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Edited and updated Testimony from SOCAN in support of SB685

Chair Lively and Members of the House Committee on Climate, 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) that is maintained by this effort to include hydrogen in their natural gas product. While, to give igs some credit, their article continues by explaining correctly that burning natural gas compared to burning other fossil fuels releases less carbon dioxide. However, the same article claims: "One of the reasons for this is that natural gas generates fewer harmful emissions." This claim completely ignores 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.

In relation to the gas utility that was responsible for the insertion of hydrogen into customer pipelines, it's worth noting how their hydrogen is derived. According to the utility itself (NWNatural 2024), this hydrogen is derived from methane pyrolysis which produces hydrogen and solid carbon as a by-product. The catch, of course, is that deriving hydrogen from methane means that the full array of upstream fugitive emissions of methane remains in place, so these are not reduced to any extent by extracting the hydrogen onsite via methane pyrolysis. There is, therefore, little to no reduction in greenhouse gas emissions achieved by this procedure. Unfortunately for Northwest Natural, there are other drawbacks to this technology. According to Keller (2021) one mole of CH_4 (methane) will yield through methane pyrolysis 2 mol of H_2. Unfortunately for gas utilities, that one mol of CH_4 has a heating value of 891 kiloJoules (kJ) while the 2 mol of H_2 have a heating value of only 572 kJ. As Keller (2021) notes, this means that: "To provide the same amount of energy, natural gas production would thus have to be increased by at least a factor of 1.56. This will exacerbate the problem of upstream CH_4 emissions." Regrettably, the Oregon Climate Protection Program (DEQ 2024) does not assess these upstream or fugitive emissions, so the gas utilities effectively are granted a pass on the upstream emissions from both the methane combusted and the methane used to undergo methane pyrolysis to generate hydrogen. As has been the history of the gas utilities this 'methane pyrolysis' gambit is another fraud that NW Natural is attempting to perpetrate on the legislature and Oregonians.

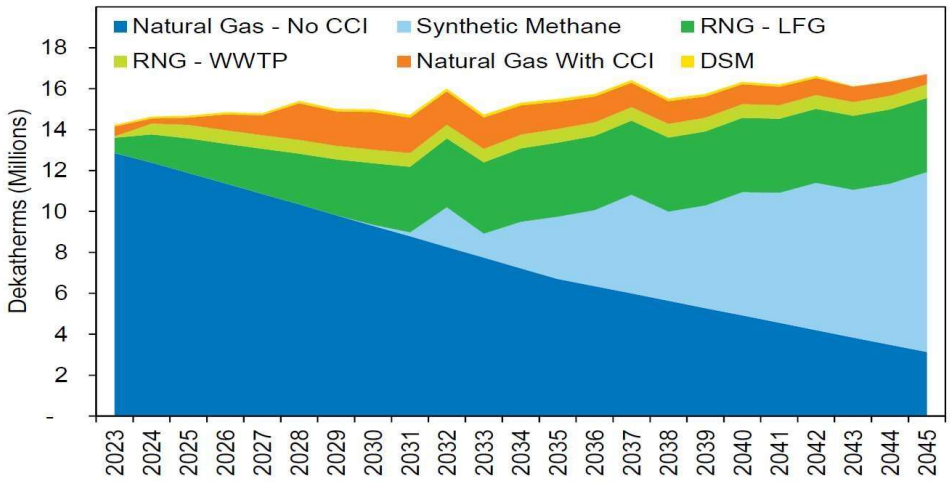

Figure 1. Anticipated contribution of RNG to the gas supply in Oregon by Avista. RNG from Landfill Gas (LFG), Wastewater Treatment Plants (WWTP), energy efficiency, - Community Climate Investments (CCIs) through the CPP, and conventional natural gas. Synthetic methane; DSM - Demand Supply Management.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

It's worth also reflecting on the Integrated Resource Plans of 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 to produce this RNG. Although Avista rejected the PUC concern about the quantity of RNG available to meet the desired capacity, it should be noted that reliance on national supplies of RNG by Oregon utilities 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, countering this national source expectation, 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 other states. 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, the hard-to electrify industrial sectors are 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 see 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 reduce the carbon dioxide emissions 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 and other gas utilities that involve emissions reductions relying on synthetic methane and the questionable CCS technology.

Additionally, abundant problems exist with the concept of incorporating even 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 customers purchasing 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 their commitment to safety and addressing the climate crisis.

The state’s gas utilities have a very obvious commitment to maintaining their 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 evident in SB685-04 to require gas utilities to inform customers using their product when they include hydrogen in the product. The protestation that requiring them to inform users suggests a commitment to social irresponsibility rather than safety. We regret, only, that this measure does not place greater restriction on the behavior of the gas utilities as was contained in the proposal as initially introduced.

Respectfully Submitted

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