas, a very limited universe of units in Washington. This would imply that a cogeneration facility utilizing fossil fuels and biomass would not be grandfathered and have to meet the greenhouse performance standard as of July 1, 2008. This need to comply with the performance standard would apply regardless of how much electricity is sold or the capacity factor of the electricity sold to the capacity to produce electricity. We feel this is a situation similar to the lack of recognition that biomass combustion involves some usage of fossil fuel (such as for cold start-up or to stabilize combustion).

The language of RCW 80.80.040(6) clearly anticipates the inclusion of emissions from cogeneration facilities in this program. However, a facility such as the

commenter's would also be required to comply with the performance standard since it is not a specifically grandfathered cogeneration facility (per RCW 80.80.040(4)) a grandfathered baseload cogeneration facility (per RCW 80.80.040(2)) or a facility powered exclusively by a renewable energy source (per RCW 80.80.040(3).

The intent of the proposed modification to the definition of baseload electric generation facilities was specifically to clarify the application of this law and rule to cogeneration facilities that are not fueled exclusively with natural gas or waste gas. The inclusion of cogeneration facilities with an electrical output capacity factor of at least 60% was to accomplish two things. First it was to set a de minimis generation rate that would require such a facility to be included in the program, so that facilities that consume all the electricity they produce and only offer trivial or intermittent amounts for sale would not be included. Second it was in recognition that cogeneration plants are often or routinely designed to provide baseload electricity with some usage of excess energy for other useful purposes. This recognition of special status is included in the requirement that a cogeneration facility must meet the criteria to be classed as a '"Qualified Facility" per FERC regulations, and as a result of that status is allowed to utilize an alternative formula to determine compliance with the GHG EPS in a way that accounts for the beneficial use of energy in the industrial plant. We note that this issue was not an item of contention or comment during the rule development stakeholder process.

We will not make any changes to the definition of baseload electric generation in response to these comments.

Comment W-23

Ecology uses the term "designed and intended" in its definition of "baseload electric generation". "Designed and intended" is not defined in Ecology's Draft rules. Clarifying the meaning of "designed and intended" is important to understanding and implementing the definition of "baseload electric generation". Some power plants may not be considered baseload electric generation based on an interpretation of the phrase "designed and intended". PSE recommends that Ecology adopt the following language defining 'designed and intended": "Designed and intended" means 1) designed is the level of operation originally specified by the engineers for the power plant, and 2) intended is the level of operation allowed for by the current permits for the power plant."

EFSEC and Ecology response:

Note that the definition of 'baseload electric generation' in RCW 80.80.020(4) includes the term "designed and intended", so the use of the phrase in that definition is not our invention.

However, the suggested definitional clarification proposed is our understanding of the meaning of the phrase. We agree that such a clarification is in line with

our understanding of the language as used in the law and as we have used it within the proposed rule. Therefore, we will make the following change:

> "Baseload electric generation" means electric generation from a power plant that is designed and intended to provide electricity at an annualized plant capacity factor of at least sixty percent. For a cogeneration facility, the sixty percent annual capacity factor applies to only the electrical production intended to be supplied for sale. For purposes of this rule, designed means originally specified by the design engineers for the power plant or generating units (such as simple cycle combustion turbines) installed at a power plant; and intended means allowed for by the current permits for the power plant, recognizing the capability of the installed equipment or intent of the owner or operator of the power plant.

Definition of "baseload electric generation facility"
Comment W-20
No definition provided for "baseload electric generation facility." The definintion is included in the Ecology rule.

EFSEC response:
The exclusion of this definition was a drafting oversight. EFSEC has added the definition.

Proposed Definition of "local jurisdiction" *(Note: Cr-102 draft did not include a definition for this term and it is not included in the final rule filed with the CR-103)*

Comments W-1, W-3, W-4, W-10 and W-15
Not defining power plant sources for Washington utilities to include those licensed by "local jurisdictions" in other states will also dilute and defeat the purpose of 6001 to protect our common climate and environment.

AND

Comment V-7 and W-19
the term "local jurisdiction" needs to include not only in-state producers of fossil fuel supplies, but local jurisdictions in other states. If this is not done, in-state suppliers as well as the Washington state consumers will be penalized and costs will increase for power production.

AND

Comment W-25
For clarity, we strongly recommend defining local jurisdiction in these rules as

"*Any entity in Washington state in addition to the energy facility site evaluation council that has authority for permitting electric generation facilities, and any entity located in another state, region, or province with authority for permitting electric generation facilities."*

Some parties may argue that local jurisdiction refers solely to entities within Washington state that have authority for permitting electric generation facilities. The effect of that interpretation would be to limit application of the emissions performance standard to utility long-term contracts with in-state electricity providers, thus violating the meaning and intent of this statute.

Because the term "local jurisdiction" on its own is ambiguous, we must look to the intent of the Legislature and the substance of the law in interpreting its meaning. See Kokoszka v. Belford, 417 U.S. 642, 650 (1974) ("[when 'interpreting a statute, the court will not look merely to a particular clause in which general words may be used, but will take in connection with it the whole statute (or statutes on the same subject) and the objects and policy of the law, as indicated by its various provisions, and give to it such a construction as will carry into execution the will of the Legislature.'"). RCW 80.80.005 clearly lays out the interest of the Legislature in reducing greenhouse gas emissions and addressing the global problem of climate change. The Legislature finds "there is a need … to take sufficient actions so that Washington meets its responsibility to contribute to the global actions needed to reduce the impacts and the pace of global warming." (RCW 80.80.005(1)(f). It would be nonsensical to assume that the Legislature intended simply to push polluting power outside the state while allowing in-state utilities to continue to rely upon it. The goal of the law is to reduce greenhouse gas emissions, not outsource them.

Another important purpose of the statute is to advance Washington's role as a leader in developing technology to combat climate change. See RCW 80.80.005(1)(g) (legislature finding that "[a]ctions to reduce greenhouse gases emissions will spur technology development and increase efficiency, thus resulting in benefits to Washington's economy and businesses").

The substantive provisions in RCW 80.80 also underscore the clear application of the emissions performance standard to all new long-term financial commitments of Washington utilities, regardless of whether those are within-state or out-of-state generators. RCW 80.80.040 (2) says "*All baseload electric generation facilities in operation as of June 30, 2008, are deemed to be in compliance with the greenhouse gases emissions performance standard established under this section until the facilities are the subject of long-term financial commitments. All baseload electric generation that commences operation after June 30, 2008, and is located in Washington, must comply with the greenhouse gases emissions performance standard established in subsection (1) of this section.*" (emph added). The first part of this provision refers to all baseload electric generation facilities, while the second part refers to

those baseload electric generation facilities that are located in Washington. If the term baseload electric generation was intended to apply only to in-state facilities, there would have been no need for the qualifier in part 2 of this provision that specifies facilities located in Washington.

The absence of any parallel specific limitation in the sections of the statute governing power contracting is significant. See, e.g., RCW 80.80.060 and 80.80.070.

Similarly, RCW 80.80.040 (3) deems compliant all renewable resources, regardless of where they are located, while RCW 80.80.040 (4) deems compliant only those cogeneration facilities located in Washington. Again, specific reference to Washington state facilities is purposefully used. The emissions performance standard also applies to contracts with the Bonneville Power Administration, as no provision was included to deem "Bonneville Power Administration resources" compliant with the law.

We can also look to formal comments made by legislators during deliberations prior to bill passage. Generally courts will provide the most weight to legislator statements made on the floor of the Senate or House during debate, particularly those made by the chair of the committee that brought the bill to the floor. On April 17, 2007, during the Senate Floor Debate regarding concurrence on ESSB 6001, Erik Poulsen, Chair, Water, Environment and Telecommunications committee stated:

> "I would just like to add my support for this legislation… This is a big step forward at closing the door on pulverized coal, not just here in Washington state but throughout the west. Under this bill, this bill will help ensure that no new pulverized coal plants are built in Washington and also that our utilities stop buying pulverized coal from out of state." (emph. added)

Finally, it is informative to examine reports in the media regarding the effect of the proposed legislation.

EFSEC and Ecology response[4]:

Thank you for your comments. RCW 80.80 defines power plant to mean "a facility for the generation of electricity that is permitted as a single plant by the energy facility site evaluation council or a local jurisdiction". Since the GHG EPS is an air emissions requirement, and both EFSEC and Ecology and the local air pollution control authorities within Washington state all have air pollution permitting authority, we believe it is appropriate to focus on that permitting aspect to define local jurisdiction. Washington state law is not enforceable on or by jurisdictions outside of the boundaries of the state. Therefore, we do not agree that the definition of local jurisdiction should include out-of-state facilities.

[4] Some of this response concerns unspecified sources and out of state long-term power contracts that are not under EFSEC jurisdiction, however EFSEC has included Ecology's response because there are parts that are appropriate for those facilities that EFSEC regulates.

We do not interpret this to mean that the EPS is only applicable to long-term contracts with in-state electricity providers, resulting in the dilution of ESSB 6001 or the outsourcing of emissions of GHG to other states. We agree that RCW 80.80.040 addresses the reduction of GHG emissions from power use in Washington by 1) requiring new power plants located in Washington to meet the emissions performance standard and 2) requiring all long-term financial commitments for baseload electric generation to comply with the EPS.

Recognizing that Washington state does not have authority to regulate the construction of new power plants located outside the state, RCW 80.80.040(2) limited the application of the EPS to all new baseload electric generation located within Washington. New power plants constructed in other states are not directly subject to the EPS under this rule. However, Ecology does not interpret this to mean that out-of-state power that does not meet the EPS can be included in a new or renewed long-term contract (term of 5 or more years) for baseload electric generation that provides power to customers in Washington state. To the contrary, Ecology interprets the law to apply to all sources of power within a new or renewed long-term contract for power, regardless of whether the source is located within or outside the state of Washington.

As Commenter W-25 noted, RCW 80.80, subsections 060 and 070 address long-term financial commitments for electrical companies (i.e. investor owned) and consumer-owned utilities, respectively. Each of these subsections states that the electrical company or consumer owned utility may not enter into a long-term financial commitment unless the baseload electric generation supplied under the commitment complies with the GHG EPS. Neither of these subsections limits the application of the EPS to purchases of in-state power supplied under the long-term financial commitment for either electrical companies or consumer-owned utilities. Procedures for determining the EPS for long-term financial commitments are addressed in WAC 173-407-300 of the rule. Subsection 300 does not limit the applicability of the EPS to only in-state power supplied under long-term financial commitments. To the contrary, Subsection 300 specifically states that it applies to any long-term financial commitment that includes electricity from unspecified or specified sources of power. The intent of this language is to include all power sources contained in a long-term financial commitment to provide retail or wholesale power to end-use customers in Washington. We believe that the existing language accomplishes the intent and respectfully disagrees that a definition is needed for local jurisdiction.

Definition of "new ownership interest"
Comment W-23
PSE is concerned that the definition of "new ownership interest" proposed in the draft rules is inconsistent with the language and intent of Chapter 80.80 RCW. The operative provisions of Chapter 80.80 RCW relating to "long-term financial commitments apply only to long-term financial commitments entered into by an

electric utility (meaning either an electrical company or a consumer-owned utility). RCW 80.80.040(1); RCW 80.80.060-.070. A "long term financial commitment" has no relevance except in the context of a commitment is made by an electric utility. Accordingly, PSE recommends that Ecology define "new ownership interest" in a manner that complies with the scope and intent of the statute, as follows: "New ownership interest" means the acquisition by an electric utility of more that 50 percent of the assets, or more than 50 percent of the equity interests in the owner of the assets, of a baseload power plant or a cogeneration facility or the electrical generation portion of a cogeneration facility. In no event shall a direct or indirect change in ownership of an electric utility constitute anew ownership interest."

EFSEC and Ecology response:
The proposed language was briefly discussed during the stakeholder process and all stakeholders (including PSE) had an opportunity to comment on the proposal before we finalized the language to go to public notice. The language proposed is not incompatible with the plant centric language EFSEC and Ecology has proposed with the draft rule except for the ownership change percentage.

We would like to understand the basis for the proposed 50% ownership interest change proposal, but PSE does not offer any information explaining why 50% change is better than the 5% change in our proposal.

While the language of RCW 80.80.040(1) clearly looks at the financial commitment trigger involving a contract with a utility (not limited by where the utility is located), the usage of long-term financial commitment within RCW 80.80.040(2) and a subset of long-term financial commitment - new ownership interest - within RCW 80.80.040(4) do not seem to be similarly constrained.

Since power plant ownership can change independent of long-term contracts and our belief that such an ownership change would be a trigger to require compliance with the performance standard, we are not changing our plant centric view of what a new ownership interest is.

Definition of "Permanent sequestration"
Comments W-1, W-3, W-4, W-6, W-10, W-15, V-5 and V-6
The definition of "permanent sequestration" in proposed WAC 173-407-110 is ambiguous with respect to the phrases "high degree of confidence" and "substantially ninety-nine percent." We believe this language should be changed to read,

"Permanent sequestration" means the retention of greenhouse gases in a containment system using a method and in accordance with standards approved by the department that can be proven to contain at least ninety-nine percent of the greenhouse gases for at least one thousand years.

AND

Comment W-9
WAC 173-407-110 definition of Permanent Sequestration – It is premature to define this term. Discussion – Defining Permanent Sequestration as ninety-nine percent greenhouse gas containment for one thousand years is very robust. The World Resource Institute and World Business Council for Sustainable Development are considering a sequestration methodology that uses a 100 year decay curve and half lives of around 40-50%. Is there any information to suggest the 99%/1000 year performance is achievable?

AND

Comment V-4
We want to note for certain that if storage does occur it will be at least 99 percent or more for at least a thousand years, in essence, permanently.

AND

Comment V-7
Permanent is an ambiguous word open to interpretation constantly.

AND

Comment V-11
In regards to the permanent sequestration, we have a lot of experience with another pollutant and those are the mining wastes in the region. We have had mining companies that have severely polluted the Spokane River system and they have since left, transferring capital and avoiding liability. Most recently Asarco.

EFSEC and Ecology response:
The proposed definition of permanent sequestration acknowledges the direction from the Legislature to "permanently" sequester greenhouse gases while recognizing the current state of technology and the ability of computer modeling systems and monitoring programs to demonstrate compliance. Merriam-Webster defines permanent as "continuing or enduring without fundamental or marked change; lasting forever". Applying this strict definition to sequestration could potentially prohibit the development and implementation of sequestration projects in Washington.

We relied upon the scientific findings in the *Intergovernmental Panel on Climate Change (IPCC) Special Report on Carbon Dioxide Capture and Storage* published in 2005 to develop the definition of permanent sequestration in the draft rule. The IPPC reports that "Observations from engineered and natural analogues as well as models suggest that the fraction retained in appropriately

selected and managed geological reservoirs is very likely to exceed 99% over 100 years and is likely to exceed 99% over 1,000 years". The report goes on to state that "the outcomes suggest that a fraction retained on the order of 90–99% for 100 years or 60–95% for 500 years could still make such impermanent storage valuable for the mitigation of climate change. All studies imply that, if CCS is to be acceptable as a mitigation measure, there must be an upper limit to the amount of leakage that can take place".

During stakeholder committee meetings, discussions about how to define permanent sequestration produced suggestions varying from the most stringent definition that allowed no flexibility to a broader definition to require "substantially complete retention" without a defined percentage or time frame. Our proposed definition of permanent sequestration is based on the upper end of the scientifically supported IPCC report's retention range for sequestered carbon. This range is considered achievable using existing technology and provides a degree of accountability that should instill public confidence while avoiding a limitation so burdensome as to prohibit the development of sequestration projects. Therefore, EFSEC and Ecology will retain the existing definition of permanent sequestration.

Comments W-25 and V-2

Merriam-Webster defines "permanent" as "*continuing or enduring without fundamental or marked change*." Yet we appreciate that, in the context of sequestration under this rule, the definition needs to be workable and be able to be enforced. The current definition is appropriate and perfectly feasible. It is consistent with the performance that can be achieved today in geologic sequestration projects. The IPCC has stated that "Observations from engineered and natural analogues as well as models suggest that the fraction retained in appropriately selected and managed geological reservoirs is very likely to exceed 99% over 100 years and is likely to exceed 99% over 1,000 years". We strongly urge the current definition to be retained and not diluted. It would not impose undue burdens on sequestration projects, but ensure that they are undertaken according to known and established methods.

We're pleased that the definition of permanent as provided by the rules is in line with scientific standards. For geologic sequestration, we recommend that we did advocate that permanent should mean the dictionary definition of permanent, forever and ever and ever, we accept this compromise because scientists have told us that it's entirely feasible and appropriate so we appreciate that.

AND

Comment V-10

We are pleased that the definition of permanent as provided by the rules is in line with scientific standards for carbon sequestration. It is a fairly feasible and

appropriate definition, but we would also support the strengthening of this definition as proposed by the previous testimony.

AND

Comment W-26
Escape of injected CO2 to the atmosphere from a sequestration site might increase CO2 concentrations at a later date. Therefore, the higher the "re-emission" of CO2 the less we can potentially use CCS as a transitional climate mitigation tool. Higher emissions also increase the potential for environmental impacts associated with leakage of CO2 brine.

This raises the question of what is an acceptable leakage rate, and what is technically achievable today. We believe that experience to date with CO2 injection; other related industrial activities such as natural gas storage, as well as seepage of CO2 from natural underground sources are consistent with the proposed definition of permanence. The definition is also consistent with the findings of the IPCC report.

It is our view that there is sufficient experience and expertise to design and operate projects for the proposed permanence standard. We also believe that in general early projects should aim for these operating conditions first for establishing public confidence and acceptance of sequestration and, second, in order to increase the potential for sequestration to reduce emissions globally - as we mention above, higher leakage rates reduce the total volume that could be sequestered worldwide over the next few decades and centuries.

At the same time it is important to recognize that early projects will help us to validate what are the most appropriate operating standards and therefore early approval processes should not be so onerous that geological sequestration is unduly inhibited and key learning lost as a consequence. We must also recognize that at some time in the future it may be shown that a very cost effective site exists that would have an anticipated storage performance of 95-98% for 1000 years. Society may wish to make that judgment. Therefore there must be scope for some flexibility in the application of the 1000/99 standard in the future, based on our experience over the coming decades, without undercutting the principle of "permanence".

EFSEC and Ecology response:
Thank you for your comments. We believe that the proposed definition of permanent sequestration meets the intent of ESSB 6001 of reducing emissions of greenhouse gases while avoiding a standard so onerous that geologic sequestration would be prohibited. We relied upon the scientific findings in the *Intergovernmental Panel on Climate Change (IPCC) Special Report on Carbon Dioxide Capture and Storage* published in 2005 to develop the definition of permanent sequestration in the draft rule.

Definition of "permitted" *(Note: CR-102 draft did not include a definition for this term and it is not included in the final rule filed with the CR-103)*

Comment W-23

Clarifying the meaning of "permitted" is important to understanding and implementing the definition of 'power plant" and "baseload electric generation". Some power plants may not be considered baseload electric generation based on interpretation of the phrase "permitted". PSE recommends Ecology adopt the following language defining "permitted": "Permitted" means the energy facility site evaluation council certification process that is the licensing process for the siting, construction and operation of power plant."

EFSEC and Ecology response:

Thank you for your suggestion. As this legislation is to limit the emissions of GHG from new power plants, your suggestion would exempt all power plants that are not subject to EFSEC's permitting process. There is a long history in Washington of baseload power plants being designed to be just below the size that is subject to the EFSEC permitting process. This size is currently 350 MW and larger power plants. Power plants under 350 MW are under the air pollution permitting authority of Ecology and the local air pollution control authorities. 300 MW is an entirely reasonable size for a new pulverized coal fired power plant to make economic sense. Such a plant would then be entirely outside of regulation by the permitting process you propose. If we were to adopt the definition of local jurisdiction you have proposed, then the hole might be closed, but leave open the question of how to enforce non-compliance with the performance standard which our proposed rule proposed to do through the compliance and enforcement provisions in the state Clean Air Act. Without Ecology and the local air pollution control authorities involved in the permitting process and including the GHG EPS as an enforceable provision of the Notices of construction issued, enforcement via the tools in the state Clean Air act becomes very difficult.

EFSEC and Ecology are of the view that permitted implies any of a number of permits including a Site Certification Agreement or a notice of construction order of approval issued under the state Clean Air Act. As such, we do not believe the term needs further explanation or definition.

Definition of "power plant"

Comment W-9

Comment 1 -- The chapter 80.80 RCW definition of "power plant" is specific to facilities permitted by the "energy facility site evaluation council or a local jurisdiction." This feature of the definition has been faithfully carried into the power plant definition in proposed WAC 173-407-110. Notably excluded are those power plants permitted by the Department of Ecology. This gap in coverage ostensibly represents the intent of the legislature and Governor.

EFSEC and Ecology response:

Local jurisdiction is often used as a vernacular term applying to local air pollution agency or authority in addition to other local governmental agencies.

As can be noted in looking at other comments (commenters W-15 and W-25 for example), there is a position that 'local jurisdiction' be considered to have an even broader context than anticipated by this commenter. These other comments advocate for an interpretation beyond simply jurisdictions in Washington that have authority for permitting electric generation facilities to any local jurisdiction in any state that could permit an electric generation facility that could supply electricity to Washington users.

If we were to follow this commenter's suggestion that 'local jurisdiction' did not include the Department of Ecology where it functions as a local air pollution control authority, we would have to extend the logic to exclude all local air pollution control authorities from coverage and assume that 'other jurisdictions' are only counties, cities, and similar municipal governmental units. However since a local jurisdiction is equivalent to EFSEC, it is not clear how the Ecology or a local air pollution control authority differs from EFSEC in its responsibility to permit new power plants, develop, and enforce air emission control requirements and regulations, and enforce non-compliance with the GHG EPS.

Another alternate outcome of limiting the world of permitting agencies to EFSEC or a local jurisdiction, assuming that local jurisdiction means only a local air pollution control authority, means that power plants not subject to EFSEC jurisdiction could be located in the counties of eastern Washington where there is no local air pollution control authority and never have to consider applicability of the GHG EPS. This is an outcome that is clearly not contemplated in the rest of the legislation (see specifically RCW 80.80.030, establishing emission reduction goals) as it would do nothing to control or reduce emissions of GHG from electric power generation.

It is EFSEC's and Ecology's position that in the definition of 'power plant' in RCW 80.80.020 and in this regulation, that the air quality permitting offices of the Department of Ecology and the local air pollution control authorities are 'local jurisdictions' equivalent to EFSEC in its air quality permitting role.

Comment W-23

Clarify the meaning of power plant. Some power plants may not be considered baseload electric generation based on interpretation of the phrase 'energy facility site evaluation council" and "local jurisdiction." Ecology should clarify that the "energy facility site evaluation council" is a state level agency of the state of Washington. Similarly, Ecology should clarify that a "local jurisdiction" is a non-state agency in the state of Washington (such as a municipal corporation). Suggested rule language "Power plant means a facility for the generation of electricity that is permitted as a single plant by the energy facility site evaluation council or a local jurisdiction. "Energy facility site evaluation council" is a

Washington state agency. "Local jurisdiction" shall have the meaning as defined in RCW 36.37C.020(2)."

EFSEC and Ecology response:
Thank you for your suggestion. We note that since development of this rule was left to Ecology, and was coordinated with EFSEC's rulemaking, we would question the usage of a definition of local jurisdiction that did not include Ecology and the other local air pollution control authorities as permitting entities. The suggestion is a reasonable one that local jurisdictions means a city, town or county government, but we wonder why the legislation was not more explicit by referencing the definition you have found. Since this is an air emissions requirement, and both EFSEC and Ecology and the local air pollution control authorities all have air pollution permitting authority, we believe it is appropriate to focus on that permitting aspect to define local jurisdiction. This is a position that is also compatible with our decision to utilize the state clean air act to provide a framework for enforcement of noncompliance by an individual power plant with the greenhouse GHG EPS.

Definition of "regulated greenhouse gases"
Comment W-25
The current definition for regulated greenhouse gas emissions reads, {definition text omitted}. From the beginning of this process, we have recommended that this should read that "regulated greenhouse gas emissions" is measured in terms of carbon dioxide equivalent. As it currently reads it appears that these rules do not recognize the vastly different global warming potentials of different greenhouse gases. Methane has a global warming potential 23 times that of CO_2 - treating this gas as if it has the exact same impact on climate change as CO_2 is not scientifically accurate and will not help to meet the intend of the law.

AND

Comment W-6
We believe that "greenhouse gases" should be further defined, and some greenhouse gases should be weighted when figuring the required amount of emissions to be sequestered. For example, methane is 23 times as harmful as CO2 as a greenhouse gas when released into the atmosphere. This should be taken into account if methane is found to be part of the mix of emissions produced by a power generation facility.

EFSEC and Ecology response:
Thank you for your comments. Such a position would have been easier to support had the term equivalent been applied to the performance standard. Notwithstanding the commenter's view nothing in the law indicates that the emission standards are on a carbon dioxide, global warming equivalent basis. We note that the most recent legislation on climate change and GHG emissions

has rectified the oversight in this law by clearly regulating carbon dioxide equivalent of greenhouse gases.

We are retaining the process in the proposed rule to sum the simple masses of each greenhouse gas that is regulated under this rule.

Definition of "renewable fuel"

Comment W-7

Supports the Ecology change to the definition of renewable fuel to include byproducts of pulping or wood product manufacturing.

EFSEC and Ecology response:

No change was made to the definition of renewable resource as defined in RCW 18.280.020(13). In this proposed rule, we separated fuels from non-fuels included in that definition, and listed the renewable resources and fuels in a list format. We note that the definition as written in RCW 18.280.020(13) is difficult to understand as printed in the law. Once we separated it into a list format, the inclusion of byproducts of pulping and wood product manufacturing as a renewable fuel became clear.

Comment W-9

Comment 3 – WAC 173-407-110 definition of "renewable fuel" - Subsection (c) could be expanded to include: "By-products of pulping or wood manufacturing processes, including but not limited to bark, wood chips, sawdust, shavings, ~~and~~ lignin in spent pulping liquors, noncondensable gases, crude sulfate turpentine, and methanol; or"

EFSEC and Ecology response:

Thank you for the suggestion. The inclusion does not change the intent of the definition, though it is more extensive than the original list which was copied from RCW 18.280.020(18) as directed in RCW 80.80. We will not include the proposed changes in the final rule.

Comment W-13

Please confirm that municipal solid waste is not considered a"renewable fuel". I find it somewhat odd that landfill gas, which is a byproduct of municipal solid waste disposal is considered a renewable fuel, but municipal solid waste is not.

EFSEC and Ecology response:

We agree that it is odd that the gas produced from the decomposition of municipal solid waste is considered to be a 'renewable resource', while the municipal solid waste itself is not a renewable resource. However, we are clearly directed in RCW 80.80.040(3) to utilize the definition of renewable resource in RCW 18.280.020(18). The listing of renewable fuels in this regulation is directly copied from that definition. Municipal solid waste is not

defined as a “renewable resource”, therefore it is not a renewable fuel for this regulation.

Definition of “upgrade”

Comment W-8

The definition of upgrade, especially the phrase “includes the installation, replacement or modification of equipment that increases the heat input or fuel usage …”, appears to move the rule away from changes that are primarily intended to increase electric generation capacity into the area of steam demand. The primary purpose of the Camas Mill is to manufacture consumer products, and the manufacturing process is heavily steam-dependent. There are a variety of reasons (increased market demand for specific products, for example) where additional steam demand will occur. Many of these will have no linkage with increased electric generation capacity. Further, in the Camas Mill’s unique arrangement with Pacificorp, plans to increase electric generation capacity are likely to be handled contractually, and will be easy to determine. The definition of “upgrade” does not need, nor should it include, the language referenced above.

EFSEC and Ecology response:

The definition of upgrade in the law, RCW 80.80.010(18) is written in a convoluted manner. We attempted to further clarify the meaning of that definition in our proposal.

Our understanding of the definition is that any activity undertaken by the owner/operator of the baseload generation or cogeneration facility that would increase the ability to extract energy from the fuel and convert it into electricity (or in the context of a topping cycle cogeneration facility steam also) or assure the long-term, safe operation of the electric generation facility would not trigger a need to demonstrate compliance with the EPS. However, if the changes also result in an increase in the need to increase the heat input or fuel usage from that specified in an applicable air quality permit, then the change is a non-exempt upgrade that would require compliance with the GHG EPS.

Based on comments received, we will modify the definition to have a structure more like that of the law. This change does not change the determination that a change that increases fuel input would trigger the need to comply with the EPS.

> "Upgrade" means any modification made for the primary purpose of increasing the electric generation capacity of a baseload electric generation facility or unit. ~~Upgrade includes the installation, replacement or modification of equipment that increases the heat input or fuel usage as specified in existing generation air quality permits in effect as of July 22, 2007.~~ Upgrade does not include:
> (a) Routine or necessary maintenance;
> (b) Installation of emission control equipment;

(c) Installation, replacement, or modification of equipment that improves the heat rate of the facility; or
(d) Installation, replacement, or modification of equipment for the primary purpose of maintaining reliable generation output capability that does not increase the heat input or fuel usage as specified in existing generation air quality permits as of July 22, 2007, but may result in incidental increases in generation capacity.

Comment W-9
Comment 5 – WAC 173-407-110 definition of "upgrade" - The structure of the proposed Upgrade definition arguably changes the core meaning of this statutory term. The literal interpretation of the proposed definition would penalize cogeneration facilities.

The commenter goes on to discuss specific issues related to the definition and Ecology's proposed text.

EFSEC and Ecology response:
It is our position that the definition of "upgrade" in the law was primarily to indicate what actions would not trigger the need to demonstrate compliance with the EPS. The inclusion of the exception to changes that also include or require an increase in fuel input was to assure that such projects did trigger the need to comply with the performance standard.

Notwithstanding the above, we agree that the first instance where we state that an upgrade that results in an increase in fuel usage could be misinterpreted in the context of a cogeneration facility such as the applicant's. We also note that in spite of this, the definition as proposed could equally be misinterpreted in the context of a cogeneration facility such as the commenter's. We are specifically including our interpretation of applicability of what an upgrade that would trigger a need by a cogeneration facility to comply with the GHG EPS in Appendix A to this CES.

Based on comments received, we propose to modify the definition to have a structure more like that of the law, as illustrated in the response above to Comment W-8.

SECTION 120 Facilities subject to the greenhouse gases emissions performance standard:

Comments W-7, W-8, and W9
As a group, these commenters question applicability of WAC 173-407 Part II and III, and RCW 80.80 to their cogeneration facilities. Each facility is uniquely configured either physically or by contracting relationships. Each facility uses

biomass and fossil fuels and other waste fuels to power their cogeneration facility.

Commenter W-7 specifically asks that baseload electric cogeneration facilities utilizing renewable fuels be exempt from the rule. They believe that a full exemption is consistent with the language in ESHB 2815 (Chapter 14, Laws of 2008) Section 3(3).

Commenter 9 noted that WAC 173-407-120(5) should be amended to say: "A new baseload electric generation or new cogeneration facility becomes an existing baseload electric generation or cogeneration facility the day it commences commercial operation." The suggestion is to improve clarity.

EFSEC and Ecology response:
RCW 80.80 and WAC 463-85-120 grandfathers all currently operating baseload generation and baseload cogeneration facilities in the state. By language of the law, all currently existing facilities are in compliance until there is a triggering action. In the case of a cogeneration facility, a triggering action would be a non-exempt upgrade or a change in ownership.

Based on the question by these commenters on the status of existing generation facilities, we propose to amend WAC 463-85 as suggested by commenter W-9 to increase clarity of when an existing facility is required to meet the GHG EPS.

As for whether the paragraph of E2SHB 2815 cited by Commenter W-7 in any way modifies coverage under this rule to cogeneration plants using renewable fuels, we note that this law was passed long after the proposed language was filed with the Code Reviser's office. The language is related specifically to a subset of renewable fuel, not all renewable fuels listed in the definition of renewable fuel in Section 110 of our proposed rule. The definition of renewable fuel is separated from the definition of renewable energy source referenced in RCW 80.80.040(3). We do not believe that the language of E2SHB 2815 modifies or changes the requirements of RCW 80.80.

WAC 463-85-120(5) is modified as follows:

> WAC 463-85-120(5) A new baseload electric generation or new cogeneration facility becomes an existing baseload electric generation or cogeneration facility the day it commences commercial operation.

Comment W-7
The commenter specifically supports the allowance to use up to 10% fossil fuel (on an annual basis) and still qualify as a baseload generation or cogeneration facility using a renewable fuel.

EFSEC and Ecology response:
Thank you. This was our intent.

Comment W-8
WAC 173-407-120, *Facilities subject to the greenhouse gases emissions performance standard for Part II,* (2), says the rule is not applicable to a "cogeneration facility or unit that is designed and intended to utilize a renewable fuel to provide at least ninety percent of its total annual heat input." The rule provides no further elucidation about how one makes this determination. Many boilers in the pulp and paper industry are designed to accommodate multiple fuels, and we have an exemplary record of using renewable biomass fuels to supply the majority of our mills' energy. The various GP LLC-owned entities (including GP Camas) are responsible for approximately 10% of the total US electricity generated by biomass. Nevertheless, the language noted above seems unnecessarily open-ended. The Camas Mill is above an 80% target at present, and the boilers were designed with the flexibility to meet a high biomass combustion target. However, fuel flexibility is of critical importance to the Camas Mill, Georgia-Pacific, and industry at large, and unforeseen circumstances could lead to a shift in fuel use. How would the Department of Ecology handle this situation, and how would we make the determination that a unit is designed and intended to use substantial quantities of renewable fuels?

EFSEC and Ecology response:
There is no exception for the use of fossil fuels in conjunction with renewable resources (fuels) to qualify for the automatic compliance provision in the law. We proposed a de minimis fossil fuel usage in the regulation with the full knowledge that no electric generation facility is fueled exclusively with a renewable fuel. We chose the 10% value after review of de minimis fossil fuel usage criteria in other state and federal air quality regulations. 10% is a common minimum fossil fuel usage value to trigger emission standard applicability.

First the term "designed and intended" is a phrase borrowed from the legislative definition of 'baseload electric generation'. As we understand this phrase and through application of compatible text of federal air quality regulations. It is our view that "designed and intended" for a renewable fuel fired system would mean that on an annual basis the facility is incapable of using more than 10 % fossil fuel through the design of the steam generating equipment or combustion units. For example, there are currently wood fired electric generation and cogeneration units in Washington, which have oil or natural gas burners which at maximum firing rate could not add more than 10% to the heat input requirements of the units. This would be indicative of a design intent. After the fact, a facility owner could request air quality permit limitations on its usage of fossil fuels such that the unit is subject to enforcement for using more than 10% fossil fuel on an annual basis. As part of the enforcement, the unit may also become subject to a number of federal air quality requirements that come into play when the fossil fuel use exceeds 10% on an annual basis.

Design intent would be represented by installation of a limited capability to utilize fossil fuel on a routine basis. Another view of intent would be through an air quality permit limitation the limiting the annual usage of fossil fuel.

Comment W-7 (Kimberly Clark)

AND

Comment W-8 *(Georgia Pacific-Camas)*

AND

Comment W-9 *(Weyerhaeuser)*
Commenters W-7, W-8 and W-9 asked for clarification of applicability of the proposed rule to their particular cogeneration facility.

Comment W-9
In comment 6, the commenter questions the inclusion of the word "or units" along with cogeneration facilities.

EFSEC and Ecology response:
Appendix A of this document includes a response regarding applicability of the rule for each of the facilities in question.

Comment W-9
The commenter notes that "cogeneration facilities and units" is used interchangeably with "baseload cogeneration facility or unit".

EFSEC and Ecology response:
Thank you for your comment. This appears to be an instance of inaccurate editing. We have edited the document and revised the usage of the terms, where appropriate, in all sections to meet context and number agreement.

SECTION 130 Emissions performance standard:

Comment W-7
The commenter **"**cannot support the emission performance standard language as currently written in WAC 173-407-130 (3) for Part II which reads: *"All base-load electric cogeneration facilities and units in operation on or before June 30, 2008, and operating exclusively on natural gas, waste gas, a combination of natural and waste gases, or a renewable fuel, are deemed to be in compliance with the emissions performance standard until the facility or unit is subject to a new ownership interest or is upgraded."* It is generally recognized that

cogeneration facilities firing renewable fuels cannot meet the emission standard of 1,100 lbs per megawatt regardless of ownership interest changes or upgrades. Minimally, Kimberly-Clark would like to see the reference to 'renewable fuels' deleted from this section so it becomes compatible with the previously supported applicability rule and WAC 173-407-120."

EFSEC and Ecology response:
A primary aspect of including renewable fueled units within the cogeneration world is to allow them to utilize the compliance formula for cogeneration, rather than the formula for baseload generation units. It is our position that the use of the cogeneration formula is appropriate for all cogeneration units, not just those using natural gas or waste gas (aka refinery gas). By including renewable fueled cogeneration units we allow operations like this commenter's to get credit for the equivalent electrical energy of the waste steam and heat recovered from the steam turbine/generator and the direct steam uses for mechanical equipment and process needs at the industrial plant. Were the electrical equivalent of the energy used within the industrial process ignored, cogeneration plants would have a much harder time demonstrating compliance with the GHG EPS, and we would not be furthering the goals to increase the opportunities to make beneficial use of the energy in wood and agricultural wastes produced in the state.

The intent is for "renewable fuels" in WAC 463-85-130(3) to be subject to the same 90 percent threshold that is contained in WAC 463-85-120(2). To make this connection clear, EFSEC will add the following text to WAC 463-85-130(3):

> For purposes of WAC 463-85-130, exclusive use of renewable fuel shall mean at least ninety percent of total annual heat input by a renewable fuel.

Comment W-9
Comment 9 -- WAC 173-407-130(1) omits a key phrase. The subsection should be reworded to say

> Beginning July 1, 2008, all baseload electric generation and cogeneration facilities and units, subject to WAC 173-407-120, are not allowed to emit…

Discussion – WAC 173-407-120 serves as the Applicability section for the Part II regulation. Numerous performance requirements are presented in the sections which follow. Without the addition of the "subject to WAC 173-407-120" phrase, the implications could be that certain regulatory requirements in sections -130 to -240 apply to "all baseload electric generation and cogeneration facilities and units."

Comment 10—WAC 173-407-130(1) – to support implementation of the performance standard, the regulation should provide a definition of "Total Greenhouse Gases" or, alternatively, use the term "Regulated Greenhouse Gases Emissions."

EFSEC and Ecology response:
Comment 9: We agree with this clarification and will make the change to include reference to WAC 463-85-120.

Comment 10: While the law applies the term "total' greenhouse gases, we have regulatory limited the emissions included in the standard to those non-fugitive emissions that are generated directly in the generation of electricity. Thus the use of our defined term "regulated greenhouse gases emissions' is appropriate here.

We will make the following changes to the final rule:

WAC 463-85-130 Emissions performance standard under Part II.

(1) Beginning July 1, 2008, all baseload electric generation and cogeneration facilities and units subject to WAC 463-85-120, are not allowed to emit to the atmosphere ~~total~~ regulated greenhouse gases at a rate greater than one thousand one hundred pounds per megawatt-hour, annual average.

Comment W-9
Comment 11 – Important provisions in this regulation apparently become effective on July 1, 2008. There appears to be no phase-in time provided for "baseload electric generation and cogeneration facilities and units." The result may well be immediate and on-going non-compliance. While deadlines in the statute create this dilemma, it is nonetheless unfair.

Discussion – If "baseload electric generation and cogeneration facilities and units" producing more than 25 MW do not already have a carbon dioxide CEMS in service, how would they be expected to comply with WAC 173-407-230(1)(c)(ii)(A) on the day the regulation comes into effect?

The WAC 173-407-130(1) Performance Standard for allowable greenhouse gas emissions is effective on July 1, 2008. It may be a challenging task to complete the technical evaluation of compliance with the Performance Standard for a complex CHP system (see Comment 6).

We suggest the rule include a compliance date of July 1, 2009 for all requirements. Alternatively, it could build in a compliance schedule available to regulated facilities if certain conditions are demonstrated.

EFSEC and Ecology response:
The Legislature established a compliance date of July 1, 2008 that is codified in Chapter 80.80 RCW. The statute does not provide for a phase-in period. We do not have the authority to change the compliance date.

However, a careful reading of the statute and rule will indicate that no requirements become effective for existing baseload generation and cogeneration units on July 1, 2008. This includes requirements to determine emissions of CO_2, N_2O and CH_4 from these facilities. Section 230 is only implemented when a facility has to demonstrate compliance with the GHG EPS.

Demonstration of compliance with the GHG EPS is not required until a triggering event occurs – a new generation facility, an existing facility has a non-exempt upgrade, an ownership change, or for baseload electric generating plants (not cogeneration facilities) a new long term contract.

No immediate compliance obligations exist for an existing electric generation facility or unit. Thus no delayed compliance date or provision for a compliance schedule is required.

SECTION 140 Calculating greenhouse gases emissions and determining compliance for baseload electric generation facilities:

Comment W-20

Comment No. 2 – On page 8, at WAC 463-85-140(2)(b), the phrase "…or ecology as appropriate…" is include when talking about who to submit calculations to. This phrase is included elsewhere as well, but sometimes not. It is confusing. Why are some things submitted to EFSEC and others to Ecology? "When is it appropriate?" To maintain awareness EFSEC may want all material submitted to it, then can transfer documents to Ecology if necessary.

EFSEC response:

We agree with the commenter and to clarify this section we have deleted the phrase "or ecology as appropriate" in this section.

SECTION 150 Calculating greenhouse gases emissions and determining compliance for baseload electric cogeneration facilities:

No Comments

SECTION 200 Requirement for and timing of sequestration plan or sequestration program submittals:

Comment W-4

The requirement to meet this 1100 pounds per megawatt hour should start on the very first day of production and continue for every day of production. The

allowance of a grace period of up to 5 years with no emissions regulation is ridiculous and unacceptable. First day, every day, is the only way!!!

AND

Comment W-19
Additionally, the allowance for plants to be able to go as long as five years before meeting this requirement and then only being required to make up the lost time OVER the life of the plant is unacceptable. The requirement to meet the 1,100# per MWH should be met from day one. No promises now and pay later.

EFSEC and Ecology response:
The law allows for sequestration to begin up to five years after start up in some cases. Chapter 80.80.040(11)(b) specifically allows for sequestration "commencing within five years of plant operation(.)"

Comment W-13
I am confused by the requirements in WAC 173-407-200 regarding the requirements to submit a "sequestration plan" and a "sequestration program." Based on this section, would a facility, such as the Waste-to-Energy facility, need to submit both a "sequestration plan" and a "sequestration program" if they enter into a new long-term financial commitment with an electric utility to provide baseload power and the facility does not comply with the EPS in effect at the time? What is the difference between a sequestration plan and a program?

The definition of "Sequestration plan" states "the sequestration will start after electricity is first produced, but within five years of the start of commercial operation." This is not clear to me how this would apply to the WTE plant because they started producing electricity and started "commercial operation" almost 20 years ago. I am assuming this is referring to the period of time after a new long-term contract is entered into, meaning that they have to start sequestration no more than 5 years after the facility begins operation under a new contract. Is this correct?

The definition of "sequestration program" in WAC 173-407-110 states "demonstrate compliance with the emissions performance standard at the start of commercial operation"... and "with the sequestration starting on or before the start of commercial operation." This implies that they have to start the sequestration when the facility begins operation under a new contract.

I am not clear when a facility, such as the WTE facility, would have to start sequestration (i.e., no more than 5 years after entering into a contract or right after they begin operation under a new contract).

EFSEC and Ecology response:

There are no substantial differences between a “sequestration plan” and a “sequestration program” with the exception of when the requirement of when sequestration begins. The criteria of a sequestration plan and a sequestration program is given in WAC 463-85-200(1) and (2) respectively. The primary difference is whether sequestration begins on or before the date the facility becomes subject to the GHG performance standard, or sequestration begins within 5 years after that date.

A power plant becomes subject to the rule (after July 1, 2008) if one of several triggering events occurs: “WAC 463-85-120(3) A baseload electric generation facility or an individual electric generating unit at a baseload electric generation facility is required to meet the EPS in effect when:

(a) The new baseload electric generation facility or new electric generating unit at an existing baseload electric generation facility is issued a notice of construction approval or a site certification agreement;
(b) The existing facility or a unit is upgraded; or
(c) The existing facility or a unit is subject to a new long term financial commitment.”

Under RCW 80.80.40(1) the EPS becomes effective on July 1, 2008 if one of the triggering events above occurs. Since the Waste-to Energy plant is a baseload electric generation plant, it is grandfathered into compliance until the owner/operator enters a new long term financial commitment or is upgraded. At that time, it would be subject to the EPS then in regulation.

SECTION 210 Types of permanent sequestration:

No Comments

SECTION 220 Requirements for nongeologic permanent sequestration plans

Comment W-1, W-3, W-4, W-10, W-15, and V-5

permitting up to 20% CO2 sequestration leakage, by not requiring monitoring equipment able to detect leakage under that amount as proposed in WAC 173-407-220(1)(c), is irresponsible, and defeats the purpose of 6001

AND

Comment W-6

WAC 173-407-220 (1)(c) allows monitoring which shows leakage from sequestration at a threshold greater than 20%. This directly contradicts the standard elsewhere which aims at 99% permanent sequestration.

AND

Comment W-25
SUBSECTION (i)(c) This section states, "the monitoring plan will be sufficient to detect losses of sequestered greenhouse gases at a level of no greater than twenty percent of the leakage rate allowed in the definition of permanent sequestration".

The department should not hold other types of sequestration to a lesser standard than geologically sequestered greenhouse gases. We believe that the definition of permanence should apply here and not given an additional twenty percent leeway. As the definition of permanence says, the monitoring program should be designed to provide reasonable assurance that the project is meeting the permanence criteria. The law clearly directs sequestration to be safe and permanent. A leakage rate of 20% does not allow for a safe and permanent sequestration project and should not be allowed in these rules. The language should read as follows,

(c) In order to monitor the effectiveness of the implementation of the sequestration plan, the owner or operator shall submit a detailed monitoring plan that will be able to detect failure of the sequestration method to place the greenhouse gases into a sequestered state. The monitoring plan will be sufficient to provide reasonable assurance that the project is meeting the definition of permanent sequestration. The monitoring shall continue for the longer of twenty years beyond either the end of placement of the greenhouse gases into a sequestration containment system, or the date upon which it is determined that all of the greenhouse gases have achieved a state at which they are now stably sequestered in that environment.

AND

Comment V-10
We would also like to see in the sequestration portion, especially when you are talking about the non-geologic sequestration methods, in the monitoring section, it appears that it will only be detected, that leaks will only be detected if it is a 20 percent leak. We think that is way too huge. It should be in compliance with the definition of permanent. If there is a 1 percent leak, then we need to know about that 1 percent and that is the maximum percent leak that we should even be considering or worrying about. So, that needs to be changed.

EFSEC and Ecology response:
Several commenters expressed their opinion on the proposed wording of WAC 173-407-220(1)(c). They specifically objected to *twenty percent* in the sentence. *"The monitoring plan will be sufficient to detect losses of sequestered*

greenhouse gases at a level of no greater than twenty percent of the leakage rate allowed in the definition of permanent sequestration."

This section refers to non-geologic sequestration, a technology that is far from being implemented. All known technologies that would fit in this section are only at the concept stage. It will be many years before this portion of the rule will be used. The twenty percent figure was recognition that the technology would be in its infancy at the time it would be first used. We expect that sometime in the future, as these unknown technologies become better defined, the rule would require amendment to better reflect the realities of what ever might be developed as non-geologic sequestration. The commenters believe that we should set the standard higher now in order to protect the environment. Also by setting the standard higher, the rule would give technology developers a higher target to aim for.

Technologies that will be developed for non-geologic sequestration will be available for use at some point in the future. We now believe that this leak detection rate should be determined at the time of the permit issuance.

Therefore we are modifying the rule to say:

> WAC 463-85-220(1)(c) In order to monitor the effectiveness of the implementation of the sequestration plan, the owner or operator shall submit a detailed monitoring plan that will be able to detect failure of the sequestration method to place the greenhouse gases into a sequestered state. The monitoring plan will be sufficient ~~to detect losses of sequestered greenhouse gases at a level of no greater than twenty percent of the leakage rate allowed in~~ to provide reasonable assurance that the sequestration provided by the project meets the definition of permanent sequestration. The monitoring shall continue for the longer of twenty years beyond either the end of placement of the greenhouse gases into a sequestration containment system, or the date upon which it is determined that all of the greenhouse gases ~~has~~ have achieved a state at which ~~it is~~ they are now stably sequestered in that environment.

The two word changes in the last sentence are made to clarify poorly written text in the proposed rule.

Comment W-25

WAC 173-407-220 Requirements for nongeologic permanent sequestration plans under Part II.

* SUBSECTION (1)(a)(ii) The section should be amended to read as follows,

(ii) Closure and post-closure financial assurances. The owner or operator shall establish a closure and a post-closure letter of credit to cover all closure and a post-closure expense respectively. The owner or operator must designate

ecology or EFSEC, as appropriate, as the beneficiary to carry out the closure and post-closure activities. The value of the closure and post-closure accounts shall cover all costs of closure and post-closure care identified in the closure and post-closure plan. The closure and post-closure cost estimates shall be revised annually to include any changes in the sequestration project and to include cost changes due to inflation. The obligation to maintain the account for closure and post-closure care survives the termination of any permits and the cessation of injection. The requirement to maintain the closure and post-closure account is enforceable regardless of whether the requirement is a specific condition of the permit.

EFSEC and Ecology response:
Thank you for proposing these clarifications. We will adopt your proposed language, with some minor modifications for better sentence structure.

SECTION 230 Emissions and electrical production monitoring, recordkeeping and reporting requirements:

Comments W-1, W-3, W-4, W-6, W-10, W-15, and V-5
We appreciate:
The tying of the permitted emission of 1100 pounds of CO2 per megawatt hour to net deliverable electrical production, rather than gross generation by a particular plant. This is as it should be, and it should not be altered.

EFSEC and Ecology response:
Thank you for your comments.

Comments W-19 and V-7
1100# per megawatt hour being used against net deliverable electric production is a solid platform to build standards on going forward. However, this should read '1100 # per megawatt hour or the technology equivalent on a two year cycle requiring upgrades."

EFSEC and Ecology response:
The legislature clearly indicated that the 1100 pound per megawatt standard is subject to revision on a 5 year cycle. The revision is to be done by rule by the Department of Community Trade and Economic Development rather than EFSEC or Ecology. The law does not include any provisions for a source to be subject to ever changing emission requirements. Such a concept is also counter to other tenets of current air quality law and permitting requirements. For example, air pollution law has an underlying concept that a requirement to install new equipment should be implemented when a facility builds new equipment or when an existing piece of equipment is being upgraded. So the requirement to upgrade a power plant for compliance with this law and rule is when an upgrade is made or when a new plant is built. The legislature added more language to

the law that required compliance with the EPS on two more triggering events, entering into a long term financial commitment and when there is a change in ownership.

No change will be made.

Comment W-8

Georgia-Pacific would like the Department of Ecology to be aware of problems associated with use of CO_2 continuous emission monitors (CEMs) for boilers burning renewable biomass fuels. While the proposed regulations hint that CEMs may not be required in all cases (we believe that 40 CFR Part 75 allows use of fuel records in some instances), use of CEMs for biomass firing is inappropriate. In contrast to fossil fuels, measurement of biomass entering boilers is less precise, relying on weigh belts or other devices. Further, biomass is not a homogeneous fuel, unlike fossil fuel. Accordingly, we believe the best measurement/calculation method is activity data (fuel records, for example) times an emission factor. This methodology is in widespread usage across the world; in fact, the European Union allows either direct measurement or use of fuel records for its emission trading program, with no bias one way or the other. The same flexibility should be allowed here.

EFSEC and Ecology response:

40 CFR Part 75 allows the usage of emission factors and fuel usage information instead of CO_2 CEMS. We recognize that a CO_2 CEM alone is not sufficient to determine the mass of CO_2 emitted and that either an exhaust gas flow monitor or the use of F-factors will be required to determine mass CO_2, N_2O, and CH_4 emission.

We note that the commenter's discussion appears to support the use of a CO_2 CEMs rather than fuel records as better able to accommodate the multiple fuels utilized in their facility.

Comment W-9

Comment 12 – WAC 173-407-230 – The requirement for installation of a carbon dioxide continuous emission monitoring system should be withdrawn. The commenter then explains its rationale for removal of the requirement.

EFSEC and Ecology response:

This section of the rules on monitoring of the direct emissions of GHG must be able to account for emissions of the regulated greenhouse gases from any baseload power plant or cogeneration facility in Washington. By the terms of the law, this can range form a very small unit to a 1400 MW coal fired power plant. A number of other existing regulatory programs come into play when a facility has a generator nameplate capacity of greater than 25 MW. Most notable is the federal Acid Rain program and its detailed monitoring and reporting program requirements. We will not go into details of the applicability of that program here.

A reader should go to the EPA Clean Air Markets Division web site for information on program applicability.

Most specifically, for facilities producing 25 MW or more we have established a preference to use a continuous emission monitoring system for determine annual CO_2 emissions. These are the size facilities, which if subject to the federal Acid Rain Program, are subject to the same preference to utilize a continuous CO_2 monitoring system. However, we have included provisions to utilize other options as allowed by the federal program. Specifically the use of emission factors accompanied by fuel usage monitoring is allowed as an alternate approach. This is the approach which we would also advocate for many smaller facilities and is included in the text for CO_2 monitoring for facilities smaller than 25 MW.

The alternatives reflected in the Acid Rain Program include options such as the commenter advocated of a source specific emission factor. We do note that as the fuel mix changes in a missed fuel system such as the commenter's, the site specific CO_2 emission factor will also change as the fuel composition changes. It is this very variability of fuel mix into their boilers that would advocate for a continuous emission monitoring system for accurate monitoring of CO_2 emissions.

We are not deleting our preference for use of a CO_2 CEM system for monitoring CO_2 emissions and we acknowledge that the use of such a system may require installation of exhaust gas flow monitoring equipment.

Comment W-11

Our understanding of the commenter's position is that Ecology has used the wrong measure of electricity to base compliance with the greenhouse gas emission performance standard. The commenter's position is that the gross electrical generation should be used rather than the lower net generation that is available for sell.

In the commenter's case, they propose to utilize an IGCC facility with CO_2 separation and sequestration of the separated CO_2 in deep basalt formations below the power plant site. The use of both the IGCC process and the separation and compression of the CO_2 from the process stream utilize between 1/6 and 1/3 of the gross power generated by the powerplant (this internal usage is known as parasitic load). In discounting the parasitic load of the plant, the commenter notes that it would be harder to comply with the emission performance standard, requiring higher rates of sequestration to just comply and unfairly penalizing a nontraditional power plant design such as theirs.

The commenter believes that using the net power available for sale as the measure of electrical output unfairly penalizes an IGCC facility compared to a natural gas combined cycle combustion turbine in that the energy used to process the raw gas prior to burning it in the combustion turbine is not being accounted for

by the natural gas fired system while it is being accounted for in the IGCC facility. The commenter also provides an example plant configuration where a nonparasitic load could reduce the power output available for sale and make compliance with the emission performance more difficult.

The commenter suggests the following revision to WAC 173-407-230(1)(a) and WAC 463-85-230(1)(a):

> (a) Electrical output: Electrical output as measured at the point of connection with the local electrical distribution network or transmission line, as appropriate. Measurement will be on an hourly or daily basis and recorded in a form suitable for use in calculating compliance with the greenhouse gases emission performance standard. Electricity that is neither delivered to the electrical distribution network or transmission line, nor consumed for purposes of operating the power generation facility, shall be included in determining the electrical output;

EFSEC and Ecology response:

The legislature's intent was to reduce the emissions of GHG from electrical generation sources, not to penalize generation sources that provide electricity "behind the meter" to non-power island operations. CO_2 sequestration and syngas manufacturing is occurring at sites in the country that are either co-located or are miles from the facility burning the syngas or generating the CO_2. It is not our intent, nor does it serve legislative intent, to treat a facility differently that chooses to manufacture "synthetic" gas, manufacture methane from synthetic gas or sequester its CO2 at or near its combined cycle power plant.

Currently, one way in which synthetic gas manufacturing and CO_2 injection is actually occurring is practiced by the Dakota Gasification Company at it's plant in Beulah, North Dakota. This plant was constructed to produce synthetic natural gas by gasifying coal excavated at a nearby lignite mine. The facility has been in operation for 8 years and makes 54 bcf of synthetic natural gas/year. CO_2 from the plant is separated and delivered via a 204-mile pipeline to the Weyburn oil field in Saskatchewan, Canada where EnCana, the field's operator, injects the CO_2 for enhancing recovery of the oil in the field. The synthetic natural gas is delivered via a 34 mile dedicated pipeline onto the Northern Border pipeline where it can travel all the way to Chicago before being used. A power plant burning that natural gas would not subtract from its electrical output the electricity used to power Dakota Gasification's syngas plant or the electricity used to power EnCana's injection system. The economics of this facility make this approach feasible and appropriate for the plant owners.

However, it is also not appropriate to completely exclude all parasitic loads from calculation of the EPS. Because the number of MWh produced is increased when the parasitic loads are not subtracted from the gross electrical production, more total annual GHG emissions can occur while the facility remains in compliance with the GHG EPS. For example, assume a facility has a net

electrical output of 700 MW, a gross output of 850 MW, operates 24 hours/day every day of the year, and just meets the EPS of 1100 lb/MWh. Using the net electrical output would allow the electric generating plant to have annual greenhouse gas emissions of approximately 3.3 million tonnes. In comparison, using the gross electrical output as a basis would allow annual greenhouse gas emissions of approximately 4 million tonnes, 0.7 million tonnes per year more. As can be seen, the difference in annual CO_2 emissions allowed by using the gross electrical output rather than the net electrical output does not assist the state in reducing or even minimizing the increase in the emissions of GHG from electrical generation sources as required by other sections of RCW 80.80.

To resolve this issue, we believe it is appropriate to take into account true parasitic load when calculating compliance with the EPS, but not load associated with transportation and injection of carbon dioxide. We view parasitic load as that load associated with the running of the power generation facility, including emission controls. For IGCC facilities, parasitic load would include load associated with separation and compression of carbon dioxide sufficiently to transport it to a sequestration facility. The sequestration facility may be at the site or the power plant or may be at a distant location. Therefore including the load associated with CO_2 separation and compression in calculating the EPS does not provide an advantage to facilities that inject off-site. Load associated with transportation and injection of carbon dioxide is not directly associated with power generation or emission controls, and so would not be considered parasitic load for purposes of calculating compliance with the EPS.

As other new project proposals and currently existing power plants become subject to the provisions of this law and regulation, those plants which are not natural gas fired combined cycle plants will also be required to utilize significant portions of the electricity produced to support previously unnecessary process equipment such as oxygen plants for pure oxygen based combustion boilers, and various CO_2 separation, cleaning, and compression technologies to separate CO_2 and prepare it for transport and underground injection of CO_2 for permanent sequestration. There is no reason to treat a facility that chooses to utilize the IGCC process differently than a facility that chooses to utilize a boiler and the pure oxygen process for its power plant.

In evaluating compliance with the GHG performance standard the combined cycle plant burning pipeline natural gas, a coal based boiler project and an IGCC facility should be evaluated using the same metric. Electrical output should be the gross output of the generators minus plant operating loads (fans, compressors, cooling systems, pulverizes, fuel preparation processes, etc) but not including the load associated with transport and injection of the separated CO_2. Electricity delivered behind the meter to CO_2 transport and injection activities should be considered as part of the power plant's net output electrical output.

Comments W-1, W-3, W-4, W-10, W-14, W-25, V-4, V-5, V-6, V-7

To synopsize the comments:
The commenters feel that not including the lifecycle emissions from the fuel used in generation of electricity is not in compliance with the terms of RCW 80.80.040(5) requiring "the total emissions associated with producing electricity be included." The commenters suggest the boundaries of total emissions should be from point of extraction form the ground through emission through the stack of the power plant and includes an example of the boundary based on use of liquefied natural gas which might be produced in a foreign country and transported to Washington. At least one commenter also contrasts the differences in statutory language between RCW 80.70 and RCW 80.80.

AND

Comments W-15 and W19

The emission limitations should apply to all emissions related to the entire lifecycle of the fossil fuel utilized in Washington Power plants, including emissions related to mining and transportation of the fuel to the plant itself. Commenter 15 specifically asks that the emissions from extracting coal in Wyoming and shipping it to the Port of Wallula be accounted for.

AND

Comment V-2

First I'd like to say that we do have to register that we were disappointed that these rules chose to measure greenhouse gas emissions associated with electric generation not on a life cycle basis so not looking at all emissions coming from the fuel source from extraction to combustion, we realize that a compromise was made and we do support these rules and that compromise but would like to register that that was a disappointment.

EFSEC and Ecology response:

The scope of what to include in the emissions was discussed during the rule development process. While several of the stakeholders believed inclusion of 'lifecycle' emissions should be included, analyses using coal transport from Wyoming to Washington was demonstrated to be a trivial emission rate compared to the direct emissions from the coal combustion process itself. The ability to determine the extraction and transport emissions for natural gas and oil fired combustion is even more difficult due to the multiple locations and distances the fuel may come from. In evaluating the impacts of transportation of coal from Wyoming to an example 1000 MW coal fired power plant in Kalama Washington we estimated that the round-trip emissions of the locomotives would be 108,360 tonnes CO2 per year, or less than 1% of the uncontrolled CO2 resulting from combusting the coal in the power plant.

For example, natural gas used in an electric generating station located at Kalama my come from Central or Northern British Columbia, or may come from gas field in Wyoming. The user of the gas has no way of knowing where their fuel came from, even if they believe they have purchased a quantity of gas from a particular supplier/gas field. Depending on where the gas came from, it is subject to different gas cleaning processes, and a different number of gas compressor stations. How would a particular plant know which sources to include within their calculation, and how much of the emissions form those sources to include?

We note that in order to implement the greenhouse gas reporting requirements in the recently passed law (E2SHB 2815) Ecology will be required to develop or adopt methodologies that are only now being completed that would look at the 'life cycle' emissions from generating electric power from fossil fuels and other fuels. At such time as we received the first reports under this program and find that the emissions from the other portions of the fuel extraction and transport process are significant we will amend this rule to include those emissions.

SECTION 240 Enforcement of the emissions performance standard:

Comment W-14 and V-4

And lastly, we strongly endorse enforcement of the greenhouse gas emissions by the revocation of operating licenses for a year or more to preventing them from exceeding standards by simply paying fines and continuing to do business as usual.

EFSEC and Ecology response:

Thank you for your support. This provision was included to emphasize the importance of reduction of emissions of GHG.

Comment W-4

d. that enforcement of the laws is the **top priority**. These new regulations will be meaningless without **strict enforcement**. The current FFA debacle with airline safety is a classic example of tough regulations with inadequate enforcement. Periodic site inspections are totally inadequate and unacceptable because the technology exists to continuously monitor the efficiency of all emissions and scrubber systems.

EFSEC and Ecology response:

Your proposal is beyond the scope of the authorizing legislation. However, Continuous Emissions Monitors are used in circumstances where they are appropriate. In this case a power plant can determine the amount of carbon dioxide that is emitted through use of continuous emission monitoring or by recording the amount of the fuel used. For recording fuel use would be number

of cubic feet of fuel gases used; the number of gallons used; and for solid fuel, the type and weight of the fuel used.

Comment W-20

On page 29, at WAC 173-407-240(f), the word “upsets” is used. We have not been able to find a definition for “upsets,” and it is not precisely clear to us what an “upset” is. We presume it refers to some sort of equipment failure event? The penalties for avoidable upsets are sufficiently strong that we believe a definition should be provided.

EFSEC and Ecology response:

Thank you for your comment. The section was adopted from WAC 173-400-107. Upset is a term that means an unexpected failure to meet a standard (in this case the EPS). The cause could be equipment failure, human errors, etc. We are not going to add the definition to the rule at this time, due to administrative constraints.

Comment W-25

NEW SECTION WAC 173-407-240 Enforcement of the emissions performance standard under Part II

SUBSECTION (2) This section allows that a revised sequestration plan by submitted no later than one hundred fifty calendar days after the due date established. We believe that sixty days would be more reasonable an expectation. One hundred and fifty days is too long to wait for a revised plan, and the project proponents should be working quickly to rectify any problems with the plan.

EFSEC and Ecology response:

If after a full year of a facility being unable to meet its obligation to fully sequester, the problem is likely to be extensive. Smaller problems that come up during a period of a year should be able to be remedied during the annual reporting period. Larger problems may take longer to solve. We are giving the facilities enough time to fully explore these large problems and create lasting solutions.

Comment W-25

NEW SECTION WAC 173-407-240 Enforcement of the emissions performance standard under Part II

SUBSECTION (3)(c) This section states that failure to meet a benchmark should be reported by January 31 of the year following the year following the year of the event or as part of the routine monitoring reports. We believe that giving either option is fine, yet waiting till January of each year is insufficient. What if the event occurred in February? We suggest that if a missed benchmark is not covered by a routine report, it should be reported within 60 days of the event.

EFSEC and Ecology response:
This date was chosen because we see the requirement to sequester being an annual requirement. Internal record keeping will allow sequestration facilities to monitor progress on a more frequent basis and do what needs to be done to come back to the standard by the end of the reporting period (annually).

SECTION 400 Severability:

No Comments

Economic Analysis

Comment W-19
Penalizing new plants by not requiring retro fitting of existing plants.
Existing plants in Washington state must be retrofitted to meet new standards or phased out on a DOE stated timeline with no exceptions. To state that these plants cannot be upgraded is to set the table for the same conversation ten years down the road on new plants going in under 6001. This is not acceptable and regulations should be expanded to deal with the old plants.

EFSEC and Ecology response:
Your proposal is beyond the scope of the authorizing legislation. ESSB 6001 specifically applies to new long term financial commitments and new plants built after July 1, 2008.

Comment W-25
Creating a perverse incentive for Washington utilities to purchase power from out-of-state would not only be contrary to the goal of reducing GHG emissions, but also would be contrary to the goal of protecting Washington electricity consumers from higher costs, including those associated with future carbon emissions.

EFSEC and Ecology response:
EFSEC accepts Ecology's analysis of this issue indicating the reverse. If there is a cost shift for consumers of electricity it will take place earlier because of the law and rule.

Comment W-25
* SUBSECTION (6) Because there is no way to ensure that taxpayers will not be called to cover a potential cost, the following suggestion is very important to include in this rule. The following language should be added to the end of section 6

The department retains the right to require operators to undertake subsequent monitoring or other necessary remedial actions after the completion of the post-closure period if a breach or potential breach in the containment system is identified, or if additional post-closure activities by the operator may become necessary to ensure the permanence of the sequestration or the protection of public health or the environment.

EFSEC and Ecology response:
The cost of carbon capture is high. It is unlikely that carbon capture and sequestration will be cost effective under this rule and law without substantial technological improvements. We believe therefore that the scenario you analyze is unlikely.

Comment W-25
* SUBSECTION (7)(c) Because it is not clear whether the cost estimate is the net present value of the future stream of closure/post-closure activities (i.e. a discounted cost in current dollars) or a current engineering cost estimate (i.e. not discounted). If it is the latter, and depending on the magnitude of costs associated with closure/post-closure, the investment "hit" on a company of posting 100% cash up-front could be significant. Therefore this section should read,

The cost of the closure and post-closure activities shall be calculated as net present value figures using current cost of hiring a third party to close all existing facilities and to provide post-closure care, including monitoring identified in the closure and post-closure plan.

EFSEC and Ecology response:
The cost of carbon capture is high. It is unlikely that carbon capture and sequestration will be cost effective under this rule and law without substantial technological improvements. We believe therefore that the scenario you analyze is unlikely.

Comment W-27
Accordingly, in a separate attached spreadsheet from the US Environmental Protection Agency's egrid database containing 2004 reported CO_2 emissions data, we have calculated the average CO_2 emissions from all coal plants operating within the footprint of the Western Electric Coordinating Council, also known as the Western Interconnection. We filtered the database to include all plants that operated with a 60% capacity factor or greater, were greater than 100 MW nameplate capacity, and were not cogeneration units. These criteria point to coal plants that reasonably can be expected to be "designed and intended to operate" as baseload electric generation. We then summed up the total MWhs generated by all those plants and divided by the total CO_2 emissions to obtain an average emissions rate across the fleet.

The result, as detailed in the attached spreadsheet, equals 2,248 lbs/MWh and we recommend that the Department adopt 2,250 lbs/ MWh as the default rate for pulverized coal and unspecified sources.

EFSEC and Ecology response:
We do not find that your data actually supports your number. We note that you have selected only coal plants here, and while we understand your logic we disagree. You also on select plants with greater than 100 MW name place capacity. The law applies to other energy sources that generate CO2 emissions and other levels of capacity. Therefore we would not have selected the breakdown the way that you did.

Using just the plants you have selected, your energy weighted average generates a value lower than either the median plant (2,282 lbs/MWh) or average of plant averages (2,301 lbs/MWh) would suggest. Further the maximum for the plants you select is 2,597.

Your data outside of those selected has plant annual lbs/MWh emissions from many plants that are higher than emissions of plants you selected.
Had we used this method to generate the value you suggest, the public may have been able to support a claim of sampling bias.

Comment W-28
(2) Sequestration … as I understand, although it was technically possible with some reservations but was not justified economically or environmentally.

EFSEC and Ecology response:
The statement about economic feasibility is consistent with the findings that were cited in the economic analysis.

Some US experts have predicted that a workable, low risk, financially acceptable system is at least a decade off.

It is difficult to predict the trajectory of research and development of the new carbon capture technology that would be necessary for geologic sequestration to be viable. We cannot know whether it will be viable in a decade or not.

IV. Summary of public involvement opportunities

Please provide a summary of public involvement opportunities for this rule adoption:

List or describe:

- **hearing dates and locations**
  Two hearings were held:

1. Ecology Headquarters Building, Lacey
   April 8, 2008, 6:00 pm
   16 people attended
   3 people testified

2. Spokane County Public Health Center
   April 10, 2008, 6:00 pm
   15 people attended
   8 people testified

- **mass mailing pieces (i.e., FOCUS sheet, news releases)**
  - A press release was issued and posted on Ecology's Laws and Rules web site.
  - An email notice went out to the following:
    - An email list serve for this rule (58 subscribers),
    - A general Ecology email list serve (1,471 subscribers)
    - A Climate Change list serve (788 subscribers).
  - EFSEC's Rulemaking Notice was mailed to its Rulemaking mail list

- **advertisements and/or newspaper announcements**
  - Notice for these hearings was published in the Washington State Register on March 19, 2008.
  - Legal notices were published in the Spokesman Review and Daily Journal of Commerce on March 19, 2008
  - The hearing notices were posted on EFSEC's Rulemaking and Ecology's Laws and Rules web pages and Ecology's Publications and Notices web page.

V. Appendices

Appendix A	**Law and Rule Applicability to Specific Facilities**
Appendix B	**Written Comments Received During Comment Period**
Appendix C	**List of Individuals Testifying at Hearings**
Appendix D	**Public Notice**
Appendix E	**Final Rule Text - Chapter 463-80 WAC**
Appendix F	**Final Rules Text - Chapter 463-85 WAC**