

2nd Draft language for portions of WAC 173-407:

Send comments by December 4, 2007 to:

Nancy Pritchett
Air Quality Program
Department of Ecology
npri461Q@ecy.wa.gov

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, sections 100 through 200 which 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 (sections 010 through 070 of this rule) are applied.

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WAC 173-407-100 Policy and purpose of part II. It is the policy of the state that “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.”

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

"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 the electrical production only. *Last sentence added from cogeneration discussion on what the 60 % CF applies to.*

“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 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.

“Cogeneration facility” means equipment used to produce electric energy and forms of useful thermal energy (such as heat or steam), used for industrial, commercial, heating, or cooling purposes, through the sequential use of energy.

"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.

"Distributed generation" means electric generation connected to the distribution level of the transmission and distribution grid, which is usually located at or near the intended place of use.

"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.

"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.

“Permanent sequestration” means retention of greenhouse gases using a sequestration method approved by the department that creates a high degree of certainty that at least 99% of the greenhouse gases will remain sequestered for at least 1,000 years.

"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.

"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.

"Supplementary firing" means an energy input to the cogeneration facility used only in the thermal process of a topping-cycle cogeneration facility, or only in the electric generating process of a bottoming-cycle cogeneration facility.

"Topping-cycle cogeneration facility" means a cogeneration facility in which the energy input to the facility is first used to produce useful 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 output" of a topping cycle cogeneration facility is the sum of the useful power output and useful thermal energy output.

"Total energy input" means the total energy of all forms supplied from external sources.

"Total Greenhouse gas emissions" means the mass of carbon dioxide emitted plus the mass of nitrous oxide emitted plus the mass of methane emitted. Total Greenhouse gas emissions include CO₂ produced by a sulfur dioxide control system such as a wet limestone scrubber system.

“Unspecified sources” means electricity purchased from one or more unidentified power plants.

“Useful power 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 topping-cycle cogeneration facility means the thermal energy:

- (a) that is made available to 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).

"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 routine or necessary maintenance, installation of emission control equipment, installation, replacement, or modification of equipment that improves the heat rate of the facility, or 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.

“Waste gas” is refinery gas, pulp mill waste gasifier gas, pulp mill noncondensable gasses, and other gasses with a heat content of less than 600 – 800 Btu/cu. ft. at standard conditions. Waste gas does not include gaseous renewable energy sources.

This is a suggestion based on committee discussion. Need to research what Btu content would be a low content gas, though probably the rate at which an organic gas stream would not be autothermal would be the logical Btu content.

173-407-160 Sequestration Plan Requirements. In order to enforce the emissions performance standard, all baseload generation facilities that are subject to this rule will submit plans for approval to EFSEC or ecology, as appropriate.

(1) **Timing of plan submittals:** A sequestration plan is required to be submitted when ever any of the following events occur:

- (a) As part of Site Certificate application submitted to EFSEC for new baseload generation;
- (b) As part of 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) As part of a Notice of Construction application submitted to ecology or a local

authority for new baseload generation or cogeneration;

(d) As part of 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) Whenever a baseload generation unit enters a new long term contract to provide baseload power; or

(f) Whenever a qualifying ownership interest change occurs

(2) The criteria for approval of the sequestration plan for baseload electric generation facilities that will commence sequestration after the date that electricity is first produced are:

(a) Sequestration projects plans shall contain sufficient detail to insure that costs associated with the construction and operation of necessary equipment, and any other significant costs are and will be available when the sequestration mechanism is built or implemented. Further a separate financial assurance shall be established to cover costs associated with the end of active sequestration processes (closure) and post closure assurance that the sequestered carbon stays sequestered.

(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 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 operator may fund the account with a trust fund, surety bond, letter of credit, or insurance. 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, **etc.**
 - (D) The proposed calculated maximum volume of CO₂ to be sequestered and aeral 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 {need to agree on a definition of this term – it relates to growth or replacement fossil CO₂ emissions as a result of this project} that may or will occur due to the proposed project
 - (F) **MORE????**
- (iii) The extent of where the CO₂ will be stored, using all information available.
 - (iv) 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. The public safety and emergency response procedures shall include contingency plans for CO₂ leakage from any storage mechanism, or associated equipment, or other permitted facility. The public safety and emergency response procedures also shall identify specific contractors and equipment vendors capable of providing necessary services and equipment to respond to such CO₂ storage leaks or loss of containment from the CO₂ storage site. These emergency response procedures should be updated as necessary throughout the operational life of the permitted storage facilities.
 - (v) A detailed worker safety plan that addresses CO₂ safety training and safe working procedures at the sequestration project;
 - (vi) A corrosion monitoring and prevention plan for all facilities where carbon dioxide gas, liquid or solid is present;
 - (vii) A leak detection and monitoring plan for all parts of the sequestration project. The approved leak 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) **MORE????**
 - (x) A performance bond covering the surface sequestration project in an amount established by department. The amount of the bond shall be sufficient to provide financial assurance to the department to cover the closure and post closure costs as found in WAC 173-407-**sxx(1)(a)(i)**
 - (xi) Any other information that the department requires; and

(xii) A closure and post closure plan.

(xiii) **Payment of a fee.** The fee shall equal 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 **any failure** of the sequestration method to place the carbon dioxide into a sequestered state and to monitor for 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 that a state at which it is now stable in that environment.

(d) In the event of the failure of a sequestration plan the owner may purchase emissions reduction credits by the same criteria as found in WAC 173-407-060(2)(b) but the amount to be mitigated must equal the amount required to meet the emissions performance standard found in section **?????** of this rule.

(3) For baseload electric generation facilities that will commence sequestration on or before the date that electricity is first produced the criteria that will be used to evaluate the plan are Subsections above (2)(a)(ii), (2)(b), and (2)(c).

(4) **Public Notice and Comment** Ecology must provide public notice and a public comment period before approving or denying any sequestration 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 **the local environment in the case of failure of the sequestration 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 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.

(5) **Penalties for failure to achieve implementation of the plan on schedule.** A penalty shall be assessed if the implementation of the sequestration plan fails to meet the

performance required of it. These penalties can include:

- (i) Submittal and implementation of a new plan; and
- (ii) Financial penalties in the amount allowed by Chapter 70.94 RCW. These financial penalties shall be assessed after one year of failure to meet a sequestration benchmark set in the sequestration plan.
- (iii) Revocation of approval to construct and operate
- (iv) The owner or operator of a facility operated under an approved sequestration plan shall have the burden of proving to ecology 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 (iv), (v) and (vi) of this section.
- (v) 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.
- (vi) Failure to meet a sequestration benchmark shall be reported within thirty days after the end of the accounting 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.
- (vii) Failure to meet a sequestration benchmark due to startup or shutdown conditions shall be considered unavoidable provided the source reports as required under subsection (v) 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.
- (viii) Maintenance. Failure to meet a sequestration benchmark due to scheduled maintenance shall be considered unavoidable if the source reports as required under subsection (v) 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.
- (ix) Failure to meet a sequestration benchmark due to upsets shall be considered unavoidable provided the source reports as required under subsection (v) 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.

173-407-180 Relationship of Ecology with PUD commissions and WUTC under part II. When the commissioners of Washington Public Utility Districts and electrical companies enter into long-term financial commitments for baseload electric generation, the Washington Public Utility Districts and electrical companies must ensure that the commitments comply with the greenhouse gases emissions performance standard. In order to do so the commissioners of Washington Public Utility Districts and electrical companies will consult with the Department of Ecology before approving the contract. Ecology will use the WAC 173-407-170 as the basis for making a recommendation to the commissioners of Washington Public Utility Districts or the electrical companies.