



MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO: Commissioners Brown, Carlson, Barofsky, McRae and Schlossberg
FROM: Frank Lawson, CEO & General Manager
DATE: October 25, 2022 (Board Meeting November 1, 2022)
SUBJECT: Northwest Natural Hydrogen Pilot Project Update
OBJECTIVE: Information Only

Issue

As a participant with Northwest Natural (NWN) on a local hydrogen pilot project, Commissioners recently requested a project update. This information is an update of a similar [Board Correspondence](#) memorandum from April 2022, with **major updates below in BOLD**.

Background/Discussion

In 2018, EWEB began talking with NW Natural and other parties interested in exploring the development of a project in EWEB service territory that would produce “green” hydrogen through electrolysis, the process of splitting water into hydrogen and oxygen using electricity. EWEB’s clean power portfolio that is approximately 90% carbon free is the basis for defining “green” in this project.

According to NWN, they are working with an Engineering, Procurement, and Construction (EPC) partner, with similar experience, to design a 1MW PEM electrolyzer for hydrogen production. This output will enable NWN a 10%vol blend of hydrogen after an initial period of 5%vol blending. No hydrogen storage is planned at this time. The project is expected to take 18 months after regulatory approval of the Oregon Public Utilities Commission (OPUC).

In parallel, NW Natural will be working with a third party to identify any system or procedural changes for hydrogen blending, and there will be provisions to expand the project by another MW on-site use should a business case exist for EWEB, NWN, or another partner in the future. Additional NWN operational objectives of the project include identification of any adjustments needed to operating procedures for gas distribution system, monitoring and documenting operations of downstream appliances at different blends, and increasing the understanding of electrolyzer capital and operational costs and construction nuances, including codes and permitting. EWEB is interested in identifying any grid benefits and value that could influence lower electricity rates (e.g., demand response).

NWN Regulatory Process

Senate Bill (SB) 844 established a voluntary emissions reduction program that permits Oregon natural gas utilities to invest in projects that reduce greenhouse gas emissions that they would not otherwise undertake in the normal course of business.

Before investing in a SB 844 project, a natural gas utility must file an application at the OPUC and obtain its approval. The application must describe how the project meets the SB 844 requirements, including benefits to customers, rate impacts, and why the emissions reduction approach is appropriate, timely, and merits approval. For NWN’s hydrogen blending project, or projects more than \$1 million or have cost of carbon greater than \$85/ton (Tier 2 projects), there is a formal 180-

day process that allows for written testimony, a hearing, and a final order. Prior to a SB 844 filing, projects must be reviewed with stakeholders, including EWEB. NWN expects the SB 844 process to take 6-9 months to complete.

On August 12, 2022, NWN filed an [application](#) (docket number UM 2251) at the Oregon Public Utility Commission (OPUC) seeking approval for the hydrogen pilot project under Senate Bill 844 (ORS 757.539). The S.B. 844 regulatory process is similar to a rate case and gives intervening parties the ability to submit responsive testimony and is expected to take approximately 6 months. SB 844 allows Oregon natural gas utilities to pursue greenhouse gas emission reduction pilot and research projects that they would not otherwise invest in the ordinary course of business.

In early November, EWEB management will participate as a stakeholder in the OPUC regulatory process. The focus of this testimony will be similar to that provided during the stakeholder outreach process described below, including EWEB's specific interests in the pilot project and a description of EWEB's long-term interest in developing hydrogen, or intermediate chemistry, as a potential energy/storage resource. The attached slide, included in present outreach materials, summarizes EWEB's interests.

EWEB's Stakeholder Role

As part of the stakeholder and regulatory review process, commencing April 2022, EWEB's role is the following:

- Participate in meetings, answering questions as to EWEB's interests and impacts on EWEB customer-owners beginning Mid-April
- Provide a letter of support from EWEB's perspective
- Meet with Eugene Mayor and/or Councilors in tandem with NWN to answer questions as to EWEB's interests and impacts on EWEB customer-owners

In this role, EWEB will explain, and answer questions related to our specific role and interests as an electric utility as described below. The merits of using hydrogen to decarbonize the natural gas sector, along with natural gas customer impacts, will be NWN's responsibility.

EWEB's Project Role

Specific to the NWN hydrogen blending pilot project and HB 844 filing, EWEB is participating as the electricity and water supplier similar to other customer requests for services, using standard published rates with no customer-owner subsidy. Additionally, EWEB is offering NWN a market-based lease arrangement for approximately ¼ acre at EWEB's Roosevelt and North Bertelsen Road location. This site is optimal for NWN based on proximity to an appropriately sized gas main for blending, and there is sufficient water and electric capacity. This is an optimal location for EWEB as it creates options for future expansion if EWEB decides to pursue hydrogen production and/or storage or wants to be an off-taker for other purposes. Finally, ancillary to the project, EWEB will use the project to investigate the potential customer benefit of creating a unique rate and/or contract terms for renewable or carbon reduction related services. For example, there could be a program similar Tacoma Power's Electrofuel Tariff that has a demand response component and leverages the utilities intermittent surplus position.

Summary of EWEB's Long-Term Interest(s)

To achieve the decarbonization of electricity, firm and/or dispatchable fossil-based electricity generators are, and will continue to be, replaced by intermittent renewable generation, primarily wind and solar. The replacement will not be one-for-one. In order to achieve similar reliability, firm and/or dispatchable generation will be replaced with greater "nameplate" amounts of intermittent resources. This larger buildout will add expense and create times of electricity surplus beyond the capabilities of battery storage.

Developing applications that take advantage of intermittent surplus electricity, like the electrolysis-formed “green” (depending on electricity mix) hydrogen, produces several potential benefits:

- Secondary market applications will create revenue during times of otherwise curtailed electricity, subsidizing further investment in renewable energy while mitigating consumer pricing impacts
- Other sectors, such as large commercial transportation, industrial, and natural gas uses, can further decarbonize as alternative fuels are developed including hydrogen, and methanated hydrogen (synthetic methane)
- Hydrogen fuel cells offer potential uses in backup power systems needed for resiliency and emergency response
- Hydrogen electricity generation (direct or fuel-cell), especially in distributed locations may create potent (high density) energy storage for use in load shifting, peak shaving, transmission optimization/capacity, and market arbitrage as generation-based scarcity and pricing volatility increases.

Recommendation/Board Action

This memorandum is provided for information only. No Board Action is requested.

Attachment A: EWEB Slide, NWN Hydrogen Pilot Project Outreach Presentation

EWEB Interests – NW Natural Green Hydrogen Pilot Project

NW Natural Hydrogen Pilot Project

EWEB Role & Interests:

Role of "Supplier" (Water, Electricity, Property)


Retail/Market-Rate Based

Clean Market-Mix Electricity

Understand Operational Impacts of Hydrogen Production:

Synchronization with Resources and/or Grid Characteristics

"Alternative Fuels" Rate Development (Surplus Conditions, TOU, Interruptible)



Long-Term Electric Utility Hydrogen Benefits

1. **Secondary Market**
(Facilitates/Leverages Renewables Buildout)
2. **Bridge to Decarbonization**
3. **Local Grid Support:**
Intermediate-Term Storage
(Demand Response, Load Shifting/Peak Shaving, Pricing Arbitrage)
4. **Resiliency**
(Distributed, carbon free, backup fuel)

