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Testimony in support of SB685 regarding Hydrogen use by utilities

Chair Sollmann and Members of the Senate Committee on Energy and Environment:

I write as cofacilitator of Southern Oregon Climate Action Now, an organization of some 2,000 Southern Oregonians who are concerned about the climate crisis and encourage state action to address it. As rural and coastal Southern Oregonians, we live on the frontlines of the warming, reducing snowpack, heatwaves, drought, rising sea level and the increasing wildfire risk that these trends conspire to impose on us. Because of this, we pay close attention to what is happening in the state legislature that relates to climate.

The gas utilities have a long track record of promoting campaigns of misinformation and disinformation, in particular regarding the claim that their product "is cleaner ….than oil and coal" (igs, undated). While, to give igs some credit, I acknowledge that the article continues by explaining correctly that burning natural gas compared to burning other fossil fuels releases less carbon dioxide than other fossil fuels. However, the same article claims: "One of the reasons for this is that natural gas generates fewer harmful emissions." This claim completely evades two huge problems with natural gas (1) the gas is toxic when used in enclosed spaces because it leaks and causes serious health problems (e.g., Gottlieb & Dyrszka 2017, Seals & Krasner 2020, O'Rourke *et al.* 2022), and (2) the gas leaks from extraction, through processing and transmission and distribution to the customer, and circulation through buildings. The leaked gas, known as fugitive emissions, is some 90% methane. Regrettably, methane has a global warming potential some 80 times greater than carbon dioxide on a 20-year basis (Mar et al. 2022). Given its powerful warming potential, it can readily be appreciated, I suspect, that not much leakage over the lifecycle of the gas prior to its combustion is required before this leakage completely negates the combustion benefits of the gas. Indeed, Howarth (2024), in a discussion of emissions from Liquified Natural Gas, concludes that "Even using GWP 100, the greenhouse gas footprint of LNG is always as large as or larger than that of coal." Robert Howarth has been undertaking studies on the leakage of methane through the life cycle of natural gas usage for many years. Meanwhile, a similar conclusion was offered by Gordon et al. 2023. That gas utilities promote the canard that their product is 'the clean fossil fuel' without acknowledging this leakage constitutes, at best, misinformation.

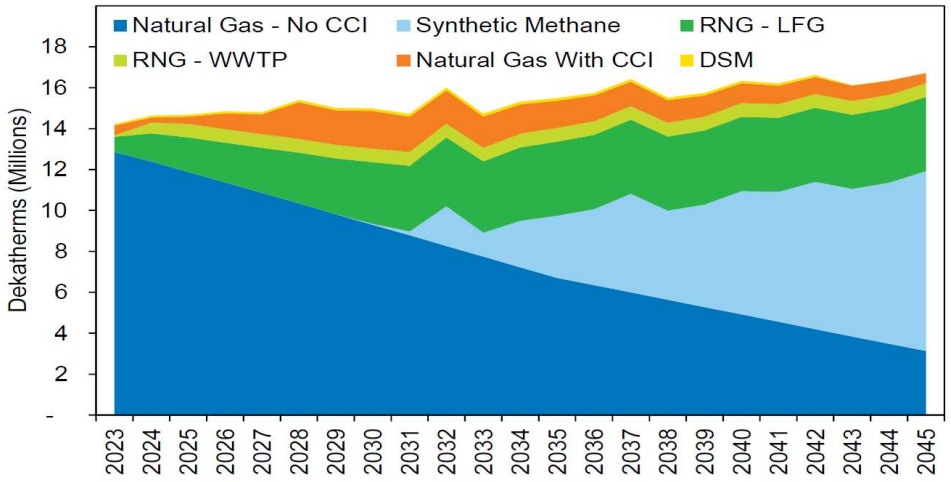

Figure 1. Anticipated contribution of RNG to the gas supply in Oregon by Avista. RNG *from Landfill Gas (LFG), Wastewater Treatment Plants (WWTP), energy efficiency, Community Climate Investments (CCIs) through the CPP, and conventional natural gas. Synthetic methane; DSM - Demand Supply Management. (Avista 2023)*

It's worth also reflecting on the Integrated Resource Plans of the gas utilities. Avista's resource strategy for Oregon, for example, taken from their 2023 Integrated Resource Plan (Avista 2023), is presented in Figure 1 where the emphasis on so-called Renewable Natural Gas (RNG) and Synthetic Methane is evident. There is abundant evidence that accurate full lifecycle assessment of RNG indicates that it is not superior to fracked natural gas (e.g., Feinstein and de Place 2021). This alone suggests that Avista has an IRP that merely pretends to reduce greenhouse gas emissions. Meanwhile, even if we accept the premise that RNG constitutes an improvement over fracked gas, a study of the potential for RNG incorporation in the state's natural gas supply by the Oregon Department of Energy (ODOE 2018) concluded: "The gross potential for RNG production when using anaerobic digestion technology is around 10 billion cubic feet of methane per year, which is about 4.6 percent of Oregon's total yearly use of natural gas."

As Figure 1 illustrates, Avista anticipates RNG comprising much more than 4.6% of its total supply. Even employing [energy and fossil fuel intensive] thermal gasification technology, the ODOE (2018) study concluded the maximum would be 17.5% of Oregon's demand. One wonders if Avista imagines the state will counter this shortfall with a massive increase in landfill and agricultural animal feedlot operations that both produce methane. Although Avista rejected the PUC concern about the quantity of RNG available to meet the desired capacity, it should be noted that relying on national supplies of RNG in Oregon would require transmitting the gas from the distant corners of the nation. The result would inevitably be substantial leakage of methane from the pipelines through which this gas is pumped, an outcome substantially negating any RNG benefits. However, Cyrs and Feldman (2020) assessed RNG supplies in the nation and concluded they could only fulfill between 4 and 7% of the nation's fossil gas consumption. Assuming gas utilities across the nation seek to lower their greenhouse gas emissions by utilizing RNG, the supplies available nationally couldn't possibly augment the needs of Avista. While we certainly seek to reduce emissions locally and statewide, this should

not be achieved by importing gas from out-of-state and thereby simply exporting emissions to transmission lines across the country. As Saadat et al. (2020) point out, buildings account for some 40% of greenhouse gas emissions nationally, much of this attributable to the methane in natural gas. Reporting on changes to California RNG rules Squarespace (undated) concludes, "These changes encourage RNG use for hard-to-electrify sectors, …"Indeed, this is where products such as RNG and Hydrogen should be focused, not in gas pipelines to residential and commercial customers.

Again using Avista as an example, (Figure 1 again) we ee that their plan clearly relies heavily on a future with synthetic methane. It may be possible commercially to produce synthetic gas from hydrogen derived from the energy intensive electrolysis of water using renewable energy and then combine this with Carbon dioxide captured using the economically questionable process of carbon capture from industrial processes. However, NRDC (2020) indicated that synthetic gas "…is still projected to be very expensive in 2040 and 2050." Relying on carbon capture to provide the carbon dioxide also seems optimistic. While reporting on the rules proposed by EPA that challenge industry to fulfill its promise to establish carbon capture technology to reduce emissions, Hennessy (2023) concludes "CCS doesn't have a strong track record of actually sequestering carbon — especially for the power sector, where 90 percent of proposed carbon capture capacity has failed or never gotten off the ground." Synthetic methane seems unlikely to provide Avista with an economically feasible option. As has repeatedly occurred with this utility, we should once again be skeptical about claims from Avista that involve emissions reductions relying on synthetic methane and the questionable CCS technology.

Additionally, abundant problems exist with the concept of incorporating Green Hydrogen into the gas mix (e.g., St. John 2022; MITClimate 2023). The latter source, quoting Penchev et al. (2022) pointed out: "In a study released last summer, the California Public Utility Commission found that up to 5 percent hydrogen blended with natural gas appears safe, but higher percentages could lead to embrittlement or a greater chance of pipeline leaks." Erdener et al. (2023) concur, pointing out that "existing gas-fired power plants or industrial processes, may not be designed to tolerate hydrogen blending beyond a given limit; for many existing gas-fired power plants, this limit is 5% volume." In short, Hydrogen whether green, blue, gray, brown or pink, cannot contribute much to solving Avista's greenhouse gas problem. It should be little surprise that the PUC rejected the Integrated Resource Plans of all the state's gas utilities Baumhardt (2024).

Given that inserting Hydrogen into pipelines can be detrimental to the security of those pipelines and thus increase the risk of leakage, it is absolutely unconscionable and disgraceful that a utility should insert Hydrogen into distribution pipelines without informing recipients of their product that they are doing so. That a gas utility has adopted the practice of doing this is further testimony to the anti-social and irresponsible behavior of this industry.

As has repeatedly occurred with gas utilities, this behavior indicates that we should once again be skeptical about the commitment of the utilities to safety and addressing the climate crisis.

The state's gas utilities have a very obvious commitment to maintaining ther business model of promoting continued increasing gas consumption rather than addressing the climate crisis for which it is partially responsible by reducing its greenhouse gas emissions with meaningful plans.

For these reasons, we wholeheartedly support the effort contained in SB685 to require gas utilities to require public utilities to obtain authorization from the Public Utility Commission before developing or carrying out a project that involves the production or use of hydrogen in this state. We regret, only, that this measure does not place greater restriction in the behavior of the gas utilities.

Respectfully Submitted

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