October 5, 2022
Via Electronic Filing

Oregon Public Utility Commission
201 High St. SE, Suite 100
Salem, OR 97301-3398

Re: OPUC Docket UM 2225- Comments on HB 2021 Straw Proposal on Analytical Improvements

The Green Energy Institute at Lewis & Clark Law School, the Sierra Club, Metro Climate Action Team Steering Committee, Multnomah County Office of Sustainability, NW Energy Coalition, Rogue Climate, Climate Solutions, and the Oregon Citizens' Utility Board ("the Energy Advocates") appreciate the opportunity to offer comments on the Analytical Improvements Straw Proposal. Energy Advocates provide some feedback in response to the Straw Proposal on Analytical Improvements. The structure of our comments follows the order of topics in the Straw Proposal.

I. Chapter 1: Planning for Decarbonization Targets Straw Proposal

Overall, the Straw Proposal requests eight specific scenarios covering technology options, demand variations, and grid interconnectivity options. These options are not mutually exclusive, and we believe more guidance is needed on integrated scenarios that optimize all or logical groupings of the proposed scenarios. Modeling results are most useful for comparing the costs and benefits of specific policies and policy portfolios, and understanding why differences exist in the near-term and long-term. Comparing the near-term actions selected across several potentially attractive policy portfolios helps to identify a set of low-risk near-term system investments. Modeling is also the best tool we currently have for identifying potential long-term preferred policies that provide the greatest net benefits for the least net cost over time. This information is critical to identifying key technology development strategies that can drive R&D spending. Instead of specifying that at least one scenario includes a specific option, we recommend that the CEP identify a "likely" least-cost pathway that integrates and optimizes across all (or most) of the eight options, with sensitivity analysis used to examine the implications of variations in the key parameters of each option. The data and assumptions used to define each option should be developed with stakeholder engagement.

With that background, we offer the following recommendations on the items covered in Chapter 1.

- "Clean hydrogen" is not sufficiently specific. It should be defined as "hydrogen produced by electrolysis with renewable energy." The term "clean hydrogen" is sometimes defined as having an allowable carbon intensity, as is the case with the definition of "clean hydrogen" in the Infrastructure Investment and Jobs Act,[1] making it distinguishable from truly renewable hydrogen.
- Where staff recommends a sensitivity, we believe the requirement, such as long duration storage options, should be considered in the base case.
- Staff should provide clearer guidance to utilities on:
    - an integrated and optimized CEP baseline scenario,
    - how the integrated and optimized CEP baseline scenario should be determined, in collaboration with stakeholders, each time a CEP is developed,
    - alternate scenarios and sensitivity analyses to understand the importance of specific data assumptions, and
    - the need for technology development plans for any options not yet commercially available.

A. Topic #1. Clean technology scenarios

Staff is correct to ask utilities to consider the non-emitting capacity resources that may be available in the future. While the utilities may struggle to acquire information about cost and availability of some of these resources in the near term, we support Staff's suggestion that utilities develop a reasonable estimate so that the utilities and stakeholders can begin to develop an understanding of what resources may complement each other, and what steps will be necessary should these options emerge as viable solutions. We see value in understanding what role these technologies might serve in meeting the clean energy targets, but also in informing the utilities about the benefits and impacts to communities, including reduction of GHG emissions and any related environmental or health benefits, and costs and risks to customers.

Staff requested feedback on the use of the term "clean hydrogen," which Staff suggested was selected to provide flexibility to utilities in obtaining a DEQ-determination of emissions of forecasted resources. However, we think use of the term "clean hydrogen" without referring back to the language of the statute is inadequate. Staff should clearly define "clean hydrogen" as "hydrogen produced by electrolysis that is powered by renewable energy." Any technology considered to meet the clean energy targets must produce "nonemitting electricity," which means that the electricity must be generated and stored in a manner that does not emit GHGs into the atmosphere.[2] Additionally, we have concerns about hydrogen as a generating source. Even if hydrogen is produced with 100 percent renewable energy, green hydrogen emits nitrogen oxides

[1] 42 U.S. Code § 16166 (b)(1)(B) ("define the term 'clean hydrogen' to mean hydrogen produced with a carbon intensity equal to or less than 2 kilograms of carbon dioxide-equivalent produced at the site of production per kilogram of hydrogen produced").
[2] ORS 469A.400(7).

(NOx) when combusted[3] and any leaked hydrogen is a short-lived climate forcer.[4] The near term leaking of hydrogen presents climate risks that are not often discussed, and the costs of after-treatment and removal of NOx must be assessed. For these reasons, utilities must provide an analysis of leakage risks and the potential emission of co-pollutants in their assessment of scenarios that include hydrogen-reliant resources.

Additionally, advocates disagree with Staff's recommendation that long duration storage should only be required in one sensitivity. Long duration storage options should be made available in the base case, with multiple duration storage options that could last days or seasons, but also batteries with 8, 12, 16, and 24-hour durations. Utilities should be required to consult with stakeholder groups and take feedback on the exact type of long duration batteries that will be included in the modeling.

More specifically, we believe more guidance is needed on identifying an integrated baseline scenario that optimizes all or logical groupings of the proposed technology scenarios. In fact, these 3 technology options can work together very synergistically and provide the capacity resources and scale needed for Oregon and the western grid. Synergies include seasonal and time-of-day complementarity of offshore wind with other renewables like PV, and reverse flow grid benefits brought about by offshore wind.[5]

B. Topic #2. Demand scenarios

The discussion identifies how electrification of buildings and vehicles may affect the timing and magnitude of resource adequacy needs and the renewable energy requirements for achieving the clean energy targets in HB 2021. However, Staff recommends the utility test at least one High Electrification scenario. While this would not limit the testing of additional scenarios, we believe the guidance should require High Electrification scenarios that investigate the differences between the impacts and requirements of vehicle electrification and building electrification. Differences in adoption rates, their relative impacts on daily load profiles, and their impacts on peak electricity demand need to be better understood and any synergies examined.

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[3] Cellek Mehmet Salih & Ali Pınarbaşı, Investigations on Performance and Emission Characteristics of an Industrial Low Swirl Burner While Burning Natural Gas, Methane, Hydrogen-Enriched Natural Gas and Hydrogen as Fuels, 43 Int'l J. of Hydrogen Energy 1994, 1205 (Jan. 11, 2018), https://www.sciencedirect.com/science/article/abs/pii/S0360319917319791 (predicting that burning pure hydrogen would emit more than six times as much NOx as burning methane).

[4] Ocko, I. B. and Hamburg, S. P.: Climate consequences of hydrogen emissions, Atmos. Chem. Phys., 22, 9349–9368, https://doi.org/10.5194/acp-22-9349-2022, 2022, https://acp.copernicus.org/articles/22/9349/2022/ (authors warn that hydrogen leakage can cause more warming than widely understood).

[5] For further details see testimony on these subjects submitted to the Oregon legislature, available at https://olis.oregonlegislature.gov/liz/2021R1/Downloads/PublicTestimonyDocument/27378, https://olis.oregonlegislature.gov/liz/2021R1/Downloads/PublicTestimonyDocument/30258, and https://olis.oregonlegislature.gov/liz/2021R1/Downloads/PublicTestimonyDocument/30270.

Staff requested feedback on whether the term "realistic electrification assumptions" was clear enough language. In doing modeling work, we believe it is better to consider a baseline electrification rate forecast. This should be based on historical data and an extrapolation of near-term trends regarding building energy use and vehicle electrification, including the impact of existing incentives. The High Electrification scenarios would have increased rates of building energy use and vehicle electrification, preferably identified by end-use application, such as space heating, water heating and vehicle type. The process should be coupled with a requirement that the utility present the electrification scenarios to stakeholders and take feedback, and should consider all relevant state and federal policies supporting electrification (i.e., the IRA) in their modeling.

Staff also requested feedback on whether the electrification scenarios are most useful for examining the preferred portfolio over time or comparing portfolios. We believe that the purpose of modeling is not to predict the future, but to examine policy alternatives within a consistent and realistic framework. As such, modeling is most useful for comparing the costs and benefits of specific policy portfolios, and understanding why differences exist in the short and long-term. Comparison of the near-term actions that are selected across several potentially attractive policy portfolios helps to identify a set of low-risk near-term system investments.
However, modeling is also the best tool we currently have for identifying potential long-term preferred policies that provide the greatest net benefits for the least net cost over time. This information is critical to identifying key technology development strategies that can drive R&D spending.

Regarding Staff's recommendation on climate change and extreme weather, we agree that the utilities should include the impacts of climate change on the annual average and peak demands, as well as the frequency and severity of extreme weather events, in their reference case long-term IRP forecasts. We also agree that the utilities should test at least one sensitivity scenario that increases the frequency and severity of extreme weather events that are likely to drive resource adequacy challenges on their system. We also believe that the guidelines should require a resilience scenario, where the utility identifies historical resilience events, quantifies how frequently those events have occurred across the historical record, and identifies planned actions in response to such events.

C. Topic #3. Regional development scenarios

The development of regional resource adequacy programs, the organization of markets for more efficient utilization of generation and transmission resources, and the expansion of transmission infrastructure in the West are options that cannot be easily projected. However, each of these options needs specification in the integrated baseline IRP scenario, with alternate scenarios or sensitivity analyses used to examine the importance of each option.

We offer some high level suggestions for consideration under this topic. First, we agree with Staff that a regional scenario could make dispatchable clean solutions, like offshore wind, more cost-effective. Additionally, as in other areas of planning, it is important that the utilities provide transparency about how they intend to allocate costs associated with regional transmission scenarios. We also request that utilities include grid-enhancing technologies to efficiently use existing transmission when evaluating expanded regional transmission scenarios. As with so many of the other elements that have been identified throughout this HB 2021 implementation exercise, we recognize that these are developing areas open to discussion and further analysis, and we would appreciate Staff flagging this topic as one to be periodically reviewed.

We also want to acknowledge in these comments that some of the signatories have concerns about the impacts of hydrogen (including "clean hydrogen"), long duration storage, and offshore wind on communities and the environment.

D. Topic #4. GHG emissions constraints in IRP modeling.

We recognize that the ability of utilities to achieve a specific GHG target in a given year is dependent upon the weather and hydro conditions in that year, which are unpredictable. We recommend that the IRP modeling be based on expected weather conditions, taking into account the best available climate forecasts. We support the requirement that the Preferred Portfolio, any alternative portfolios, and all of the technology, demand, and regional development scenarios tested by the utility achieve the 2030 and 2035 emission reduction targets. Furthermore, we support the recommendation that the IRP achieve the 2040 clean energy target across the same weather and hydro conditions that are considered within the utility's resource adequacy analysis.

We agree with Staff that achieving resource adequacy with no emissions in 2040 may be based on a projected buildout of technology and market structures that are not commercially available today. The guidelines should recommend that the utilities identify the expected technology development and commercialization pathways for these technologies and propose a research and development plan that addresses how these market and technological uncertainties will be reduced as part of the utility's long-term strategy to remove key barriers in complying with HB 2021 over time.

E. Topic #5. Key long-term decarbonization planning questions

We agree with Staff's set of long-term decarbonization planning questions, particularly the identification of 1) low regrets near term actions, 2) near-term actions with large negative consequences, 3) critical junctures or decision points regarding technology readiness, 4) critical dependencies in preferred long-term plans, and 5) implementation barriers to be addressed.

However, the recommendations should require a plan for addressing the specific barriers that need to be addressed in the next 5-10 years.

II. Chapter 2: Treatment of Fossil Fuel Resources Straw Proposal

The six largest climate polluters in Oregon are gas power plants, four of which are owned in whole or in part by PGE and PacifiCorp.[6] Emissions from power plants present serious equity concerns for nearby communities who are disproportionately impacted by emissions from these facilities.[7] As a result, it is critical that the approach delineated by the PUC in this HB 2021 implementation process encourages, to the fullest extent of the law, retirement or significant thermal plant operational changes resulting in emissions reductions in impacted communities. The approach should also facilitate transparent information sharing to inform communities and the Community Benefits Impacts and Advisory Group about how operational changes may impact air quality and other community concerns.

The PUC should consider Oregon's larger policy context when evaluating the various approaches it may choose to take in planning for the future of the utilities' thermal plants. Specifically, it is important to remember that the rules adopted by Oregon's Environmental Quality Commission in December of 2021, called the Climate Protection Program, which are intended to reduce greenhouse gas emissions from significant sources in Oregon, **specifically exclude power plants and the natural gas used to fuel them**.[8] That also means that the rules, which are intended to prioritize equity by promoting benefits to environmental justice communities disportionately burdened by the effects of climate change and air pollution, are not directly poised to deliver those benefits to communities impacted by thermal plant operations.

With this background, we provide feedback on these topics in the Straw Proposal below.

A. Topic #1. Fossil fuel retirements and conversions

We appreciate Staff's affording consideration in the Straw Proposal of how best to evaluate fossil fuel retirements and conversions. Reflected in the Straw Proposal is Staff's question about whether endogenous modeling can measure risks, GHG reductions, and community impacts.[9] The question is a good one because under the HB 2021 rubric, optimization of retirement decisions can no longer be based solely on cost. Rather, pursuant to the provisions of the statute, utilities must "[e]xamine the costs and opportunities of offsetting energy generated from fossil

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[6] https://www.oregon.gov/deq/aq/programs/Pages/GHG-Emissions.aspx
[7] U.S. Environmental Protection Agency, Power Plants and Neighboring Communities, available at https://www.epa.gov/airmarkets/power-plants-and-neighboring-communities.
[8] OAR 340-271-0110(4)(b)(B)(iv) and (viii).
[9] Straw Proposal at 7.

fuels with community-based renewable energy,"[10] must engage with a Community Benefits and Impacts Advisory Group to invest in facilities that generate non-emitting electricity[11] and provide "[s]ocial, economic or environmental justice co-benefits" resulting from "investments, contracts or internal practices,"[12] and, of course, submit a Clean Energy Plan that is "in the public interest" by delivering reductions in GHG emissions "and related environmental or health benefits."[13] We urge a modeling approach that reflects the benefits to community, health, and air quality of fossil fuel plant retirements.

We do note Staff's suggestion that "retirement" might mean the removal of a resource from portfolio and rates, indicating that Staff might consider a plant retired even though it remains in operation. We underscore here the importance of the "public interest" criteria to the CEP evaluation process. If a utility intends to continue operating a fossil fuel plant, but it considers the plant retired due to removal from the portfolio and rates, the utility will need to satisfy the Commission that such a decision is in the "public interest."[14] One criterion called out in the statute for determining whether a CEP is in the public interest is whether there are GHG emissions reductions "and related environmental and health benefits."[15]

Staff's reticence to propose specific requirements for modeling retirements is somewhat troubling. Given the statute's mandate to the Commission that the utilities "demonstrate[] continual progress" toward meeting the clean energy targets, and are "taking actions as soon as practicable that facilitate rapid reduction" of GHG emissions at reasonable costs,[16] combined with the fact that we are a mere seven years away or so until the first target deadline, we urge Staff to articulate what they want utilities to model now. Plans must not be inconsistent with the statutory requirement, and the sooner the utilities must grapple with filling their needs, the better positioned they will be to meet the challenge of 2040. We recommend that Staff's first recommendation be modified to require the utilities to consider retiring thermal resources in the first IRP/CEP–both gas and coal. Where endogenous retirement is not an option for the utility's modeling software, the utility should work with stakeholders to identify potential retirement dates for testing.

We also urge caution in considering conversions of power plants currently relying on fossil gas to burn alternative fuels. Careful evaluation of the statutory language is necessary to ensure alternative fuels are truly "nonemitting."[17] There are potentially significant downsides and risks associated with each of the alternative fuels identified by Staff.

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[10] ORS 469A.415(4)(d).
[11] ORS 469A.425(2)(a)(C).
[12] ORS 469A.425(2)(a)(E).
[13] ORS 469A.420(2)(a).
[14] *Id.*
[15] *Id.*
[16] ORS 469A.415(6).
[17] ORS 469A.400(7).

Staff does not address the conversion of power plants from coal to fossil gas. The Straw Proposal reflects the possibility of conversions to lower or zero emissions fuels and does not appear to contemplate conversions of coal to fossil gas. Any conversion of coal to gas, will swap one risky fuel source for another and offer a short-term fix that will have long-lasting negative impacts. Every new fossil gas investment locks in equipment and emissions that will be slow and costly to phase out, and will not benefit Oregon ratepayers in the long-term.

In modeling conversions of any kind, utilities must consider not just costs, but also the stranded asset risk. They should compare conversion emissions and costs to replacing the resource with a zero-emissions alternative, such as renewable energy paired with storage or demand-side resources.

Based on the concerns we articulate above, we recommend the following:

- Staff should require utilities to model retirements of thermal plants in the first IRP/CEP.
- Recognize that the removal of a resource from the portfolio and rates does not eliminate it from assessment as the utility's operations must satisfy the public interest criteria for purposes of CEP acknowledgement.
- In addition to providing the rationale for conversions, Staff should require utilities to reflect the reason for considering or not considering retirements of fossil fuel power plants.
- Conversions of power plants from fossil gas to alternative fuels must include an analysis of cost, availability, leakage risks, and emissions.
- Conversions of power plants must consider not just costs but also stranded asset risk. Proposed conversions must be compared with replacing the resource with a zero-emissions alternative.

B. Topic #2. Fossil fuel resource operational changes

We appreciate Staff's support for transparency around operational changes at fossil fuel power plants. Again, given the importance of community impacts and benefits embedded in all aspects of HB 2021, it is critical that utilities report their planned treatment of fossil fuel resources. For that reason, we appreciate the inclusion of the first Staff recommendation requesting utilities to describe how they intend to implement operational changes within the Action Plan. Stakeholders are relying on the Commission to use its regulatory oversight and the tools at its disposal to ensure the utilities do not miss an operational target.

We believe, however, that the second bullet point, which requires utility reporting on the sales and emissions of fossil fuel-based generation, is too narrowly limited to resources in the Preferred Portfolio used to achieve the clean energy targets. HB 2021 is broadly phrased to

require Clean Energy Plans that both meet the targets and are in the public interest. The public interest includes reductions in GHG emissions and "any related environmental or health benefits."[18] Accordingly, if utilities intend to sell fossil fuel-based generation to any buyers, whether to achieve the clean energy targets or not, they must demonstrate that they meet the public interest criteria for CEP acknowledgement.

III. Chapter 3: Additional Data Transparency Straw Proposal

Data transparency is a key component of ensuring accessibility of these processes, and we appreciate Staff proposing guidance to best achieve that transparency. We provide answers to some of the questions Staff posed on the topics below.

A. Topic #1. GHG emissions

Staff inquired about the usefulness of tracking regional emissions over time versus emissions between different portfolios. We believe both approaches would be useful and are not mutually exclusive. Comparing regional emissions between different portfolios would be instructive in understanding the relative continued and reasonable progress between individual portfolios and among the different utilities themselves. Our primary interest is in having a line of sight to emissions in neighboring states attributable to a utility's energy generation in Oregon. We also hope this data will be relevant for assessing more localized emissions as well, which is important to understand impacts at the community level. Although we have not advocated for comprehensive regional modeling, we believe the portfolio lens referenced above will provide data that will be insightful in also understanding how regional emissions change over time, at least conceptually. We suggest that staff test this practice of including both the portfolio lens and the regional emissions lens in the upcoming 2023 IRP/CEP submission, assess the value of each and whether each delivers valuable insights into regional emissions, and take an iterative approach to adjusting Staff's approach for future IRP/CEP cycles as necessary.

We appreciate Staff's request for suggestions about how to convey the impacts on regional emissions for stakeholders. Recognizing that emissions reductions in Oregon and regionally may not be linear, as staff have suggested, due to changes in markets, transmission, and/or resource availability, it would be useful for us if Staff would make a tool available that tracks regional emissions over time with a degree of both spatial and temporal granularity. A set of graphs, for example, that tracks these emissions directly resulting from energy generation in Oregon will be valuable for stakeholders.

[18] ORS 469A.420(2)(a).

B. Topic #2. Renewable Energy Credits (RECs)

We appreciate Staff's recognition that some stakeholders seek further clarity on utility use of RECs generated from clean energy resources. We support the call for transparency from Staff. We understand that utilities may point to the reporting they already submit, but we respectfully suggest that utilities should be required to report their REC sales in the CEP as well; after all, a central tenet of HB 2021 is to encourage and facilitate stakeholder engagement in utility planning. We support the language offered by CRS during the workshop, which we captured as follows:

For both generated and contracted renewable energy included in Clean Energy Plans, utilities should report the quantity of associated RECs that are expected to be retired on behalf of Oregon customer load for compliance in Oregon, retired on behalf of Oregon customer load for voluntary sales, retired on behalf of customer load in a different state (for either compliance or voluntary sales), banked for future Oregon compliance, banked for compliance in a different state, sold to a different Oregon provider, sold to an entity outside of Oregon, or banked and then sold either in-state or out-of-state in each year.

This language, or something similarly specific, demands transparency from the utilities in a way that is consistent with the spirit and language of HB 2021. Some stakeholders who are signatories to these comments have provided additional feedback on Staff's proposed approach to RECs.

C. Topic #3. Fossil fuel resource operations

Again, we appreciate Staff's consideration of stakeholder concerns about fossil fuel plant operations. We support the recommendations in the Straw Proposal requiring utilities to report total annual generation and average heat rate for each fossil resource, explaining impacts on generation and heat rate of operational changes and/or emissions constraints. We also appreciate the recommendation that utilities supply three years of historical generation and average heat rate data for its fossil fuel resources.

In answer to the question posed by Staff, we do not believe that projected data on an aggregate level by fuel type is sufficient to apprise stakeholders about thermal plant emissions. Stakeholders must have sufficient information to advocate for outcomes that benefit their communities. We recognize that utilities may have concerns about confidentiality and may wish to keep some data out of the public domain. We request additional information about those concerns to better evaluate available options that will prioritize access to necessary information while protecting commercially sensitive information.

D. Topic #4. Data standardization and accessibility

We sincerely appreciate Staff's willingness to develop a process by which data may be shared with stakeholders. We also appreciate the utilities' attempts to keep stakeholders apprised of their planning processes and for accepting feedback on those plans. We especially appreciate PGE's willingness to record and post their IRP meeting presentations for stakeholders who miss the live presentations, or for those stakeholders who wish to watch the meetings again to understand some of the more technical aspects of the planning process. We also appreciate that PacifiCorp posts its responses to stakeholder feedback on its website. Its willingness to be transparent both about the questions stakeholders ask as well as its responses to those questions provides meaningful information to stakeholders and saves the trouble of multiple inquiries on the same subject. We do note that despite repeated requests of PacifiCorp, the utility is not recording its IRP meetings. PacifiCorp is now the only utility operating in Oregon that is not offering this very useful and important way to best facilitate involvement in these proceedings. Please require the utilities to record and post IRP meetings, presentations, and stakeholder feedback for both the IRP and the CEP processes.

In answer to the specific questions posed by Staff, we suggest that Staff facilitate a process to standardize information and data related to the IRP and CEP. We think it would be most efficient to have both utilities engage in this process at the same time. With respect to handling confidential information, we ask that Staff make it clear to the utilities and stakeholders what categories of information will be treated as confidential. Although a difficult task, delineating categories of information subject to confidential protections provides regulatory certainty to the utilities and clear guidance to the public. We ask that Staff ensures information is made as publicly available as possible. Staff-led discussions on this issue may be necessary and helpful.

IV. Conclusion

We remain grateful to Staff for their work in this docket and thank Staff for identifying and queuing up stakeholder concerns for further discussion. We look forward to additional opportunities to support this important work.

Sincerely,

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