



MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO: Commissioners Carlson, Barofsky, McRae, Schlossberg, and Brown
FROM: Frank Lawson, CEO & General Manager
DATE: May 29, 2023 (Board Meeting June 6, 2023)
SUBJECT: Hydrogen Technology & Interests
OBJECTIVE: Information

Issue

Commissioners requested information on hydrogen technology and applications in the energy sector.

Background

Although hydrogen as an energy source has been around for centuries, over the past decade the interest in hydrogen as a source of energy has been evolving.

On August 1, 2019, EWEB hosted a Hydrogen Summit with participants U.S. Congressman Peter DeFazio, Toyota, EWEB, Columbia-Willamette Clean Cities Coalition, NW Natural, Oregon State University, Renewable Hydrogen Alliance, and Hydrostar (electrolyzer Manufacturer) discussing the issues and opportunities of hydrogen production and applications.

In April and October of 2022, staff provided updates to the Board, clarifying EWEB's role in NW Natural's potential development of a hydrogen production facility and blending operation, and highlighting EWEB's separate and distinct general long-term interest in hydrogen's opportunities within the electricity sector. Additionally, EWEB's Green Hydrogen Principles were included in 2023 Board discussions of EWEB's Climate Guidebook ([Guidebook-Draft-Link](#)).

Discussion

At the June 6, 2023, Board Meeting, Kelly Hoell, EWEB Climate Analyst/Advisor, will present information on hydrogen technology, production, and the characteristics of hydrogen applicable to the energy sector. The different types of hydrogen production (green, blue, grey, etc.) will be discussed along with intermediate storage and transport options and fuel cells. Michelle Detwiler, Executive Director of Renewable Hydrogen Alliance, will discuss recent trends, policies, and projects. Frank Lawson will summarize EWEB's, and other electric utilities, interests in hydrogen including secondary market potential, applications in hard-to-decarbonize industries/applications, local grid support, and resiliency.

As our industry moves away from fossil-based electricity generators (primarily coal and natural gas) in favor of renewable generation (primarily wind and solar), the utility industry needs to compensate for the loss of firm and/or dispatchable resource attributes. The replacement of fossil-based generators will not be one-for-one; to achieve similar reliability, firm/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, such as electrolysis-formed “green” hydrogen (greenness dependent upon electricity mix), produces several potential benefits. Secondary market applications will create revenue during times of otherwise curtailed electricity, creating an opportunity to subsidize additional investments 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 electricity generation (direct or fuel-cell), especially in distributed locations may create energy storage for use in load shifting, peak shaving, transmission optimization/capacity, and market arbitrage as generation-based scarcity and pricing volatility increases. Hydrogen fuel cells also offer potential beneficial uses in backup power systems needed for resiliency and emergency response.

Recommendation/Requested Board Action

This agenda item is for information only. No Action is requested at this time.