EVALUATING RENEWABLE NATURAL GAS (RNG) AND HYDROGEN PROPOSALS

RNG AND HYDROGEN: WHAT ARE THEY?

There is currently a lot of talk about possible "fuels of the future" and whether or not they have the technical and economic potential to substitute for natural gas in various applications. Some utilities are exploring RNG and hydrogen as ways to deliver cleaner gas using existing natural gas infrastructure. Although RNG can replace natural gas with minimal changes to existing infrastructure, there are material limitations to the amount of RNG that can be produced from available feedstocks. While RNG and hydrogen may be feasible for some end-uses of gas, there are also important technical limitations to understand and consider.

Renewable natural gas (RNG):

RNG is biogas that has been processed for use in place of fossil gas. It can come from a variety of sources, including municipal solid waste and wastewater treatment facilities and livestock operations. Assuming high resource potential, modeling from the American Gas Foundation and ICF shows that RNG supply could meet approximately 23-28% of current U.S. gas demand across sectors by 2040.[1]

Hydrogen (H_2):

Hydrogen is an abundant chemical element that may be used as fuel in certain applications that currently rely upon gas. It can be produced from several different sources, including thermal, biological, and renewable-driven processes, and electrolysis. The emissions associated with hydrogen production depend upon the feedstocks and methods used to produce the fuel. Large-scale clean hydrogen production will require abundant clean energy generation. While there is no technical limitation on the amount of hydrogen available, it will be limited by economics and compatibility with existing infrastructure.

When a utility proposes an RNG or hydrogen pilot project, or a long-term gas resource and distribution plan that relies heavily on the future use of RNG and/or hydrogen, Public Utility Commissions should confirm that RNG and/or hydrogen are feasible and cost-effective options at scale.

[1] The United States has consumed on average 15,850 tBtu of natural gas over the last ten years (2009-2018); In the high resource potential scenario, ICF estimates that about 3,780 tBtu of RNG can be produced annually for pipeline injection by 2040. That estimate increases to 4,510 tBtu per year when including the potential for the non-biogenic fraction of MSW. American Gas Foundation and ICF, 2019, https://www.gasfoundation.org/wp-content/uploads/2019/12/AGF-2019-RNG-Study-Full-Report-FINAL-12-18-19.pdf.

EVALUATING UTILITY RNG/HYDROGEN PROPOSALS CHECKLIST

- Does modeling acknowledge and evaluate limitations to RNG supply?
- Does the cost assessment include system retrofits needed to accommodate high hydrogen blends?
- Do plans direct RNG and hydrogen to the highest-value use cases?
- Are the costs of decarbonizing industrial customers included in the modeling scope?
- Is there a plan to meet gaps between RNG/hydrogen supply and total gas demand with cost-effective, zero-emission resources through other means (e.g. efficiency, electrification)?
- Do plans confirm a firm, long-term supply of the RNG and hydrogen fuels that will be used to meet projected demand?
- Do overall plan costs include the costs of any required carbon offsets?
- Are interconnection points for RNG and hydrogen focused on areas of the system that minimize stranded asset risk (e.g. near hard-to-electrify end users or self-contained distribution systems that can be disconnected from the main system)?

INTERESTED IN LEARNING MORE?

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