



# Oregon

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**Date:** June 15, 2018

**To:** Oregon Energy Facility Siting Council (EFSC)

**From:** Jason Sierman, Energy Policy Analyst  
Todd Cornett, Siting Division Administrator

**Subject:** Agenda Items B and J (Information & Action Items) Rulemaking: Phase 2 Updates to Carbon Dioxide (CO<sub>2</sub>) Standards for the June 29, 2018 Council Meeting

## Summary of Agenda Items & Recommendations

Rulemaking hearing, consideration of all comments, and deliberation on the adoption of final rule language for the Phase 2 updates to the Council's carbon dioxide (CO<sub>2</sub>) standards. Staff recommends the Council find that most efficient CCCT natural gas-fired power plant operating in the U.S. is the Grand River Energy Center in Oklahoma, recommends the Council make findings on the 13 principles identified in 345-024-0510, and recommends that the Council adopt the following changes to its rules:

- 1) Update the benchmark heat rate identified in 345-024-0570:
  - Replace 6,955 Btu/kWh with 6,321 Btu/kWh;
- 2) Update the Council's net carbon dioxide emissions rate thresholds for:
  - Base Load Gas Plants in 345-024-0550
    - Replace 0.675 lbs. CO<sub>2</sub>/kWh with 0.614 lbs. CO<sub>2</sub>/kWh;
  - Non-Base Load Power Plants in 345-024-0590
    - Replace 0.675 lbs. CO<sub>2</sub>/kWh with 0.614 lbs. CO<sub>2</sub>/kWh;
  - Nongenerating Energy Facilities in 345-024-0620
    - Replace 0.504 lbs. CO<sub>2</sub>/hp-hr with 0.458 lbs. CO<sub>2</sub>/kWh.

## Overview

At its April 24, 2018 Council meeting, the Council received an update on staff's work on the Council's first scheduled rulemaking project for 2018, the Phase 2 rulemaking to update the Council's CO<sub>2</sub> standards. Work included: research to identify the most efficient combined cycle, combustion turbine (CCCT), natural gas-fired energy facility operating in the U.S.; analysis of 13 principles identified under 345-024-0520 and analysis of the fiscal impacts of this rulemaking; and convening three meetings of a Rulemaking Advisory Committee (RAC) and considering all the input received from the RAC. After receiving staff's update, the Council authorized staff to issue official public notice of this rulemaking.

Official public notice of this rulemaking, along with a redline showing the precise changes being proposed, was issued on May 30. The redline is included as **Attachment A**, the official public notice document is included as **Attachment B**. The analysis of 13 principles identified under 345-024-0510 is included as **Attachment C**, and the analysis of the fiscal impacts of this rulemaking is included as **Attachment D**.

The rulemaking hearing is Agenda Item B, an information item for the Council. After the hearing and after considering all comments received on the record before the close of the hearing, the Council will deliberate and decide on whether to adopt final rule language under Agenda Item I, an action item for the Council.

### **Background**

The administrative rules promulgating the Council's CO<sub>2</sub> standards are collectively located in Chapter 345, Division 24 - beginning at OAR 345-024-0500 and ending at 345-024-0720. Within this set of rules, the Council identified three specific issues to address through rulemaking in 2017 (the three issues are numbered below). Phase 1 addressed two of the 3 issues and that rulemaking is now complete (see the summary below for more details). Phase 2 is addressing the third issue, an evaluation and potential update of the CO<sub>2</sub> emissions standards. Phase 2 began in 2017 and will conclude in 2018.

#### **Phase 1 - Updates to CO<sub>2</sub> Standards (Complete and Effective 10/23/17):**

- 1) New monetary offset rate under OAR 345-024-0580 is now \$1.90 per ton of CO<sub>2</sub>
- 2) CO<sub>2</sub> equivalency weights for methane and nitrous oxide under OAR 345-024-0620 are respectively now 25 and 298 pounds of CO<sub>2</sub>.

#### **Phase 2 - Updates to CO<sub>2</sub> Standards (In Process):**

- 3) Evaluate and update the CO<sub>2</sub> emissions standards under:
  - OAR 345-024-0570 Modification of the Standard for Base Load Gas Plants,
  - OAR 345-024-0550 Standard for Base Load Gas Plants,
  - OAR 345-024-0590 Standard for Non-Base Load Power Plants, and
  - OAR 345-024-0620 Standard for Nongenerating Energy Facilities

### **Purpose of Phase 2 Rulemaking Project**

The main purpose of the Phase 2 rulemaking project is for the Council to determine if the most efficient combined cycle combustion turbine (CCCT) operating in the U.S. has a more efficient heat rate than the heat rate the existing standard is based on. According to OAR 345-024-0570, if the Council finds the most efficient stand-alone CCCT, natural gas-fired energy facility that is commercially demonstrated and operating in the United States has a net heat rate less than 6,995 Btu per kilowatt hour higher heating value adjusted to ISO conditions, then it may modify the CO<sub>2</sub> emissions standards and reset the standards to 17% below the most efficient heat rate it finds.

### **Purpose and Function of the CO<sub>2</sub> Emissions Standards**

The purpose of the Council's CO<sub>2</sub> emissions standards are two-fold. The first purpose is to encourage applicants proposing a fossil-fueled energy facility to build the most efficient facility possible, thereby directly reducing the gross amount of CO<sub>2</sub> emitted from fossil-fueled energy facilities sited within the Council's jurisdiction. The second purpose is to reduce the net amount of greenhouse gasses (GHGs) attributable to fossil-fueled energy facilities sited within the Council's jurisdiction. The Council's standards accomplish these two purposes by:

- 1) Setting standards for the net CO<sub>2</sub> emissions rate for CO<sub>2</sub> emitting energy facilities sited within Council jurisdiction; and
- 2) Requiring site certificate applicants that propose a facility subject to the standards to offset that energy facility's gross CO<sub>2</sub> emissions by the amount that facility's gross CO<sub>2</sub> emissions exceed the set standards for the net CO<sub>2</sub> emissions rate. As further described below, there are three pathways to compliance with this rule, but to date, all applicants have complied with the standard by making monetary offset payments to a qualified organization (The Climate Trust).

This design requires applicants to offset those gross CO<sub>2</sub> emissions that exceed the set standards, and is intended to provide an incentive for applicants to directly reduce CO<sub>2</sub> emissions by proposing efficient energy facilities that emit CO<sub>2</sub> at rates as close to the set standards as possible.

As specified under ORS 469.503(2) and OAR 345-024-0500 through -0720, the Council's current CO<sub>2</sub> emissions standards set the net CO<sub>2</sub> emissions rate at 0.675 lb. CO<sub>2</sub>/kWh for CO<sub>2</sub> emitting energy facilities within EFSC jurisdiction.<sup>1</sup> Energy facilities subject to these standards may emit CO<sub>2</sub> at a net rate below 0.675 lb. CO<sub>2</sub>/kWh without needing to offset those CO<sub>2</sub> emissions any further, and any emissions above the net rate of 0.675 lb. CO<sub>2</sub>/kWh must be offset via one of the compliance pathway options outlined in rule.

ORS 469.503(2) and OAR 345-024-0500 through -0720 also specify the means by which energy facilities subject to the CO<sub>2</sub> standards are allowed to offset CO<sub>2</sub> emissions. The specified means are commonly called the compliance pathways. The statute and rules limit the compliance pathways to any combination of the following three options:

- 1) the applicant or a third party agrees to provide funds in an amount deemed sufficient to produce the reduction in CO<sub>2</sub> emissions necessary to meet the applicable CO<sub>2</sub> standard (this third option is deemed the "Monetary Path Payment Requirement" under OAR 345-024-0710).
- 2) the applicant or a third party implements CO<sub>2</sub> offset projects approved by the Council; and
- 3) the facility sequentially produces electrical and thermal energy from the same fuel source, and the thermal energy will be used to displace another source of CO<sub>2</sub> emissions that would have otherwise continued to occur.

To date, all energy facilities subject to the Council's CO<sub>2</sub> standards have complied with the standards through the monetary path, either singularly or in combination with other options, to meet the CO<sub>2</sub> standards. The amount of funds required by the monetary path is calculated by multiplying the tons of CO<sub>2</sub> reduction required to meet the applicable CO<sub>2</sub> standard by the

“monetary offset rate,” which is specified under OAR 345-024-0580. Currently the monetary offset rate is \$1.90 per ton of CO<sub>2</sub> emissions.

***See Attachment E*** for a more detailed summary of how the CO<sub>2</sub> standards function.

### **History of Updates and Current Need to Update**

In 1997, ORS 469.503(2)(a) established the initial CO<sub>2</sub> emissions standard for base load gas plants at 0.70 lb. CO<sub>2</sub>/kWh. The statute requires the CO<sub>2</sub> emissions standard to be set at 17% below the most efficient gas plant operating in the United States. The initial standard was derived from a benchmark gas plant with a heat rate of 7,200 BTU/kWh. A heat rate is a measure of how efficient a thermal power plant is. It considers how much fuel energy, measured in British Thermal Units (BTUs), is used to produce 1 kilowatt-hour (kWh) of electricity. A heat rate can also be expressed in terms of an efficiency percentage. For example, the 1997 benchmark gas plant with a heat rate of 7,200 BTU/kWh was roughly 47% efficient.

The 1997 standard of 0.70 lb. CO<sub>2</sub>/kWh was derived from 7,200 BTU/kWh by using the conversion factor of 117 pounds of CO<sub>2</sub> per million BTU of combusted natural gas fuel. The conversion yields 0.8424 lb. CO<sub>2</sub>/kWh, and 0.70 lb. CO<sub>2</sub>/kWh represents a 17% reduction from 0.8424 lb. CO<sub>2</sub>/kWh.

ORS 469.503(2)(a) and OAR 345-024-0570 authorize the Council to modify the emissions standard for base load gas plants through rulemaking any time the Council finds sufficient evidence that the efficiency of a natural gas fired CCCT has improved relative to the benchmark heat rate (the benchmark heat rate is specified in OAR 345-024-0570). This authority gives the Council the ability to ensure that the net CO<sub>2</sub> emission rates of CO<sub>2</sub> emitting energy facilities sited within Council jurisdiction remain 17% below the CO<sub>2</sub> emission rate of the most efficient gas plant operating in the U.S. at any given time.

In January 2000, the Council found that the most efficient gas plant operating in the U.S. had a heat rate of 6,955 BTU/kWh (~49% efficiency). Based on this finding, the Council took action to modify its CO<sub>2</sub> standards by updating the benchmark heat rate to 6,955 BTU/kWh, calculating a 17% reduction (5,773 BTU/kWh), and converting that 17% reduction from 5,773 BTU/kWh to 0.675 lb. CO<sub>2</sub>/kWh. The 2000 rulemaking modified the CO<sub>2</sub> standard for base load gas plants to 0.675 lb. CO<sub>2</sub>/kWh and modified the standards for non-base load power plants and non-generating energy facilities to the equivalent of 0.675 lb. CO<sub>2</sub>/kWh.

The standards have not been updated in the 18 years since 2000. Yet, over that same time period, the power industry has experienced continuous improvements in power plant efficiency. In other words, the Council’s CO<sub>2</sub> emissions standards are out of date and, if not modified to reflect the most efficient current technology, could eventually allow an applicant to propose an energy facility that would not be required to offset a portion of its CO<sub>2</sub> emissions at all. If a proposed fossil-fueled energy facility is not required to offset its CO<sub>2</sub> emissions at all, the two-fold purpose of the Council’s CO<sub>2</sub> emissions standards would no longer be met.

### **Authority to Update the Standards**

ORS 469.503(2)(a)<sup>2</sup> and OAR 345-024-0570<sup>3</sup> dictate how the emission standard for base load gas plants is set and authorize the Council to modify the standard for base load gas plants if it finds that the efficiency of a natural gas fired CCCT has improved relative to the benchmark heat rate (the benchmark heat rate is specified in OAR 345-024-0570). OAR 345-024-0610<sup>4</sup> and OAR 345-024-0640<sup>5</sup> authorize the Council to modify the standard for non-base load power plants and the standard for nongenerating energy facilities, but require both of these standards to remain equal to the standard for base load gas plants. OAR 345-024-0510<sup>6</sup> requires the Council to consider and balance at least thirteen principles, set in rule, in adopting new CO<sub>2</sub> standards for fossil-fueled power plants<sup>7</sup>.

### **Applicability of New CO<sub>2</sub> Emissions Standards**

If the Council approves new CO<sub>2</sub> emissions standards, they would be applicable to:

- Unbuilt fossil-fueled energy facilities receiving a site certificate after the effective date of the rulemaking.
- Unbuilt fossil-fueled energy facilities receiving an amendment to a site certificate to extend its construction deadlines after the effective date of the rulemaking.
- Built or unbuilt fossil-fueled energy facilities receiving an amendment to a site certificate after the effective date of the rulemaking that adds new CO<sub>2</sub> emitting equipment or alters the operation of existing CO<sub>2</sub> emitting equipment included in the original site certificate.
- Facilities with express terms and conditions in its site certificate that require the application of new CO<sub>2</sub> standards under certain scenarios.

### **Evaluation Process**

Staff evaluated the CO<sub>2</sub> emissions standards according to the 4-step process below. Based on the results of this evaluation, and after considering all input received from the RAC, staff issued official public notice of a public comment period and rulemaking hearing for this rulemaking project.

Official public notice was accompanied by staff's proposed rule language consisting of new numerical values that would update the benchmark heat rate and the three CO<sub>2</sub> standards to net CO<sub>2</sub> emission rates lower than what currently exist. Staff's proposed rule language conforms with the requirements of OAR 345-024-0610<sup>8</sup> and OAR 345-024-0640<sup>9</sup>, by recommending a new standard for non-base load power plants and a new standard for nongenerating energy facilities that is equal to any new standard recommended for base load gas plants.

Staff's evaluation process:

- 1) Staff conducted research and made findings in its search to find tested heat rate data for the most efficient natural gas-fired CCCT power plant that is commercially demonstrated and operating in the U.S. Staff shared its findings with the RAC and received input on those findings from the RAC;

- See the next page for a summary of staff’s findings and see Attachment F for the tested heat rate data supporting staff’s findings.
- 2) Staff conducted an analysis that considered and balanced the thirteen principles listed under ORS 469.503(2)(b) and OAR 345-024-0510. Staff shared this analysis with the RAC, and received input on this analysis from the RAC;
    - See Attachment C for staff’s analysis of the 13 principles.
  - 3) Staff considered all input received from the RAC, including input on staff’s analysis of the listed 13 principles under ORS 469.503(b) and OAR 345-024-0510, and including input on staff’s analysis of the fiscal impacts of this rulemaking as required by ORS 183.333 and 183.335.
    - See Attachment D for staff’s analysis of the fiscal impacts.
  - 4) After considering all input from the RAC, staff issued official public notice and wrote this staff report. This staff reports contains a summary of staff’s work, evaluation and analysis; a summary of the input received from the RAC; draft proposed language; and a recommendation to the Council that the new CO<sub>2</sub> emissions standard for base load gas plants, non-base load power plants and nongenerating energy facilities should all be modified in accordance with the Council’s rules.

**Staff Findings**

Staff has found that the most efficient CCCT power plant operating in the U.S. is the Grand River Energy Center in Chouteau, OK. This plant has a tested net heat rate of 6,321 Btu per kilowatt hour higher heating value adjusted to ISO conditions.

<b>Grand River Energy Center</b>	
<b>Owner</b>	Grand River Dam Authority
<b>Location</b>	Chouteau, OK
<b>First Year of Commercial Operation</b>	2017
<b>Approx. Cost to Build</b>	\$ 296 MM
<b>Turbine Make &amp; Model</b>	Mitsubishi Hitachi 501J
<b>Nominal Capacity</b>	505 MW
<b>Tested HHV Net Heat Rate (adjusted to ISO conditions)</b>	<b>6,321* Btu/kWh</b>
<a href="http://www.grda.com/electric/facilities/grand-river-energy-center/">http://www.grda.com/electric/facilities/grand-river-energy-center/</a>	

*\*At the time public notice was issued for this project, the tested HHV net heat rate values was calculated by staff to be 6,326. Additional information related to the calculation this tested heat rate was given to staff after public notice was issued. Upon recalculation based on the additional information, the tested HHV net heat rate adjusted to ISO conditions for the GREC is 6,321. Attachment G show’s staff’s calculations.*

## **Summary of RAC Input Received at RAC Meetings**

### **RAC Meeting #1 - January 24, 2018**

The purpose of this meeting was to give the RAC an overview of how the CO<sub>2</sub> standards function and an overview of the rulemaking project very generally. The overview included an outline of staff's evaluation process as described earlier in this staff report on page 5. There were a few general questions about how the CO<sub>2</sub> standards function, but since it was only an introductory meeting there was nothing for the RAC to offer substantive comments on.

### **RAC Meeting #2 - March 21, 2018**

The purpose of this meeting was to share the preliminary findings of staff's search to find the most efficient CCCT power plant operating in the U.S. and to hear input on these preliminary findings. As in the first meeting, there were a few general questions about how the CO<sub>2</sub> standards function. There were also a few substantive questions about how heat rates are tested, how tested heat rates are adjusted to standard conditions, and what kind of tested heat rates the Department has found thus far.

### **RAC Meeting #3 – May 15, 2018**

The purpose of this meeting was to receive additional input from the RAC on staff's preliminary findings of its search to find the most efficient CCCT power plant operating in the U.S., and to receive input on staff's analysis of the thirteen principles under 345-024-0510 and staff's analysis of the fiscal impacts of this rulemaking. There was minimal additional input to any of the work done by staff. There were a few notable questions raised: one asking for staff's response to the comments of PacificPower; one asking for clarification on the difference between lower heating value (LHV) and higher heating value (HHV); and another asking how the economic analysis - aimed at determining whether the proposed updates to the CO<sub>2</sub> standards would prevent a CCCT facility from being built in Oregon - could be accomplished in a clear and objective way.

***See Attachment H*** for a list of RAC entities.

### **Aggregate of Written RAC Input (prior to public notice)**

***See Attachment I*** for an aggregate of the written input that was received from:

- PacificPower
- Columbia Riverkeeper
- Green Energy Institute

### **Aggregate of Official Written Comments (after public notice)**

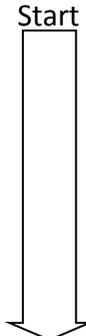
No official written comments for the public record of this rulemaking have been received by staff as of the date of this staff report. Staff will continue to monitor for written comments, and will aggregate and deliver to the Council all written comments received before the comment deadline of 10:30 a.m. on June 29, 2018.

**Approved Rulemaking Process:**

At its January 19, 2017 Council meeting, the Council approved a rulemaking process with early public participation for this rulemaking project. The approved rulemaking process, including the status of milestone steps, is outlined below:

EARLY PUBLIC PARTICIPATION

\* = EFSC Meeting  
**bold** = optional

	Start	Council Approves Pub. Part. Process*	<input checked="" type="checkbox"/>
		<b>Rulemaking Advisory Committee (RAC)</b>	<input checked="" type="checkbox"/>
		Staff Draft of Proposed Language	<input checked="" type="checkbox"/>
		Council Authorization to File Notice*	<input checked="" type="checkbox"/>
		Staff Issues Official Public Notice	<input checked="" type="checkbox"/>
		Public Comment Period	<input checked="" type="checkbox"/>
		Rulemaking Hearing*	<input type="checkbox"/>
		<b>Hearing Officer Report</b>	<input type="checkbox"/>
		Council Adopts Final Rule Language*	<input type="checkbox"/>
	Finish	Staff Files Final Rule Language	<input type="checkbox"/>

**Estimated time 4 – 6 months**

**Next Steps**

The next step in the process is for the Council to consider the proposed rule language in conjunction with its consideration of all comments received on the record before the end of the rulemaking hearing on June 29, 2018. Should the Council need additional time to consider all comments received, it may postpone its decision on adoption of permanent rules to a future Council meeting.

After the Council considers all comments received, the Council may vote on adoption of the proposed rule language as permanent rules. Subject to Council adoption, staff will ask for signature authorization from the Council Chair to file the permanent rules with the Oregon Secretary of State. Subject to the Council’s adoption of permanent rules, and subject to receiving authorization to file, staff would likely file the permanent rules on or around July 18, 2018. Unless the Council chooses an effective date later than the filing date, the new rule language would become effective upon filing.

**Staff Recommendation**

Staff recommends that the Council find that most efficient CCCT natural gas-fired power plant operating in the U.S. is the Grand River Energy Center in Oklahoma. Based on this finding, and after the Council considers and balances the 13 principles under 345-024-0510 and makes findings on these 13 principles, staff also recommends that the Council update the CO2

standards by adopting the proposed changes to OAR 345-024-0550, 345-024-0570, 345-024-0590 and 345-024-0620 (as shown in the redline included as **Attachment A**). The proposed changes include:

- 345-024-0570 - Replacing 6,955 Btu/kWh with 6,321 Btu/kWh;
- 345-024-0550 - Replacing 0.675 lbs. CO<sub>2</sub>/kWh with 0.614 lbs. CO<sub>2</sub>/kWh
- 345-024-0590 - Replacing 0.675 lbs. CO<sub>2</sub>/kWh with 0.614 lbs. CO<sub>2</sub>/kWh
- 345-024-0620 - Replacing 0.504 lbs. CO<sub>2</sub>/hp-hr with 0.458 lbs. CO<sub>2</sub>/kWh.

Staff recommends that the Council adopt the proposed language as final permanent rules and authorize staff to file the adopted permanent administrative rules with the Oregon Secretary of State. Unless directed otherwise by the Council, these rules would be effective upon filing, with a target filing date of July 18, 2018.

## References

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<sup>1</sup> Base load gas plants and non-base load power plants within EFSC jurisdiction are responsible for reducing their CO<sub>2</sub> emissions to meet a 0.675 lb. CO<sub>2</sub>/kWh emissions standard; nongenerating facilities within EFSC jurisdiction are responsible for reducing their CO<sub>2</sub> emissions to meet a 0.504 lb. CO<sub>2</sub>/hph emissions standard (the horsepower-hour equivalent to 0.675 lb. CO<sub>2</sub>/kWh).

<sup>2</sup> **ORS 469.503(2)** If the energy facility is a fossil-fueled power plant, the energy facility complies with any applicable carbon dioxide emissions standard adopted by the council or enacted by statute. Base load gas plants shall comply with the standard set forth in subsection (2)(a) of this section. Other fossil-fueled power plants shall comply with any applicable standard adopted by the council by rule pursuant to subsection (2)(b) of this section. Subsections (2)(c) and (d) of this section prescribe the means by which an applicant may comply with the applicable standard.

### **Continued from ORS 469.503(2)**

**(a)** The net carbon dioxide emissions rate of the proposed base load gas plant shall not exceed 0.70 pounds of carbon dioxide emissions per kilowatt hour of net electric power output, with carbon dioxide emissions and net electric power output measured on a new and clean basis. **Notwithstanding the foregoing, the council may by rule modify the carbon dioxide emissions standard for base load gas plants if the council finds that the most efficient stand-alone combined cycle, combustion turbine, natural gas-fired energy facility that is commercially demonstrated and operating in the United States has a net heat rate of less than 7,200 Btu per kilowatt hour higher heating value adjusted to ISO conditions. In modifying the carbon dioxide emission standard, the council shall determine the rate of carbon dioxide emissions per kilowatt hour of net electric output of such energy facility, adjusted to ISO conditions, and reset the carbon dioxide emissions standard at 17 percent below this rate.**

**(b)** The council shall adopt carbon dioxide emissions standards for other types of fossil-fueled power plants. Such carbon dioxide emissions standards shall be promulgated by rule. In adopting or amending such carbon dioxide emissions standards, the council shall consider and balance at least the following principles, the findings on which shall be contained in the rulemaking record:

- (A) Promote facility fuel efficiency;
- (B) Promote efficiency in the resource mix;
- (C) Reduce net carbon dioxide emissions;
- (D) Promote cogeneration that reduces net carbon dioxide emissions;
- (E) Promote innovative technologies and creative approaches to mitigating, reducing or avoiding carbon dioxide emissions;
- (F) Minimize transaction costs;
- (G) Include an alternative process that separates decisions on the form and implementation of offsets from the final decision on granting a site certificate;
- (H) Allow either the applicant or third parties to implement offsets;
- (I) Be attainable and economically achievable for various types of power plants;
- (J) Promote public participation in the selection and review of offsets;
- (K) Promote prompt implementation of offset projects;
- (L) Provide for monitoring and evaluation of the performance of offsets; and
- (M) Promote reliability of the regional electric system.

### <sup>3</sup> **OAR 345-024-0570 Modification of the Standard for Base Load Gas Plants:**

The Council may by rule modify the carbon dioxide emissions standard for base load gas plants in OAR 345-024-0550 if the Council finds that the most efficient stand-alone combined cycle, combustion turbine, natural gas-fired energy facility that is commercially demonstrated and operating in the United States has a net heat rate of less than 6,955 Btu per kilowatt hour higher heating value adjusted to ISO conditions. In modifying the carbon dioxide emission standard, the Council shall determine the rate of carbon dioxide emissions per kilowatt hour of net

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electric output of such energy facility, adjusted to ISO conditions and reset the carbon dioxide emissions standard at 17% below this rate.

<sup>4</sup> **OAR 345-024-0610 Modification of the Standard for Non-Base Load Power Plants:**

The Council may by rule modify the carbon dioxide emissions standard for non-base load gas plants in OAR 345-024-0590 so that the standard remains equivalent to the standard for the net carbon dioxide emissions rate of a base load gas plant, subject to the principles described in OAR 345-024-0510.

<sup>5</sup> **OAR 345-024-0640 Modification of the Standard for Nongenerating Energy Facilities:**

The Council may by rule modify the carbon dioxide emissions standard for nongenerating energy facilities in OAR 345-024-0620 so that it remains equivalent to the standard for the net carbon dioxide emissions rate of a base load power plant.

<sup>6</sup> **OAR 345-024-0510 Principles for the Adoption of New Standards for Fossil-Fueled Power Plants:**

The council shall adopt carbon dioxide emissions standards for fossil fueled power plants by rule. In adopting or amending such carbon dioxide emissions standards, the Council shall consider and balance at least the following principles. In the rule-making record, the Council shall include findings on these principles:

- (1) Promote facility fuel efficiency;
- (2) Promote efficiency in the resource mix;
- (3) Reduce net carbon dioxide emissions;
- (4) Promote cogeneration that reduces net carbon dioxide emissions;
- (5) Promote innovative technologies and creative approaches to mitigating, reducing or avoiding carbon dioxide emissions;
- (6) Minimize transaction costs;
- (7) Include an alternative process that separates decisions on the form and implementation of offsets from the final decision on granting a site certificate;
- (8) Allow either the applicant or third parties to implement offsets;
- (9) Be attainable and economically achievable for various types of power plants;
- (10) Promote public participation in the selection and review of offsets;
- (11) Promote prompt implementation of offset projects;
- (12) Provide for monitoring and evaluation of the performance of offsets;
- (13) Promote reliability of the regional electric system.

<sup>7</sup> **ORS 469.503(2)(e)(B)(D) "Fossil-fueled power plant"** means a generating facility that produces electric power from natural gas, petroleum, coal or any form of solid, liquid or gaseous fuel derived from such material.

<sup>8</sup> **OAR 345-024-0610 Modification of the Standard for Non-Base Load Power Plants:**

The Council may by rule modify the carbon dioxide emissions standard for non-base load gas plants in OAR 345-024-0590 so that the standard remains equivalent to the standard for the net carbon dioxide emissions rate of a base load gas plant, subject to the principles described in OAR 345-024-0510.

<sup>9</sup> **OAR 345-024-0640 Modification of the Standard for Nongenerating Energy Facilities:**

The Council may by rule modify the carbon dioxide emissions standard for non-base load gas plants in OAR 345-024-0620 so that the standard remains equivalent to the standard for the net carbon dioxide emissions rate of a base load gas plant.