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Fuel cell use in microgrids

Additional submitted attachment is included below.

August 10, 2020

California Energy Commission

Dockets Office, MS-4

Re: Docket No. 20-IEPR-04

1516 Ninth Street

Sacramento, CA 95814-5512

Subject: IEPR Commissioner Workshop on Assessing the Future Role of Microgrids in California: Docket Number 20-IEPR-04

Introduction

Plug Power is a publicly traded company (Nasdaq: PLUG) founded in 1997. We are the architect of modern hydrogen and fuel cell technology; the first company to take hydrogen and fuel cell technology from concept to commercialization. With industry-first full-service solutions, Plug Power has successfully transformed fuel cell technology for the backup power market. Plug Power's GenKey full turnkey solution couples together all the necessary elements to power, fuel and serve a customer. With proven hydrogen and fuel cell products, Plug Power replaces legacy combustion generator technology to provide emission free, low-maintenance and cost-effective reliable backup power.

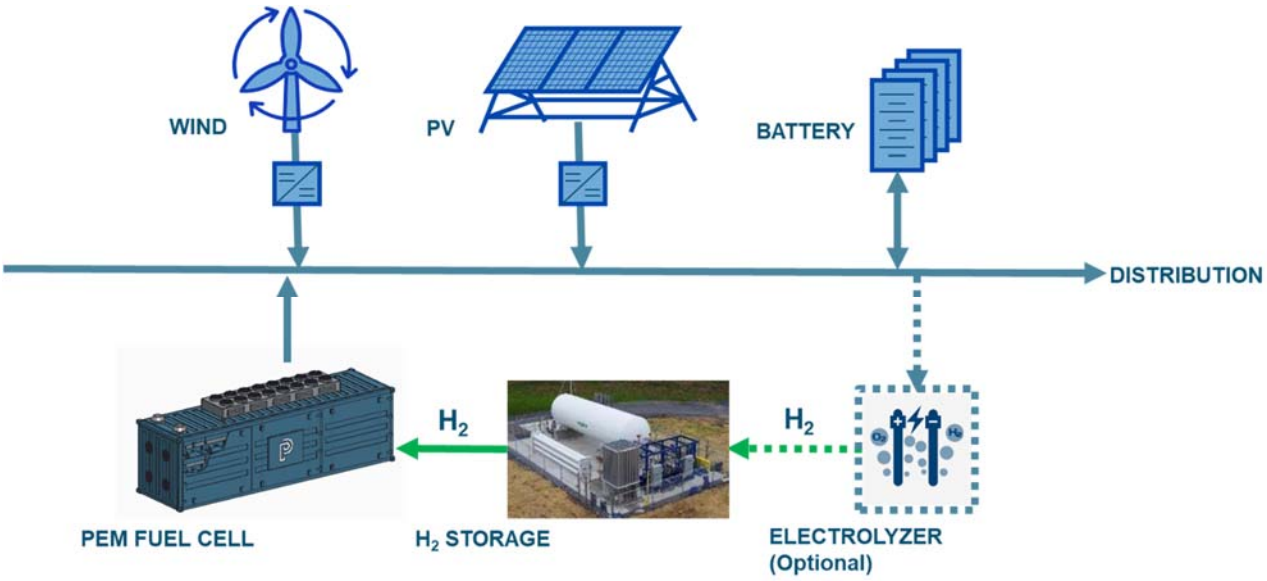
GenSure is Plug Power's critical power product line, providing highly-reliable, zero-emission backup power to a variety of markets. We have installed over 8 MW and greater than 4,700 GenSure fuel cells at over 2,700 sites in 35 countries, on 5 continents around the globe, including with multiple government agencies. Plug Power customer applications include wireless and wireline telecommunications with carriers both large and regional, utility communication networks, railway signals and communications, microgrid and government communications and security networks

The GenSure HP (high power) platform is a line of zero-emission PEM fuel cell systems designed for large-scale, high power backup power applications. This product line is focused on data centers, energy storage systems, microgrids, and other high power commercial facilities. GenSure HP hydrogen fuel cell systems are made up of Plug Power's 125kW ProGen fuel cell engines. Initial configurations include power outputs of 500kW, 1MW, and 1.5MW, with all systems housed in standard ISO containers for

ease of packaging and deployment. GenSure HP solutions are modular and scalable to meet higher capacity requirements, making them appropriate for a wide variety of high-power applications ranging from as low as 100kW to those requiring multiple megawatts.

The GenSure HP platform provides, clean, cost-effective performance to meet customers' 24x7 stationary power needs with significantly lower maintenance requirements and much higher reliability than traditional combustion generators—enabling growth and capacity expansion in all regulatory environments.

With the introduction of the GenSure HP high-power PEM fuel cell solution, Plug Power can now provide a true zero-emission alternative to combustion generators to support long-duration resiliency for microgrids ranging from tens of kilowatts to tens of megawatts. GenSure HP fuel cells can provide critical backup power in seconds to maintain a resilient microgrid that can be operated indefinitely on zero-emission fuel cell power alone if needed. Additionally, studies have shown that energy storage in excess of 8 to 12 hours can more economically be achieved with hydrogen than batteries. Plug Power recently completed the acquisitions of United Hydrogen Group Inc. and the leading PEM fuel electrolyzer manufacturer Giner ELX, providing the ability to include green hydrogen generation as part of an overall microgrid solution as noted below:



These recent acquisitions are part of the Company's vertical integration strategy in the hydrogen business which will further enhance Plug Power's position in the hydrogen industry with capabilities in

generation, liquefaction and distribution of clean hydrogen fuel, complementing its industry-leading position in the design, construction, and operation of customer-facing hydrogen fueling stations.

Turnkey packages for the GenSure HP product line include power, fuel, installation, permitting, and aftermarket service—delivering a comprehensive solution that aims to take the complexity out of the equation and enable a seamless transition to hydrogen power. Powered by clean-burning hydrogen fuel, GenSure HP systems provide extended, emissions-free runtime for all manner of critical equipment and are not subject to fuel spill containment or air quality reporting requirements. GenSure products are able to operate in microgrids, as well as support value-added services such as load peak shaving and demand response programs without impacting emissions and operating hour limitations. Their low acoustic signature means they can be located anywhere power is required.

In addition to the GenSure backup power product line, Plug Power has revolutionized the material handling industry with its GenDrive fuel cell products, replacing lead-acid batteries to power electric industrial vehicles at leading retailer distribution centers with customers such as Walmart, Amazon, and Home Depot. Each customer location is equipped with hydrogen storage and, together, our material handling customers have completed more than 27 million hydrogen fills into their forklifts and other industrial electric vehicles.

Extending its reach into the on-road electric vehicle market, Plug Power's ProGen platform of modular fuel cell engines empowers OEMs and system integrators to rapidly adopt hydrogen fuel cell technology.

Sustainability

Plug Power fuel cells are a part of many well-planned corporate sustainability programs. Clean, zero-emissions operation means not having to address fuel spill containment and air quality reporting requirements. The operational related costs of tracking combustion generator assets and usage to meet increasingly stringent CO_2 emissions regulations are eliminated with fuel cells. Hydrogen fuel cells emit only water, so there are no carbon dioxide emissions and no air pollutants that create smog and cause health problems at the point of operation. Low heat and noise allow for placement in environmentally-sensitive locations including neighborhoods and national parks. All these assets contribute to fuel cells being ideally suited to a nationwide deployment across various geographies and state jurisdictions, particularly in an ever-increasing climate change aware regulatory environment.

Fuel Cell Microgrid Customer: Stone Edge Farm

As noted in Session 2 of the workshops, Stone Edge Farm, located in Sonoma, California, operates its own state-of-the-art micro-grid consisting of a number of clean technologies working in conjunction to provide sustainable energy for facility operations. One component of the micro-grid is a hive of Plug Power GenSure fuel cells, which produce 26kW to power Stone Edge's "critical grid". This critical grid powers their servers, fiber, Ethernet, gates, alarms and security lighting. Hydrogen for the GenSure fuel cells, and for multiple fuel cell vehicles operated by Stone Edge, is provided by electrolyzers, which are

powered by a solar array. One of the electrolyzers is provided by recently acquired Giner ELX. It provides up to 200kg of hydrogen per day. The electrolyzer is a “plug and play” unit, designed for easy water and electrical connection, so Stone Edge can quickly connect and begin producing hydrogen for their microgrid needs.

The micro-grid project, developed by Wooster Engineering Specialties, a general engineering contractor specializing in alternative energy, combines a number of off-grid energy solutions with peak shaving and load shifting services to Stone Edge Farm for energy self-sufficiency and carbon footprint reduction. The grid-tied micro-grid is capable of islanding and operating continuously and autonomously, and is also generating extra energy so that Stone Edge Farm is able to sell a substantial amount of this energy back to local utility, PG&E.

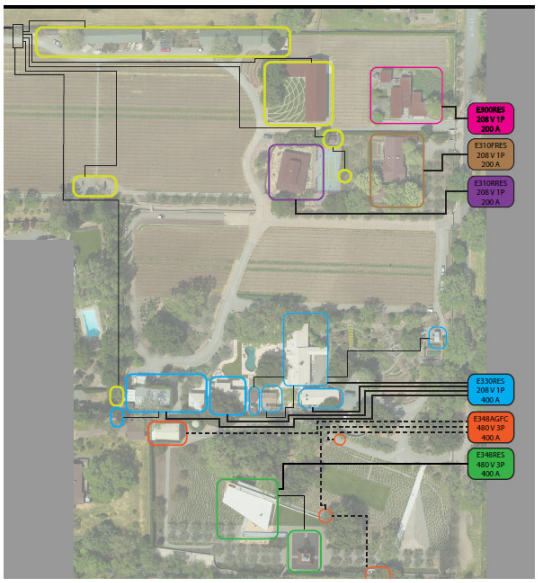


Photo: Stone Edge Farm

Projects like the Stone Edge micro-grid are exactly the kind of innovation Plug Power envisions for a future when hydrogen and fuel cells will be abundant globally.

Respectfully submitted,

_____/s/_____

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