23Q2 MGB HYDROGEN TASK FORCE OVERVIEW

Mass General Brigham

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23Q2 NORTHEAST H2 SUMMIT: MGB HYDROGEN

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OBSTACLE

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Northeast Hydrogen Infrastructure Summit
Funding & Development Speaker Challenge
June 29th | Federal Reserve Bank of Boston

DERIVED 12-MONTH CRITICAL OBSTACLE

Launching pilot projects that study distribution, delivery, and onsite storage of GreenH2 for use in fuel cells at critical facilities to address inertia and lack of understanding/support.

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SOLUTION

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12-MONTH & 90-DAY GOAL

12-Month: Expand upon the scoping document to include supplier, permitting, funding, and considerations. Utilize this document to build out and submit a permitting proposal for the pilot project.

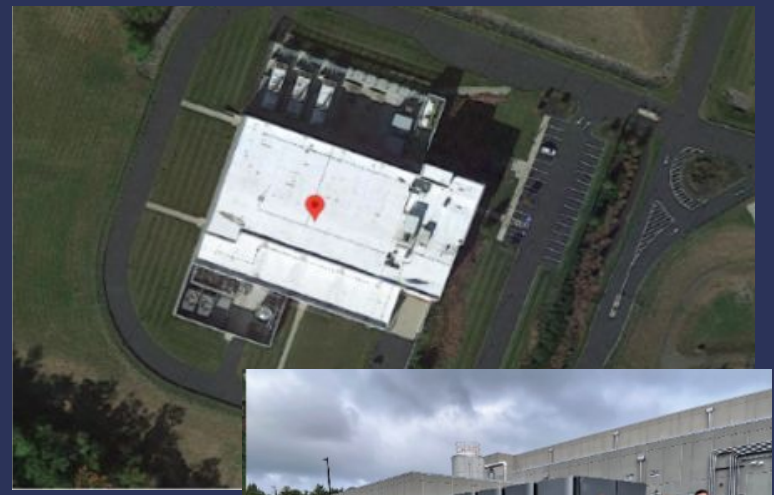
90-Day: Align relevant stakeholders and create a scoping document that consists of a technical feasibility analysis using the MGB Data Center in Marlborough, MA a basis for project implementation.

RESULTS

Request for Information on Enabling Green-Hydrogen Supply on Fuel Cell Electricity Generation

Task Force Mission Statement

Our mission is to lead the charge in revolutionizing the energy landscape by harnessing the power of green hydrogen to fuel critical infrastructure, starting with an essential data center in Massachusetts. We envision a future where sustainable energy solutions drive our world, mitigating climate change and reducing our reliance on fossil fuels.



NEH2IS Mass General Brigham Data Center Project Scoping

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AEG NEH2IS MGB Task Force

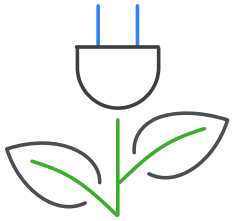
Dennis Villanueva
Director of Energy Strategy & Procurement
Mass General Brigham, Real Estate and Facilities

February 8, 2024

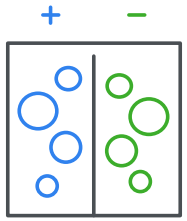
Root Problem: Ensuring Business Continuity in Hospital Facilities while Reducing GHG

- CMS Guidance requires:
  - Emergency Backup with 96 hours onsite fuel storage required from an alternate source of energy
  - Provide temperatures to protect patient health. (could require backup capacity for 80%-90% of total load)
- NFPA 99: sources such as healthcare microgrids systems (HMGS) can now be used to serve emergency power loads
- Challenge is finding a feasible zero or low carbon alternative fuel to fossil fuels

90-Day Report: Identification of Critical Paths to Build the Infrastructure to Implement Green Hydrogen Supply to Onsite Fuel Cell Generators

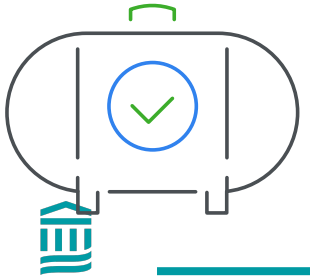


Zero Carbon Electricity is Sourced



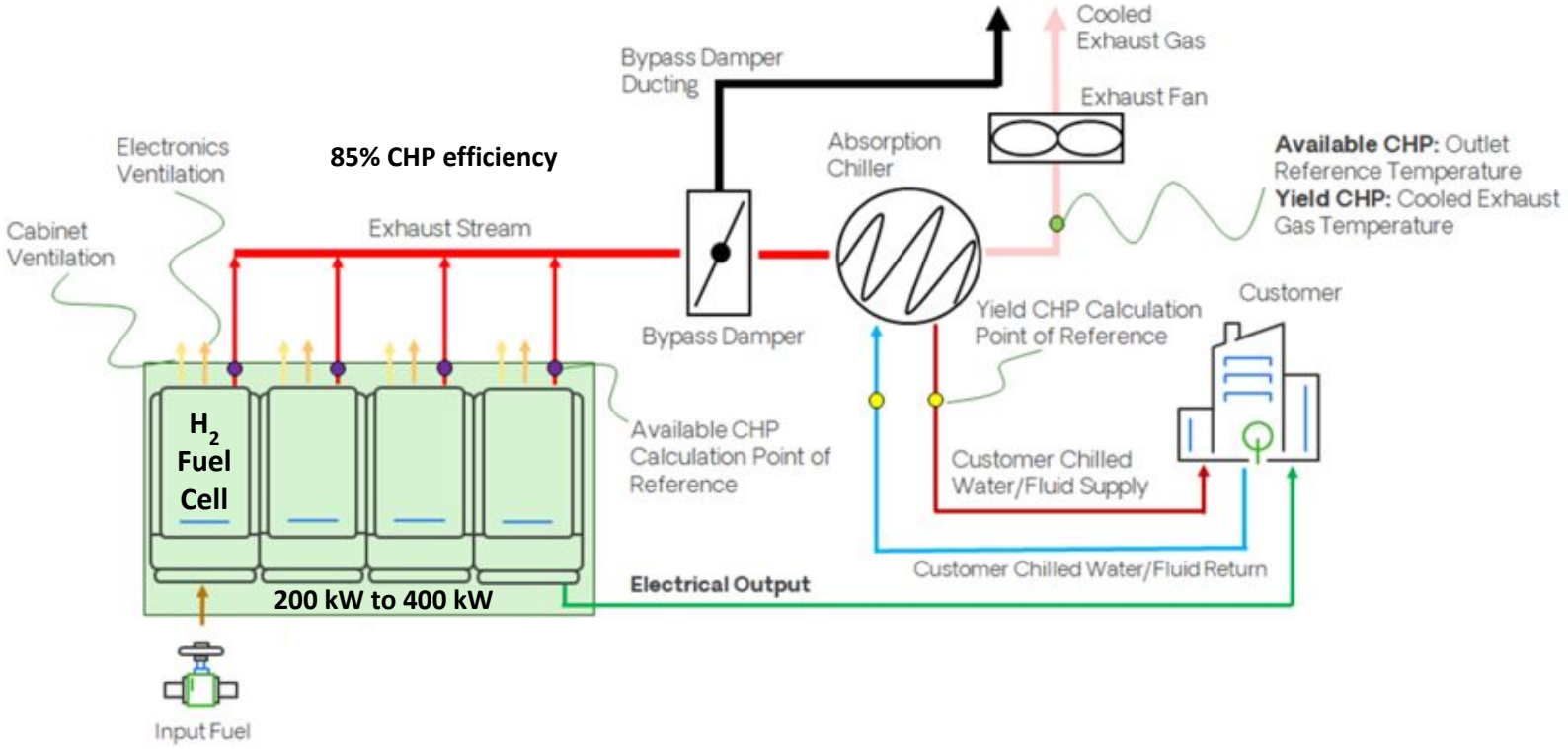
Electricity + Water Input to Electrolyzer

Results in Green Hydrogen



Green Hydrogen is Stored Onsite (Capacity for 96 hours of Fuel Cell Operations)

Decarbonized Operations: Hydrogen Fuel Cell Microgrid with Heat Capture



With onsite green hydrogen storage, the H_2 fuel cells can continue to operate throughout any grid outages displacing fossil fuel use in existing emergency generators, preventing air pollution & carbon emissions.

Diagram courtesy of Bloom Energy

Next Steps: Stakeholder Input to Draft and RFI to Inform an RFP for Hydrogen Supply and Turnkey Project Delivery with a COD of July 2025

- Modify our RFI to obtain insights from a wider audience
- Compile a list of contacts to distribute our adapted RFI to
- Confirm hydrogen quantities for delivery or for production onsite using electrolyzer
- Confirmation of GH2 Storage Capacity for 96 Hours of continued operations
- Identification of GH2 suppliers
- Identify potential sources of funding to achieve economic feasibility
- Identifying a feasible business structure and appropriate party to implement a turnkey project, from site permitting to COD: i.e., EPC, fuel cell manufacturer, systems integrator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