

BEFORE THE ENERGY FACILITY SITING COUNCIL OF OREGON

**In the matter of proposed rules implementing
HB 2021 (2021) and updating carbon dioxide
emissions standards.**

Public Comments received as of
July 7, 2022

At its meeting on April 22, 2022, the Council initiated formal proceedings to adopt rules implementing HB 2021 (2021) and updating the carbon dioxide emissions standards in OAR chapter 345, division 024. Staff issued a Notice of Proposed Rulemaking containing the proposed rules under consideration by Council on April 29, 2022.

The Notice of Proposed Rulemaking began a public comment period on the proposed rules. An opportunity for oral comments was provided at a rulemaking hearing on June 23, 2022. At the hearing, the Council extended the deadline for written comments to 5:00 pm on July 11, 2022. The Council will not consider comments provided after the deadline unless the comment period is extended for everyone.

This Document contains all written comments received on this rulemaking as of July 7, 2022. The Document will be updated to include all public comments received before the deadline described above before the Council considers the adoption of permanent rules at its meeting on July 22, 2022.

INDEX

Exhibit	Date	Commenter	Pages
1	4/29/2022	Jynx Houston	1
2	6/22/2022	Columbia Riverkeeper, Verde, Rogue Climate, Earthjustice and Friends of the Columbia Gorge	2-5
3	6/22/2022	League of Women Voters of Oregon	6-7
4	6/22/2022	Portland General Electric Company	8-11
5	6/23/2022	Avista Corporation	12
6	6/23/2022	Joint Energy Advocates (Climate Solutions, Renewable Northwest, Metro Climate Action Team Steering Committee)	13-16
7	6/23/2022	Green Energy Institute at Lewis & Clark Law School	17-18
8	6/23/2022	Kathy Moyd	19
9	6/23/2022	Oregon Department of Energy	20-28
10	6/26/2022	Matha Dibblee	29

Via Comment Portal, 4/29/2022

From: Jynx Houston

The last thing Oregon needs for the health of its residents are fossil fuel facilities that emit whatever & however they want. Which seems to be the case now. I'm advocating for stricter emission standards for these facilities & no new facilities whatsoever.



Rogue
Climate



June 22, 2022

EFSC Rules Coordinator
Oregon Department of Energy
550 Capitol St. NE
Salem, OR 97301

Submitted via email to: EFSC.rulemaking@energy.oregon.gov

RE: Proposed Rules for the Implementation of HB 2021 and Updates to Carbon Dioxide Emissions Standards

Dear Chair Grail, Council Members, Rules Coordinator Clark, and Department Staff,

Columbia Riverkeeper, Verde, Rogue Climate, Earthjustice and Friends of the Columbia Gorge submit the following comments regarding the 2022 Carbon Dioxide Emissions Standards Rulemaking. This rulemaking involves issues that could significantly impact the amount of climate changing pollution Oregon allows from fracked gas power plants, as well as the monetary offset rate required to partially address these impacts.

We support the proposal to increase the monetary offset rate by the full amount currently allowed under Oregon law, 50 percent. The update will bring the regulatory costs of offsetting carbon a bit closer to the market cost of carbon offsets, although the staff report indicates that the price would still be lower than the typical price paid by Oregon Climate Trust. We also support staff's recommendation to reset emissions standards based on the most efficient stand-alone combined cycle, combustion turbine, natural gas-fired energy facility that is commercially demonstrated and operating in the United States. By updating the monetary offset rate and the baseline efficiency expectation for gas plants, EFSC will improve the rules consistent with the Governor's Executive Order 20-04.

The proposed rules would update the requirements for a description of a proposed fossil fuel facility to include "a discussion of methods the facility will use to ensure that the facility does not emit greenhouse gasses into the atmosphere, and a description of any equipment the facility will used [*sic*] to capture, sequester, or store greenhouse gasses." The language leaves the door open to an unsure path for compliance with HB 2021, by relying on unproven carbon capture and sequestration methods that

may not comply with the new statutory requirement that no greenhouse gases can be released to the atmosphere. A “discussion of methods” may not be adequate to ensure that projects adequately and durably refrain from emitting carbon dioxide or other greenhouse gases into the atmosphere. How would EFSC actually ensure that the methods will in fact be adequate and that greenhouse gases are not emitted?

We urge EFSC to consider the unproven nature of carbon capture and sequestration when EFSC determines whether a facility emits climate changing pollution to the atmosphere. Sequestration projects and carbon pipelines can have significant potential impacts, especially when they densely concentrate CO₂ and ship it through failure-prone pipelines.¹ Further, these types of projects do not capture all of the carbon emissions from fossil fuel power plants. For instance, a recent study by Stanford’s Mark Jacobsen shows that carbon capture and sequestration technology may only address a fraction of a power plant’s emissions. Jacobsen writes, “In sum, spending on capture rather than wind replacing fossil or bioenergy always increases social cost,” and he notes that future equipment improvements will not change the fundamental conclusion while fossil emissions exist.² To avert releasing greenhouse gas emissions to the atmosphere, sequestration efforts would have to be proven to succeed over thousands of years, which is unlikely given the immaturity of resources and technology in capturing and storing carbon over such long timeframes.

Additionally, EFSC needs to resolve and clarify the meaning of “significant increases” in gross carbon dioxide emissions. EFSC’s current and proposed rules undermine HB 2021 by allowing significant increases in fracked gas use and pollution. EFSC’s approach allows power plants, such as a fracked gas plant using 100 million cubic feet of fracked gas per day, to increase fuel use and emissions significantly without requiring a site certificate amendment.³ This approach violates HB 2021, which prohibits site certificate amendments for changes that are “significant.” Specifically, EFSC’s approach exempts from the requirement to obtain a site certificate amendment “an electrical generation facility that would increase the electrical generating capacity and would not increase the number of electric generators at the site, change fuel type, increase fuel consumption by more than 10 percent or enlarge the facility site.” A 10 percent increase in a gas plant using 100 million cubic feet per day (10 million cubic feet of additional gas use per day) should be deemed significant, but EFSC’s

¹ Erin Jordan, *The Gazette*. “Witnesses describe Mississippi CO₂ pipeline explosion. January 31, 2022.

Companies not always told to set aside money for spills.”

<https://www.thegazette.com/environment-nature/witnesses-describe-mississippi-co2-pipeline-explosion/>.

Jared Strong, *Iowa Capitol Dispatch*. “Landowners Say CO₂ pipeline builder is harassing them to obtain lease agreements.” June 6, 2022.

<https://www.thegazette.com/news/landowners-say-co2-pipeline-builder-is-harassing-them-to-obtain-easements/>

Alex Rozier. *Mississippi Today*. “Carbon leak in Satartia prompts federal focus on pipeline safety.” June 13, 2022.

<https://mississippitoday.org/2022/06/13/carbon-leak-in-satartia-prompts-federal-focus-on-pipeline-safety/>

² Mark Jacobsen. 2019. The health and climate impacts of carbon capture and direct air capture.

<https://web.stanford.edu/group/efmh/jacobson/Articles/Other/19-CCS-DAC.pdf>

³ The 546 MW Hermiston Power Plant uses approximately 4,136 million British thermal units (MMBtu) of natural gas fuel per hour at full load, which converts to approximately 100 million cubic feet of gas per day. See Fourth Amended Site Certificate for the Hermiston Power Plant. September 2005. p. 4.

https://www.oregon.gov/energy/facilities-safety/facilities/Facilities%20library/HPP_site_certificate_amend_5_092705.pdf

rules would not treat such an increase as significant and would not require a site certificate amendment below this threshold. To ensure compliance with HB 2021 and Governor Brown’s Executive Order 20-04, EFSC must further clarify and define the meaning of “significant” in the specific context of gas plants to include additional thresholds beyond just a uniform 10-percent increase rule. *Any* increase in fracked gas use is significant given the clear direction by Governor Brown in Executive Order 20-04 to limit new emissions plus the requirements of HB 2021 to avoid additional emissions from new or existing gas plants.

Finally, EFSC’s rules should discourage new and amended site certificates for fracked gas facilities or other fossil fuel facilities whose energy supplies involve significant upstream emissions, such as the persistent and increasing problem of methane emissions resulting from the production, storage, and processing of fracked gas and other fossil fuels. According to *The Washington Post*, a report recently released by the House Committee on Science, Space and Technology demonstrates that methane emissions remain both underreported and potentially destructive to efforts in the U.S. to curb greenhouse gas emissions.⁴ Fossil fuel plants do more damage to the atmosphere than caused by just the emissions at the plant itself: wells, pipelines, and compressors all release greenhouse gases into the atmosphere.⁵ EFSC should consider whether any gas plant is truly a non-emitting source. Three to nine percent of a power plant’s gas demand could be released to the atmosphere, including emissions from upstream pipelines, compressors, and wells, as well as methane releases at the gas plant itself.⁶ Further, the reliability of carbon capture and sequestration remains unproven in Oregon and elsewhere.

Thank you for considering these comments.

⁴ Steven Mufson. The Washington Post. “Oil and gas companies underreported methane leaks, new study shows.” June 8, 2022. <https://www.washingtonpost.com/climate-environment/2022/06/08/oil-gas-methane-house-science-permian/> See also: House Committee on Science, Space and Technology. June 2022. “Seeing CH₄ Clearly: Science-Based Approaches to Methane Monitoring in the Oil and Gas Sector.”

https://science.house.gov/imo/media/doc/science_committee_majority_staff_report_seeing_ch4_clearly.pdf

⁵ Chen et al. 2022. *Environ. Sci. Technol.* 2022, 56, 7, 4317–4323. March 23, 2022 <https://doi.org/10.1021/acs.est.1c06458>. Regarding New Mexico’s Permian Basin, “We estimate total O&G methane emissions in this area at 194 (+72/–68, 95% CI) metric tonnes per hour (t/h), or 9.4% (+3.5%/–3.3%) of gross gas production.”; Josh Saul and Naureen Malik. “As Gas Prices Soar, Nobody Knows How Much Methane Is Leaking.” May 2, 2022

<https://www.bloomberg.com/features/2022-methane-leaks-natural-gas-energy-emissions-data/> “Methane emissions tend to be higher from natural gas than from coal,” says Robert Howarth, a professor of ecology and environmental biology at Cornell University. “It does not take huge methane emissions to make up for the lower CO₂ emissions from natural gas.”

⁶ Nichola Groom. “Los Angeles natural gas plant has been leaking methane for years.” Reuters. August 6, 2020. <https://www.reuters.com/article/usa-methane-california/los-angeles-natural-gas-plant-has-been-leaking-methane-for-years-idUKL1N2FS29W>;

Lavoie et al. 2017. Assessing the Methane Emissions from Natural Gas-Fired Power Plants and Oil Refineries. *Environmental Science and Technology*.

https://pubs.acs.org/doi/full/10.1021/acs.est.6b05531?_ga=2.23206393.213165467.1655843438-640222953.1655843438;

Steve Horn. Natural gas leaks from power plants, refineries, 100 times greater than thought. *The Ecologist*. March 22, 2017. <https://theecologist.org/2017/mar/22/natural-gas-leaks-power-plants-refineries-100-times-greater-thought>

Sincerely,

Dan Serres, Conservation Director, Columbia Riverkeeper

Nathan Baker, Senior Staff Attorney, Friends of the Columbia Gorge

Allie Rosenbluth, Campaigns Director, Rogue Climate

Oriana Magnera, Energy, Climate, and Transportation Program Manager, Verde

Molly Tack-Hooper, Supervising Senior Attorney, Northwest Office, Earthjustice



The League of Women Voters of Oregon is a 102-year-old grassroots nonpartisan political organization that encourages informed and active participation in government. We envision informed Oregonians participating in a fully accessible, responsive, and transparent government to achieve the common good. LWVOR Legislative Action is based on advocacy positions formed through studies and member consensus. The League never supports or opposes any candidate or political party.

June 22, 2022

To: EFSC.rulemaking@oregon.gov

Re: Comments on EFSC Proposed Rulemaking for Implementation of HB 2021 (2021)

The League of Women Voters of Oregon (LWVOR) believes that climate change is a serious threat facing our nation and planet. The League believes that an interrelated approach to combating climate change—including through energy conservation, air pollution controls, building resilience, and promotion of renewable resources—is necessary to protect public health and defend the overall integrity of the global ecosystem.

We have reviewed the Energy Facility Sitting Council (EFSC) [Proposed Rulemaking](#) for compliance with HB 2021 (2021).

LWVOR provided [testimony](#) in support of the final version of HB 2021 including the following paragraph:

Finally, we approve of the changes made to the section on natural gas plants. Instead of explicitly allowing renewable natural gas and not excluding expansion of existing plants, it now limits new and expanded plants to “only nonemitting electricity.” We recognize that the way “nonemitting electricity” is defined may allow for carbon capture and storage.

LWVOR provided public [testimony](#) for the rules for the Climate Protection Program including:

The good news is that HB 2021 (100% Clean Energy) was passed this year ... However, the generation of natural-gas-powered electricity generated in Oregon and exported to another state is not covered by HB 2021. At the current time, the amount of that electricity is very small. However, if other states start buying that electricity, DEQ should have the authority to move it under the natural gas cap.

We believe that these rules could provide a way to limit the export of fossil-fueled electricity.

Although Section 28 in HB 2021 (2021) is titled “Natural Gas Plants,” it actually applies to all facilities that produce electricity from fossil fuels. We appreciate that the description of “fossil fuel” in HB 2021 was identical to the definition in the existing rules (OAR 345-001-0010): “natural gas, petroleum, coal and any form of solid, liquid or gaseous fuel derived from such materials.”

HB 2021 Section 28 (1) New generating facility

There are several areas in the proposed rules that specifically discuss fossil-fueled power plants. We believe the key change was to completely rewrite OAR 345-024-0500, including retitling it to Standards for Fossil-Fueled Power Plants and Energy Facilities that Emit Carbon Dioxide and dividing it into two sections, one for fossil-fueled power plants and the second for nongenerating facilities.

(1) Notwithstanding rules in OAR 345-024-0503 through 345-024-0720, to issue a site certificate for a fossil-fueled power plant on or after September 25, 2021, the Council must find that the facility will only generate electricity in a manner that does not emit greenhouse gasses into the atmosphere.

We are especially pleased that the Notice of Intent being submitted for site approval, of a thermal power plant generating electric power from fossil fuel, must include “a discussion of methods the facility will use to ensure that the facility does not emit greenhouse gasses into the atmosphere, and a description of any equipment the facility will use to capture, sequester, or store greenhouse gases.”

HB 2021 Section 28 (2) Amendment to existing Notice of Intent

HB 2021 specifies that an amendment to a site certificate approved before its effective date could not be approved if it would “significantly increase the gross carbon dioxide emissions.” We found the adoption of this requirement in the proposed rules to be confusing and possibly not in compliance with HB 2021. Based on our limited review, here are some changes we ask you to consider. We are not sure why HB 2021 considers all greenhouse gas emissions for new sites and only carbon dioxide for the amendment for existing sites but we have accepted that in our suggested changes.

Changes Exempt from Requiring an Amendment: OAR 345-027-0353 was not changed in the proposed rules. Existing (1) provides that an increase in fuel consumption of less than 10 percent would not require an amendment. This exception was not included in HB 2021, and we are concerned that an increase of 10 percent could lead to an increase of carbon dioxide emissions by 10 percent, which we do not consider to be insignificant. We recommend that this be deleted.

Amendment of Notice of Intent: OAR 345-020-0016 should be updated to include the specific requirement in HB 2021 that an amendment will not be approved if it would significantly increase the gross carbon dioxide emissions. Because the overall intent of HB 2021 is to decrease greenhouse gas emissions, we suggest that for this amendment the extension of the expiration date should be precluded unless the facility will capture and sequester or store all the carbon dioxide emissions.

Scope of Council Review: OAR 345-027-0375 (2) states that to issue an amended site certificate, the Council must determine that the preponderance of evidence on the record supports the following conclusions:

(d) (newly added by proposed rules) For a request for amendment to a site certificate for a fossil-fueled power plant, the proposed change will not result in a significant increase in the gross carbon dioxide emissions that are reasonably likely to result from the operation of the facility. For the purposes of this subsection, an incremental increase in capacity or heat rate resulting from changes that otherwise falls within the limits of OAR 345-027-0353(1) does not significantly increase the gross carbon dioxide emissions that are reasonably likely to result from the operation of the energy facility.

Since we have recommended the elimination of OAR 345-027-0353(1), the second sentence above should also be eliminated.

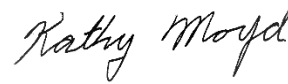
We appreciate the effort you have taken in incorporating the siting requirements in HB 2021 and thank you for the opportunity to provide comments.



Rebecca Gladstone
LWVOR President



Claudia Keith
Climate Emergency Coordinator



Kathy Moyd
Climate Emergency Portfolio



Portland General Electric

121 SW Salmon Street • Portland, OR 97204
portlandgeneral.com

June 21, 2022

Mr. Christopher Clark
Rules Coordinator
Energy Facility Siting Council
Oregon Department of Energy
550 Capitol St. NE
Salem, OR 97301

RE: Notice of Proposed Rulemaking, Implementation of HB 2021 (2021) and Updates to Carbon Dioxide Emissions Standards

Dear Mr. Clark,

Portland General Electric Company (PGE) submits the following comments in the above referenced rulemaking and requests that the Energy Facility Siting Council (EFSC) consider them in their deliberation in this matter. PGE appreciates the opportunity to provide our perspective on the proposed rules, based on our decades of experience with the carbon dioxide emissions standard and with advocating for greenhouse gas (GHG) reduction policies in Oregon.

PGE understands that reducing GHGs, electrifying the economy to reduce GHGs from other sectors like transportation, and offering products and services that put customers in control of their energy use, will require us to deploy new technologies on the path to a low-greenhouse gas future. This year, we brought our first-of-its-scale Wheatridge wind-solar-battery facility online in partnership with NextEra Energy. By 2030, PGE will need to nearly triple the amount of clean and renewable resources in our generation portfolio to meet our GHG targets. Navigating this transition will require a more dynamic system with significant energy storage and flexible load programs. We will also have to operate our existing natural gas plants differently to maintain system reliability and meet peak demand, rather than as traditional baseload plants. Those changes could increase fuel consumption, increase generating capacity, change fuels, or enlarge a facility site. Realizing the target of 80% reduction by 2030, and zero emissions by 2040, will not be easy to accomplish and we admit that we do not have all the answers today. Efficiency improvements, new technologies, and new partnerships across the entire economy will be necessary to achieve the House Bill 2021 targets. We are ready to take this step and look forward to working collaboratively with our regulators to achieve them.

PGE's Climate Leadership

We believe it important for council members and interested parties to understand the context within which PGE makes our comments. PGE's recommendations for changes to the proposed rules should not be taken as an indication that we seek to increase GHG emissions associated with serving our customers, in fact we have been working for more than two decades to reduce emissions associated with generating electricity. For example, in 1997, PGE testified in support of HB 3283, the bill that created the carbon dioxide emissions standard codified at ORS 469.503 and later led the legislative effort to craft and lobby for HB 3538 (2011), an update to the standard that improved the environmental outcomes associated with the standard. In 2006, PGE was the first utility in the nation to call for an economy-wide market-based mechanism to reduce the emissions of GHGs. Since then, we

have helped craft and update the state's renewable portfolio standard, developed a groundbreaking agreement to shutter the state's only coal-fired facility, signed national pledges supporting strong regulation of emissions, set a corporate goal to reduce GHG emissions by more than 80% by 2030 prior to the development and passage of HB 2021, supported cap and trade legislation, led the adoption of the state's goals for transportation electrification and was part of a broad coalition of stakeholders to advocate for and pass HB 2021, a part of which is at issue in this rulemaking.¹

Proposed amendment to OAR 345-027-0375 (2)(d)

PGE supported the limits on the construction of new, and modification of existing, natural gas facilities found in ORS 469.413. The legislative language allowing the amendment of a site certificate for changes that would not "significantly increase the gross carbon dioxide emissions" of the facility was intentionally crafted based on the understanding that (1) we do not yet have all the answers to how we will serve customers post-2030 and (2) how we operate our natural gas-fired facilities in that time period may require modifications to site certificates to permit changes that modestly increase individual facility emissions while achieving systemwide GHG emissions reductions: system-wide carbon emissions can be achieved by shifting more generation to those sites with lower carbon intensity, an existing facility might operate more hours in the short-term while integrating more renewable resources, or a facility may operate more hours but with a reduced carbon intensity.

In PGE's reading, the proposed OAR 345-027-0375 (2)(d) nullifies the language allowing EFSC to ***approve the amendment*** of a site certificate if the changed operation in the facility results in an increase in carbon dioxide emissions up to the limit of "significant." EFSC's proposal allows increases in carbon dioxide emissions if the increases are caused by changes that do not require a site certificate amendment, fundamentally defining "significantly increase" for purposes of an amendment as zero.

Such a proposal is inconsistent with the text of the provisions of ORS 469.413, is contrary to the intention of the legislature, and could stifle innovations at specific generation facilities that will be needed as we push toward 2040. We believe the legislature's adoption of HB 2021 was a call to utilities and others to think outside the box in reaching our shared low-GHG future. The Legislature required GHG reductions without prescribing technologies or strategies, providing maximum flexibility in how those GHG emissions reductions are achieved. If the EFSC were to adopt the rules as proposed, it would be constraining the flexibility that the legislature provided. The ability provided to EFSC to approve site certificate amendments up to a significant increase threshold was made with the understanding that increasing emissions from any one source was not as important as decreasing emissions overall.

Under the proposed rule, per the interpretation in the associated staff report, a change that increased nameplate capacity, and changed fuel type, would be a change forbidden by the proposed rule if it also increased GHG output at all - even if the change decreased the GHG output on a per kilowatt-hour basis, and facilitated system-wide progress towards HB 2021 targets.

One clear example would be modifications to facilitate transition to zero-carbon hydrogen as a fuel in the future. PGE is currently evaluating a wet compression project that could be environmentally beneficial, allowing a potential decrease in GHG emissions plus the potential to use hydrogen as a fuel

¹ The bulk of House Bill 2021 (2021) was codified at ORS 469A.400 to .475. The provision at issue in this rule was codified at ORS 469.413.

up to 30% of the total fuel. A fuel use change (from natural gas to hydrogen) would require a site certificate amendment in the long-term and, if converted, result in a lower carbon intensity (CO₂ per kWh produced). Unfortunately, the proposed rule could prohibit the wet compression project from proceeding if, as expected, capacity increases and the result is an increase in CO₂ emissions compared to pre-project operations, even temporarily. Perhaps a more straightforward circumstance could exist where PGE changes equipment or adds software modifications that improve (reduce) the heat rate at nominal generation but increase the GHG emitted from the facility if used at maximum generation.

In adopting HB 2021, the legislature did not want the EFSC to operate in a vacuum. That is, while PGE agrees with the staff report that the legislature put the provisions on site certificate amendments “in a bill intended to eliminate all greenhouse gas emissions associated with electricity,” it did not direct the EFSC to accomplish that goal by itself. The Oregon Public Utility Commission and the Oregon Department of Environmental Quality will require utilities to show continual progress toward the reduction targets and file plans showing how they anticipate making the reductions required. The prohibition on new fossil fueled plants is clear, but nothing in the language in ORS 469.413 (2) suggests that a “fairly conservative approach was intended” because the utilities subject to the law’s reduction targets are ultimately bound by the targets. A utility that managed, for example, to wring additional generation out of a state-of-the-art natural-gas fired G-class turbine facility to serve customers while giving the utility the ability to reduce emissions from a much less-efficient facility, would on a net basis, not only be accomplishing what the legislature directed it to accomplish, but also accomplishing the real reductions in GHG emissions necessary for our planet.

PGE’s concerns could be ameliorated through the adoption of provisions allowing for flexibility in emissions already encompassed in OAR 345-027-0353 (1). PGE proposes the following language for EFSC’s consideration at OAR 345-027-0375 (2):

(d) For a request for amendment to a site certificate for a fossil-fueled power plant, the proposed change will not result in a significant increase in the gross carbon dioxide emissions that are reasonably likely to result from the operation of the facility. For the purposes of this subsection, changes that result in an increase of gross greenhouse gas emissions at or below those associated with fuel increases allowed without amendment as provided by OAR 345-027-0353(1) are not significant.

Summary

Regardless of the outcome of this rulemaking, PGE and other regulated parties will be held to reductions mandated by ORS 469A.400 to .475, the requirements to make continual progress toward the 2030, 2035 and 2040 targets, the requirements to submit plans that place the utility on track to meet those requirements, and the integration of clean electricity targets into our planning and procurement processes. We believe that the provisions in ORS 469.413 were intended to make clear that new fossil fueled generation is prohibited and that modest increases from existing fossil fueled generation were allowed if the changes sought would potentially reduce emissions over time, shift generation from less efficient natural gas facilities to more efficient ones in the fleet, or make changes that decrease the carbon intensity associated with system-wide production (even if that decrease came with a net increase in GHG emissions from a single plant). Approval of a site certificate amendment

that allows a facility to marginally increase GHG emissions in no way diminishes the requirement to meet the GHG reduction targets.

Since 1997, PGE has been working to reduce its emissions in this state and is committed to meeting the reductions mandated by HB 2021. We seek to do so while keeping electricity prices affordable. One of the means toward affordability is by ensuring that we can continue to rely on our existing generation fleet to provide support to the system, which means that site certificate amendments may be required. EFSC should not adopt a rule that would prohibit these efforts by proscribing changes to facilities that would result in only a modest GHG emission increase - especially in the face of clear legislative intent otherwise.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Sunny Radcliffe". The signature is written in a cursive, flowing style.

Sunny Radcliffe
Director of Government Affairs and Environmental Policy

Mr. Christopher Clark
Rules Coordinator
Energy Facility Siting Council
Oregon Department of Energy
550 Capitol St. NE
Salem, OR 97301

RE: Notice of Proposed Rulemaking, Implementation of HB 2021 - Updates to Carbon Dioxide Emissions Standards

Dear Mr. Clark,

Avista provides electricity to 402,000 customers in Idaho and Washington and natural gas to 368,000 customers across four northwestern states, including Oregon. Since Avista's founding in 1889, we've served our customers with an electric generation resource mix that is more than half renewable, allowing us to keep our carbon emissions among the lowest in the nation. Our company is committed to reducing greenhouse gas emissions while providing our customers reliable, affordable essential energy services. Avista currently owns Unit 2 at the EFSC permitted facility – Coyote Springs operated by Portland General in Boardman, OR. Avista's Coyote Springs Unit 2 serves electricity to Idaho and Washington electric customers and is subject to both the WA Clean Energy Transformation Act (CETA) and the WA Climate Commitment Act (CCA) in regards to carbon regulation.

Avista appreciates the opportunity to provide these brief comments in the referenced rulemaking and requests that the Energy Facility Siting Council (EFSC) consider how they may impact our existing permitted facility located in Boardman.

Specific to the language in Section 28, HB 2021 as the applicable provision.

Avista does not believe that the phrase "significantly increase the gross carbon dioxide emissions" can be defined as a zero increase in the proposed language to the ESFC council. If the legislature had intended EFSC to hold carbon increases at zero, the law would have reflected specific language to that end. Rendering the word "significantly" as being superfluous, violates the rules of statutory construction. The focus of the legislation preceding did not envision "significant" increase means anything above zero, and we recommend a change that gives flexibility for existing facilities to a increase allowed consistent with the current allowable fuel increase (10%).

Thank you for consideration in this matter. If you have questions or comments, please feel free to contact me.

Respectfully submitted,
-Darrell

Darrell Soyars, Manager, Environmental Compliance
1411 E Mission Ave MSC-21, Spokane, WA, 99202
P 509.495.2860 | C 509.435.6464
www.myavista.com

June 23, 2022

Christopher Clark
Energy Facility Siting Council, Oregon Department of Energy
Via email to christopher.clark@energy.oregon.gov

Re: Comments on Proposed Rules for the Implementation of HB 2021 and Updates to Carbon Dioxide Emissions Standards

The Joint Energy Advocates (Climate Solutions, Renewable Northwest, and Metro Climate Action Team Steering Committee) appreciate the opportunity to submit these comments on the HB 2021 rulemaking being undertaken by the Energy Facility Siting Council (“The Council”).

Introduction

HB 2021, the landmark legislation passed last year, sets Oregon on an ambitious course toward 100% clean energy by 2040, with a set of near-term interim targets. Although HB 2021 itself is focused on the retail electricity sector, the spirit of Oregon’s broader energy policy is clear. Through the Climate Protection Program, the Oregon Climate Action Plan, the REbuilding Task Force, the Oregon Clean Fuels Program, and the Zero Emissions Vehicles Goal, we are rapidly decarbonizing not just electricity, but also buildings and transportation. Oregon is on a pathway to a zero emissions future.

Expansion of fossil fuel generating facilities is antithetical to this overarching decarbonization policy. Energy facilities have long lifespans. Any new or expanded gas powered facility built now will certainly outlive our 2040 decarbonization target in Oregon, which is a mere seventeen years away. These facilities are not good investments for Oregon, will not provide power for Oregon in the long term, and will eventually become stranded assets – sooner rather than later.

Although HB 2021 allows The Council to issue new and amended site certificates for gas powered facilities in a narrow set of circumstances, there are a number of very tight constraints that we detail below, and we question whether any proposal for such a facility could meet the requirements or be a feasible option in Oregon’s energy market.

With this context in mind, we offer the following comments and recommendations.

Site Certificates for New Gas Powered Facilities

Section 28(1) of HB 2021 prohibits The Council from issuing a site certificate for a new fossil fuel generating facility unless The Council determines that the new “facility will generate only nonemitting electricity.”¹ The statute defines ‘nonemitting electricity’ as electricity that is generated and may be stored in a manner that does not emit greenhouse gas into the atmosphere.²

This provision significantly constrains The Council’s siting authority for gas powered facilities. It effectively carves out a single narrow pathway for siting a new facility of this kind, which would

¹ HB 2021, Section 28(1).

² HB 2021, Section 1(7).

necessarily require inclusion of an adjoining Carbon Capture and Storage (“CCS”) facility sufficient to capture 100% of greenhouse gas emissions from the facility.

CCS is a relatively new technology. The literature is rife with studies indicating that all currently available CCS technologies will leak CO₂ during their lifespan. Below is just a sample of the literature.

- [Carbon capture and storage: A lot of eggs in a potentially leaky basket - International Council on Clean Transportation \(theicct.org\)](#)
 - o “The problem for storage is that the CO₂ pumped underground can later escape through multiple channels, including geological features such as fractures in the rock.”
 - o “A bigger problem lies in leakage through wells. Both active wells and abandoned, idle wells can be pathways of CO₂ leakage, and well leakage can take the form of either continuous leakage or well blowouts.”
- [Can Stored Carbon Dioxide Leak? - Scientific American](#)
 - o Globally, a leakage rate of 1 percent every decade could be “very serious,” and would eventually lead to temperature spikes of about 3 degrees Celsius in the next century.
- [Frontiers | Bearing the Cost of Stored Carbon Leakage | Energy Research \(frontiersin.org\)](#)
 - o “Leakage of CO₂ from stored carbon can potentially undermine the value of carbon storage as a mitigation option.”

CCS technology is unproven. “Because CCS has never been tried at a commercial scale, it is impossible to pinpoint the exact leakage rate that would occur...”³ There is a strong likelihood, and perhaps a certainty, that leakage will occur in a CCS facility throughout its lifecycle, including during capture, transportation, injection, storage, and decommissioning. Any such leakage would automatically place the facility in noncompliance with HB 2021 by virtue of the “zero emissions into the atmosphere” standard. We believe that the prevailing research on leakage essentially disqualifies this technology from being used in conjunction with gas powered facilities within Oregon.

The Council’s jurisdiction logically extends to CCS facilities through its oversight of underground gas storage reservoirs. *See OAR 469.300(29)*. We remind The Council that a reading of the plain language of the ‘nonemitting electricity’ definition requires *zero emissions into the atmosphere*. To fully comply with HB 2021’s restrictions on the issuance of new site certificates for natural gas facilities, a project proponent must prove that 100% of emissions will be captured and stored and there will be zero emissions at the facility and storage site in order for The Council to issue a site certificate. The burden for such proof would be on the applicant. Issuance of the site certificate must be conditioned on the facility not releasing any emissions into the atmosphere during its lifespan. If any amount of leakage is discovered, EFSC must revoke the site certificate.

We urge The Council to include language in the rules indicating that any proposal for a carbon capture facility as part of a new site certificate must demonstrate unambiguously that it will have zero emissions over its entire lifespan, from the beginning of operations through to decommissioning. This should include rigorous testing protocols.

³ [Can Stored Carbon Dioxide Leak? - Scientific American](#)

Amended Site Certificates for Existing Gas Powered Facilities

Section 28(2) of HB 2021 prohibits The Council from issuing an amended site certificate “in a manner that would significantly increase the gross carbon dioxide emissions that are reasonably likely to result from the operation of the energy facility.” The term ‘significantly increase’ is defined neither by HB 2021 nor in The Council’s rules. However, when contextualized within HB 2021, a statute targeting a complete phase out GHG emissions over a short-term horizon, one must reach the reasonable conclusion that the term ‘significantly increase’ should be narrowly defined to accommodate changes associated with minor upgrades to existing facilities. Any net increase in GHG emissions should be deemed “significant” within the HB 2021 regulatory regime.

We urge The Council to adopt Alternative 3 from staff’s April 22, 2022 memo, which interprets the term ‘significant increase’ as any net increase in gross carbon dioxide emissions resulting from a change in facility design or operation that requires an amendment. Within this interpretation, site certificate holders could make changes to existing facilities so long as they are accompanied by other changes that result in a corresponding reduction in emissions, such as the installation of carbon capture, utilization or storage technology at the facility. Adoption of Alternative 3 is particularly important given the existing definition of “significant” in OAR 345-001-0010(52) (now proposed to be 28) which could be interpreted to inform the meaning of “significant increase” in the newly proposed OAR 345-027-0375(1)(d). HB 2021 demands a more stringent standard than the current definition of “significant” requires.

As in the case of new site certificates for gas powered facilities, here again project proponents are confronted with significant constraints. We see a narrow route to achieving a ‘no net increase’ in GHG emissions from facility changes, one which would almost certainly necessitate the addition of a CCS facility. To achieve parity with the restrictions referenced above for a new site certificate, and to fulfill the legislative intent of HB 2021, The Council must impose the same requirements. As above, this includes a warranty of 0% leakage, burden of proof on the applicant that changes would not lead to a net increase in emissions into the atmosphere, rigorous testing protocols, and an obligation to revoke the site certificate if those terms are violated.

Finally, and notwithstanding staff’s ‘no net increase’ recommendation and our strong recommendation to align the technical requirements for both new and expanded gas powered facilities, in no case should gross emissions from an expanded facility exceed 3%, which is the common understanding of a statistically significant increase.

Role of Oregon Department of Environmental Quality

We urge The Council to work closely with DEQ in tracking emissions from gas powered facilities subject to new or amended site certificates under this rulemaking. DEQ must deliver emissions data from such facilities, including any connected CCS facility, in a timely manner to The Council for review. If the facilities are found to be in violation of the “zero emissions into the atmosphere” standard from emissions at the generating facility or the connected CCS facility, The Council must act immediately. We recommend regular communication between the two agencies to ensure consistent, comprehensive, and continuous oversight.

Role of Oregon Public Utilities Commission

We also recommend that The Council liaise regularly with OPUC. As the lead agency implementing HB 2021, OPUC has oversight over planning and reporting processes for all retail electricity subject to the statute's decarbonization targets. We emphasize again that new fossil fuel powered generating facilities are inconsistent with HB 2021 and the legislature's stated goals. If a retail electricity provider subject to HB 2021, including Investor Owned Utilities and Electricity Service Suppliers, seeks a new or amended site certificate for a gas powered generating facility, that entity's plan for that facility should be reflected in its IRP and CEP, or in the case of Electricity Service Suppliers that entity's report to OPUC. It should also be consistent with the entity's forward looking decarbonization planning.

We emphasize that Oregon is on a rapid decarbonization trajectory, and there will likely be additional near-term expansions of legislation and government programs facilitating decarbonization. Thus, all retail electricity providers in Oregon, including IOUs, COUs, and ESS's, should be circumspect in financing and operating new or expanded gas powered facilities given the rapidly evolving regulatory environment.

Thank you again for the opportunity to submit these comments. Please do not hesitate to reach out with any questions.

Sincerely,

Joshua Basofin, Clean Energy Policy Manager
Climate Solutions

Max Greene, Deputy Director
Renewable Northwest

Brett Baylor, Rick Brown, Pat DeLaquil, Dan Frye, Debbie Garman, KB Mercer, Michael Mitton, Rich Peppers, Rand Schenck, and Jane Stackhouse
Metro Climate Action Team Steering Committee



Carra Sahler
10101 S. Terwilliger Boulevard
Portland, Oregon 97219
Phone: (503)768-6634 Fax: (503)768-6671
E-Mail: sahler@lclark.edu

June 23, 2022

Christopher Clark, Rules Coordinator
Energy Facility Siting Council, Oregon Department of Energy
Via <https://odoe.powerappsportals.us/SitingPublicComment/>

Dear Mr. Clark:

The Green Energy Institute at Lewis & Clark Law School is a nonprofit energy and climate law and policy institute within Lewis & Clark's top-ranked environmental, natural resources, and energy law program. Our team of attorneys and law students works to design comprehensive legal and policy strategies to address climate change and support a swift transition to a clean and renewable energy system. We appreciate the opportunity to comment on the Energy Facility Siting Council's proposed rules implementing HB 2021.

Based on my review of the rules, I offer the following feedback:

Consistent with Alternative 3 in the April 15, 2022 Issues Analysis Document, we strongly recommend that the rules more directly address the meaning of "significant increase" as it is used in deciding whether to grant or deny an amended site certificate.¹

Alternative 3 recommends that Council adopt a new rule in OAR chapter 345, division 027 specifying that a certificate holder must demonstrate the change it proposes will not result in a net increase in gross carbon dioxide emissions.² Alternatively, a definition of "significant increase" could be added to the rules that reflects the same language.

As the Staff Report notes, the current definition of "significant" is not specific and, I suggest, could be interpreted in a manner that is counter to the purposes of HB 2021. As it stands now, the proposed provision addressing how the Council must review a request for amendment unhelpfully refers to the word "significant," which will inevitably result in the existing regulatory definition of "significant" informing whether an amendment may be granted or not. That definition is so broad that it might be possible for an applicant to argue that attribution of additional emissions from its source cannot be considered as having an "important consequence"

¹ Proposed OAR 345-027-0375(2)(d).

² Item E: 2022 Carbon Dioxide Standard Updates, Attach. 1: Issues Analysis Document 4 (Apr. 15, 2022), <https://www.oregon.gov/energy/facilities-safety/facilities/Council%20Meetings/2022-04-22-Item-E-2022-CO2-Standards-Staff-Report-Attachment-1-Issues-Analysis.pdf>

on any “affected human population or natural resources.”³ As Staff notes, however, the purpose and legislative history of HB 2021 support a cautious and restrictive interpretation of “significant increase;” for that reason, I suggest eliminating any confusion about what is permitted for an amended site certificate. Alternative 3 offers an interpretation that is most consistent with the intent of the law.

We also support the comments submitted by Climate Solutions and Renewable Northwest.

We appreciate your consideration of our comments.

Sincerely,

A handwritten signature in blue ink that reads "Carra Sahler". The signature is written in a cursive, flowing style.

Carra Sahler
Staff Attorney
Green Energy Institute at Lewis & Clark Law School

³ Proposed OAR 345-001-0010(28).

From: KathyMoyd-gmail <kmoyd11@gmail.com>
Sent: Thursday, June 23, 2022 10:49 AM
To: CLARK Christopher * ODOE
Cc: Ca Keith
Subject: Extension of deadline for comments

I enjoyed our discussion this morning.

I would appreciate having an extension of the deadline for submitting comments for the 2022 Carbon Dioxide Emissions Standards Rulemaking for at least three weeks.

Just since I submitted my comments on Monday for approval by the League of Women Voters of Oregon I have discovered some other issues. Also, I would like to hear other testimony tonight; sometimes it brings up other issues I want to include.

I just reviewed the two other comments you received. Considering that at minimum there is disagreement between the comments submitted by LWVOR and Dan Serres and those submitted by PGE regarding the 10% limit on being required to submit an amendment, I don't see how these rules could be adopted tomorrow.

I will be testifying at the hearing today.

Kathy Moyd



Oregon

Kate Brown, Governor



550 Capitol St. NE
Salem, OR 97301
Phone: 503-378-4040
Toll Free: 1-800-221-8035
FAX: 503-373-7806
www.oregon.gov/energy

To: Energy Facility Siting Council

From: Christopher M. Clark, Siting Policy Analyst & Rules Coordinator

Date: June 23, 2022

Subject: Oregon Department of Energy Testimony on the Energy Facility Siting Council's Proposed Rules to Implement HB 2021 and Updates to Carbon Dioxide Standards

The Oregon Department of Energy, as staff to the Energy Facility Siting Council, submits this testimony in support of the proposed rules for the Implementation of HB 2021 (2021) and Updates to Carbon Dioxide Emissions Standards, as provided in the Notice of Proposed Rulemaking filed with the Oregon Secretary of State on April 27, 2021, and issued to the persons described under OAR 345-001-0000 on June 1, 2022.

When the legislature established the carbon dioxide standards found under ORS 469.503(2), it authorized the Council to amend the standards and associated requirements if certain criteria were satisfied. These criteria include:

- That any changes to the carbon dioxide standard for base-load gas plants be based on the rate of carbon dioxide emissions per kilowatt hour of net electric output for the most efficient stand-alone combined cycle, combustion turbine, natural gas-fired energy facility that is commercially demonstrated and operating in the United States. ORS 469.503(2)(a).
- That, in adopting or amending such carbon dioxide emissions standards for other types of fossil-fueled power plants, the Council has considered and balanced the principles listed under ORS 469.503(2)(b), and
- That any changes to the monetary offset rate for carbon dioxide emissions will be economically achievable with the modified rate for natural gas-fired power plants.

We address each of these criteria separately below.

Required findings for Amending the Carbon Dioxide Standard for Base-Load Gas Plants

The Council has the discretion to set the carbon dioxide emissions standard for base load gas plants to 17 percent below the emissions rate of the most efficient combined cycle combustion turbine plant that is commercially demonstrated and operating in the United States.

The Council's current carbon dioxide emissions standard is based on performance test data from the Grand River Energy Center Unit 3 (GREC), which includes one MHI M501J gas turbine in a 1x1 combined cycle configuration.¹ At its meeting on June 15, 2018, the Council found that the tested heat rate of that facility, adjusted to ISO conditions, was 6,321 btu/kWh (HHV). Based on that heat rate, and the assumed rate of 117 pounds of carbon dioxide per million btu of natural gas, the Council determined that the gross emissions rate for GREC was 0.740 pounds of carbon dioxide per kilowatt hour of net electric output from the facility (lbs CO₂/kWh). Accordingly, the council reset the carbon dioxide standard for base load gas plants to 17 percent below this rate, which is the current standard of 0.614 lbs CO₂/kWh.

The Department has identified two combined-cycle combustion turbine plants in the United States which are potentially more efficient than the GREC facility. Both of these plants use General Electric H-Class turbines, which were also used in the development of reference plants for Portland General Electric's 2019 Integrated Resource Plan and the 2021 Northwest Power Plan.²

The Tennessee Valley Authority's Allen Combined-Cycle Power Plant in Shelby County, Tennessee began commercial operation in April 2018.³ The plant uses two GE 7HA.02 turbines in a 2x1 configuration. According to the manufacturer's specifications, a facility using this configuration can attain a net heat rate of 5,944 btu/kWh (HHV) at ISO conditions.⁴

The Dania Beach Clean Energy Center, located in Broward County, Florida, is owned and operated by Florida Power & Light, a subsidiary of NextEra Energy. The facility uses two General Electric 7HA.03 turbines in a 2x1 configuration.⁵ According to the manufacturer specifications, a facility using this configuration can attain a net heat rate of 5,907 btu/kWh (HHV) at ISO

¹ Combined Cycle configurations are typically denoted by the number of combustion turbine generators and the number of steam turbine generators. For example, in a 1x1 configuration, the exhaust heat from a single combustion turbine generator powers a single steam turbine generator.

² See Northwest Power and Conservation Council Memorandum on Natural Gas Reference Plants for draft 2021 Power Plan. February 4, 2020. Accessed from https://www.nwcouncil.org/sites/default/files/2020_02_p3.pdf, 4/6/22.

³ Power Technology. Allen Combined-Cycle Power Plant Datasheet. Accessed at: <https://www.power-technology.com/projects/allen-combined-cycle-power-plant-tennessee/>

⁴ General Electric Company. 7HA Gas Turbine Fact Sheet. September 2021. Accessed at: https://www.ge.com/content/dam/gepower-new/global/en_US/downloads/gas-new-site/products/gas-turbines/7ha-fact-sheet-product-specifications.pdf. Consistent with the requirements of ORS 469.503(2)(a), the Department converted the Lower Heating Value (LHV) rates reported by the manufacturer to Higher Heating Value (HHV) rates using a ratio of 1.108:1. The ratio is based on standard fuel specifications for natural gas. HHV includes the energy used to vaporize water contained in the fuel or created during the combustion process, where this energy is excluded from the LHV heat rate value.

⁵ Power Technology. Dania Beach Energy Center Datasheet. Accessed at: <https://www.power-technology.com/marketdata/dania-beach-energy-center-us/>

conditions.⁶ The Dania Beach Clean Energy Center began commercial operations on June 1, 2022.⁷

At its meeting on April 22, 2022, the Council directed staff to obtain facility specific field test data adjusted to ISO conditions, and to make recommendations on the appropriate carbon dioxide standard based on these data rather than on the manufacturer's specifications.

Staff contacted the Tennessee Valley Authority for the tested heat rate of the Allen Combined Cycle Plant and was informed that field tested heat rate data was not publicly available.

Staff has contacted Florida Power, its parent company, NextEra Energy for the tested heat rate of the Dania Beach Clean Energy Center. Staff also contacted the General Electric Company for the results of validation testing for the turbines used at the Dania Beach Clean Energy at its test stand in Greenville, South Carolina. A representative of the General Electric Company responded that they would work with the facility owner to try to provide the requested data, but this data was not available as of the date of this testimony.

Because field tested data for the two candidate facilities are not available at this time, staff recommends that the Council rely upon the manufacturer's specifications for the Dania Beach Clean Energy Center as the most efficient stand-alone combined cycle, combustion turbine, natural gas-fired energy facility that is commercially demonstrated and operating in the United States. As described above, according to the manufacturer's specifications, a facility using General Electric 7HA.03 turbines in a 2x1 configuration can achieve a net heat rate of 5,907 btu/kWh (HHV) at ISO conditions. Based on that heat rate, and the assumed rate of 117 pounds of carbon dioxide per million btu of natural gas established in ORS 469.503(2)(e)(J), the Department estimates that the gross emissions rate for the Dania Beach Clean Energy Center will be 0.691 lbs CO₂/kWh. Accordingly, the Department recommends the council reset the carbon dioxide standard for base load gas plants under OAR 345-024-0550 to 17 percent below this rate, or 0.574 lbs CO₂/kWh.

If the Council chooses not to rely on manufacturer's specifications, staff recommends that Council move forward with the other proposed rule changes included in the Notice for this project, and update the carbon dioxide emissions standards in OAR 345-024-0550, 345-024-0590, and 345-024-0620, at a later date when field tested data becomes available.

⁶ General Electric Company. 7HA Gas Turbine Fact Sheet. September 2021.

⁷ General Electric Company. "GE Announces First Commercial Operation of GE's 7HA.03 Technology at Florida Power & Light Company's "Dania Beach Clean Energy Center". June 2022. Accessed at: <https://www.ge.com/news/press-releases/ge-announces-first-commercial-operation-of-ges-7ha03-technology-at-florida-power>

PROPOSED AMENDMENT OF CARBON DIOXIDE STANDARD FOR NON-BASE LOAD POWER PLANTS

Based on the recommended change to OAR 345-024-0550 above, staff recommends the Council amend OAR 345-024-0590 to lower the carbon dioxide emissions standard for non-base load power plants in to 0.574 lbs CO₂/kWh.

Under ORS 469.503(2)(b) and OAR 345-024-0510, the Council must include a consideration of thirteen principles in the record of any proceeding adopting or amending a carbon dioxide emissions standard for a fossil-fueled power plant other than a base-load gas plant. Staff’s recommendations on each of the principles is presented in the table below. We note that, due to the passage of HB 2021 which prohibits the Council from issuing a site certificate for new fossil-fueled power plants in Oregon, the revised standard will have limited applicability and any effects described are expected to be minimal.

Criteria	Evaluation	Notes
Promote facility fuel efficiency	Consistent	Setting the carbon dioxide emissions standard for non-base load gas to a rate that is 17 percent below the most efficient natural gas-fired combined cycle combustion turbine plant that is currently operating in the U.S. will help promote facility fuel efficiency by incentivizing the use of fuel-efficient technology to minimize potential carbon dioxide emissions.
Promote efficiency in the resource mix	Consistent	Setting carbon dioxide emissions standards to promote facility fuel efficiency would also generally be expected to promote efficiency in the electricity resource mix.
Reduce net carbon dioxide emissions	Consistent	While applicability will be limited, setting more strict carbon dioxide emissions standards will likely incentivize the use of more efficient equipment, low carbon fuels, and carbon capture and storage technologies to reduce net carbon dioxide emissions.
Promote cogeneration that reduces net carbon dioxide emissions	Neutral	The proposed rules are not likely to affect the use of cogeneration as a carbon dioxide mitigation strategy. Cogeneration, which typically relies on the use of thermal energy for both electrical generation and industrial application, is typically incorporated in the design of the facility. Under ORS 469.413(1), any new cogeneration facilities that rely on fossil-fuel energy sources would either be required to be entirely non-emitting or to obtain an exception from the requirement to obtain a site certificate under ORS 469.320.
Promote innovative technologies and creative approaches	Consistent	While applicability will be limited, setting more strict carbon dioxide emissions standards will likely incentivizing the use of more efficient equipment, low

to mitigating, reducing or avoiding carbon dioxide emissions		carbon fuels, and carbon capture and storage technologies to mitigate, reduce, and avoid carbon dioxide emissions.
Minimize transaction costs	Not Applicable	The proposed rules are not expected to affect transaction costs associated with offsetting carbon dioxide standards.
Include an alternative process that separates decisions on the form and implementation of offsets from the final decision on granting a site certificate	Not Applicable	The proposed rules are not expected to affect the separation of the form and implementation of offsets from the final decision on whether or not to grant a site certificate.
Allow either the applicant or third parties to implement offsets	Not Applicable	The proposed rules are not expected to affect the ability of an applicant to implement offsets itself or through a third-party.
Be attainable and economically achievable for various types of power plants	Consistent	As described further below, staff estimates that the combined effect of the proposed increase in the monetary offset rate from \$2.85 to \$4.79 and of resetting the carbon dioxide emissions standard from 0.614 lbs CO ₂ per kWh to 0.574 lbs CO ₂ /kWh would increase the average cost of constructing a new natural gas fired power plant by approximately 3.9 percent, or approximately \$0.40 for each megawatt hour the fossil fueled power plant is expected to produce over its assumed 30-year life. The average retail price of electricity in the United States in January 2022 was approximately \$137.20 per megawatt hour. Due to the relatively low level of expected potential increased costs, and the limited applicability of the standards, we recommend that the proposed offset rate, with the modified standard is attainable and economically achievable for various types of power plants.
Promote public participation in the selection and review of offsets	Not Applicable	The proposed rules are not expected to affect public participation in the selection and review of offsets.

Promote prompt implementation of offset projects	Not Applicable	The proposed rules are not expected to affect the responsibility of the certificate holder or qualified organization to implement offset projects in a timely fashion.
Provide for monitoring and evaluation of the performance of offsets	Not Applicable	The proposed rules are not expected to affect monitoring and evaluation of the performance of offsets.
Promote reliability of the regional electric system.	Neutral	The proposed rules are not expected to affect regional reliability of the electric system. Staff recognizes that the remaining portfolio of gas generation in the regional electric system may continue to provide important reliability services during the transition to 100 percent clean energy. The proposed rules promote the use of efficient technologies in a cost-effective and economically achievable manner, and further incentivizes shifts to non-emitting technologies.

Staff recommends that resetting the carbon dioxide emissions standard for non-base load gas to a rate that is 17 percent below the most efficient natural gas-fired combined cycle combustion turbine plant that is currently operating in the U.S. will be consistent with the majority of the applicable principles articulated in ORS 469.503(2)(b) and will generally have no effect on the remaining applicable principles. Staff recommends the Council adopt the findings above as part of the rulemaking record.

Required findings for amendment of the monetary rate for carbon offsets.

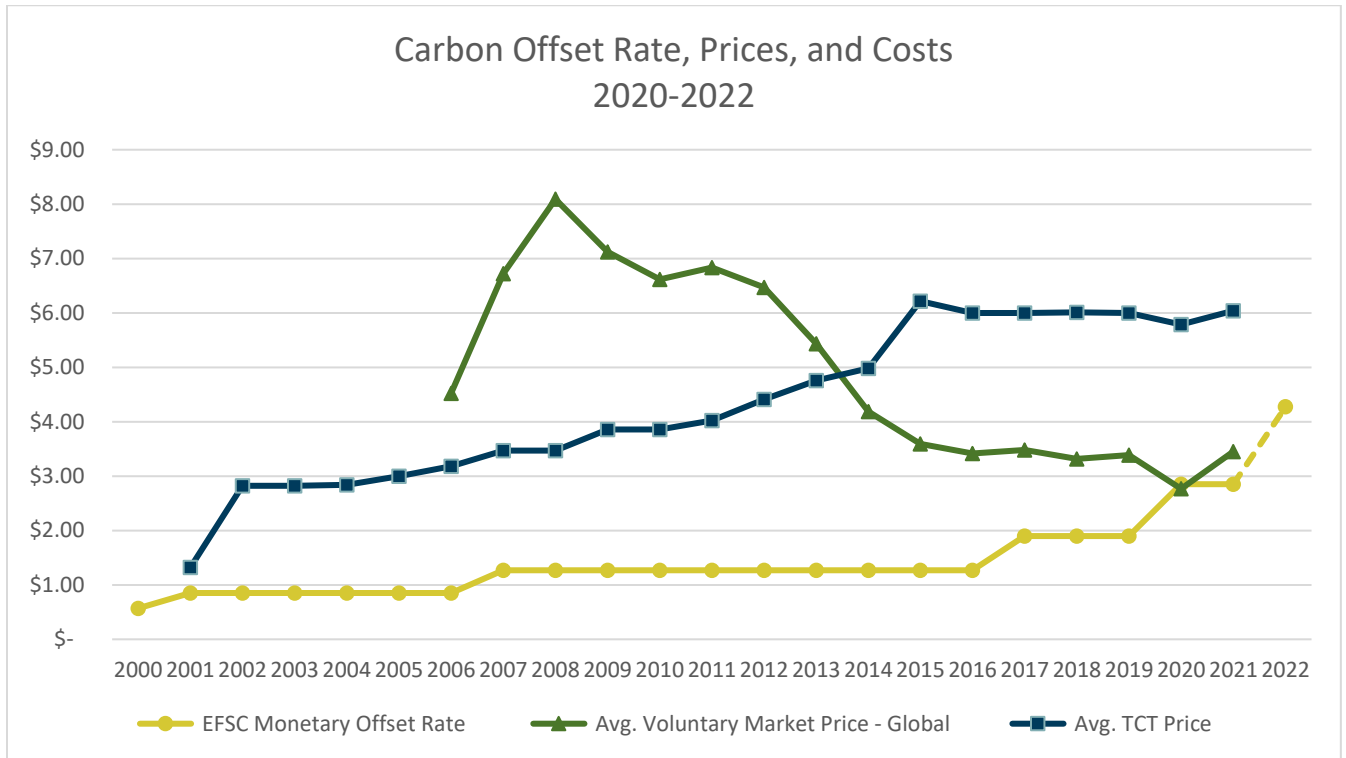
Staff recommends that increasing in the monetary offset rate from \$2.85 to \$4.79, the full 50 percent increase allowed under ORS 469.503(2)(d), is supported by empirical evidence of the costs of offsets and is economically achievable for various types of fossil fueled power plants.

Empirical Evidence of the Costs of Offsets

Based on the latest State of the Voluntary Carbon Markets report from Ecosystem Marketplace, the average price off offsets in the global voluntary market was \$3.45 per ton of CO2e in 2021; however, the prices incurred by The Climate Trust (TCT) are typically higher than global average price in part because The Climate Trust focuses its offset purchases on latter vintage offsets with a strong preference for Oregon and regional projects.

Average prices for offsets derived from projects in North America, which may be more representative of the costs incurred by TCT, rose from \$3.87 in 2019 to \$6.96 in 2020 before

falling to \$5.65 in 2021.⁸ The North American averages are generally consistent with the historic data from TCT shown in the chart below, which show the average cost of offsets for compliance as of 2021 was approximately \$6.04 per short ton of CO₂e.



Economic Achievability

In addition to finding that a proposed change in the monetary offset rate is supported by empirical evidence, we recommend the Council find that the rate is attainable and economically achievable with the modified monetary carbon standard.

Based on cost and performance estimates provided in the 2022 Annual Energy Outlook we estimate that the combined effect of the proposed increase in the monetary offset rate from \$2.85 to \$4.79 and of resetting the carbon dioxide emissions standard from 0.614 lbs CO₂ per kWh to 0.574 lbs CO₂/kWh would increase the cost of constructing a new natural gas fired power plant by approximately 3.9 percent, or approximately \$0.40 for each megawatt hour the fossil fueled power plant is expected to produce over its assumed 30-year life.

⁸ Ecosystem Marketplace (2021) State of the Voluntary Carbon Markets 2021, Installment 1. Data represent average reported prices through August 2021. All prices converted from price per metric ton to price per short ton using a factor of 1.10231

Full calculations are provided below. The average retail price of electricity in the United States in January 2022 was approximately \$137.20 per megawatt hour.⁹ We note that due to the enactment of HB 2021, these costs are unlikely to be realized. While we are unable to quantify the impacts on non-generating facilities that emit carbon dioxide, we assume that these impacts will be of similar magnitude. Due to the low level of expected potential increased costs, and the low likelihood that they will be realized, we recommend that the proposed offset rate, with the modified standard recommended under Issue 3, is attainable and economically achievable for various types of power plants.

⁹ US Energy Information Agency. Electricity Monthly Update with Data for January 2022. March 24, 2022. Accessed from: <https://www.eia.gov/electricity/monthly/update/>

Economic Achievability Analysis

Assumptions		
Carbon Standard - Current	0.614	lbs CO2/kWh
Carbon Standard - Modified	0.574	lbs CO2/kWh
Plant life	30	Years
	0.00011	
CO2 Emissions Rate for Natural Gas	7	lbs CO2/Btu
Monetary Offset Rate - Current	\$2.85	\$/ton CO2
Monetary Offset Rate - Proposed	\$4.72	\$/ton CO2
TCT Offset Price	\$5.79	\$/ton CO2
Social Cost of Carbon	\$58	\$/ton CO2

Results		
Increased Cost of Compliance	\$44.15	\$/kW
Avg. Total Inc. in Cost of Compliance	3.9%	
Avg. Increase Costs of Production	\$0.39	\$/MWh
		lbs
Avg. Reduction in Net GHG Emissions	0.0344	CO2e/kWh
Avg. Social Benefit of Rate Increase	\$3.96	\$/MWh
Avg. Net Impact of Rate Increase	\$3.57	\$/MWh

Cost Estimates and Performance Characteristics*					Calculated Values										Indicator #1	Indicator #2	Net Social Impacts		
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	
Description	Net Capacity (kW)	Capacity Factor	Total Overnight Capital Costs (** (\$/kW)	Avg. Full Load Heat Rate (HHV Btu/KWh)	Total Overnight Capital Costs (\$) (B*D*1000)	Gross Emissions Rate (lbs/kWh) (E*.000117)	Excess Emissions Rate - Current Standard (lbs/kWh) (G-0.614)	Excess Emissions Rate - New (G-.574)	Annual Net Production (MWh) (B*C*8670)	Annual Excess Emissions - Current Standard (Tons) (H*J/2)	Annual Excess Emission - New Standard (Tons) (I*J/2)	Total Increased Cost of Compliance (K*(\$4.72-\$2.85)*30)+ ((L-K)*\$4.72*30)	Increased Costs of Compliance (\$/kW) (M/B)*100	% Increase over Total Capital Costs. (M/F)	Increased Cost of Compliance (\$/MWh) (M/J*30)	Additional CO2 Offsets Achieved (tons/MWh) (M/\$5.79)*(J*30)	Social Benefit of Rate Increase (\$/MWh) (Q/\$58)	Net Impact of Rate Increase (\$/MWh) (R-P)	
Combined Cycle - Single Shaft	418.3	0.87	\$1,201.00	6431	\$502,378,300.00	0.752	0.138	0.178	3155195.07	218382.094	281485.9954	\$21,186,747.91	\$50.65	4.2173%	\$ 0.22	0.04	\$ 2.23	\$ 2.00	
Combined Cycle - Multi Shaft	1083.3	0.87	\$1,062.00	6370	\$ 1,150,464,600.00	0.745	0.131	0.171	8171223.57	536399.9713	699824.4427	\$53,232,943.54	\$49.14	4.6271%	\$ 0.22	0.04	\$ 2.16	\$ 1.94	
Reciprocating Internal Combustion Engines	21.4	0.3	\$2,018.00	8295	\$ 43,185,200.00	0.971	0.357	0.397	55661.4	9922.062011	11035.29001	\$714,260.76	\$33.38	1.6539%	\$ 0.43	0.07	\$ 4.26	\$ 3.83	
Combustion Turbine - Aeroderivative	105.1	0.3	\$1,294.00	9124	\$135,999,400.00	1.068	0.454	0.494	273365.1	61986.62989	67453.93189	\$4,251,619.90	\$40.45	3.1262%	\$ 0.52	0.09	\$ 5.16	\$ 4.64	
Combustion Turbine - Industrial Frame	232.6	0.3	\$ 785.00	9905	\$182,591,000.00	1.159	0.545	0.585	604992.6	164825.6964	176925.5484	\$10,960,060.61	\$47.12	6.0025%	\$ 0.60	0.10	\$ 6.01	\$ 5.41	

From: [Martha Dibblee](#)
Sent: Sunday, June 26, 2022 10:30 AM
To: [EFSC Rulemaking * ODOE](#)
Subject: CO2 reduction rulemaking

Categories: Tracked To Dynamics 365

For EFSC Rulemaking on CO2 emission:

During the pandemic we demonstrated that gasoline use went down significantly and CO2 emissions overall decreased significantly. People were staying home & not driving.

In keeping with lowering CO2 emissions, EFSC should offer financial incentive for neighborhood small grocery stores and other local businesses that would be within walking or biking distance & preclude driving. If people could walk or bike to get groceries instead of driving to a big all purpose grocery conglomerate there would be a significant CO2 reduction, as demonstrated during the pandemic.

We also demonstrated during the pandemic that working from home was a viable business model. EFSC should offer financial incentive to any business that elected to implement the work at home & zoom business model rather than forcing employees to drive to a remote location (office).

Initiating these two measures would significantly reduce CO2 emission without interrupting manufacturing, which likely is required to maintain a CO2 footprint.

Martha Dibblee
mgdibblee@me.com
503.484.4831

About this email:

This message may contain confidential information and is intended for the named recipients. If you are not the intended recipient you are notified that disclosing, copying, distributing or taking any action in reliance on the contents of this information is strictly prohibited. If you have received this e-mail in error, please immediately notify me by return e-mail.