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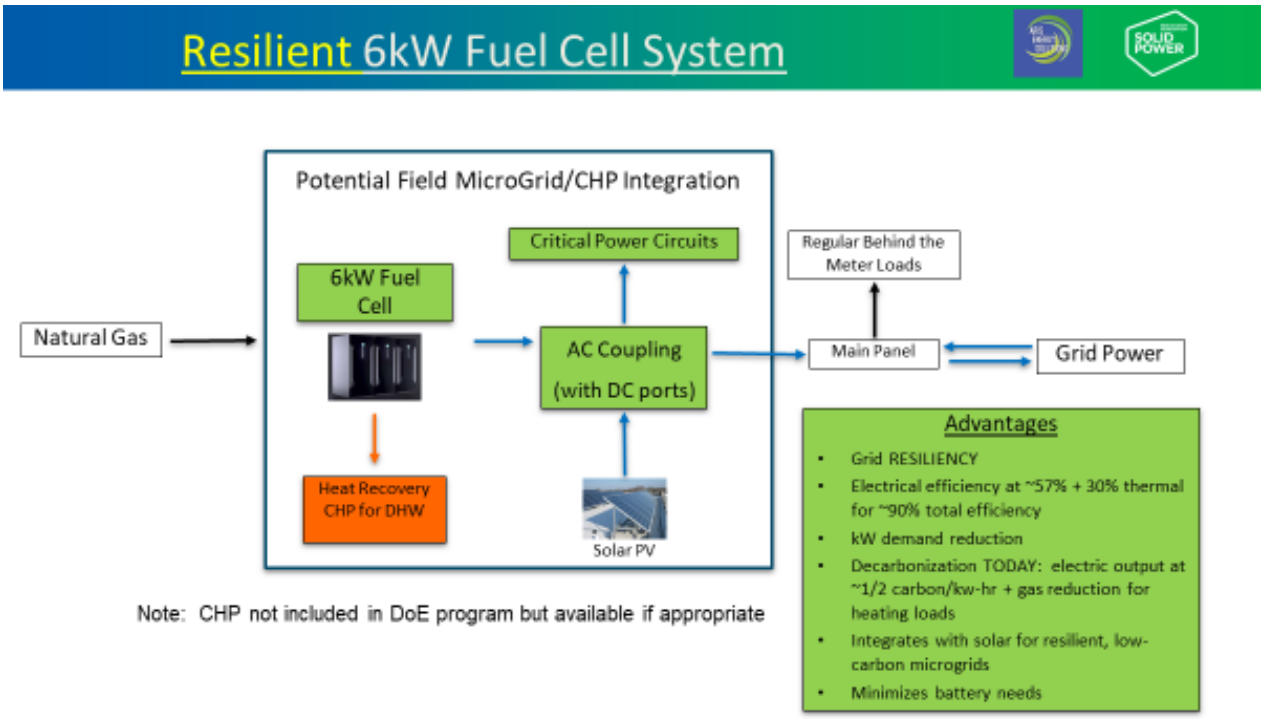
Program/Proposal Title: Modular Fuel Cells Providing Resiliency to Data Centers and Other Critical Power Users
Federal $ Grant Value: $2.66 million
Term: 3-year grant with most activity in Years 1-2

Program/Proposal Team:

- National Energy Technology Laboratory (NETL): is a U.S. national laboratory under the Department of Energy, and it focuses on applied research for the clean production and use of domestic energy resources
- West Virginia University (WVU) including their collaboration with the National Aeronautics and Space Administration (NASA). NASA is an independent agency of the U.S. Federal Government responsible for the civilian space program as well as aeronautics and space research
- Gaia Energy Research Institute: Gaia helps with a wide range of energy research, including thermodynamics, chemical engineering process, plant design, economics, computer modeling, techno-economic analysis, life cycle assessment, and independent testing of advanced energy systems
- Velocity Data Centers: specializes in "Edge Computing" - constructing remote data centers on your property, freeing clients from the burden of owning, operating, and spending capital dollars on an old data center

Broader Aris Energy Work to Meet Fuel Cell Market Needs: Resiliency and De-Carbonization

- Aris Energy Solutions has been working to launch the SOLIDpower "BlueGen" stationary power fuel cell to the US markets. This work has included:
    - Collaboration and support to Brookhaven National Lab who operated a BlueGen fuel cell for multiple years. Aris hosted a series of industry showcases to building property management firms, Fortune 500 facilities management and engineering staffs, municipal leaders and regional utilities
    - Current execution of a contract from major NE regional utility to demonstrate the fuel cells with micro CHP in both a residential homeowner and institutional building applications.
    - Recently obtained first US electrical interconnect permit for the BlueGen outside a laboratory/pilot facility
    - Outreach campaign to major utilities nationwide to raise their awareness of the BlueGen solution to both market needs
- This DoE program/award is a major step forward to demonstrate the resiliency functionality. Please see illustration on next page.
- While the existing BlueGen technology can reduce carbon emissions about 50% today (depending on the carbon intensity of the electric grid), Aris Energy Solutions is currently developing public/private partnerships to advance the SOLIDpower BlueGen technology to meet the growing market demand for De-Carbonization. Refer to illustration at end of this summary.



Program Objectives and Resulting Commercialization Goals:

- Significantly advance the state-of-the-art of modular SOFC systems and their ability to meet the market needs for Resiliency
- Present a defined pathway towards DOE's long-term goals of achieving price compression of SOFC systems through RD&D, while emphasizing progression from "Development to Deployment."
- Demonstrate the high system efficiency, reliability, operating flexibility and reduced carbon emissions at the full-scale demonstration sites, providing early customers in several critical power sectors with the operating history they seek to accelerate their early adoption and deployment
- Use the above demonstration foundation, "Resiliency Value" and cost reduction pathway to broaden addressable markets, spark widespread deployment for green jobs creation and growth.
- Beyond Resiliency, and using additional public/private funding as available, use the modular SOFC technology to make further progress with "De-Carbonization" via hydrogen substitution/blending in natural gas, ultimately to a 100% green hydrogen powered device as a part of the infrastructure to support the hydrogen economy.

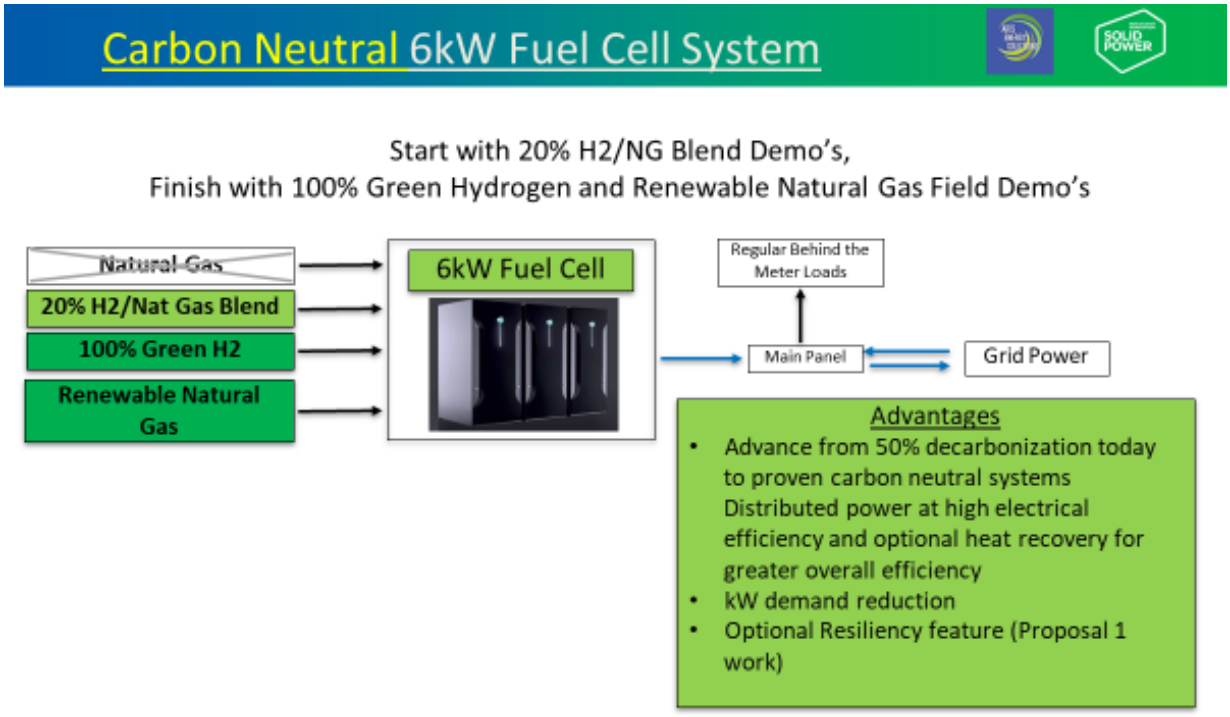
The demonstration sites and plans are:

1) **NETL**
    A. "Stress test" the BlueGen's ability to reliably disconnect from the grid in to "Island Mode" and then reliably "Load Follow" critical loads on the Year 1 6kW Quad product
    B. In Year 3 replicate that work on the 6kW BG-60 product
2) **WVU/NASA**
    A. Demonstrate a modular approach to scaling to higher kW range via a Resilient 24kW prototype system of BG-15 units, in service to power critical data center loads at the NASA/Fairmont WV facility for 12 months, and integrate multiple AC coupling systems
    B. In Phase 2 at NASA, incorporate lessons learned to complete second part of the NASA data center installation, with an additional 16.5kW BG-15 capacity to operate for 12 months
3) **Velocity "Edge Computing" Data Center**
    A. Install and operate a 6kW BG-15 Quad at Velocity Data Centers for 12 months for operation with a commercial modular data center
    B. Integrate with other "Edge Computing" power management technologies.

Techno Economic Assessment

Over the course of the 3 year program, Gaia Energy Research Institute, who has an intimate understanding of fuel cell technologies and economics, will chart a path towards the cost and market goals.

Beyond Resiliency….De-Carbonization



For further information about Aris Energy Solutions' fuel cell work please visit our website.