

Docket No. 20-057-02
OCS Data Request No. 1.02
Requested by the Office of Consumer Services
Date of DEU Response September 1, 2020

OCS 1.02: Please refer to page 11-3 of the 2020 IRP (last bullet on the page): “The Company is participating in the International HyReady study which evaluates the potential to blend renewable Hydrogen in natural gas systems. The Company is participating in ten other RNG research projects with GTI and NySearch.”

Please also refer to an S&P Global article from August 26, 2020 titled “Why Gas Utilities Could Get Left Behind in the Hydrogen Economy”, it was reported that “Meanwhile, Dominion Energy Inc. said a pilot project to ensure its gas distribution systems can accept up to 5% hydrogen by 2030 has entered advanced planning stages in Utah.”

- A. It appears there is quite a bit of work on the hydrogen issue going on behind the scenes not included in the IRP. Does DEU have a target date of when it will try and blend hydrogen into natural gas?
- B. Where would the hydrogen come from?
- C. What are the economics?
- D. What are these 10 additional RNG research projects taking place with GTI and NySearch?

Answer: A. The Company is in the planning stages for a pilot program. A full review of the response in the July 31, 2020 investor call provides some additional insight. Diane Leopold, Chief Operating Officer for Dominion was asked about hydrogen. Her response was “With respect to hydrogen, we do see that there will be an increase in hydrogen utilization in the energy mix over the next several decades and we’ve certainly spent a lot of time studying it. At the moment, at least to our knowledge, no continental U.S. LDC is blending hydrogen into supply mix today. We committed a couple of years ago, to making sure our LDC system is ready to accept up to 5% hydrogen by 2030, so just in the next decade. And our initial pilot is in advanced planning stages in Utah. So high level, we think that there’s going to be a lot of activity in this area but for the most part it is still in that study and preparatory planning stage but expected to be ramping up and look forward to sharing updates.” The pilot program she is referring to is a the Hyready study which will test hydrogen at DEUs training facility to understand the impacts of combusting a blend of methane and hydrogen in a variety of appliances. That test is expected to take place in 2021. As Ms. Leopold mentioned, the Company has the goal to have its system ready to accept up to 5% on its system but there is currently no definitive timeline for how or when that will occur. As the Company creates more specific plans it will share them in future integrated resource plan filings.

B. The hydrogen could be purchased from a third-party supplier or it could be produced by DEU using a variety of methods including using electrolysis, reformation, or gasification.

C. Currently, the economics of hydrogen are cost prohibitive, and can cost \$25/Dth equivalent or higher, depending on the process used to create the hydrogen. The blending of up to 5% of hydrogen on the system assumes that over the next ten years technological advances and economies of scale will bring that cost down considerably.

D. A summary of the projects is as follows:

- NYSEARCH M2012-002 – Living Lab for Biogas Treatment
 - Objective: Study the impact to gas infrastructure of processed biogas from the Newtown Creek waste water treatment facility and compare information from this system to a pipeline system specifically designed to be equivalent but with utilization of traditional pipeline quality natural gas.
- NYSEARCH M2017-003 – Biomethane Data Collection Project
 - Objective: To collect and share data with a NYSEARCH gas industry funding consortium about the impact of processed biomethane from Renewable Natural Gas sources at varying levels of blending with pipeline gas on: a) at the point of custody transfer, b) on piping components and materials that are part of the downstream line system (between custody transfer and end use meter).
- NYSEARCH T-783 – Assessment of Consequences of RNG on Gas Infrastructure/Appliances
 - Objective: Assimilate past research that taps into a wealth of knowledge on potential risks of RNG and combine that knowledge with a study of differences and similarities to North American gas LDC conditions.
- OTD 7.7.d – Pipeline Quality Biomethane: Guidance Document for Dairy Waste
 - Objective: Develop a guidance document regarding pipeline quality biomethane from anaerobic digestion of manure and farm effluent from dairy operations.
- OTD 7.8.a – Pipeline Quality Biomethane: Guidance Document for Landfill/Wastewater
 - Objective: Create a guidance document to identify criteria that stakeholders should consider when developing a landfill gas recovery facility for introduction of biomethane into a natural gas pipeline.
- OTD 7.16.e – On-Line Biomethane Gas Quality Monitoring
 - Project Cost to DEUWI
 - Objective: Determine if on-line monitoring systems can be used to determine key parameters in biomethane being blended into the gas distribution system.
- OTD 7.16.g – Development of a Universal Analytical Technique for Determining Siloxane Content in Biomethane
 - Objective: Develop a universal, industry-wide sampling and analysis procedure for measuring siloxanes in biomethane that can obtain a detection limit of 0.01 mg/M3 of silicon or less.

- OTD 7.18.b – Biomethane Justification Study for Improved/Accepted Gas Quality Standards
 - Objective: Provide a fact-based, objective study on the quality, analysis, risk, and compositional variability of final end-use grade biomethane.
- OTD 7.18.g – Impact of RNG on End Use Applications
 - Objective: To determine the effects of trace constituents in Renewable Natural Gas (RNG) on end use applications.
- OTD 7.18.h – Trace Constituent Database
 - Objective: To create an on-line searchable database that will compile natural gas and renewable gas major, minor, and trace constituent concentrations along with sampling and measurement techniques

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