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

Re: Natural Gas Fact Finding Session 2 (UM 2178)

Our undersigned organizations, made up of climate, environmental and energy justice advocates and experts, appreciate the opportunity to submit comments on the Oregon Public Utility Commission's (OPUC) proposed Natural Gas Fact Finding (NGFF) Compliance Modeling Proposal.

Our organizations commend the OPUC for opening this necessary fact-finding proceeding. Effectively evaluating the future of methane gas in Oregon and the impacts of a transition to cleaner energy will profoundly impact the state's ability to combat the climate emergency, achieve the state's greenhouse gas (GHG) reduction goals, and improve public health for all Oregonians. This evaluation will also significantly impact Oregon's current and future gas ratepayers, particularly those least able to shoulder the burden of transitioning away from gas and its infrastructure.[1]

The use of methane gas in the electricity sector and for direct use for homes and buildings is on the rise in Oregon and nationwide, despite its significant public health,[2] racial justice,[3] and climate consequences.[4] But methane gas use must significantly decline in the coming years if the state hopes to achieve its

---

[1] *See, e.g.,* THE GREENLINING INSTITUTE & ENERGY EFFICIENCY FOR ALL, EQUITABLE BUILDING ELECTRIFICATION: A FRAMEWORK FOR POWERING RESILIENT COMMUNITIES 22 (2019), https://greenlining.org/publications/reports/2019/equitable-building-electrification-a-framework-for-powering-resilient-communities/.

[2] In Oregon burning fossil fuels in buildings was responsible for 20 premature deaths and $221,326,511 in health impacts in 2017. 89% of those impacts were from burning gas in buildings. This is a conservative estimate because it only includes health impacts from outdoor PM2.5 and precursor pollution; it also does not include pollution from upstream extraction. *See,* Jonathan J Buonocore (Harvard T.H. Chan School of Public Health) et al, "A decade of the U.S. energy mix transitioning away from coal: historical reconstruction of the reductions in the public health burden of energy", 2021 Environ. Res. Lett. 16 054030, https://doi.org/10.1088/1748-9326/abe74c.

[3] Pollution and climate harms of gas operations disproportionately affect Black communities in the United States. Black Americans are exposed to 38 percent more polluted air than white Americans, on average. And more than one million Black Americans live within a half mile of gas facilities, resulting in higher risks of cancer and other health problems. *See* NAACP ET AL., FUMES ACROSS THE FENCELINE (2017), http://www.catf.us/wp-content/uploads/2017/11/CATF_Pub_FumesAcrossTheFenceLine.pdf; *See also* Mikati et al. *Disparities in Distribution of Particulate Matter Emission Sources by Race and Poverty Status*, AMERICAN PUBLIC HEALTH ASSOCIATION (2018), https://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2017.304297; *See also* Sarah Kaplan. *Climate Justice is a Racial Justice Problem*, WASH. POST (June 29, 2020), https://www.washingtonpost.com/ climate-solutions/2020/06/29/climate-change-racism/.

[4] Recent research demonstrates that burning fossil fuels causes 50,000 U.S. deaths and $445 billion in economic damage annually. *See* Karn Vorha et al., *Global mortality from outdoor fine particle pollution generated by fossil fuel combustion: Results from GEOS-Chem*, ENV'T. RES. 195 (2021), https://www.seas.harvard.edu/news/2021/02/deaths-fossil-fuel-emissions-higher-previously-thought; A recent UN report demonstrates that cutting global methane emissions, including from gas utilities, is more critical than previously thought. *See generally,* United Nations Environment Programme and Climate and Clean Air Coalition, *Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions,* NAIROBI: UNEP, https://www.unep.org/resources/report/global-methane-assessment-benefits-and-costs-mitigating-methane-emissions.

longer-term GHG reduction goals and mitigate the climate emergency.[5] Electrification of buildings, particularly space and water heating, is on the rise, and a transition is at hand. Future investments in unneeded gas infrastructure and appliances would likely result in stranded costs and could slow the transition away from fossil fuels. And the OPUC has a responsibility to take an active role in this transition with an eye toward protecting ratepayers' best interests, including access to affordable energy, avoidance of stranded assets, and ballooning infrastructure costs.

Given these high stakes, our organizations urge the OPUC Staff to:

1. Remedy the proposed NGFF Compliance Model process and design to ensure diverse and robust stakeholder involvement and better serve the public interest;
2. Ensure model sensitivities reflect realistic future climate and economic conditions, including static and negative load growth sensitivities; and
3. Provide sufficient model results data so that stakeholders can feasibly review and replicate model analyses.

I. <u>We have significant concerns about the NGFF Compliance Model process and design.</u>

While we applaud the state and the OPUC's decision to dive into this crucial issue, we are concerned about this proceeding's process and the proposed model's scope.

First, we want to address inherent problems with the process of this proceeding thus far. The OPUC Staff has already given the gas utilities a concerning amount of leeway and control over this proceeding by allowing them to design and run the models and influence how the public is able to provide input during stakeholder meetings.

Regarding model design and implementation, it is presumably not in the gas companies' financial interest to truly investigate and model potential decarbonization trends and scenarios that could undermine their current business model and investor returns. Exploring alternative options to the scenarios presented by the gas industry will be critical to serve ratepayers' best interests and identify the most cost-effective and realistic outcomes.

Further, as multiple stakeholders raised in the July 20, 2021 stakeholder meeting, we are concerned that the short timeline for comments on the compliance model design, as well as the webinar format for the meeting, prevent stakeholders from sufficiently weighing in on these important issues. The format chosen for the July meeting felt incredibly stifling of honest dialogue and discussion. Like all webinars, it facilitated a primarily one-way flow of information from the OPUC Staff to participants, and only allowed very limited participation by stakeholders (primarily to ask clarifying questions). The first meeting enabled a much more open process for robust stakeholder participation, particularly from participants representing different communities around the state directly impacted by these decisions involving gas infrastructure and climate pollution. Additionally, less than a full week to provide written comments is a very difficult timeline for most non-utility organizations to meet given limited staff

[5] United Nations Environment Programme and Climate and Clean Air Coalition, supra, at 11-12.

resources. If the OPUC's sincere intention is to proactively assess and address equity implications of Climate Protection Program (CPP) compliance by the gas utilities, the perspectives of environmental justice and impacted communities are essential to achieving that aim, and the process should be tailored to ensure those voices are heard.

Thus, we recommend the OPUC Staff 1) adjust the format of all future stakeholder meetings so that non-gas-utility parties can meaningfully participate, including re-enabling the participant video and chat functions; 2) explore having dedicated listening sessions and meetings with environmental justice organizations if these all-day meetings are not enabling participation; and 3) extend the timeline of future public comments after the meetings to allow for meaningful and diverse stakeholder input.

Second, we have significant concerns with the NGFF Compliance Model scope. Staff should expand the model's scope and strengthen its baseline assumptions to paint a meaningful and realistic picture of Oregon's gas future.

Basing this model on 2018 IRP assumptions alone (which virtually always show growth), including Northwest Natural's (NW Natural) assumption that their gas system will grow 10% through 2037,[6] would likely hinder the ability to model a future scenario that accurately reflects reality. Making decisions based on these kinds of assumptions, particularly when trends indicate gas use will decline across multiple sectors much more quickly than gas utilities are projecting,[7] could result in significant stranded assets and unplanned-for customer attrition.[8] This would, in turn, result in considerable costs to remaining ratepayers. Sensitivities should at least be run to model gas consumption declines in line with Energy Information Administration (EIA) projections.

Basing this model exclusively on CPP compliance is insufficient, as Stakeholder comments after the first meeting also addressed.[9] Although we are optimistic that the CPP will create the first mandatory GHG reductions in the gas sector in Oregon and will push gas utilities beyond voluntary commitments, focusing exclusively on CPP impacts as currently proposed could fail to address the following:

- Ensuring proportionate methane gas-associated GHG emission reductions and timelines to meet the state's long term GHG reduction goals;
- Providing an accurate picture for modeling and analyzing how to achieve deep decarbonization of the methane gas system writ large;

---

[6] *See* Northwest Natural, 2018 Integrated Resource Plan, Docket No. UG-170911.

[7] The U.S. Energy Information Administration projects a decline in short-term natural gas consumption from 2021-2022. *See* U.S. EIA, *Natural Gas Weekly Update,* (April 8, 2021), https://www.eia.gov/naturalgas/weekly/archive new_ngwu/2021/04_08/.

[8] *See* MARK DYSON, A BRIDGE BACKWARD? THE RISKY ECONOMICS OF NEW NATURAL GAS INFRASTRUCTURE IN THE UNITED STATES, Rocky Mountain Institute (2021), https://rmi.org/a-bridge-backward-the-risky-economics-of-new-natural-gas-infrastructure-in-the-united-states/.

[9] *See* Climate Solutions et al., *Re: Comments on the PUC Natural Gas Fact Finding Proceeding*, Oregon Public Utilities Commission Docket No. UM-2178 (June 15, 2021); *see also* Green Energy Institute & Electrify Now, *Re: Natural Gas Fact Finding Session 1 (UM 2178),* Oregon Public Utilities Commission Docket No. UM-2178 (July 12, 2021).

- Addressing whether methane gas can continue to be a viable or desired product in new or existing buildings over the next 10 or 20 years;
- Identifying economic and climate risks of different levels of gas consumption and of assignment of those risks to ratepayers and shareholders;
- Considering the broader, growing trend of electrification and how that will impact the gas utility business model;
- Assessing the risk of the potential for stranded assets as the gas sector is required to reduce its emissions over time and electrification trends increase;
- Assessing the potential impacts to lower-income gas ratepayers, renters, rural communities, and Black, Indigenous, and other communities of color (BIPOC), who are least able to shift away from gas, and thus may remain captive ratepayers of the gas utilities as broader ratepayer pools shrink;
- Understanding the actual viability and cost of a potential shift away from natural gas to renewable natural gas (RNG) and renewable hydrogen (RH) for use in existing natural gas pipelines and infrastructure, and the barriers and limitations to doing so; and
- Analyzing existing policies, incentives, and programs for inconsistencies or barriers to achieving GHG reductions by gas utilities and in the building sector.

Thus, it is critical that this process—and the related modeling that underpins this fact finding—be extended beyond just the CPP to include a more robust analysis of how the gas utilities will realistically and affordably decarbonize and meet necessary GHG targets. At a minimum, this analysis must consider compliance with new and easily-anticipated future policies, including local electrification ordinances, nationwide trends in efficiency policies, and ever-improving state and regional climate policies, including HB 2021 and further including technology advances (e.g., long-duration electricity storage) that support direct electrification of present gas utility loads. Having an accurate understanding of these likely compliance scenarios will be critical for the OPUC to ensure that remaining gas customers—particularly low-income residential customers—are not footing unnecessarily high gas bills[10] or bearing the disproportionate brunt of continued in-home gas pollution.[11]

Regarding expectations of supporting data behind the model inputs, we urge Staff to ensure that all data and assumptions used in the models are 1) made publicly available and transparent and 2) include references to all sources considered. The model itself should also be provided for third parties

---

[10] *See, e.g.,* MEGAN ANDERSON ET AL., UNDER PRESSURE: GAS UTILITY REGULATION FOR A TIME OF TRANSITION, Regulatory Assistance Project 14 (2021), https://www.raponline.org/knowledge-center/under-pressure-gas-utility-regulation-for-a-time-of-transition/#:~:text=Under%20Pressure%3A%20Gas%20Utility%20Regulation %20for%20a%20Time,electric%20end-use%20technologies%20are%20constraining%20demand%20for%20gas.

[11] *See, e.g.,* BRADY SEALS & ANDEE KRASNER, GAS STOVES: HEALTH AND AIR QUALITY IMPACTS AND SOLUTIONS, Rocky Mountain Institute, Physicians for Social Responsibility, Mothers Out Front, & Sierra Club (2020), https://rmi.org/insight/gas-stoves-pollution-health; *See also* BRADY SEALS, INDOOR AIR POLLUTION: THE LINK BETWEEN CLIMATE AND HEALTH, Rocky Mountain Institute (2020), https://rmi.org/indoor-air-pollution-the-link-between-climate-and-health; *See also* Jonathan J. Buonocore et al., *A decade of the U.S. energy mix transitioning away from coal: historical reconstruction of the reductions in the public health burden of energy*, 2021 ENV'T. RES. LETTERS. 16 054030, https://doi.org/10.1088/1748-9326/abe74c (highlighting that in-home gas combustion has significant impacts to outdoor air quality).

to replicate and verify model results. Access to model data is critical for all stakeholders to provide the OPUC with robust comments.

If a broader scope and more accurate assumptions cannot be included in this modeling process, a "Natural Gas Fact Finding" Stage 2 or follow-up investigation will be necessary to gain a holistic understanding of 1) what are the most likely scenarios that realistically reflect the future prospects of Oregon's gas industry and utilities, not simply a tunnel-vision analysis performed by the gas utilities themselves, and 2) what future scenarios and decarbonization pathways would actually be in the best interests of ratepayers, given necessary climate and equity goals.[12]

II. Staff-suggested sensitivities are important to consider, but must be expanded to reflect likely future climate and economic realities.

We support many of the sensitivities thus far outlined, but urge Staff to expand the sensitivities considered.

First and foremost, the realities of current and future climate change conditions must be incorporated as key sensitivities. As an example, the OPUC Staff refers to "weather" as a potential sensitivity; this must include science-based projections of extreme weather events and changes in average seasonal temperatures and temperature extremes. Fires, extreme temperature conditions, and decreased water availability are already ravaging the Pacific Northwest[13] and are expected to only worsen over time.[14] All of these climate-fueled events are likely to have significant impacts on gas infrastructure and demand.[15]

Further, as the public becomes increasingly concerned about the climate emergency, it is likely that new electrification policies will pass, and grassroots actions to block new gas investments and infrastructure will continue, ultimately increasing costs of gas operations.[16]

---

[12] Stakeholder comments submitted in October, 2020 provided a broad range of recommendations to more robustly evaluate the future of gas in Oregon under climate imperatives. *See* Climate Solutions et al., *Re: Comments in Response to PUC Draft Work Plans for EO 20-04*, (October 28, 2020), https://www.oregon.gov/puc/utilities/Documents/EO20-04-Comments-Joint-Gas.pdf.

[13] In 2021 alone, Oregonians have witnessed extreme weather invents including a winter ice storm, a record-shattering heat dome, nearly 90% of the state in drought, (as of July 6, according to the National Drought Monitor), as well as the ongoing Bootleg fire.

[14] *See* OREGON CLIMATE CHANGE RESEARCH INSTITUTE, FIFTH OREGON CLIMATE ASSESSMENT, Oregon Climate Change Research Institute, Oregon State University (2021), https://blogs.oregonstate.edu/occri/oregon-climate-assessments/.

[15] U.S. GLOBAL CHANGE RESEARCH PROGRAM, IMPACTS, RISKS, AND ADAPTATION IN THE UNITED STATES, FOURTH NATIONAL CLIMATE ASSESSMENT, VOLUME II at 176 (2018), https://nca2018.globalchange.gov/.

[16] *See* LILA HOLZMAN ET AL., NATURAL GAS: A BRIDGE TO CLIMATE BREAKDOWN: AN INVESTOR BRIEF ON OVERCOMING THE POWER SECTOR'S NATURAL GAS DEPENDENCE, As You Sow & Energy Innovation, 12-13 (2020), https://energyinnovation.org/wp-content/uploads/2020/03/Natural-Gas_A-Bridge-to-Climate-Breakdown.pdf (highlighting that grassroots action and public awareness of the harms of gas are ". . . increasing pressure on policymakers and companies to urgently and decisively act to address greenhouse gas emissions").

Second, Staff should ensure that all sensitivity analyses include accurate accounting and ranges of variables such as gas emissions and gas price forecasts.[17] As initial examples, but without foregoing the opportunity to provide additional feedback once further details about model parameters have been provided, we encourage Staff to:

1. Ensure methane gas emissions from all sources,[18] are appropriately calculated and greenhouse gas global warming potentials are adequately applied;[19]
2. Incorporate realistic measured upstream emissions associated with gas related to the production, transmission, distribution, meters, appliances, and "other" leakage of the fuel using data from The Gas Index;[20]
3. Ensure emissions reductions are not double-counted[21] by gas utilities and ensure the identified actions meet the CPP emission goals; and
4. Ensure gas price forecasts are reflective of the most recent EIA Annual Energy Outlook scenarios for all gas types.

Third, concerning sensitivities related to renewable natural gas (RNG) and renewable hydrogen (RH), we urge Staff to carefully scrutinize gas utilities' assumptions and utilize the wealth of deep decarbonization modeling, economic analysis and data already at hand.

Developing a realistic understanding of the possible role of renewable natural gas (RNG) and renewable hydrogen (RH) and their limitations, including leakage rates during production and RNG GHG intensity,[22] is an essential outcome of this fact-finding docket. While some experts agree that these fuels could play a niche role in the energy economy, studies and other regulators' analyses show that they will:

---

[17] For an example of where inaccurate accounting can happen in modeling, *see* Sierra Club Comments on SoCalGas and Navigant Report Analysis on the Role of Gas for a Low-Carbon California Future (18-IEPR-09), https://efiling.energy.ca.gov/GetDocument.aspx?tn=224588&DocumentContentId=55144.

[18] For example, and explored further in the following section for RNG and RH, synthetic natural gas emissions are effectively methane that would otherwise have not existed, so any leaks increase emissions of a potent greenhouse gas.

[19] Methane is a particularly potent greenhouse gas, with a GWP-20 of 84-87 for fossil methane and 82-86 for non-fossil methane. That is, 1kg of methane released into the atmosphere is 82-87 times more potent over a 20 year time horizon than 1kg of carbon dioxide. *See* Daniel A. Vallero, *Air Pollution Biogeochemistry*, Air Pollution Calculations, (2019), https://www.sciencedirect.com/topics/earth-and-planetary-sciences/global-warming-potential#:~:text=What%20happens%20to%20the%20methane%20GWP%20if%20a,that%20occur%20after%2020%20years%20from%20the%20emission; *See also* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE. CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS, 664-665, 714 (2013), Cambridge University Press. https://www.ipcc.ch/report/ar5/wg1/.

[20] The Gas Index report synthesizes the best available science to provide provides gas leakage data along stages of the gas supply chain. This should be cross-referenced for a sense of how gas companies' sensitivities compare. *See*, *generally,* MASON INMAN, THE GAS INDEX, Global Energy Monitor, (2020), https://thegasindex.org/wp-content/uploads/2020/12/Gas-Index-report-2020-final.pdf?hsCtaTracking=17ccb21f-c72b-42fe-a465-fccbcc037407%7C0537ae90-a261-4dd1-a4bf-cfc78d6c4c69.

[21] The waste and agricultural sectors may already consider fugitive methane emissions reductions toward meeting state emissions reduction requirements. Gas utilities should not be able to claim credit for these sectors' emissions reductions if they are already modeled to happen.

[22] Literature suggest leakage rates for RNG is 2-4% but could be as high as 15%. *See* Emily Grubert, *At scale, renewable natural gas systems could be climate intensive: the influence of methane feedstock and leakage rates*. ENV'T. RES. LETTERS 3 (2020), https://iopscience.iop.org/article/10.1088/1748-9326/ab9335/pdf.

(1) not happen at scale, (2) not occur on a meaningful timeline to avert the worst impacts of climate change, and (3) are not likely to displace existing fossil gas sources in pipelines.[23] Cost and source availability will significantly limit the use of RNG and RH, making them an unrealistic fit for space and water heating in buildings as we decarbonize in the coming decades. Further, even if there were sufficient supplies that were not cost-prohibitive, existing gas pipes and appliances can only support a small portion of hydrogen (5-10%) before they would have to be replaced.[24] Finally, the highest and best uses of the limited RNG and RH resources will likely be in hard-to-electrify sectors such as aviation fuels and specialized industrial uses, not for the vast majority of energy uses.

Renewable hydrogen also has potential as a source of energy storage; electrolyzers can convert excess renewable electricity into hydrogen that can be stored and used to generate electricity when wind and solar power is not available. When used for energy storage, RH could better support a compliance pathway that relies on electrification rather than a pathway that relies on substituting RH for fossil gas in the direct use distribution system.

Despite these broadly acknowledged realities, NW Natural has broadly reported claims that they will get to a 100% clean pipeline based on RNG and RH technologies.[25] The undersigned organizations hope to ensure this is a true fact-finding of what is possible so that we can build a strong and realistic foundation for the OPUC to make future energy and GHG compliance decisions. Thus, Staff should be scrupulous in their review of gas utility-proposed ranges of future RNG and RH uses for overly optimistic inputs or estimates that conflict with data from other reputable sources. And ultimately, if gas utilities fail to meet decarbonization targets that have been known for over a decade because they are failing to seriously explore realistic opportunities to decarbonize, any future incremental infrastructure costs, as well as costs for failure to comply to said targets, should be borne by utility shareholders and not ratepayers.

Further, through choosing sensitivities and scenarios, Staff's analysis should include a holistic approach to evaluating the trade-offs of using different levels of RNG and RH to meet carbon reduction targets compared to alternative—and largely more affordable— strategies for decarbonizing the gas system. Leading analyses for our region have a nearly-universal message: to meet our climate goals, highly efficient electric heat pumps are *much more cost effective* than RNG running through gas furnaces.[26] For

---

[23] *See, e.g.,* Tom DiChristopher, *Hydrogen, RNG 'not ready for prime time' in gas grid – state policymakers*, S&P (June 1, 2021), https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/hydrogen -rng-not-ready-for-prime-time-in-gas-grid-8211-state-policymakers-64792110.

[24] *See* Julie McNamara, *What's the Role of Hydrogen in the Clean Energy Transition?*, UNION OF CONCERNED SCIENTISTS (December 9, 2020), https://blog.ucsusa.org/julie-mcnamara/whats-the-role-of-hydrogen-in-the-clean-energy-transition/.

[25] *See* Cassandra Profita, *Northwest Natural Gas Company's Plan For A Carbon Neutral Gas System,* NPR (February 15, 2021), https://www.npr.org/2021/02/15/968028396/northwest-natural-gas-companys-plan-for-a-carbon-neutral-gas-system; *see ALSO* NW NATURAL HOLDINGS, 2019 ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) REPORT at 23 (2020) (claiming that "Developing both RNG and renewable hydrogen provides a potential path to **100% renewable energy** in the natural gas pipeline system.").

[26] *See, generally,* DAN AAS ET AL., THE CHALLENGE OF RETAIL GAS IN CALIFORNIA'S LOW-CARBON FUTURE: TECHNOLOGY OPTIONS, CUSTOMER COSTS, AND PUBLIC HEALTH BENEFITS OF REDUCING NATURAL GAS USE, Energy and Environmental Economics, Inc. & University of California, Irvine (2019), https://www.energy.ca.gov/sites/default/files/2021-06/CEC-500-2019-055-F.pdf; *see also* Megan Anderson et al., supra, at 31; *see also* MERRIAN BORESON, "RENEWABLE" GAS – A PIPE DREAM OR CLIMATE SOLUTION?, Natural Resources Defense

example, the seminal report by E3 commissioned by California Energy Commission in 2019 found that, electrification of buildings – particularly the use of electric heat pumps for space and water heating – leads to lower energy bills over the long term than the use of renewable natural gas. The primary reason stated for this cost difference is the higher cost of decarbonizing natural gas with renewable natural gas.[27] The California Energy Commission also found that the lowest-cost pathway to eliminate direct emissions from commercial and residential buildings is to electrify. According to the analysis, in 2050 an electric heat pump would cost $34 to $44 per month to operate, while a gas furnace fueled by RNG would cost *five times as much*, $160 to $263 per month, to operate.[28]

From an equity standpoint, the need for a holistic understanding of different compliance options' costs and benefits also means Staff (and the NGFF modeling/analysis) cannot ignore the GHG, health and energy burden impacts of various scenarios as well. Staff should evaluate the potential for methane leakage along the delivery system, safety, and air quality risks from combusting these methane gases in homes and buildings. In evaluating RNG emissions calculations, it's important to evaluate whether the methane emitted from RNG use would have existed without the RNG activity and whether alternative strategies could have prevented that methane from being created and released into the atmosphere, among other things.[29] Although this consideration may be out of the scope of this PUC investigation, recognizing that the scrutiny applied to whether an RNG source is truly reducing emissions or not will be increasing and that lens will further limit what RNG supplies are available, affordable and actually climate-friendly.

Fourth, Staff should ensure that static load growth and negative load growth sensitivities are applied in utilities' models to account for realistic building electrification outcomes.

In the Pacific Northwest specifically, deep decarbonization studies have consistently concluded that building electrification (particularly space heating and water heating) is the least-cost and necessary step to achieving climate targets. For example, the Regional Deep Decarbonization Study by the Clean Energy Transition Institute (CETI) modeled how to achieve an 80% reduction in carbon emissions across the region by 2050.[30] A key finding was that, in addition to getting to nearly zero-emission electricity generation, the region will need to eliminate use of gas in homes over the next three decades. At a state level, the first draft of the Washington State Energy Strategy was released in November 2020. Washington State's analysis concluded that "electricity is the lowest cost option to decarbonize Washington's space and water heating end uses when high efficiency heat pump technologies are used." [31] The most sophisticated study to date comparing electrification to high efficiency gas appliances was recently released by the UC Davis Western Cooling Efficiency Center in conjunction with the Natural

---

Council (June 15, 2020), https://www.nrdc.org/experts/merrian-borgeson/report-renewable-gas-pipe-dream-or-climate-solution.

[27] Aas et al., supra, at 4.

[28] *Id*. at 39.

[29] For additional recommendations, s*ee Direct Testimony of Dr. Emily Grubert,* NV PUC Docket No. 21-01015, 4-5 (April 12, 2021), http://pucweb1.state.nv.us/PDF/AxImages/DOCKETS_2020_THRU_PRESENT /2021-1/8720.pdf.

[30] *See* CLEAN ENERGY TRANSITION INSTITUTE (CETI), MEETING THE CHALLENGE OF OUR TIME: PATHWAYS TO A LOW-CARBON FUTURE FOR THE NORTHWEST; AN ECONOMY-WIDE DEEP DECARBONIZATION PATHWAYS STUDY at 5 (2019), https://www.cleanenergytransition.org/meeting-the-challenge.

[31] *See* WASHINGTON STATE 2021 ENERGY STRATEGY – FIRST DRAFT at 63, https://www.commerce.wa.gov/wp-content/uploads/2020/11/WA-2021-State-Energy-Strategy-FIRST-DRAFT-2.pdf.

Resources Defense Council. It includes considerations of marginal emissions rates for added load to the electric grid for electric heat pumps, emissions from refrigerant leakage and methane leaks within the fossil gas system, and concludes that **an electric heat pump would produce between *70% and 85% fewer carbon emissions* than a high efficiency gas furnace in the Pacific region**.[32] If and when Oregon completes a similar deep decarbonization study for our state, we expect it to show these results as well. The NGFF modeling should include sensitivities and scenarios that align with this likely reality.

It is concerning that the OPUC appears reluctant to consider the impact of electrification on this fact-finding study. Rather than ignore electrification, it would be prudent to explore the potential positive impacts from high-electrification scenarios, considering the overwhelming evidence that electrification is both the most effective and least-cost pathway to decarbonizing buildings in our state, and thus has greater potential to benefit ratepayers than other compliance pathways. The OPUC has mechanisms within its authority to affect the level of electrification in buildings, such as gas Line Extension Allowance policies and the fuel switching preemption currently applied to Energy Trust of Oregon incentives.[33] As was discussed in the workshop, electrification is likely to occur whether the OPUC embraces it as a compliance strategy or not, as the public gets more educated on the comfort and health advantages of heat pumps and induction cooking and becomes more informed of the health risks associated with gas stoves. If gas prices rise as a likely outcome of compliance with the CPP, electrification will become an even more attractive option for customers that can afford to transition to electric heating and cooking systems.

Given the current cost parity between gas and electric appliances and growing customer concerns about climate change and the relationships between indoor and outdoor air quality and public health, it seems inevitable that gas utilities will experience reductions in load growth, and very likely negative load growth, due to electrification. The electrification transition will have a significant impact on both gas consumption and gas customer acquisition and retainment, and hence will have a substantial financial impact on remaining gas ratepayers in *Oregon*, who risk shouldering the burdens of growing rate bases and revenue requirements that are split among shrinking ratepayer pools. It is therefore imperative that electrification be accounted for within this fact-finding study to ensure that all measures are taken to avoid these risks for remaining gas ratepayers. At a bare minimum, Staff must direct utilities to apply static load and negative load growth sensitivities as proxies for increased rates of electrification.

Finally, the NGFF should evaluate projected infrastructure costs and stranded asset risks associated with the various compliance pathways.

It is concerning that the OPUC appears reluctant to engage with the issue of fossil gas infrastructure costs as they pertain to this study. The costs incurred by the gas industry for infrastructure maintenance, safety upgrades and new additions to the gas distribution system all have an impact on customer rates, as does the price of the gas product itself. If gas commodity costs increase due to the inclusion of expensive RNG or RH fuel sources, and capital investments increase due to unnecessary infrastructure build-outs and

---

[32] *See* Theresa Pistochini, *Greenhouse gas emission forecasts for electrification of space heating in residential homes in the United States* (webinar presentation), UC DAVIS WESTERN COOLING EFFICIENCY CENTER, https://ucdavis.app.box.com/s/dqja4itdlh1wwicyjh6wag5yswwf97tc.

[33] *See* OREGON PUBLIC UTILITY COMMISSION EXECUTIVE ORDER 20-04 WORK PLANS at 20 (December 14, 2020).

system upgrades, but customer gas use decreases due to increases in efficiency and electrification, the resulting cost increases and load reductions could significantly raise rates on gas customers. A recently released study by Stanford Woods Institute for the Environment concluded that the decarbonization solution with the lowest impacts to gas rates was eliminating any further addition to the gas infrastructure system, because that would avoid additional costs to existing ratepayers for this new infrastructure construction.[34] The next most-effective and least-cost method was to begin to scale back existing infrastructure by planning the retirement of older segments of the system that were due for significant maintenance. Both of these methods were far superior to adding RNG to the system in terms of limiting the increase in ratepayer costs while decarbonizing the system.

When applying sensitivities for zero or negative customer acquisition, the NGFF modeling should evaluate the interplay between zero and negative load growth and utility infrastructure cost projections. If the data from the gas utility model does not make this information transparent, the OPUC and other stakeholders will lack confidence that the model is accurately portraying the true ratepayer impact from that scenario. Therefore, infrastructure costs should be *separately* reported for maintenance, safety upgrades and new infrastructure construction in the model and supporting data, even if infrastructure costs do not meaningfully decline under negative load growth scenarios.

Taking this wealth of data and applying it to the modeling exercise at hand, it is clear that if the goal is for this modeling to identify the least-cost and least-risk ways for gas utilities to reduce emissions and comply with their CPP compliance obligations, and to determine which compliance pathways are in the best interest of customers, it would be a glaring omission to not run sensitivities and resulting scenarios that *at least* allow comparison between 1) RNG and RH compliance pathways vs. electrification compliance pathways, 2) low, static, and negative load growth scenarios, and 3) projected infrastructure costs and stranded asset risks associated with different compliance pathways.

Additionally, other benefits such as customers' energy savings (and therefore cost savings) of more efficient electric heat pumps should be factored in as well.

In summary, if the promises by gas utilities of RNG and RH fully, or even substantially, displacing the current fossil gas that supplies homes and buildings over time are not realistic, these claims will result in harmful delays in shifting away from methane gas infrastructure. That would, in turn, result in even more future stranded assets and increase the financial detriment to current and future gas customers. We urge Staff to carefully scrutinize these inputs in the model and the need for alternative sensitivities and scenarios for robust comparison.

III. **To be useful to stakeholders, NGFF Compliance Modeling Results must allow for thorough replication and review of utility assumptions and results. The resultant data must be granular enough that potential impacts on low-wealth, BIPOC, and rural communities can be reasonably evaluated.**

[34] *See* ALISON ONG ET AL., THE COSTS OF BUILDING DECARBONIZATION POLICY PROPOSALS FOR CALIFORNIA NATURAL GAS RATEPAYERS: IDENTIFYING COST-EFFECTIVE PATHS TO A ZERO CARBON BUILDING FLEET, Stanford Woods Institute, (2021), https://woodsinstitute.stanford.edu/system/files/publications/Building_Decarbonization_Policy_CA_Natural_Gas_Ratepayers_Whitepaper.pdf.

To enable stakeholder review of model results with an eye towards equity and justice concerns, all gas demand and cost data should be broken down by customer class, by season, and by volumetric and peak requirements.[35] The results should include a bill impacts analysis by income for the residential class (e.g., low- and moderate-income residential customers) as well as any information that can be reasonably provided to understand how changes in bills, along with projected climate impacts, might affect ratepayers' energy use behavior.

For example, higher gas rates could lead large commercial customers to invest in efficiency and electrification solutions, ultimately defecting from gas utility services.[36] This could in turn result in higher bills for remaining residential customers. As another example, higher gas rates could result in lower-income households being reluctant to turn on their gas heat in the winter and suffering through less-habitable—and in many cases, dangerous—housing conditions to avoid high energy bills.[37] As we continue to learn about the many cascading effects of energy rates and price signaling on end-user behavior, it will be critical to ensure robust and transparent access to data so that equity impacts can be analyzed.

Regarding RNG and RH analyses, results should include critical information on the sources (e.g., location and type of project) of RNG and renewable hydrogen. Projected price information for each resource should also be included. There is great demand for these limited projects and these details will be essential to verify the projected availability and cost of these substitute fuels. Oregon Department of Energy's 2018 RNG report also made clear that the vast majority of the "theoretical potential RNG" quantified in the report was not technically achievable with existing technologies.[38] It is therefore imperative that supporting information about the types of projects and potential sourcing of RNG and/or RH is made available so stakeholders can determine how realistic the utilities' assumptions are.[39] We also agree with Staff that only renewable hydrogen from electrolysis (*i.e.*, green hydrogen) should be included

[35] Peak demand outputs under future climate conditions could be particularly meaningful to the OPUC to anticipate and prevent inordinately high energy bills during winter storm events.

[36] *See* Holzman, supra, at 13-14.

[37] *See, e.g.,* Dominic J. Bednar and Tony G. Reames, *Recognition of and response to energy poverty in the United States*, NATURE ENERGY 5, 432–439 (2020), https://www.nature.com/articles/s41560-020-0582-0?proof=.

[38] *See* OREGON DEPARTMENT OF ENERGY, BIOGAS AND RENEWABLE NATURAL GAS INVENTORY SB 334 (2017): 2018 Report to the Oregon Legislature 43-45 (2018), https://www.oregon.gov/energy/Data-and-Reports/Documents/2018-RNG-Inventory-Report.pdf.

[39] *See* Oregon Department of Energy, supra, at 39 (Stating that of Oregon Department of Energy's identified RNG potential in Oregon, "79 percent is derived from thermal gasification potential – a technology that is not operational anywhere in the U.S."). For comparison, Washington state's RNG report applied a lens of what RNG is realistic for procurement by in-state utilities, not just all potential, and found that "adequate opportunities exist for RNG production equivalent to 3 percent to 5 percent of current natural gas consumption in Washington." This was also in part because the two biggest RNG projects in Washington were already under long-term contract to California, where the Low Carbon Fuel Standard creates higher credit value and higher demand for RNG projects. *See* WASHINGTON STATE UNIVERSITY ENERGY PROGRAM & WASHINGTON STATE DEPARTMENT OF COMMERCE, PROMOTING RENEWABLE NATURAL GAS IN WASHINGTON STATE: A REPORT TO THE WASHINGTON STATE LEGISLATURE, (December 2018), https://www.commerce.wa.gov/wp-content/uploads/2019/01/Energy-Promoting-RNG-in-Washington-State.pdf.

as a CPP compliance/GHG reduction option, as it is the only hydrogen technology capable of providing GHG emission reductions.[40]

Staff should also ensure that data is projected annually, rather than as a few snapshots in time (*e.g.*, 45% GHG reduction by 2035, and 80–90% by 2050). This will allow stakeholders and staff to understand how the gas utilities plan to comply with their GHG reduction requirements in the first several years of the program, which is as important as evaluating compliance pathways under a longer-term view.[41] Because the proposed CPP rules establish three-year compliance periods, gas utilities should, at a bare minimum, be required to provide compliance projections in three-year increments. This will also help illuminate the timing of ratepayer impacts based on the gas utilities' decisions, so that stakeholders and the OPUC can appropriately plan.

Finally, results should include, to the greatest extent possible, infrastructure costs and costs of potential stranded assets under ambitious electrification and decarbonization scenarios and related sensitivities. This should include data that differentiates between costs of repair and replacement of existing infrastructure to maintain the system, and the costs of building new infrastructure. These infrastructure costs should be compared to the cost estimates for efficiency and electrification of space and water heating technologies.

In summary, our organizations respectfully urge the OPUC Staff 1) remedy the proposed NGFF Compliance Model process and design to ensure diverse and robust stakeholder involvement and better serve the public interest; 2) ensure model sensitivities reflect realistic future climate and economic conditions; and 3) provide sufficient model results data so that stakeholders can feasibly review and replicate model analyses.

Sincerely,

Meredith Connolly
Oregon Director
CLIMATE SOLUTIONS

Brian Stewart
Founder
ELECTRIFY NOW

Amy Schlusser
Staff Attorney
GREEN ENERGY INSTITUTE AT LEWIS & CLARK LAW SCHOOL

[40] Approximately 99% of existing hydrogen is from fossil fuels. *See,* Magdalena Petrova, *Green hydrogen is gaining traction, but still has massive hurdles to overcome,* CNBC (December 4, 2020), https://www.cnbc.com/2020/12/04/green-hydrogen-is-gaining-traction-but-it-must-overcome-big-hurdles.html.

[41] Understanding gas utility compliance in the near-term could be particularly important to avoid locking in cascading effects of the climate crisis, which are already evident in the state.

Sue Craig
Co-facilitator
INTERFAITH EARTHKEEPERS EUGENE/SPRINGFIELD

Dylan Sullivan
Senior Scientist
NATURAL RESOURCES DEFENSE COUNCIL

Nora Apter
Climate Program Director
OREGON ENVIRONMENTAL COUNCIL

Angus Duncan
Former Oregon Global Warming Commission Chair

Jonny Kocher
Associate
RMI

Allie Rosenbluth
Campaigns Director
ROGUE CLIMATE

Dylan Plummer
Senior Campaign Representative
SIERRA CLUB

Diane Hodidak
Executive Director
350 DESCHUTES

Patricia Hine
President
350 EUGENE

Philip H. Carver, Ph.D.
350 SALEM OREGON