

Secretary of State

STATEMENT OF NEED AND FISCAL IMPACT

A Notice of Proposed Rulemaking Hearing or a Notice of Proposed Rulemaking accompanies this form.

Oregon Department of Energy, Energy Facility Siting Council (EFSC)

345

Agency and Division

Administrative Rules Chapter Number

Reset carbon dioxide (CO₂) emissions standards based on current natural gas-fired energy facility technology.

Rule Caption (Not more than 15 words that reasonably identifies the subject matter of the agency's intended action.)

In the Matter of: Proposed amendments to OAR 345-024-0550, 345-024-0570, 345-024-0590, and 345-024-0620.**Statutory Authority:** ORS 469.470, 469.501, and 469.503**Stats. Implemented:** ORS 469.501 and 469.503**Need for the Rule(s):**

The Council's CO₂ emissions standards impose threshold limitations on the CO₂ emissions rates for large scale fossil-fueled energy facilities sited in Oregon. There are three CO₂ emissions standards, one for base load gas plants, one for non-base load power plants, and one for nongenerating energy facilities. The CO₂ standards apply to those energy facilities within the Council's jurisdiction that apply for new site certificates and also existing site certificate holders making requests for certain types of amendments to their existing site certificates.

As specified under ORS 469.503(2) and OAR 345-024-0500 through -0720, the Council's current CO₂ emissions standards limit the net CO₂ emissions rate of base load gas plants and non-base load power plants to 0.675 lb. CO₂/kWh, and limit the net CO₂ emissions rate for nongenerating energy facilities to 0.504 lb. CO₂/hp-hr for nongenerating energy facilities. These two emissions rates are written in different units for different technologies, but are equivalent to each other. Facilities subject to these standards must comply with them by offsetting the facility's gross lifetime CO₂ emissions that occur in excess of the applicable net emissions rate limit set in the standards (either 0.675 lb. CO₂/kWh or the equivalent 0.504 CO₂/hp-hr) via one of the compliance pathway options outlined in rule. To date, all applicants have complied with the standards by making monetary offset payments to a qualified organization (The Climate Trust).

The purpose of the Council's CO₂ emissions standards is two-fold. The first purpose, the efficiency 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 CO₂ emitted from fossil-fueled energy facilities sited within the Council's jurisdiction. The second purpose, the offset purpose, is to indirectly reduce the net amount of greenhouse gasses (GHGs) attributable to fossil-fueled energy facilities sited within the Council's jurisdiction.

ORS 469.503(2)(a) and OAR 345-024-0570 authorize the Council to reset the emissions standard for base load gas plants through rulemaking any time the Council finds that the efficiency of a combined cycle, combustion turbine (CCCT), natural gas-fired energy facility that is commercially demonstrated and operating in the United States has improved relative to the benchmark efficiency specified in OAR 345-024-0570. This authority gives the Council the ability to ensure that the net CO₂ emissions rates of CO₂ emitting energy facilities sited within the Council's jurisdiction remain 17% below the CO₂ emissions rate of the most efficient gas plant operating in the U.S. at any given time. OAR 345-024-0610 and OAR 345-024-0640 also authorize the Council to modify the standard for non-base load power plants and the standard for nongenerating energy facilities. These rules require both the standard for non-base load power plants and the standard for nongenerating energy facilities to remain equal to the standard for base load gas plants. OAR 345-024-0510 requires the Council to consider and balance at least thirteen principles, set in rule, in adopting new CO₂ standards for fossil-fueled power plants .

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 reset its CO₂ standards and reset the benchmark heat rate in OAR 345-024-0570 to 6,955 Btu/kWh. The Council reset the CO₂ standards to their current values of 0.675 lbs. CO₂/kWh for base load gas plants and non-base load power plants and 0.504 lbs. CO₂/hp-hr for nongenerating energy facilities by calculating a 17% reduction from 6,955 Btu/kWh (5,773 Btu/kWh), then converting 5,773 Btu/kWh to 0.675 lbs. CO₂/kWh by multiplying 5,773 Btu/kWh by a conversion factor of 0.000117 lbs. CO₂/Btu. There are 0.746 kWh per 1 hp-hr, and 0.675 lbs. CO₂/kWh multiplied by 0.746 kWh/hp-hr equals 0.504 lbs. CO₂/hp-hr.

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 CO₂ emissions standards are likely out of date and, if not reset 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 CO₂ emissions at all. If a proposed fossil-fueled energy facility is not required to offset its CO₂ emissions at all, the two-fold purpose of the Council's CO₂ emissions standards would no longer be met.

Documents Relied Upon:

The Climate Trust's Five-Year Report to the Oregon Energy Facility Siting Council, October 2014, pp. 14-15.
<https://climatetrust.org/wp-content/uploads/2014/11/2014-Oregon-5-Year-Report-EMAIL-141117-CAM-FNL.pdf>

Fiscal and Economic Impact:

The proposed amendments would decrease each of the three CO₂ emissions standards by roughly 8 percent. The Oregon Department of Energy (ODOE) estimates this decrease would continue to allow the siting, construction, and operation of fossil-fueled energy facilities to be economically achievable. The impact the proposed 8 percent decrease would have on the overall costs of siting, constructing, and operating a fossil-fueled energy facilities would be small. To illustrate the magnitude of impact the proposed 8 percent decrease to the CO₂ emissions standards would have relative to the total cost to site, construct and operate a fossil-fueled energy facility, we can compare what it would cost a new hypothetical energy facility to comply with the existing CO₂ standards (using the existing monetary offset rate of \$1.90/ton and the existing applicable CO₂ emissions standard of either 0.675 lbs. CO₂/kWh or 0.504 lbs. CO₂/Btu) to what it would cost that same new hypothetical energy facility to comply with the proposed CO₂ standards (using the existing monetary offset rate of \$1.90/ton and the proposed applicable CO₂ emissions standard of either 0.615 lbs. CO₂/kWh or 0.459 lbs. CO₂/Btu). Expressing compliance costs under the existing and proposed CO₂ standards in terms of a percentage of the total cost to site, construct, and operate the facility for 30 years offers the best comparison.

Hypothetical base load gas plant

A hypothetical base load gas plant with a nominal generating capacity of 370 megawatts, an emission rate of 0.782 lbs. CO₂/kWh (6,688 Btu/kWh heat rate), and operating 7,884 hours per year (90% operating capacity) for 30 years.

The estimated cost to comply with the existing CO₂ standard of 0.675 lbs. CO₂/kWh would be \$10.34 million dollars and the estimated cost to comply with the proposed CO₂ standard of 0.615 lbs. CO₂/kWh would be \$16.12 million dollars. Compliance cost estimates are based on calculation methods specified in rule and statute.

The estimated total cost to site, construct and operate the facility for 30 years is around \$3.32 billion dollars. Cost estimates to site, construct and operate the facility are based on data from the 7th Power Plan from the Northwest Power and Conservation Council.

The cost to comply with the existing CO₂ standard as a percentage of the total cost to site, construct, and operate the facility for 30 years is 0.31% (\$10.34M / \$3.32B). The cost to comply with the proposed CO₂ standard as a percentage of the total cost to site, construct, and operate the facility for 30 years is 0.49% (\$16.12M / \$3.32B).

Hypothetical non-base load gas plant

For a hypothetical non-base load gas plant with a nominal generating capacity of 370 megawatts, an emission rate of 0.782 lbs. CO₂/kWh (6,688 Btu/kWh heat rate), and operating 5,256 hours per year (60% operating capacity) for 30 years.

The estimated cost to comply with the existing CO₂ standard of 0.675 lbs. CO₂/kWh would be \$6.21 million dollars and the estimated cost to comply with the proposed CO₂ standard of 0.615 lbs. CO₂/kWh would be \$9.68 million dollars. Compliance cost estimates are determined based on calculation methods specified in rule and statute.

The estimated total costs of siting, constructing and operating the facility is around \$2.64 billion dollars. Cost estimates to site, construct and operate the facility are based on data from the 7th Power Plan from the Northwest Power and Conservation Council.

The cost to comply with the existing CO₂ standard as a percentage of the total cost to site, construct, and operate the facility for 30 years is 0.24% (\$6.21M / \$2.64B). The cost to comply with the proposed CO₂ standard as a percentage of the total cost to site, construct, and operate the facility for 30 years is 0.37% (\$9.68M / \$2.64B).

Hypothetical nongenerating fossil-fueled energy facility

For a hypothetical nongenerating fossil-fueled energy facility with a nominal compressor capacity of 10,000 horsepower, an emission rate of 0.936 lb. CO₂/hp-hr (8,000 Btu/hp-hr heat rate), and operating 3,000 hours per year for 30 years.

The estimated cost to comply with the existing CO₂ standard of 0.504 lbs. CO₂/kWh would be \$406,296 dollars and the estimated cost to comply with the proposed CO₂ standard of 0.459 lbs. CO₂/kWh would be \$448,619 dollars. Compliance cost estimates are determined based on calculation methods specified in rule and statute.

The total costs of siting, constructing and operating a nongenerating facility are difficult to quantify because the project scope of a nongenerating facility is not as predictable as the project scope for a base load or non-base load facility. Without a clear way to estimate these costs, the cost to comply with the existing and proposed CO₂ standards as a percentage of the total cost to site, construct, and operate the facility for 30 years is not available.

Statement of Cost of Compliance:

1. Impact on state agencies, units of local government and the public (ORS 183.335(2)(b)(E)):

The proposed amendments are not expected to impact state agencies or units of local government. The general public is also not expected to be impacted. Applicants for site certificates for fossil-fueled energy facilities would see an increase in compliance costs as a fraction of the total cost to site, construct, and operate the facility. A very rough estimate of what these increases may be is given above.

2. Cost of compliance effect on small business (ORS 183.336):

a. Estimate the number of small businesses and types of business and industries with small businesses subject to the rule:

Few, if any, small businesses would be subject to the proposed rule changes. EFSC rules apply to applicants for, and holders of, site certificates for large energy facilities as defined in ORS 469.300. Applicants for site certificates are usually large corporations or subsidiaries of large corporations. Nevertheless, a small business could become an applicant or certificate holder. The only industry or business affected by these rules are those related to developing, building or operating energy facilities. Because the proposed reset of the carbon dioxide emissions standards is not expected to significantly increase the costs to comply with the CO2 standards as a percentage of the overall cost to site, construct and operate a fossil-fueled energy facility, and because few, if any small businesses are applicants or certificate holders, the proposed rules are not expected to result in significant adverse impacts on small businesses.

Furthermore, while it is possible for a site certificate holder to be a small business, as defined under ORS 183.336, the burden of any such small business to comply with all applicable siting standards prescribed in Oregon's energy facility siting statutes and Council rules cannot be diminished in any way. Therefore, while the costs of compliance for an energy facility to meet Oregon's applicable siting standards may vary depending on the type and location of a proposed facility, the costs of compliance will not vary depending on the type of business entity applying for a site certificate. Therefore, regardless of an applicant's characterization as a small business or not, the Council could not reduce any significant adverse economic impact of the rule for potential small business applicants.

b. Projected reporting, recordkeeping and other administrative activities required for compliance, including costs of professional services:

None anticipated because few, if any, small businesses would be subject to the proposed rule changes.

c. Equipment, supplies, labor and increased administration required for compliance:

None anticipated because few, if any, small businesses would be subject to the proposed rule changes.

How were small businesses involved in the development of this rule?

Because there is no anticipated impact to small businesses, small businesses were not involved in the development of the proposed rule. However, small businesses and others will have the opportunity to comment on the proposed rule through the close of the public hearing and public comment period.

Administrative Rule Advisory Committee consulted? If not, why?:

Yes.

Signature

Administrative Rules Unit, Archives Division, Secretary of State, 800 Summer Street NE, Salem, Oregon 97310. ARC 925-2007

Printed name

Date