NOTE: Comments in **BLUE** are from the 12/11/07 Stakeholder Meeting

PARTS II and III – RCW 80.80

Chapter 173-407 WAC
CARBON DIOXIDE MITIGATION AND SEQUESTRATION PROGRAMS FOR FOSSIL-FUELED THERMAL ELECTRIC GENERATING FACILITIES

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New Section

WAC 173-407-005 Work in unison. The requirements of this chapter, sections 010 through 070 are based upon Chapter 80.70 RCW and are separate and distinct from the requirements found in this chapter, section 100 through 320 which are based upon Chapter 80.80 RCW. These two requirements are expected to work in unison with each other.

(1) If sequestration is chosen as the method of compliance with the mitigation requirement in sections 010 through 070 of this chapter, the tons of greenhouse gases sequestered can be used to comply with the requirements of sections 100 through 320 of this chapter.

(2) If the mitigation method chosen under sections 010 through 070 of this chapter is something other than sequestration, the tons of greenhouse gases mitigated cannot be used for compliance under sections 100 through 320 of this chapter.

(3) If there is no requirement to sequester greenhouse gases under sections 100 through 320 of this chapter, the requirement for mitigation in sections 010 through 070 of this chapter is still applicable.

Existing sections 010 – 080 will be under Part I. They are currently provided in a separate document while the rule is in working draft form. The will be combined into one document in the final draft.

New Section

PART II

WAC 173-407-100 Policy and purpose of part II. It is the intent of the legislature to establish statutory goals for the statewide reduction in greenhouse gases emissions. The legislature further intends by this chapter (Chapt. 80.80 RCW) to authorize immediate actions in the electric power generation sector for the reduction of greenhouse gases emissions.

WAC 173-407-110 Definitions to Part II. The following definitions are applicable for the purposes of Part II of this chapter.

Benchmark needs to be defined

"Average available greenhouse gases emissions output" means the level of greenhouse gases emissions as surveyed and determined by the energy policy division of the department of community, trade, and economic development under section 7 of this act.

"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 60% annual capacity factor applies to only the electrical production intended to be supplied for sale.

“Bottoming-cycle cogeneration facility” means a cogeneration facility in which the energy input to the system is first applied to a useful thermal energy application or process, and at least some of the reject heat emerging from the application or process is then used for electrical power production

"Cogeneration facility" means a power plant in which the heat or steam is also used for industrial or commercial heating or cooling purposes and that meets federal energy regulatory commission standards for qualifying facilities

under the public utility regulatory policies act of 1978 (16 U.S.C. Sec. 824a-3), as amended. In general, a cogeneration facility is comprised of equipment and processes which through the sequential use of energy is used to produce electric energy and useful thermal energy (such as heat or steam) which is used for industrial, commercial, heating, or cooling purposes.

"Combined-cycle natural gas thermal electric generation facility" means a power plant that employs a combination of one or more gas turbines and steam turbines in which electricity is produced in the steam turbine from otherwise lost waste heat exiting from one or more of the gas turbines.

"Commission" means the Washington utilities and transportation commission.

"Consumer-owned utility" means a municipal utility formed under Title 35 RCW, a public utility district formed under Title 54 RCW, an irrigation district formed under chapter 87.03 RCW, a cooperative formed under chapter 23.86 RCW, a mutual corporation or association formed under chapter 24.06 RCW, or port district within which an industrial district has been established as authorized by Title 53 RCW, that is engaged in the business of distributing electricity to more than one retail electric customer in the state.

"Department" means the department of ecology.

“Electricity from unspecified sources” means electricity to be delivered pursuant to a long-term financial commitment whose sources or origins of generation and expected average annual deliveries of electricity cannot be ascertained with reasonable certainty.

“EFSEC” means the Energy Facility Site Evaluation Council.

"Electric utility" means an electrical company or a consumer-owned utility.

"Electrical company" means a company owned by investors that meets the definition of RCW 80.04.010.

"Fossil fuel" means natural gas, petroleum, coal, or any form of solid, liquid, or gaseous fuel derived from such material to produce heat for the generation of electricity.

"Governing board" means the board of directors or legislative authority of a consumer-owned utility.

"Greenhouse gases" includes carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

"Long-term financial commitment" means:

(a) Either a new ownership interest in baseload electric generation or an upgrade to a baseload electric generation facility; or

(b) A new or renewed contract for baseload electric generation with a term of five or more years for the provision of retail power or wholesale power to end-use customers in this state.

“MWh” = megawatt-hour electricity

“MWh_{eq}” = megawatt-hr equivalent electrical energy of useful thermal energy output. 1 MWh_{eq} = 3.413 million Btu of thermal energy.

“New ownership interest” means a change in the ownership structure of a baseload power plant or cogeneration facility affecting at least 5% of the value of the power plant or cogeneration facility or 5% of the electrical output of the facility.

“Permanent sequestration” means the retention of greenhouse gases in a confinement system using a method and in accordance with standards approved by the department that substantially 99% of the greenhouse gases will remain sequestered for at least 1,000 years (could state above as goal and then add practical measure). Can not be demonstrated on a monitoring plan. Use a definition that would require the producer to keep track of about 95 percent of the CO2 in containment system. Need to tie what is being asked for to something the producer can meet.

"Plant capacity factor" means the ratio of the electricity produced during a given time period, measured in kilowatt-hours, to the electricity the unit could have produced if

it had been operated at its rated capacity during that period, expressed in kilowatt-hours.

"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.

“Regulated Greenhouse gas emissions” is the mass of carbon dioxide emitted plus the mass of nitrous oxide emitted plus the mass of methane emitted. Regulated greenhouse gas emissions include CO_2 produced by a sulfur dioxide control system such as a wet limestone scrubber system. Carbon dioxide equivalents

"Renewable resources" means electricity generation facilities fueled by:

(a) Water;
(b) Wind;
(c) Solar energy;
(d) Geothermal energy;
(e) Landfill gas;
(f) Biomass energy utilizing animal waste, solid organic fuels from wood, forest, or field residues or dedicated energy crops that do not include wood pieces that have been treated with chemical preservatives such as creosote, pentachlorophenol, or copper-chrome-arsenic;
(g) Byproducts of pulping or wood manufacturing processes, including but not limited to bark, wood chips, sawdust, and lignin in spent pulping liquors;
(h) Ocean thermal, wave, or tidal power; or
(i) Gas from sewage treatment facilities.

“Sequential use of energy” means:

(a) For a topping-cycle cogeneration facility, the use of reject heat from a power production process in sufficient amounts in a thermal application or process to conform to the requirements of the operating standard; or
(b) For a bottoming-cycle cogeneration facility, the use of reject heat from a thermal application or process, at least some of which is then used for power production.

“Sequestration plan” means a comprehensive plan to

sequester carbon dioxide within 5 years of the date that electricity is first produced.

“Sequestration program plan” means a comprehensive plan to sequester carbon dioxide on the date that electricity is first produced.

“Supplementary firing” means an energy input to:

(a) a cogeneration facility used only in the thermal process of a topping-cycle cogeneration facility,
(b) the electric generating process of a bottoming-cycle cogeneration facility; or
c) to any baseload electric generation unit to temporarily increase the thermal energy that can be converted to electrical energy.

“Topping-cycle cogeneration facility” means a cogeneration facility in which the energy input to the facility is first used to produce useful electrical power output, and at least some of the reject heat from the power production process is then used to provide useful thermal energy.

“Total energy input” means the total energy supplied by all fuels used to produce electricity in a baseload generation plant.

“Total energy output” of a topping cycle cogeneration facility is the sum of the useful electrical power output and useful thermal energy output.

"Upgrade" means any modification made for the primary purpose of increasing the electric generation capacity of a baseload electric generation facility. "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,the effective date of Chapter 80.80

RCW, but may result in incidental increases in generation capacity.

"Useful energy output" of a cogeneration facility means the electric or mechanical energy made available for use, exclusive of any such energy used in the power production process.

"Useful thermal energy output" of a cogeneration facility means the thermal energy:

(a) that is made available to and used in an industrial or commercial process (net of any heat contained in condensate return and/or makeup water);

(b) that is used in a heating application (e.g., space heating, domestic hot water heating); or

(c) that is used in a space cooling application (i.e., thermal energy used by an absorption chiller).

"Waste gas" is refinery gas, pulp mill waste gasifier gas, pulp mill noncondensable gases, and other gases with a heat content of less than 300 Btu/ standard cubic foot at standard conditions. Waste gas does not include gaseous renewable energy sources.

WAC 173-407-120 Greenhouse gases emissions performance standard applicability for part II.

(1) This rule is applicable to:

(a) All new and existing baseload electric generation facilities which are all electric generation units at a single site.

(b) All new and existing baseload electric cogeneration facilities which are all electric cogeneration units at a single site (delete).

(c) The baseload generation and cogeneration plants must (make c subsection 2):

(i) Utilize fossil fuel or nonrenewable resources for all or part of their fuel requirements and

(ii) Are designed and intended to operate as baseload generation plants.

(d) Baseload electric generation plants may also be subject to long-term contracts to provide baseload electric generation (may not be necessary).

(2) This rule is not applicable to any baseload electric generation facility or cogeneration facility which utilizes a renewable energy source for all of its fuel input.

(3) A baseload electric generation facility in operation

on June 30, 2008 long-term (delete) is deemed to meet the performance standard until it has become subject to a new long-term financial commitment. -Baseload electric generation facility (make consistent through section)

-Facility conducted in WA state

(4) A baseload electric generation facility that is new or an existing baseload electric generation facility that is subject to a new long-term financial commitment is required to meet the performance standard in effect at the time:

(a) The new facility is issued a Notice of Construction or Site Certification Agreement,

(b) The existing facility is upgraded, or

(c) The existing facility is subject to a new long-term financial commitment

(5) A new baseload electric generation or cogeneration facility becomes an existing baseload electric generation or cogeneration facility the day it first delivers electricity to the electrical transmission or distribution grid.

(6) A baseload electric cogeneration facility in existence on June 30, 2008, and operating exclusively on natural gas, waste gas, a combination of natural and waste gases, or a renewable resource, that has not been subject to a change in ownership or upgrade is deemed to meet the performance standard until it has become subject to a change in ownership or upgrade. Change of ownership defined

(7) A baseload electric cogeneration facility that is new or existing and does not operate exclusively on a renewable resource is required to meet the performance standard in effect at the time:

(a) The new facility is issued a Notice of Construction or Site Certification Agreement,

(b) The existing facility is upgraded, or

(c) The existing facility is subject to a change in ownership.

WAC 173-407-130 Emissions performance standard under part II.

(1) Beginning July 1, 2008, all baseload electric generation and cogeneration plants located in Washington are required to emit to the atmosphere total greenhouse gases at or below 1100 pounds per megawatt-hour, annual average.

(2) All baseload electrical generation plants in operation on or before June 30, 2008 are deemed to be in compliance with the performance standard until the plant is subject to a new long-term financial commitment.

(3) All baseload cogeneration plants in operation on or

before June 30, 2008 are deemed to be in compliance with the performance standard until the plant is subject to a new ownership interest or are upgraded.

(4) All electric generation facilities or power plants powered exclusively by renewable resources are deemed to be in compliance with the performance standard.

(5) Compliance with the performance standard may be through use of fuels and baseload power plant designs that comply with the performance standard without need for greenhouse gas emission controls, or by use of CO_2 emission controls and carbon dioxide sequestration methods meeting the requirements of WAC 173-407-160 or WAC 173-218-115 as appropriate.

(6) Beginning July 1, 2008, the greenhouse gases emissions performance standard for all baseload electric generation for which electric utilities enter into long-term financial commitments on or after such date 1100 pounds per megawatt-hour, annual average.

WAC 173-407-140 Calculating greenhouse gases emissions and determining compliance for baseload electric generation facilities under part II.

(1) All baseload electrical generation facilities (in WA state-make sure in applicability section 120) which are not baseload cogeneration facilities are subject to compliance in accordance with the following process.

(2) Compliance determinations shall be made using the data identified below.

(a) Fuels and fuel feed stocks (follow else where) to be accounted for in determining compliance

(i) All fuels used to provide energy input to the baseload electric generation facility.

(ii) A fuel which is a renewable resource may be excluded as a fuel contributing to total greenhouse gas emissions and electricity generated. -Clarity about calculation –explain why giving the opportunity is bad –make same exemption for biomass as California (070-1039 sec 1.6)

(iii) Fuel usage and heat content is to be monitored, and reported as directed by WAC 173-407-170.

(b) Electrical output will be the net (change to gross) electrical output measured in MWh as directed by WAC 173-407-170.

(c) Regulated greenhouse gas emissions from the baseload power plant as monitored, reported and calculated in WAC 173-407-170.

(d) A baseload electric generation facility may adjust its electrical output and greenhouse gas emissions to

account for the usage of renewable resources. If a baseload electric generation facility adjusts its electrical output and greenhouse gas emissions to account for the use of renewable resources, both electrical generation and greenhouse gas emissions are reduced based on the ratio of the annual heat input from all fuels and the annual heat input from use of nonrenewable fuels. Such adjustment will be based on records of fuel usage and a representative heat content approved by ecology.

(3) By January 31 of each year, each baseload electric generation facility subject to this rule will calculate the pounds of regulated greenhouse gas emissions emitted per MWh of electricity produced during the prior calendar year by dividing the regulated greenhouse gas emissions by the total MWh produced in that year.

WAC 173-407-150 Calculating greenhouse gases emissions and determining compliance for baseload cogeneration facilities under part II.

(1) The use of this section for determining compliance with the GHG performance standard is limited to only those facilities which have certified to FERC under the provisions of 18 CFR 292 Subpart B as a qualifying cogeneration facility.

(2) Compliance determinations shall be made using the data identified below.

(a) Fuels to be accounted for in determining compliance

(i) All fuels used to provide energy input to the baseload cogeneration facility.

(ii) A fuel which is a renewable resource may be excluded as a fuel contributing to regulated greenhouse gas emissions useful thermal energy and useful energy produced and electricity generated.

(iii) Fuel usage and heat content is to be monitored, and reported as directed by WAC 173-407-170

(b) Electrical output will be the net electrical output measured in MWh as directed by WAC 173-407-170

(c) All useful thermal energy and useful energy used for non-electrical generation uses will be converted to units of megawatts energy equivalent (MWeq) using the conversion factor of 3.413 (MMBtu/MWh).

(d) Regulated greenhouse gas emissions from the baseload cogeneration power plant as monitored, reported and calculated in WAC 173-407-170.

(e) A baseload electric generation facility may adjust its electrical output and greenhouse gas emissions to account for the usage of renewable resources. If a baseload electric generation facility adjusts its

electrical output and greenhouse gas emissions to account for the use of renewable resources, both electrical generation and greenhouse gas emissions are reduced based on the ratio of the annual heat input from all fuels and the annual heat input from use of nonrenewable fuels. Such adjustment will be based on records of fuel usage and a representative heat content approved by ecology.

(3) Bottoming Cycle cogeneration facilities. The formula to determine compliance of a bottoming cycle cogeneration facility with the performance standard will be jointly developed by Ecology and the facility. To the extent possible, the facility specific formula must be based on the one for topping cycle facilities, but be specific to the installed equipment, other thermal energy uses in the facility, and specific operating conditions of the facility.

(4) Topping cycle cogeneration facilities. Compliance of a topping cycle facility with the performance standard will be as follows:

(a) Determine annual net (look for consistency) electricity produced in MWh.

(b) Determine the annual electrical energy equivalent of the useful thermal energy output in MWh_{eq}.

(c) Determine the annual regulated greenhouse gas emissions produced in pounds.

(d) A baseload cogeneration facility may adjust its electrical output, useful energy and thermal energy output, and greenhouse gas emissions to account for the usage of renewable resources. If a baseload electric generation facility adjusts its electrical output, useful energy and thermal energy output, and greenhouse gas emissions to account for the use of renewable resources, both electrical generation, useful electrical energy (or remove), thermal energy output, and other useful electrical energy greenhouse gas emissions are reduced based on the ratio of the annual heat input from all fuels and the annual heat input from use of nonrenewable fuels. Such adjustment will be based on records of fuel usage and a representative heat content approved by ecology.

(e) By January 31 of each year, each baseload electric cogeneration facilities subject to this rule will calculate the pounds of regulated greenhouse gas emissions emitted per MWh of electricity produced during the prior calendar year by dividing the regulated greenhouse gas emissions by the sum of the MWh and MWh_{eq}

produced in that year.

WAC 174-407 158 Requirement for and timing of plan or program plan submittals.

(1)A sequestration plan for a source that begins sequestration after the start of commercial operation shall be submitted when:

(a) A site certificate application submitted to EFSEC for a modification to an existing baseload electric generation plant that has a site certificate and the modification is not an exempt upgrade;

(b) A Notice of Construction application submitted to ecology or a local authority for new baseload generation or cogeneration;

(c) A Notice of Construction application submitted to ecology or a local authority for a modification to an existing baseload electric generation plant and the modification is not an exempt upgrade;

(d) A baseload generation unit enters a new long-term contract (change to financial commitment with WA retail providers) to provide baseload power if EPS has changed; or

(e) A qualifying ownership interest change occurs and the EPS has changed.

(2) A sequestration program plan is required to be submitted when:

(a) A Site Certificate application submitted to EFSEC for new baseload generation;

(b) A site certificate application submitted to EFSEC for a modification to an existing baseload electric generation plant that has a site certificate and the modification is not an exempt upgrade;

(c) A Notice of Construction application submitted to ecology or a local authority for new baseload generation or cogeneration;

(d) A Notice of Construction application submitted to ecology or a local authority for a modification to an existing baseload electric generation plant and the modification is not an exempt upgrade ;

(e) A baseload generation unit enters a new long-term contract to provide baseload power; or

(f) A qualifying ownership interest change occurs. (Change according to d and e above)

WAC 173-407-159 Types of permanent sequestration. Specific requirements for injecting carbon dioxide for permanent geologic

sequestration can be found in WAC 173-218-115. Requirements for approval of plans or program plans for other (non-geologic) types of permanent sequestration is found in Section 160, below.

WAC 173-407-160 Requirements for non-geologic permanent sequestration plans under part II. In order to meet the emissions performance standard, all baseload generation facilities that are subject to this rule, and require sequestration in order to meet the emissions performance standard, will submit sequestration plans or sequestration program plans for approval to EFSEC or ecology, as appropriate

(1) Sequestration plans must include:

(a) Financial Requirements.

Each owner or operator of a baseload generation or cogeneration plant utilizing other sequestration as a method to comply with the emission performance standard in 173-407-130 is required to provide financial assurances as a condition of plant operation sufficient to ensure successful implementation, closure, and post closure activities identified in the carbon sequestration plan, including construction and operation of necessary equipment, and any other significant costs. EFSEC gets letter of credit

(i) The owner or operator of a proposed sequestration project shall establish an account to cover all expenses for construction and operation of necessary equipment, and any other significant costs. The owner or operator may fund the account with a trust fund, surety bond, letter of credit, or insurance. The cost estimate for the sequestration project shall be revised annually to include any changes in the project and to include cost changes due to inflation.

(ii) Closure and post closure financial assurances. The owner or operator shall establish a closure and post closure account to cover all closure and post closure expenses. The owner or operator may fund the account with a trust fund, surety bond, letter of credit, or insurance showing 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 account shall cover all costs of closure and post closure care identified in the closure and post closure plan. The closure and post

closure cost estimate 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.

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

(i) A current site map showing the boundaries of the sequestration project and all areas where carbon dioxide will be stored.

(ii) A technical evaluation of the proposed project, including but not limited to, the following:

(A) The name of the area in which the sequestration will take place;

(B) A description of the facilities and place of carbon dioxide storage.

(C) A complete site description of the site, including but not limited to the terrain, the geology, the climate (including rain and snowfall expected), any land use restrictions that exist at the time of the application or will be placed upon the site in the future;

(D) The proposed calculated maximum volume of CO_2 to be sequestered and aerial extent of the location where the carbon dioxide will be stored using a method acceptable to and filed with the department;

(E) Evaluation of the quantity of leakage that may or will occur due to the proposed project.

(iii) A detailed description of the proposed project public safety and emergency response plan. The plan shall detail the safety procedures concerning the sequestration project and residential, commercial, and public land use within one mile, or any other distance as deemed necessary by the department, of the outside boundary of the project area.

(vi) A CO_2 loss detection and monitoring plan for all parts of the sequestration project. The approved CO_2 loss detection and monitoring plan shall address identification of potential release to the atmosphere;

(viii) A detailed schedule of annual benchmarks for sequestration of carbon dioxide.

(ix) Any other information that the department requires;

(x) A closure and post closure plan; and

(xi) A fee that equals the fees found in WAC 173-455-050(2(b)(iii).

(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 carbon dioxide into a sequestered state. The monitoring plan will be sufficient to detect losses of sequestered carbon dioxide at a level of no greater than 20% of the leakage rate allowed in the definition of permanent sequestration. The monitoring shall continue for the longer of 20 years beyond either the end of placement of the carbon dioxide into sequestration, or the date upon which it is determined that all of the carbon dioxide has achieved a state at which it is now stable in that environment.

(d) In the event of the failure of a sequestration plan the owner or operator the baseload generation or cogeneration plant is no longer in compliance with the emissions performance standard.

(3) For baseload electric generation facilities that will commence sequestration on or before the date that electricity is first produced, will submit a program plan that petitions EFSEC to approve as part of EFSEC's site certification or petitions ecology to approve and incorporate into the permitting authority's Notice of Construction approval. The program plan shall be sufficient to provide safe, reliable, and permanent sequestration. Once ecology or EFSEC approves a program plan for non-geologic sequestration that program plan can be used as an example for other program plans of the same type of sequestration.

(4) **Public Notice and Comment.** Ecology must provide public notice and a public comment period before approving or denying any sequestration plan or program plan.

(i) 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 program plan. The plan must be available for public inspection in at least one location near the proposed project.

(ii) Public comment.

(A) The public comment period must be at least the thirty-day period for written comment specified in the public notice.

(B) The public comment period must extend through the hearing date.

(C) Ecology shall make no final decision on any sequestration plan or program plan until the public comment period has ended and any comments received during the public comment period have been considered.

(iii) Public hearings.

(A) Ecology will hold a public hearing within the thirty-day public comment period. Ecology will determine the location, date, and time of the public hearing.

(B) Ecology must provide at least thirty days prior notice of a hearing on a sequestration plan or program plan.

WAC 173-407-170 Emissions and electrical production monitoring, recordkeeping and reporting requirements under part II.

(1) Monitoring and recordkeeping requirements. –Ongoing test in 6001(sec. 5. sub 1 and 10)? – DOE sets the standard for monitoring (air permit)
-EPS standard that is applicable to facility is the current one when project is permitted –Is this applicable to existing plant? The following parameters shall be monitored and reported as explained below:

(a) Net electrical output: Net electrical output is as measured at the point of connection with the local electrical distribution network or to a transmission line, as appropriate. This is the same point of measurement as is used for payment for electrical sales and uses the same meters. Measurement will be on an hourly or daily basis and recorded in a form suitable for use in calculating compliance with the GHG emission standard.

(b) Useful thermal energy output: Determine quantity of energy supplied to non-electrical production uses through monitoring of both the energy supplied and returned by the thermal energy user or uses. This can be done

through

(i) Measurement of the supply and return streams of the:

(A) Mass of steam or other thermal fluid,

(B) Pressure of the steam or thermal fluid, and

(C) Temperature of the steam or thermal fluid.

(ii) Through use of thermodynamic calculations as approved by ecology.

(iii) Measurement will be on an hourly or daily basis and recorded in a form suitable for use in calculating compliance with the GHG emission standard.

(c) Regulated greenhouse gas emissions

(i) The regulated greenhouse gas emissions are the emissions from the main plant exhaust stack and any bypass stacks or flares. For power plants utilizing CO_2 controls and sequestration to comply with the GHG emission standard, direct and fugitive CO_2 emissions from the CO_2 separation and compression process are included.

(ii) Carbon dioxide (CO_2)

(A) For baseload electric generation and cogeneration facilities producing 25 MW net or more of electricity, CO_2 emissions will be monitored by a continuous emission monitoring system meeting the requirements of 40 CFR Part 75.10, 75.13 and 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 75.10, 75.13 and Appendix G.

(B) For baseload electric generation and cogeneration facilities producing less than 25 MW net of electricity, the owner may either utilize a continuous emission monitoring system meeting the requirements of 40 CFR Part 75.10, 75.13 and Appendix F, or through fuel carbon content monitoring and methods meeting the requirements of 40 CFR Part 75.10, 75.13 and Appendix G.

(C) When the monitoring data from a continuous emission monitoring system does not meet the completeness requirements of 40 CFR 75, the baseload generation facility 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 new and upgraded baseload power plants producing 25 MW net or more of electricity.

(1) 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 Dept. of Energy's Energy Information Agency, or other authoritative source as approved by ecology for use by the facility.

(2) For succeeding years, N_2O emissions will be estimated through use of plant specific emission factors derived through use of emissions testing using ecology or EPA approved methods. The emission factor shall be derived through testing at varying loads and through at least 4 separate test periods spaced evenly through the first year of commercial operation.

(B) For existing baseload power plants producing 25 MW net or more of electricity, starting on the effective date of this rule and lasting until the plant is upgraded. The annual N_2O emissions will be estimated by use of emission factors as published by the Environmental Protection Agency, the federal Dept. of Energy's Energy Information Agency, or other authoritative source as approved by ecology for use by the facility.

(C) For existing, new, and upgraded baseload power plants below 25 MW net. The annual N_2O emissions will be estimated by use of emission factors as published by the Environmental Protection Agency, the federal Dept. of Energy's Energy Information Agency, or other authoritative source as approved by ecology for use by the facility.

(iv) Methane (CH_4)

(A) For new and upgraded baseload power plants equal to or greater in output than 25 MWh net.

(1) For the first year of operation, CH_4 emissions are estimated by use of emission

factors as published by the Environmental Protection Agency, the federal Dept. of Energy's Energy Information Agency, or other authoritative source as approved by ecology for use by the facility.

(2) For succeeding years, CH_4 emissions will be estimated through use of plant specific emission factors derived through use of emissions testing using ecology or EPA approved methods. The emission factor shall be derived through testing at varying loads and through at least 4 separate test periods spaced evenly through the first year of commercial operation.

(B) For existing baseload power producing 25 MW net or more of electricity, starting on the effective date of this rule and lasting until the plant is upgraded. The annual CH_4 emissions will be estimated by use of emission factors as published by the Environmental Protection Agency, the federal Dept. of Energy's Energy Information Agency, or other authoritative source as approved by ecology for use by the facility.

(C) For existing, new, and upgraded baseload power plants below 25 MW net. The annual CH_4 emissions will be estimated by use of emission factors as published by the Environmental Protection Agency, the federal Dept. of Energy's Energy Information Agency, or other authoritative source as approved by ecology for use by the facility.

(d) Fuel usage and heat content information

(i) Fossil fuel usage will be monitored by continuous fuel volume or weight measurement as appropriate for the fuel used. Measurement will be on an hourly or daily basis and recorded in a form suitable for use in calculating GHG emissions.

(ii) Renewable energy fuel usage will be monitored by continuous fuel volume or weight measurement as appropriate for the fuel used. Measurement will be on an hourly or daily basis and recorded in a form suitable for use in calculating GHG emissions.

(iii) Heat content of fossil fuels shall be tested at least once per calendar year. The

owner/operator of the baseload generation plant shall submit a proposed fuel content monitoring program to ecology for its approval. Upon request and submission of appropriate documentation of fuel heat content variability, ecology may allow a source to:

(A) Test the heat content of the fossil fuel less often than once per year, or

(B) Utilize representative heat content for the renewable energy source instead of the periodic monitoring of heat content required above.

(iv) Renewable energy fuel heat content will be tested monthly or on a different frequency approved by ecology. A different frequency will be based on the variability of the heat content of the renewable energy fuel.

(A) If the baseload power plant using a mixture of renewable and fossil fuels does not adjust its electrical output and its CO_2 emissions by the heat input from the renewable energy fuels, the monitoring go the heat content of the renewable energy fuels is not required.

(B) Upon request and appropriate documentation, ecology may allow a source to utilize representative heat content for the renewable energy source instead of the periodic monitoring of heat content required above.

(2) Reporting requirements. The results of the monitoring of the parameters monitored above shall be reported to ecology and the permitting authority annually.

(a) Facilities 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 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 with the emissions for N_2O and CH_4 appended to the report

(b) For facilities not subject to the reporting requirements of 40 CFR Part 75. Annual emissions of CO_2, N_2O and CH_4 and supporting information will be reported to ecology 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.

(c) Information to be contained in the report is given in Appendix A of this regulation.

WAC 173-407-190 Enforcement of the Emissions Performance Standard on schedule under part II. (1) Any new, modified or upgraded power plant as defined in section 120, above, which does not meet the emissions performance standard on schedule shall be subject to a penalty. A penalty shall be assessed if the implementation of the sequestration plan or sequestration program plan utilizing geologic or other sequestration fails to meet the emissions performance standard on the schedule found in the sequestration plan or the sequestration program plan for the source. These penalties can include:

(a) Financial penalties in the amount allowed by Chapter 70.94 RCW. These financial penalties shall be assessed after each year of failure to meet a sequestration benchmark set in the sequestration plan or program plan. Each pound of greenhouse gases above the emissions performance standard will constitute a separate violation, as averaged on an annual basis.

(b) Revocation of approval to construct the source or to operate the source.

(2) Provisions for unavoidable circumstances. (a) The owner or operator of a facility operated under an approved sequestration plan or program plan shall have the burden of proving to ecology, EFSEC, or the decision-making authority in an enforcement action that failure to meet a sequestration benchmark was unavoidable. This demonstration shall be a condition to obtaining relief under subsections (d), (e), and (f) and of this section.

(b) Failure to meet a sequestration benchmark determined to be unavoidable under the procedures and criteria in this section shall be excused and not subject to financial penalty.

(c) Failure to meet a sequestration benchmark shall be reported by January 31 of each year during which the event occurred or as part of the routine sequestration monitoring reports. Upon request by ecology the owner(s) or operator(s) of the sequestration project source(s) shall submit a full written report including the known causes, the corrective actions taken, and the preventive measures to be taken to minimize or eliminate the chance of recurrence.

(d) Failure to meet a sequestration benchmark due to startup or shutdown conditions shall be considered unavoidable provided the source reports as required

under subsection (c) above, and adequately demonstrates that the failure to meet a sequestration benchmark could not have been prevented through careful planning and design and if a bypass of equipment occurs, that such bypass is necessary to prevent loss of life, personal injury, or severe property damage.

(e) Maintenance. Failure to meet a sequestration benchmark due to scheduled maintenance shall be considered unavoidable if the source reports as required under subsection (c) above, and adequately demonstrates that the excess emissions could not have been avoided through reasonable design, better scheduling for maintenance or through better operation and maintenance practices.

(f) Failure to meet a sequestration benchmark due to upsets shall be considered unavoidable provided the source reports as required under subsection (c) above, and adequately demonstrates that:

(A) The event was not caused by poor or inadequate design, operation, maintenance, or any other reasonably preventable condition;

(B) The event was not of a recurring pattern indicative of inadequate design, operation, or maintenance; and

(C) The operator took immediate and appropriate corrective action in a manner consistent with good practice for minimizing non-sequestration during the upset event.

Enforcement for permit violations**(need to include)**

Part III Relationship of Ecology and the WUTC, and the Governing Boards of Consumer-Owned Utilities

WAC 173-407-300 Procedures for Determining the Emissions Performance Standard of a Long Term Financial Commitment and Addressing Electricity from Unspecified Sources

(1) The following procedures are adopted by the department to be utilized by the department under RCW 80.80.060 and to be available to and utilized by the governing boards of consumer owned utilities pursuant to RCW 80.80.070 when evaluating a potential long term financial commitment. This procedure can be utilized when the long term financial commitment includes electricity from unspecified sources, electricity from one or

more specified sources, and/ or provisions to meet load growth with electricity from unspecified and/ or specified sources.

(2) The Emissions Performance Standard for a long term financial commitments is calculated using a time weighted average of all sources of emissions in the years in which they are contributing electricity and emission in the commitment. Each source's proportional contribution to emissions per each MWH delivered under the contract is added together to demonstrate that the long term financial commitment does not exceed, in any year, on average, the emissions performance standard of RCW 80.80.040, currently 1100 lbs/ MWh, as updated pursuant to RCW 80.80.050.

(3) A time weighted average formula calculates, for every year of the contract, the average GHG emissions per average MWh of the portfolio using the expected annual average proportional delivery from each source in proportion to the total portfolio for the year for which the calculation is being made. Default values adopted in this procedure shall be used for each source unless actual emissions are known or specified by the manufacturer. A default GHG emissions value of an average pulverized coal plant, as shown below, shall be used for unspecified sources in the procedure.

(4) The time weighted average calculation can be performed using emissions factors as follows (Table ?? is an Example Calculation):

(a) If a manufacturer's emissions specification or measured emission rate is available for a specified generator, that specification or measured rate will be used in the calculation.

(b) Combined cycle combustion turbines =1100 lbs/ MWh - or as updated and adopted by rule in 2012 and every five years thereafter pursuant to RCW 80.80.050

(c) Steam turbines using pulverized coal = 2,200 lbs/ MWh minus the amount of CO2 permanently sequestered on an annual basis divided by the MWhs generated that year.

(d) Integrated Gasification Combined Cycle = 1,800 lbs/ MWH minus the amount of CO2 permanently sequestered on an annual basis divided by the MWhs generated that year

(e) Electricity from unspecified sources = 2,200 lbs/ MW

WAC - 173-407-310 Relationship of Ecology and Washington Utilities and Transportation Commission.

(1) The Washington Utilities and Transportation Commission shall consult with Ecology to apply the procedures adopted by the department to verify the emissions of greenhouse gases from baseload electric generation under RCW 80.80.040. Ecology shall report to the commission whether baseload electric generation will comply with the greenhouse gases emissions performance standard for the duration of the period the baseload electric generation is supplied to the electrical company. (RCW 80.80.60(7)) The method for determining compliance with the emissions performance standard is found in WAC 173-407-130.

(2) When Ecology is consulting with Washington Utilities and Transportation Commission in order to determine if a long-term financial commitment for baseload electric generation meets the greenhouse gases emissions performance standard, ecology shall consider whether the method used by the Washington Utilities and Transportation Commission meets the requirements of RCW 80.80.040 and WAC 173-407-130.

(a) Ecology will conclude this process of consultation and assistance within 30 days of receiving all necessary information to verify compliance.

(b) The Washington Utilities and Transportation Commission shall pay ecology a consultation based on the fees found in WAC 173-455-050(2)(b)(iii).

WAC 173-407-320 Relationship of Ecology and the Governing Boards of Consumer-Owned Utilities.

(1) RCW 80.80.070 requires the governing boards of consumer-owned utilities to “review and make a determination on any long-term financial commitment by the utility, pursuant to this chapter and after consultation with the department, to determine whether the baseload electric generation to be supplied under that long-term financial commitment complies with the greenhouse gases emissions performance standard established under RCW 80.80.040.” (RCW 80.80.070(1)) The method for determining compliance with the emissions performance standard is found in WAC 173-407-130(question about why this is here).

(2) RCW 80.80.070 also requires the governing boards of consumer-owned utilities to “apply the procedures adopted by the department to verify the emissions of greenhouse gases from baseload electric generation under RCW 80.80.040, and may request assistance from the department in doing so.” (RCW 80.80.70(5)) The method for determining compliance with the emissions performance standard is found in WAC 173-407-130.

(3) When Ecology is consulting with a governing board and when

Ecology is assisting a governing board to determine if a long-term financial commitment for baseload electric generation meets the greenhouse gases emissions performance standard, ecology shall consider whether the method used by the governing board meets the requirements of RCW 80.80.040 and WAC 173-407-130 sec. 5. sub 8 in ESSB 6001-look at how consultation is defined according to CTED –Consultation process does not give Ecology authority over governing board.

(a) Ecology will conclude this process of consultation and assistance within 30 days of receiving all necessary information to verify compliance.

(b) The governing board shall pay ecology a consultation and assistance fee based on the fees found in WAC 173-455-050(2)(b)(iii).

WAC 173-407-400 Severability. The provisions of this regulation are severable. If any provision is held invalid, the application of that provision to other circumstances and the remainder of the regulation will not be affected.

[Statutory Authority: RCW 70.94.892 and chapter 80.70 RCW. 05-01-237 (Order 03-09), § 173-407-090, filed 12/22/04, effective 1/22/05.]