| DOCKETED | |
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| **Docket Number:** | 22-RENEW-01 |
| **Project Title:** | Reliability Reserve Incentive Programs |
| **TN #:** | 248866 |
| **Document Title:** | Dash Clean Energy Comments - Dash Clean Energy comments on DSGS and DEBA |
| **Description:** | N/A |
| **Filer:** | System |
| **Organization:** | Dash Clean Energy |
| **Submitter Role:** | Public |
| **Submission Date:** | 2/17/2023 3:56:41 PM |
| **Docketed Date:** | 2/17/2023 |

*Comment Received From: Dash Clean Energy*
*Submitted On: 2/17/2023*
*Docket Number: 22-RENEW-01*

## Dash Clean Energy comments on DSGS and DEBA

*Additional submitted attachment is included below.*

February 17, 2023

California Energy Commission

RE: 22-RENEW-01, "Demand Side Grid Support and Distributed Electricity Backup Assets Program"

**Introduction:**

Dash Clean Energy (DCE) is an independent clean power developer that designs, engineers, and constructs distributed energy resources (DER's) utilizing zero emission hydrogen fuel cell technology to provide grid reliability, demand response, and resource adequacy for CCA's, IOUs, and C&I customers.

DCE has pioneered the development of an integrated Proton Exchange Membrane (PEM) fuel cell system for distributed energy resources though its integrated approach and design philosophy around multiple hydrogen systems including electrolyzers, compressors, high pressure storage, and fuel cell systems into one uniform product that reduces capital cost, improves efficiency, and optimizes operational performance through software integration.

Our current solution is being tested and developed through sponsorship by the California Energy Commission (CEC) through the Electric Program Investment Charge Program (EPIC) grant GFO-19-305 "Demand Based Power-to-Power Applications" with field trials and testing being performed and monitored by the University of California at Irvine and the Advanced Power and Energy Program (APEP). Our research will advance the performance and validation of our business models and develop critical software tools for power plant performance.

PEM fuel cells offer an opportunity to deploy zero emission DER's solutions utilizing clean hydrogen and offer several advantages over traditional DER's such as

1. Scalable: Hydrogen based systems are scalable form Kw to Mw scale which allows for multiple use either for behind the meter customers, or utility scale applications.
2. Flexible: Hydrogen can be produced with excess wind/solar and unlike most technologies, hydrogen systems can store MWhs of power in pressurized vessels or solid metal hybrids and TWh's in pipelines, or salt caverns providing seasonal storage.
3. Emissions: PEM based fuel cells allow for truly zero emissions unlike natural fuel cells or gas turbines with hydrogen blends as there are no $CO_2$, $NO_x$, or criteria area pollutants.
4. Environmental: 95% of the precious metal platinum that is used for the membrane electrode assembly (MEA) is recycled and reused either in refurbishment or a new fuel cell.
5. Durability: Fuel cells have proven track record in the automotive industry by achieving over 30,000 hours of operations.
6. Response time: Fuel cells and electrolyzers can respond within milli-seconds versus high temperature fuel cells which require hours.

7. Value Stack: Hydrogen can be used in more than one market, including the transportation and alternative fuels, such as e-methanol or ammonia.

## Comments:

**Distributed Electricity Backup Assets (DEBA)**

1. *How best can DEBA invest in assets for emergency load reduction without interfering in the Resource Adequacy Program or creating clean stranded assets? How can it best do both?*

**Bulk Grid Investments:**

DEBA can invest in the upgrade of existing clean energy assets that incrementally add low to zero emission generators to existing wind and solar projects with a specific focus on zero emission generation. The utilization of existing generation paired with new capacity resources will take advantage of existing interconnection and allow for increased capacity on the grid.

**Distributed Resources:**

DEBA should incentivize the replacement of Diesel Backup generators with qualifying RA products including zero emission fuel cells.

DEBA should incentives the development of microgrids using zero emission generation.

Existing BTM programs such as SGIP support the development of generation resources including wind power. In many cases generation projects that look towards net metering face high interconnection costs that cannot be overcome by SGIP funds alone. DEBA should consider eligible funding for SGIP projects that face high interconnection that are paired with a capacity generation including fuel cells.

2. ***Are the proposed program frameworks reasonable? What modifications could unlock additional resources for emergency events?***

The proposed framework is only as reasonable as the final incentive values for the projects. In order to justify the investment of new large generation resources, the project developer must have clear line of site for a return on investment.

We recommend that the incentive value is based on the % equipment cost. The problem with a $/MW is not all project technologies are the same, and capital cost can vary depending on technology, emission profile, duration, etc. Take for example the SGIP program that provides $2,000/kw for generation projects. Wind turbines are a great distributed resources but are significantly more capital intensive for the delivery and installation of one turbine, when compared to generators running on renewable gas.

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3. ***Are there additional criteria that the CEC should consider when evaluating projects? How should the CEC rank or weight the evaluation criteria?***

Evaluation Criteria:

- Portfolio Diversity: We agree there should be a wide range of technologies that are supporting, including zero emission fuel cells. Many technologies exist today but need funding to achieve commercial viability. DEBA funding should focus on non-lithium solutions, as lithium-ion batteries cannot be the States only solution to storage and reliability.

- Loading Order: We believe that cost effective renewable and zero emission resources should be prioritized just as important as demand response and efficiency projects, as these projects tend to be high in capacity and can achieve greater penetration than DR and efficiency alone.

- Resource Longevity: Agree that projects should meet the states climate and air quality requirements.

- Capacity: Ranking for projects that provide longer duration

- Cost: Recommend funding based on % of the proposed project.

- Readiness: Many projects are currently under development, including site lease negotiations, CEQA permitting, CUP, etc. DEPA should consider the developers experience and ability to meet deadlines as many projects will be in the planning phase, and signing state investment can unlock future development dollars to more projects in the state.

- Equity: There are countless number of reports that demonstrate how disadvantage communities and/or low to moderate income communities are impacted by localized air pollution. DEBA should set priority and provide preference for projects located in communities most affected by air pollution.

  DEBA should also focus and provide consideration for the develop of projects where the lead applicant is a women-owned, minority-owned and/or LGBT-owned business enterprise. (WMLGBTBE).

- Co-Benefits: Agree that additional consideration for critical infrastructure should be a priority. In addition, if projects demonstrate cross sector support, such as hydrogen fuel cell generators providing hydrogen or zero emission electricity to the fuel cell electric vehicle market and the battery electric vehicle markets.

4. What are reasonable exceptions to non-performance in an emergency event?

Plants that do not meet expectations should have a repayment penalty for non-performance.

5. What level of funding is needed to spur the development of a project?

The level of funding will differ for Bulk Grid projects where funding greater than $10-million will be required per project.

For distributed generation projects, less than $10-Million will be required depending on MW of the facility being proposed by the applicant.

Dash Clean Energy appreciates the opportunity to provide comments to the DSGS and DEBA program and we look forward to supporting the State as we achieve a zero-carbon grid.

Thanks,

*Gordon Dash*

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