

## **Appendix E**

## Chapter 463-80 WAC

### CARBON DIOXIDE MITIGATION PROGRAM FOR THERMAL ELECTRIC GENERATING FACILITIES

#### NEW SECTION

**WAC 463-80-005 Work in unison.** The requirements of this chapter, are based upon chapter 80.70 RCW and are separate and distinct from the requirements found in chapter 463-85 WAC - greenhouse gases performance standard 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 under chapters 80.80 RCW and 463-85 WAC. Once that standard is met, the requirements of chapters 80.70 RCW and 463-80 WAC are applied.

#### NEW SECTION

**WAC 463-80-010 Policy and purpose.** It is the policy of the state to require mitigation of the emissions of carbon dioxide (CO<sub>2</sub>) from all new and certain modified fossil-fueled thermal electric generating facilities with station-generating capability of greater than 25 megawatts of electricity (MWe). This chapter applies to fossil-fueled thermal electric generating facilities with station-generating capability of greater than 350 MWe.

#### NEW SECTION

**WAC 463-80-020 Definitions.** The definitions in this section are found in RCW 80.70.010 and apply throughout this chapter unless clearly stated otherwise. The definitions are reprinted below.

"Applicant" has the meaning provided in RCW 80.50.020 and is subject to RCW 80.70.020 (1)(a).

"Carbon credit" means a verified reduction in carbon dioxide

or carbon dioxide equivalents that is registered with a state, national, or international trading authority or exchange that has been recognized by EFSEC.

"Carbon dioxide equivalents" means a metric measure used to compare the emissions of various greenhouse gases based upon their global warming potential.

"Certificate holder" means the company that holds a site certification agreement and is authorized to construct and operate an energy facility under chapter 80.50 RCW.

"Cogeneration credit" means the carbon dioxide emissions that EFSEC, department, or authority, as appropriate, estimates would be produced on an annual basis by a stand-alone industrial and commercial facility equivalent in operating characteristics and output to the industrial or commercial heating or cooling process component of the cogeneration plant.

"Cogeneration plant" means a fossil-fueled thermal 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.

"Commercial operation" means the date that the first electricity produced by a facility is delivered for commercial sale to the power grid.

"Department" means the department of ecology.

"EFSEC" or "council" means the energy facility site evaluation council created by RCW 80.50.030.

"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.

"Independent qualified organization" means a third-party company or organization that is independent of any energy facility that emits CO<sub>2</sub> and is recognized by the council to receive payment for selection, monitoring, and evaluation of CO<sub>2</sub> emissions mitigation activities.

"Mitigation plan" means a proposal that includes the process or means to achieve carbon dioxide mitigation through use of mitigation projects or carbon credits.

"Mitigation project" means one or more of the following:

(a) Projects or actions that are implemented by the certificate holder directly or through its agent, or by an independent qualified organization to mitigate the emission of carbon dioxide produced by the fossil-fueled thermal electric generation facility. This term includes, but is not limited to, the use of energy efficiency measures, clean and efficient transportation measures, qualified alternative energy resources, demand side management of electricity consumption, and carbon sequestration programs;

(b) Direct application of combined heat and power (cogeneration);

(c) Verified carbon credits traded on a recognized trading authority or exchange; or

(d) Enforceable and permanent reductions in carbon dioxide or

carbon dioxide equivalents through process change, equipment shutdown, or other activities under the control of the applicant and approved as part of a carbon dioxide mitigation plan.

"Permanent" means that emission reductions used to offset emission increases are assured for the life of the corresponding increase, whether unlimited or limited in duration.

"Qualified alternative energy resource" has the same meaning as in RCW 19.29A.090.

"Site certification agreement" means the document as recommended by EFSEC and approved by the governor that lists the requirements and conditions for construction and operation of an energy facility, including any attached or associated permits or authorizations, for example a prevention of deterioration permit or notice of construction.

"Station generating capability" means the maximum load a generator can sustain over a given period of time without exceeding design limits, and measured using maximum continuous electric generation capacity, less net auxiliary load, at average ambient temperature and barometric pressure.

"Total carbon dioxide emissions" means:

(a) For a fossil-fueled thermal electric generation facility described under RCW 80.70.020 (1) (a) and (b), the amount of carbon dioxide emitted over a thirty-year period based on the manufacturer's or designer's guaranteed total net station generating capability, new equipment heat rate, an assumed sixty percent capacity factor for facilities under EFSEC's jurisdiction and taking into account any enforceable limitations on operational hours or fuel types and use; and

(b) For a fossil-fueled thermal electric generation facility described under RCW 80.70.020 (1) (c) and (d), the amount of carbon dioxide emitted over a thirty-year period based on the proposed increase in the amount of electrical output of the facility that exceeds the station generation capability of the facility prior to the applicant applying for certification pursuant to RCW 80.70.020(1), new equipment heat rate, an assumed sixty percent capacity factor for facilities under EFSEC's jurisdiction, and taking into account any enforceable limitations on operational hours or fuel types and use.

#### NEW SECTION

**WAC 463-80-030 Carbon dioxide mitigation program applicability.** (1) The provisions of this chapter apply to:

(a) New fossil-fueled thermal electric generation facilities with station-generating capability of three hundred fifty thousand kilowatts or more and fossil-fueled floating thermal electric generation facilities of one hundred thousand kilowatts or more under RCW 80.50.020 (15) (a), for which an application for site

certification is made to EFSEC after July 1, 2004; and

(b) Fossil-fueled thermal electric generation facilities with station-generating capability of three hundred fifty thousand kilowatts or more that have an existing site certification agreement and, after July 1, 2004, apply to EFSEC to increase the output of carbon dioxide emissions by fifteen percent or more through permanent changes in facility operations or modification of equipment.

(2) **New facilities.** Any fossil-fueled thermal electric generating facility is required to mitigate CO<sub>2</sub> emissions as described in chapter 80.70 RCW, if the facility meets the following criteria:

(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.

(3) **Modifying existing fossil-fueled thermal electric generating facilities.** A fossil-fueled thermal electric generating facility seeking to modify the facility or any electrical generating units is required to mitigate the increase of the emission of CO<sub>2</sub>, as described in RCW 80.70.020, when the following occur:

(a) The application was received after July 1, 2004;

(b) The unmodified station generating capability is 350 MWe or greater;

(c) The increase to the facility or units is the greater of the following measures:

(i) An increase in station-generating capability of more than 25 MWe; or

(ii) An increase in CO<sub>2</sub> emissions output by fifteen percent or more.

(4) **Examples of fossil-fueled thermal electric generation units.** The following are some examples of fossil-fueled thermal electric generating units:

(a) Coal, oil, natural gas, or coke fueled steam generating units (boilers) supplying steam to a steam turbine - electric generator;

(b) Simple cycle combustion turbine attached to an electric generator;

(c) Combined cycle combustion turbines (with and without duct burners) attached to an electric generator and supplying steam to a steam turbine - electric generator;

(d) Coal gasification units, or similar devices, where the synthesis gas produced is used to fuel a combustion turbine, boiler or similar device used to power an electric generator or provide hydrogen for use in fuel cells;

(e) Hydrocarbon reformer emissions where the hydrogen produced is used in fuel cells.

NEW SECTION

**WAC 463-80-040 Carbon dioxide mitigation program costs.** Reasonable and necessary costs for EFSEC's carbon dioxide mitigation program shall be charged to applicants and certificate holders as authorized by RCW 80.70.060 and 80.50.071.

NEW SECTION

**WAC 463-80-050 Calculating total carbon dioxide emissions to be mitigated.** (1) Step 1 is to calculate the total quantity of CO<sub>2</sub>. The total quantity of CO<sub>2</sub> is referred to as the maximum potential emissions of CO<sub>2</sub>. The maximum potential emissions of CO<sub>2</sub> is defined as the annual CO<sub>2</sub> emission rate. The annual CO<sub>2</sub> emission rate is derived by the following formula unless a differing analysis is necessary or appropriate for the electric generating process and type of equipment:

$$CO_{2rate} = \frac{F_s \times K_s}{2204.6} \times T_s + \frac{F_1 \times K_1}{2204.6} \times T_1 + \frac{F_2 \times K_2}{2204.6} \times T_2 + \frac{F_3 \times K_3}{2204.6} \times T_3 \dots + \frac{F_n \times K_n}{2204.6} \times T_n$$

where:

- CO<sub>2rate</sub> = Maximum potential emissions in metric tons per year
- F<sub>1-n</sub> = Maximum design fuel firing rate in MMBtu/hour calculated as manufacturer or designer's guaranteed total net station generating capability in MWe times the new equipment heat rate in Btu/MWe. Determined based on higher heating values of fuel
- K<sub>1-n</sub> = Conversion factor for the fuel(s) being evaluated in lb CO<sub>2</sub>/MMBtu for fuel F<sub>n</sub>
- T<sub>1-n</sub> = Hours per year fuel F<sub>n</sub> is allowed to be used. The default is 8760 hours unless there is a limitation on hours in a site certification agreement
- F<sub>s</sub> = Maximum design supplemental fuel firing rate in MMBtu/hour, at higher heating value of the fuel
- K<sub>s</sub> = Conversion factor for the supplemental fuel being evaluated in lb CO<sub>2</sub>/MMBtu for fuel F<sub>n</sub> given fuel
- T<sub>s</sub> = Hours per year supplemental fuel F<sub>n</sub> is allowed. The default is 8760 hours unless there is a limitation on hours in a site certification agreement

(a) When there are multiple new fossil-fueled electric generating units, the above calculation will be performed for each unit and the total CO<sub>2</sub> emissions of all units will be summed.

(b) When a unit or facility is allowed to use multiple fuels, the maximum allowed hours on the highest CO<sub>2</sub> producing fuels will be utilized for each fuel until the total of all hours per fuel add up to the allowable annual hours.

(c) When a new unit or facility is allowed to use multiple fuels without restriction, this calculation will be performed assuming that the fuel with the highest CO<sub>2</sub> emission rate is used 100% of the time.

(d) When the annual operating hours are restricted for any reason, the total of all T<sub>1-n</sub> hours equals the annual allowable hours of operation in the site certification agreement.

(e) Fuel to CO<sub>2</sub> conversion factors (derived from the EPA's AP-42, Compilation of Air Pollutant Emission Factors):

Fuel	K <sub>n</sub> lb/MMBtu
#2 oil	158.16
#4 oil	160.96
#6 oil	166.67
Lignite	287.50
Sub-bituminous coal	267.22
Bituminous coal, low volatility	232.21
Bituminous coal, medium volatility	241.60
Bituminous coal, high volatility	262.38
Natural gas	117.6
Propane	136.61
Butane	139.38
Petroleum coke	242.91
Coal coke	243.1
Other fossil fuels	Calculate based on carbon content of the fossil fuel and application of the gross heat content (higher heating value) of the fuel
Nonfossil fuels	00.00

(2) **Step 2 - Insert the annual CO<sub>2</sub> rate to determine the total carbon dioxide emissions to be mitigated.** The formula below includes specifications that are part of the total carbon dioxide definition:

$$\text{Total CO}_2 \text{ Emissions} = \text{CO}_{2\text{rate}} \times 30 \times 0.6$$

(3) **Step 3 - Determine and apply the cogeneration credit (if any).** Where the cogeneration unit or facility qualifies for cogeneration credit, the cogeneration credit is the annual CO<sub>2</sub> emission rate (in metric tons per year) and is calculated as shown below or similar method:

$$CO_{2\text{credit}} = \frac{H_s}{2204.6} \times (K_a) \div n$$

where:

- CO<sub>2credit</sub> = The annual CO<sub>2</sub> credit for cogeneration in metric tons/year.
- H<sub>s</sub> = Annual heat energy supplied by the cogeneration plant to the "steam host" per the contract or other binding obligation/agreement between the parties in MMBtu/yr as substantiated by an engineering analysis.
- K<sub>a</sub> = The time weighted average CO<sub>2</sub> emission rate constant for the cogeneration plant in lb CO<sub>2</sub>/MMBtu supplied. The time-weighted average is calculated similarly to the above method described in subsection (1) of this section.
- n = Efficiency of new boiler that would provide the same quantity of thermal energy. Assume n = 0.85 unless applicant provides information supporting a different value.

Calculate the metric tons of the cogeneration credit over the 30 year period.

$$\text{Cogeneration Credit} = \text{CO}_{2\text{credit}} \times 30$$

**(4) Step 4 - Apply the mitigation factor.**

(a) RCW 80.70.020(4) states that "*Fossil-fueled thermal electric generation facilities that receive site certification approval or an order of approval shall provide mitigation for twenty percent of the total carbon dioxide emissions produced by the facility.*"

(b) The CO<sub>2</sub> emissions mitigation quantity is determined by the following formula:

$$\text{Mitigation Quantity} = \text{Total CO}_2 \text{ Emissions} \times 0.2 - \text{Cogeneration Credit}$$

where:

- Mitigation quantity = The total CO<sub>2</sub> emissions to be mitigated in metric tons.
- CO<sub>2rate</sub> = The annual maximum CO<sub>2</sub> emissions from the generating facility in tons/year.
- 0.2 = The mitigation factor in RCW 80.70.020(4).

**(5) Additional restrictions for modifications to an existing facility not involving installation of new generating units.** The quantity of CO<sub>2</sub> to be mitigated is calculated by the same methods used for the new generating units with the following restrictions:

(a) The quantity of CO<sub>2</sub> subject to mitigation is only that resulting from the modification and does not include the CO<sub>2</sub> emissions occurring prior to the modification;

(b) An increase in operating hours or other operational limitations established in a site certification agreement is not an exempt modification under this regulation. However, only increased CO<sub>2</sub> emissions related to the increase in operating hours or changes to any other operational restriction are subject to the CO<sub>2</sub> mitigation program requirements;

(c) The annual emissions (CO<sub>2rate</sub>) is the difference between the

premodification condition and the postmodification condition, but using the like new heat rate for the combustion equipment; and

(d) The cogeneration credit may be used, but only if it is a new cogeneration credit, not a cogeneration agreement or arrangement established prior to July 1, 2004, or used in a prior CO<sub>2</sub> mitigation evaluation.

#### NEW SECTION

**WAC 463-80-060 Carbon dioxide mitigation plan requirements and options.** (1) **Once the total carbon dioxide emissions mitigation quantity is calculated, what is next?** The facility must mitigate that level of carbon dioxide emissions. A CO<sub>2</sub> mitigation plan is required and must be approved as part of a site certification agreement. A mitigation plan is a proposal that includes the process or means to achieve carbon dioxide mitigation through use of mitigation projects or carbon credits (RCW 80.70.010).

The approved mitigation plan must be fully implemented and operational in accordance with the schedule in the site certification agreement. The applicant may request an extension of the mitigation project implementation deadline. The request must be submitted in writing to EFSEC before the implementation deadline. The request must fully document the reason(s) more time is needed to implement the mitigation project and propose a revised schedule.

(2) **What are the mitigation plan options?** The options are identified in RCW 80.70.020(3), which states that "*An applicant for a fossil-fueled thermal electric generation facility shall include one or a combination of the following carbon dioxide mitigation options as part of its mitigation plan:*

(a) *Payment to a third party to provide mitigation;*  
(b) *Direct purchase of permanent carbon credits; or*  
(c) *Investment in applicant-controlled carbon dioxide mitigation projects, including combined heat and power (cogeneration)."*

(3) **What are the requirements of the payment to a third-party option?** The payment to a third party option requirements are found in RCW 80.70.020 (5) and (6). Subsection (5) identifies the mitigation rate for this option and describes the process for changing the mitigation rate. Subsection (6) describes the payment options.

The initial mitigation rate is **\$1.60 per metric ton** of carbon dioxide to be mitigated. If there is a cogeneration plant, the monetary amount is based on the difference between twenty percent of the total carbon dioxide emissions and the cogeneration credit. The mitigation rate will change when EFSEC adjusts it through the process described in RCW 80.70.020 (5)(a) and (b). The total

payment amount = mitigation rate x mitigation quantity.

An applicant may choose between a **lump sum payment or partial payment over a period of five years**. The **lump sum payment** is described in RCW 80.70.020 (6) (a) and (b). The payment amount is the mitigation quantity multiplied by the per ton mitigation rate. The entire payment amount is due to the independent qualified organization no later than one hundred twenty days after the start of commercial operation.

The alternative to a one-time payment is a **partial payment** described in RCW 80.70.020 (6) (c). Under this alternative, twenty percent of the total payment is due to the independent qualified organization no later than one hundred twenty days after the start of commercial operation. A payment of the same amount (or an adjusted amount if the rate is changed under RCW 80.70.020 (5) (a)) is due on the anniversary date of the initial payment for the next four consecutive years. In addition, the applicant is required to provide a letter of credit or comparable security for the remaining 80% at the time of the first payment. The letter of credit (or comparable security) must also include possible rate changes.

(4) **What are the requirements of the permanent carbon credits option?** RCW 80.70.030 identifies the criteria and specifies that these credits cannot be resold without approval from EFSEC. The permanent carbon credit criteria of RCW 80.70.030(1) are as follows:

(a) Credits must derive from real, verified, permanent, and enforceable carbon dioxide or carbon dioxide equivalents emission mitigation not otherwise required by statute, regulation, or other legal requirements;

(b) The credits must be acquired after July 1, 2004; and

(c) The credits may not have been used for other carbon dioxide mitigation projects.

(5) **What are the requirements for the applicant-controlled mitigation projects option?** RCW 80.70.040 identifies the requirements for applicant controlled mitigation projects. Subsections (1) through (5) specify the criteria. The direct investment cost of the applicant controlled mitigation project including funds used for selection, monitoring, and evaluation of mitigation projects cannot be required by EFSEC to exceed the cost of making a lump sum payment to a third party per subsection (3) of this section.

The applicant controlled mitigation project must be:

(a) Implemented through mitigation projects conducted directly by, or under the control of the site certification agreement holder;

(b) Approved by EFSEC and incorporated as a condition of the site certification agreement; and

(c) Operational within one year after the start of commercial operation. Failure to implement an approved mitigation plan is subject to enforcement under chapter 80.50 RCW.

(d) The certificate holder may not use more than twenty percent of the total funds for the selection, monitoring, and evaluation of mitigation projects, and the management and

enforcement of contracts.

NEW SECTION

**WAC 463-80-070 Carbon dioxide mitigation option statement and mitigation plan submittal and approval.** (1) Applicants must provide EFSEC with a statement selecting the mitigation option(s) in:

(a) Applications for site certification; or  
(b) Requests to amend site certification agreements under chapter 463-66 WAC where changes to the facility will increase CO<sub>2</sub> emissions by fifteen percent or more.

(2) Applicants choosing to use the payment to a third party or the permanent carbon credit option must provide EFSEC with the documentation to show how the requirements will be satisfied before a recommendation to the governor is issued or an amendment to a site certification agreement is approved.

(3) Applicants seeking to use the applicant controlled mitigation projects option must submit the entire mitigation plan to EFSEC. EFSEC will review the plan for consistency with the requirements of chapter 80.70 RCW.

(4) Approval of the mitigation plan will be by:

(a) The governor for approval of the application for site certification, or an amendment to the site certification agreement under WAC 463-66-080; or

(b) EFSEC for approval of an amendment to the site certification agreement under WAC 463-66-070.

NEW SECTION

**WAC 463-80-080 Enforcement.** Applicants or facilities violating the carbon dioxide mitigation program requirements are subject to the enforcement provisions of chapter 80.50 RCW.

NEW SECTION

**WAC 463-80-090 Independent qualified organizations list.** (1) EFSEC shall develop and maintain a list of independent qualified organizations as required by RCW 80.70.050.

(2) To develop or update the independent qualified

organization list EFSEC shall issue a request for qualifications through use of a mailing list maintained by EFSEC and publication in a regional newspaper in both eastern and western Washington, and other appropriate forums.

(3) Proposals from independent qualified organizations shall, at a minimum, contain the following information:

(a) A demonstration of how the company or organization has successfully developed and managed programs to implement:

- Energy efficiency;
- Renewable energy projects;
- Clean and efficient transportation measures;
- Demand side management of electricity consumption; and
- Carbon sequestration programs.

(b) A complete description of the company or organization's specific expertise in the science and economics of greenhouse gas emissions mitigation, including proven ability to:

- Specify preferred offset types;
- Develop and issue requests for proposals;
- Evaluate and recommend projects;
- Assemble diverse portfolios;
- Negotiate offset contracts;
- Design monitoring and verification protocols, manage the implementation of offset contracts; and
- Maintain an offset registry and retired tons.

(c) Proven experience and demonstrated ability should include staff or organization experience. A new organization made up of experienced employees, or an existing organization with demonstrated accomplishments, should both be able to qualify. However, proven experience and demonstrated ability should be in the specific areas listed in this subsection.

(4) Using best professional judgment, EFSEC staff shall review each proposal and make recommendations to EFSEC whether a company or organization should be placed on the independent qualified organization list.

(5) After reviewing the EFSEC staff recommendations, and prior to making a decision to add a company or an organization to its list of independent qualified organizations, EFSEC may request the organization to testify at a public meeting or hearing to gain additional information and knowledge regarding the organization's experience and qualifications.

(6) Based on the EFSEC staff recommendation and information from public meeting(s) or hearing(s) (if held) EFSEC shall approve or deny companies' or organizations' placement on the list of independent qualified organizations.

(7) EFSEC may remove a company or organization from the independent qualified organization list at the request of the organization, or if EFSEC determines the organization is no longer capable or qualified to carry out CO<sub>2</sub> mitigation programs or activities.

(8) EFSEC shall update its list as it deems appropriate using the process described in this section.

NEW SECTION

**WAC 463-80-100 Independent qualified organization use of funds.** (1) An independent qualified organization shall not use more than twenty percent of the total funds it receives for CO<sub>2</sub> mitigation for any of its activities in the selection, monitoring, or evaluation of a project.

(2) No independent qualified organization shall use any funds received for CO<sub>2</sub> mitigation to lobby federal, state or local agencies, their elected officials, officers, or employees.

(3) If EFSEC finds that an independent qualified organization has violated subsections (1) or (2) of this section, EFSEC may:

(a) Require the independent qualified organization to refund to the applicant or certificate holder the amount EFSEC determines was wrongfully spent; and

(b) Remove the organization from its list of independent qualified organizations.

(4) An organization found by EFSEC to have violated subsections (1) or (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.

NEW SECTION

**WAC 463-80-110 Independent qualified organization oversight.**

(1) EFSEC may appoint up to three persons to inspect and audit independent qualified organization mitigation plans, performance measures, compliance activities, and financial records of projects funded by certificate holders.

(2) Persons that EFSEC appoints should have expertise in energy issues, carbon dioxide mitigation, or other areas that would benefit EFSEC's understanding of the independent qualified organization's or company's carbon dioxide mitigation activities, operations, and performance.

(3) EFSEC may remove a member of an oversight board for "due cause."

NEW SECTION

**WAC 463-80-120 Biennial reports.** (1) Each independent qualified organization on the list maintained by EFSEC shall file a biennial report with EFSEC.

(2) The biennial report shall include but not be limited to:

(a) A report on the performance of each carbon dioxide project listing the amount of carbon dioxide reduction the project has achieved;

(b) An estimate of the carbon dioxide mitigation projected for each mitigation project for the next biennium; and

(c) A statement of the cost for each mitigation project including the cost for each metric ton of carbon dioxide mitigated.

NEW SECTION

**WAC 463-80-130 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.