Grant County
PUBLIC UTILITY DISTRICT

Powering Our Way of Life.

Feb. 23, 2024

Secretary Janet Yellen
U.S. Department of the Treasury
1500 Pennsylvania Avenue NW
Washington, D.C. 20220

Secretary Jennifer Granholm
U.S. Department of Energy
1000 Independence Avenue SW
Washington, DC 20585

Mr. John Podesta
Assistant to the President and Senior Advisor to the President for Clean Energy
1600 Pennsylvania Avenue NW
Washington, DC 20220

Re: Implementation of the Section 45V Clean Hydrogen Production Tax Credit

Dear Secretary Yellen, Secretary Granholm and Mr. Podesta:

Grant County Public Utility District (Grant PUD) is pleased to provide comments regarding the draft 45V regulations relating to the Clean Hydrogen Production Tax credit (PTC) under the Inflation Reduction Act (IRA).

Forward

Grant PUD is a large, rural electric utility located in central Washington state with generation assets greater than 2,000MW nameplate capacity. Our generating assets primarily consist of 2 large Columbia River hydro projects and minor wind resources.

Washington state has aggressive decarbonization goals enacted in the Clean Energy Transformation Act (CETA). The law requires utilities to phase out coal-fired electricity from their state portfolios by 2025. By 2030, their portfolios must be greenhouse gas emissions neutral, which means they may use limited amounts of electricity generated from natural gas if it is offset by other actions. By 2045, utilities must supply Washington customers with electricity that is 100% renewable or non-emitting with no provision for offsets.[1]

[1] Washington Department of Commerce. https://www.commerce.wa.gov/growing-the-economy/energy/ceta/ceta-overview/

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Grant PUD loads are growing beyond our existing resources. To address this, Grant PUD is exploring carbon-free resources, including small modular reactors, hydrogen-based power generation, pumped storage, and batteries. Specifically, Grant PUD has explored producing hydrogen via a co-located solar project, electrolysis, on-site hydrogen storage, and hydrogen turbines or fuel cells to generate power. Without the 45V tax credit incentives, hydrogen is currently not cost-competitive with other resources. Our comments are directed by our explorations into hydrogen as a peaking electrical resource through the lens of 45V incentives and its proposed rules.

Comments

The incrementality requirement restricts the economic and operational usefulness of hydrogen production for electrical generation and reliability because it raises the cost of both hydrogen and the cost of electrical generation. This impairment arises from physical incrementality constraints, the discouragement to store hydro generation as hydrogen during spring runoff and low-priced off-peak periods, and the probable knock-on effects that will likely impede the development of a regional hydrogen ecosystem or market.

Incrementality physically prevents Grant PUD from optimizing the use of the electrolyzer and thwarts the pursuit of lower average per-unit costs for hydrogen and hydrogen-based power. Hydrogen-fueled electrical generation is facing a roughly 3:1 to 5:1 ratio to store hydrogen for electrical production, depending on technology. This means that for every three megawatt-hours of electricity supplied, one megawatt-hour is produced if utilized in fuel cells or a combined cycle plant, and if combustion turbines are used, for every five megawatts-hours of electricity supplied one megawatt-hour is produced in return.

The most straightforward incrementality would be co-locating a solar project sized to the electrolyzer. Based on where Grant PUD is, a solar capacity factor of roughly 27% annually can be expected. When coupled to an electrolyzer this translates to a 5-9% annual capacity factor for like-sized generation. Additional solar would require an additional electrolyzer, which is costly. Adding wind would only work in the periods when the wind is blowing at night, and would require increased interconnection sizing (e.g. substations, transformers) and investment to be able to deliver excess energy to the grid during daylight hours, or would require spilling/curtailing wind or solar generation. Forcing incremental renewable generation to be dedicated to hydrogen production is also sub-optimal from an electrical reliability standpoint because during periods of hydrogen use for electrical generation, it would not make sense to use electricity to make more hydrogen. Grant PUD would want the energy from those renewable resources to go directly to serve load in addition to the peaking hydrogen generator.

The incrementality requirement would likely limit the electrolyzer to ¼ capacity and the capital costs associated with the electrolyzer would need to be borne by a smaller number of megawatt-hours produced from hydrogen generation, thus increasing the levelized cost of energy (or levelized cost of storage). This distorts the economics such that the resource becomes unattractive relative to current market prices and alternatives for power production.

Grant PUD's hydrogeneration is largely run-of-river, which means there is relatively little storage capability. This makes storing hydropower attractive, especially in off-peak periods and seasonally when the river is flowing in excess of power demand, when prices are low or water is being spilled. As previously mentioned, storing power as hydrogen faces a 3:1 to 5:1 ratio, whereas batteries are around a

1.2:1 ratio. The 45V incentives help overcome the ratio disadvantages of hydrogen for power production through financial recompense. If moving specified-source scheduled hydropower without an Energy Attribute Certificate (EAC) through a Clean Hydrogen Production Facility (Facility) eliminates the entire Facility from having access to 45V incentives, then net annual complex costs (Facility, hydrogen storage and hydrogen generators) are estimated to rise by approximately 20% during the 45V period, assuming a 10% hydrogen combustion turbine generation factor.

Impairing the volumes and financial feasibility of hydrogen production may also have knock-on effects to developing a regional hydrogen market. If reduced hydrogen production is being hoarded for electrical reliability, less will be available to sell on the open market, thereby decreasing supply, increasing price, and creating supply availability concerns for potential customers. If hydropower does not have the benefit of 45V credits, then the price of the incremental hydrogen will reflect specified-source hydropower market prices. This will likely make the hydrogen so expensive that potential customers will pursue other feedstocks or substitutes.

For questions regarding the technical aspects of these comments please contact Bryce Greenfield, Engineer IV for Grant PUD at bgreeenfield@gcpud.org or by phone at 509-885-2186.

Sincerely,

Rich Wallen

General Manager / Chief Executive Officer
Grant PUD

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