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To: Amanda Maxwell, Executive Director, Washington Utilities and Transportation Commission

Docket: U-210553

Re: Sightline Institute Comments on Decarbonization Pathways

Commenting Party: Emily Moore, Director of Climate & Energy, Sightline Institute

Date: January 17, 2023

Dear Amanda Maxwell,

Thank you for the opportunity to provide comments on the Decarbonization Pathways examined in Docket U-210553. Sightline Institute is a leading independent research organization in the Pacific Northwest. We conduct original analysis on topics related to the energy transition, including "[renewable natural gas](#)" (RNG), [hydrogen](#), and [electric transmission](#). Please find below our recommendations and comments on the Decarbonization Pathways analysis that the Washington Utilities and Transportation Commission (UTC) and its consultants, Sustainability Solutions Group (SSG), have presented thus far.

1. Ensure the results of the examination will be of practical use and not introduce confusion.

The SSG consultants have presented three scenarios: "Electrification," "Alternative Fuels," and "Hybrid." During the Public Technical Meeting 3, the SSG consultants indicated that these three scenarios are not necessarily likely or desirable. However, the legislature specifically asks the UTC for an examination of "feasible and practical pathways for investor-owned electric and natural gas utilities to contribute their share to greenhouse gas emissions reductions." To ensure that the results of this effort meet the legislature's directive, the final product should present and analyze realistic scenarios for achieving emissions reductions requirements. Sightline's research indicates that several of the ingoing assumptions to the "Alternative Fuels" scenario are implausible, as we outline further below.

Additionally, the current scenario names do not accurately describe the contents and assumptions of each scenario, which will likely lead to confusion among policymakers and the public. Specifically, the scenario that SSG named "Electrification" includes continued use of fossil gas in it. The inclusion of fossil gas means the "Electrification" scenario has the highest emissions of all three scenarios, which confused multiple attendees of the Public Technical Meeting 3. Because all three scenarios are actually "hybrids" that include multiple fuel types, we recommend adjusting their names to more accurately represent their contents or simply name them "Scenario A, B, C," etc.

2. Reduce estimates of the long-term availability of RNG. The "Alternative Fuels" and "Hybrid" scenarios that the SSG consultants present rely on implausibly high estimates of the future availability of RNG to Washington state. SSG's primary source for estimating RNG availability is a [2019 study](#) conducted by ICF on behalf of the American Gas Foundation. SSG uses the "High" estimate of future national availability of RNG from this ICF report to extrapolate Washington's proportional share (based on current gas usage). Using this methodology, SSG estimates that between 86 and 96 Tbtu/year of RNG could be available for Washington's use by 2050. However, this methodology is flawed because:

- It implausibly relies on nascent thermal gasification technology. Today, there are no commercial-scale thermal gasification facilities in the United States. But the SSG consultants rely on ICF's projection that more than half of the available RNG by 2040 in the United States will be derived from thermal gasification ([see page 14 of ICF study](#)). Thermal gasification could ultimately be uneconomical, emissions-intensive,

and/or technologically impractical at scale. By relying so heavily on this nascent technology, the SSG consultants far overestimate the future availability of RNG. Unless and until thermal gasification technology is proven out at a commercial scale and is shown to be economically feasible and environmentally beneficial, it should not be included in the UTC analysis.

- It assumes imports of RNG, which may be implausible given likely competition from other states. As noted above, the SSG consultants assume that Washington will have access to its proportional share of ICF's estimated future national availability of RNG. However, a proportional allocation is not plausible. Demand for RNG will be high across the United States given the limited availability of RNG feedstocks. To access RNG outside of Washington, the state will likely need to pay a premium, potentially making RNG imports uneconomical. The consultants should exclude RNG imports from the analysis, or, at a minimum, model these likely costs.
- It does not adequately consider the cost implications of likely competition for RNG and its feedstocks across industries. Already, heavy-duty transportation fuel markets in states with low-carbon fuel policies compete for the scarce amount of RNG available. This competition has driven up the cost of RNG, making some sources unaffordable for utilities to acquire. The SSG consultants' modeling should consider the impact of competition across industries and applications for RNG or its feedstocks on RNG's future costs.

Instead of relying on the American Gas Foundation's ICF report and making unrealistic extrapolations to Washington, SSG should rely on studies conducted by and for Washington state. For a comparison of several recent studies on RNG availability in Washington, see the [meta-analysis conducted by the Northwest Power Council](#) in 2021. The Washington-specific studies find much lower likely future availability of RNG than the SSG analysis assumes.

3. Include carbon emissions and health impacts of RNG and gas. During the Public Technical Meeting 3, the SSG consultants stated that they are not counting any greenhouse gas emissions from RNG. This is a flawed assumption. Producing and burning RNG emits greenhouse gases. The level of emissions varies by the technology used to create the RNG and by the feedstock. We encourage the consultants to use the [California Air Resources Board](#) fuel pathways table on low-carbon fuels to more accurately estimate the carbon emissions from RNG.

Additionally, a growing body of evidence indicates that combusting methane, the primary compound in both fossil gas and RNG, is harmful to human health, including causing childhood asthma. (See [Harvard study](#), [Stanford study](#), [RMI report](#), and [LBNL study](#).) The UTC report should assess the health impacts of gas appliances in homes and develop recommendations for mitigating these impacts, particularly for low- and moderate-income residents.

4. Constrain hydrogen to industrial use and incorporate additional cost assumptions. The SSG consultants' "Alternative Fuels" scenario assumes adoption of hydrogen into residential homes (see slide 15 from the Public Technical Meeting 3). However, only small volumes of hydrogen, [perhaps up to a ratio of 20 percent hydrogen to 80 percent gas](#), can safely be injected into existing gas pipelines. Above that ratio, expensive pipeline replacement or retrofitting is necessary. [Hydrogen for home heating](#) is implausible, costly, and potentially dangerous, and should not be included in any of the scenarios. Instead, hydrogen should be constrained to specific industrial end-uses for which superior alternatives do not yet exist, such as steelmaking and long-distance aviation.

Additionally, if incorporating hydrogen into analyses, the SSG consultants should model costs associated with retrofitting natural gas pipelines for hydrogen, replacing natural gas pipelines with hydrogen pipelines, building new corridors of hydrogen pipelines to industrial customers, and replacing end-use equipment, if the consultants have not done so already. Additionally, the SSG consultants should model the likely competition for surplus renewable electricity, which may constrain the production volumes of green hydrogen and increase costs.

5. Provide sensitivity analysis for nascent technologies. Several of the technologies that the SSG consultants include in the “Alternative Fuels” scenario are immature and not commercially available, again calling into question the plausibility of that scenario. At a minimum, the SSG consultants should provide a sensitivity analysis for if technologies like gas heat pumps, thermal gasification, and hydrogen vehicles fail to mature and commercialize according to the presumed schedule. The sensitivity analysis should also assess impacts of varied levels of market adoption. For example, even if gas heat pumps or hydrogen vehicles are offered into the market, consumers may opt for electric alternatives because of cost, wider availability of supporting infrastructure like charging stations, and more confidence in the technology due to a longer track record.

6. Explore the feasibility of “GeoNetworks” for regulated gas utilities. The legislature asked the UTC to identify “potential regulatory policy changes to facilitate decarbonization of the services that gas companies provide.” As part of this mandate, the SSG consultants should analyze the potential for gas utilities to decarbonize by installing a network of ground source heat pumps, or, “[GeoNetworks](#).”¹

Several US gas utilities and their regulators, primarily in the Northeast, are exploring the potential for gas utilities to decarbonize through GeoNetworks. In 2021, the Massachusetts Department of Public Utilities approved pilot plans for GeoNetworks by both Eversource and National Grid. New York State passed the “[Utility Thermal Energy Networks and Jobs Act](#)” in 2022, which directs the state’s Public Service Commission to develop a regulatory framework for the idea and requires the state’s utilities to submit pilot projects. GeoNetworks could offer [many benefits](#) to ratepayers and to Washington, including low greenhouse emissions and minimal impact on the grid, and could be a feasible decarbonization strategy for gas utilities. Additionally, installing GeoNetworks in place of aging gas pipelines could help gas utilities avoid spending millions on likely future stranded assets.

Washington’s current regulatory framework prohibits gas utilities from piloting GeoNetworks as a regulated business line. The UTC’s Decarbonization Pathways study should identify potential regulatory changes that would allow gas utilities to pilot the idea. Additionally, the analysis should model the costs and benefits of installing GeoNetworks instead of new gas pipelines in areas that each gas utility has already identified as needing replacement through Washington’s Pipeline Replacement Program. For an example of what this analysis could entail, see E3’s analysis for Massachusetts’s Department of Public Utilities, in which the [consultant analyzed replacing aging gas pipelines with GeoNetworks](#) (referred to as “networked geothermal” in the report).

7. Analyze impact of likely stranded assets and identify regulatory changes to reduce impact on customers. As a part of its planned equity analysis, the consultants should analyze the potential risk of stranded gas assets in each scenario, particularly for low-income and moderate-income residents and renters. Additionally, as part of its mandate to propose regulatory changes to facilitate gas decarbonization, the consultants should explore eliminating gas utility “[line extension allowances](#)” and ending incentives for adopting high-efficiency gas appliances. These subsidies perversely encourage expansion of the gas system in contradiction with Washington’s decarbonization mandates and increase the risk to ratepayers of stranded gas assets.

Thank you for your consideration and please don’t hesitate to reach out if I can provide further clarification.

Sincerely,



Emily Moore | Director, Climate & Energy | Sightline Institute
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¹ This idea has several names, including: GeoGrids, GeoMicroDistricts, thermal energy networks, and NeighborGrids