



September 24, 2021

Kim Herb
JP Batmale
Oregon Public Utility Commission
Via email to kim.herb@puc.oregon.gov; jp.batmale@puc.oregon.gov

RE: Sierra Club Comments on Natural Gas Fact Finding, Workshop 3 (UM 2178)

Dear Ms. Herb and Mr. Batmale:

Please accept these comments¹ submitted by Sierra Club in response to Oregon Staff's request for public comments following Workshop 3 in the above referenced docket. Sierra Club appreciates the opportunity to submit these comments and to provide feedback on future modeling in order to fully evaluate the future of gas in Oregon in compliance with EO 20-04 and the Department of Environmental Quality's ("DEQ") anticipated Climate Protection Program ("CPP").

Sierra Club believes that significantly more information is needed to effectively evaluate the gas utilities' current models and the assumptions made therein. Most importantly, Sierra Club urges the Commission to ensure that an all-electrification scenario is evaluated. The most effective means of compliance with the CPP, both in terms of customer rates and greenhouse gas reduction, is likely a future without gas, but the current models do not evaluate this possibility at all. Sierra Club's specific recommendations are discussed below.

I. MODEL REFINEMENT AND ADDITIONAL MODELLING NEEDS

The current utility modelling is deficient in a few ways. First, there is need for a unified compliance model with similar assumptions and format across all utilities. Second, an independent assessment of all viable options, including an all-electric scenario, is vital to ensuring that the OPUC consider the least carbon, least cost options.

A. Unified Compliance Model

Each utility is presently submitting separate models that employ different assumptions and are presenting in different formats. While we understand assumptions will be unique to each utility,

¹ Sierra Club's comments were prepared by Craig Hart, Executive Director of Pace Energy and Climate Center at Pac University, Elizabeth Haub School of Law.

Sierra Club suggests that the Commission specify a common format for compliance purposes, with assumptions and data being explicitly documented. A unified format will enable stakeholders more ease of comparison and thus enhance public participation in the Commission's Future of Gas Proceeding.

We urge the Commission to require a consolidated model that enables individual utilities to provide verified utility-specific data that, when combined in the model, provides an aggregate analysis for the State of Oregon as a whole. The model should enable different assumptions to be made and sensitivity analysis for variables including:

- Demand growth;
- Renewable Natural Gas ("RNG"), hydrogen, synthetic gas availability;
- Potential changes in climate policy, such as increasing the level of ambition or hastening meeting reductions goals; and,
- Availability of community climate investments as a compliance offset.

The resulting model should be intuitive and usable by the public for purposes of evaluating the status of compliance and possible alternative scenarios.

B. Need for Independent Assessment of Overall Costs and Environmental Impacts Compared to All Options

As the Commission is significantly shaping the future greenhouse gas emissions of the State of Oregon in this proceeding, Sierra Club urges the Commission to conduct a wholistic assessment of the overall costs and environmental impacts of an RNG-hydrogen-biofuels-synthetic gases strategy advocated by the utilities compared to all other options, including all-electrification, geothermal and other lower carbon paths that can provide heat services with lower emissions and potentially at lower costs.

Each utility failed to present and analyze a high electrification scenario in its modeling. It is critical that the Commission examine no-gas and high-electrification scenarios to comprehensively study options, and in particular to understand the costs and benefits of all-electrification versus high RNG, hydrogen, biofuels, and synthetic gas only scenarios. Sierra Club urges this analysis to be performed by an independent research organization that can objectively analyze the State of Oregon's and the public's interest in meeting climate mandates. Gas utilities do not have an incentive to pursue an all- or high-electrification model, as demonstrated by the three utilities' portfolios to date and the exorbitant reliance on RNG. While Senate Bill 98 recognizes that gas utilities *may* pursue RNG, nothing in the bill mandates that gas utilities meet any specific RNG target. An independent analysis comparing the costs and benefits of an all-or high- electrification scenario with the utilities' current proposals is critical to ensuring both that Oregon customers enjoy low rates and that Oregon's greenhouse gas reduction mandates are met.

In conducting such analysis, we urge the Commission to consider the totality of costs, including the continuously increasing costs of maintaining the gas distribution system, the inherent safety

risks particularly in an increasingly fire-prone environment, and the potential cost savings that can be achieved by less capital intensive and cleaner alternatives.

These non-gas scenarios should be further incorporated into the compliance model so that a public model is available to assist the Commission and all stakeholders in charting Oregon's future. At this critical juncture in Oregon's energy transition, conducting a holistic assessment of the costs and benefits of all possible paths is essential to ensuring that we meet our climate mandates and that ratepayer funds are invested prudently and in the public interest.

II. GENERAL DEFICIENCIES WITH RNG, BIOFUELS, HYDROGEN, SYNTHETIC GAS AND EFFICIENCY ASSUMPTIONS AND TECHNOLOGIES

Several assumptions made regarding RNG, biofuels, hydrogen, and synthetic gases are flawed or missing significant data, including important safety and life cycle information. In addition, the use of gas heat pumps, as opposed to electric heat pumps, omits critical information about costs and feasibility.

A. RNG Data on Availability and Cost

Additional detail regarding RNG pricing and availability is necessary to fully evaluate the feasibility of RNG as a compliance approach and its impact on rate payers. For example, NW Natural cites responses to its request for proposal by price level, but does not provide any information concerning potential attrition of projects or whether the stated production levels can be achieved. Experience with RNG projects involving landfill methane recovery demonstrates that production levels are highly variable and difficult to predict due to unknown landfill contents and other variables. RNG projects completed under the United Nations Framework Convention on Climate Change ("UNFCCC") Clean Development Mechanism, such as landfill gas, commonly underperformed estimates by as much as 50 percent.²

The Commission should require RNG data specific enough to evaluate the potential for underproduction, and require reasonable assumptions regarding projection attrition.

B. Biofuels, Hydrogen, Synthetic Gases Data on Availability and Cost

Detailed information concerning biofuel, hydrogen, and synthetic gas availability and costs is necessary in order to evaluate and justify the utilities' assumptions regarding these matters. Best case assumptions or speculation should not form the basis of policy. In order to inform evaluation of feasibility as a compliance approach and the possible impacts on rate payers, any

² Craig Hart, *The Clean Development Mechanism, Considerations for Investors and Policymakers*, 7 Sustainable Dev. Law & Pol'y 41, 41-42 (Spring 2007). Dr. Hart subsequently evaluated the 206 registered Clean Development Mechanism landfill gas projects during the 2003 to 2012 period published by UNEP Risoe, confirming that of those, only 82 projects produced during that period, and their underperformance of actual relative to modelled results was on average 57%.

assumptions should be justified and demonstrated to be reasonable, and uncertainty should be evaluated probabilistically with a range of possible outcomes as to availability and cost.

C. Safety of Distributed Fuels Production

Oregon has been experiencing increasing frequency and severity of forest fires in recent years, a trend that is likely to intensify due to climate change. The locations and facilities for distributed fuels production should be considered in relation to safety concerns, which include, but are not limited to the safety of volatile fuels in a fire zone, reliability of these fuels during a fire, and the safety of persons living near such facilities

D. Safety and Costs of Hydrogen Blending in Distribution System

The utilities do not present information concerning the safety and costs of blending hydrogen gas into the distribution system safely. Hydrogen is a smaller molecule than methane, capable of exiting the distribution system through cracks which methane could not exit. Hydrogen mixing can embrittle metal pipelines, and is a precursor greenhouse gas, with an indirect global warming potential of between 4 to 6 times that of carbon dioxide over a 100-year time horizon.³ The Commission should require the utilities to address safety of blending and the costs of upgrading the distribution system to ensure that gas mixing does not put people, property or Oregon's environment at risk.

E. Lifecycle Assessment of Emissions of RNG, Hydrogen, Biofuels and Synthetic Gases

The utilities appear to assume that RNG, hydrogen, biofuels, and synthetic gas are zero-carbon fuels. All of these gases have global warming impacts. In Order No. 20-227, the Commission recognized that RNG sources will differ in their greenhouse gas emissions, and that RNG and other gases must be specifically evaluated by source using a lifecycle analysis approach for variations in greenhouse gas impact:

The lifecycle approach also means that fuel producers are evaluated on every step in the chain of their production and have a clear financial incentive to cut the carbon in all stages of their supply chains.” Different RNG sources (e.g., manure digester, landfill gas collector, wastewater treatment digester) will have differing carbon intensities for the RNG they produce.

Consistent with the Commission's guidance in Order No. 20-227, Sierra Club urges the Commission to require the utilities to conduct lifecycle assessment of their proposed RNG, hydrogen, biofuels, and synthetic gas sources on a source-specific basis.

³ Richard Derwent et al., *Global Environmental Impacts of the Hydrogen Economy*, 1 Int'l J. of Nuclear Hydrogen Production & Applications 57 (2006); Richard Derwent et al., *Global Modelling Studies of Hydrogen and Its Isotopomers Using STOCHM-CRI: Likely Radiative Forcing Consequences of a Future Hydrogen Economy*, 45 Int'l J. Hydrogen Energy 9211 (Mar. 2020).

We further urge the Commission to demand a high degree of rigor in conducting these lifecycle assessments, reflecting the importance of resource decisions in meeting Oregon's statutory greenhouse gas reduction mandates. In particular, we note that although lifecycle analysis represents best practice, there may be wide variation in the assumptions that are made in in such analysis. We ask the Commission to only accept lifecycle assessments that are supported by demonstrable evidence and make justifiable assumptions.

F. Gas Heat Pumps

The utilities propose to promote gas heat pumps as an alternative to electric heat pumps. Electric heat pumps are commercialized, proven technology. Gas heat pumps are still in development. Sierra Club urges the Commission to require that utilities provide full and accurate information to the Commission and the public concerning the costs, performance, and emissions of both types of heat pump technologies—all electric and gas heat pumps. Public funds should only support demonstrated technologies that are as efficient, reliable, and cost-effective as commercialized electric heat pumps.

G. Carbon Capture and Storage

Carbon capture and storage units that convert boiler flue gas to produce potassium carbonate have been proposed as a means to decarbonize Oregon's natural gas system. Potassium carbonate is an ingredient in chemicals, fertilizers and soaps. The proposed conversion systems should be evaluated realistically. For example:

- What percentage of households in Oregon have space in their basements or homes for a potassium carbonate production unit that roughly has the footprint of two large refrigerators?
- Of those homes with space, what percentage of households in Oregon would accept such a large unit into their home, once advised that these units will need to be emptied and serviced on a regular basis?
- Does demand for potassium carbonate provide a sustainable business model for distributed production to support decarbonization?

These questions are unanswered. The Commission should not accept speculation as a basis for meeting Oregon's climate mandate.

Sierra Club appreciates this opportunity to comment and looks forward to continuing to engage in this process.

Sincerely,

/s/ Jessica Yarnall Loarie
Jessica Yarnall Loarie
Senior Attorney
Sierra Club
jessica.yarnall@sierraclub.org

/s/ Rose Monahan
Rose Monahan
Staff Attorney
Sierra Club
rose.monahan@sierraclub.org