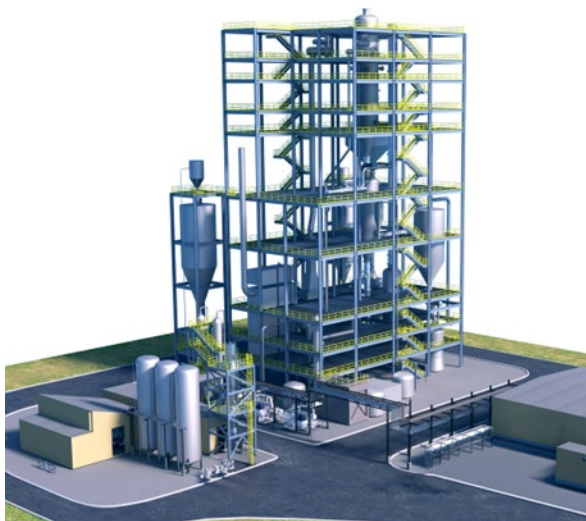


Marguerite Lake Hydrogen Hub Project

The Marguerite Lake Hydrogen Hub Project, developed by Cache Power Corp., Cold Lake First Nations and Babcock & Wilcox, represents an effort to establish a cost-competitive and environmentally responsible solution for Alberta's peak power needs. By integrating BrightLoop™ technology with on-site hydrogen salt cavern storage, this initiative aims to deliver net-zero electricity when coupled with CO₂ sequestration. The BrightLoop technology employs a chemical looping process to generate hydrogen from natural gas while simultaneously separating the CO₂. This innovation offers distinct economic and environmental benefits over traditional methods, positioning it as the most viable alternative for hydrogen production at the scale needed.

**RECIPIENT:****Cache Power Corp.****PARTNERS:****Babcock & Wilcox
Cold Lake First****TOTAL BUDGET:****\$4,252,167****AI FUNDING:****\$2,000,000****PROJECT DATES:****MAR 2025 –
MAR 2026****PROJECT TRL:****Start: 6
End: 8**

APPLICATION

The project focuses on engineering studies to co-locate Babcock & Wilcox's BrightLoop hydrogen production technology with Cache Power's Marguerite Lake Compressed Air Energy Storage (CAES) Project. This integration will enable the CAES facility to operate on hydrogen as a clean fuel source, supporting net-zero electricity generation. The unique subsurface geology at Marguerite Lake, with its multiple salt layers, offers a cost-effective solution for large-scale hydrogen storage, eliminating the need for long-distance hydrogen transportation. The application of BrightLoop at this site will demonstrate an efficient and scalable approach to clean energy storage and hydrogen utilization in Alberta.



ALBERTA INNOVATES CLEAN ENERGY

CLEAN TECHNOLOGY

HYDROGEN CENTRE OF EXCELLENCE

PROJECT GOALS

- Scale up BrightLoop technology to produce 60 tonnes of hydrogen per day.
- Integrate hydrogen production with Cache's Compressed Air Energy Storage facility for net-zero power generation.
- Establish a local supply chain through Alberta-based fabricators and constructors.
- Validate the technical and economic feasibility of large-scale hydrogen production, storage, and utilization.
- Support a Final Investment Decision for full deployment of the hydrogen hub.

BENEFITS TO ALBERTA

- Position Alberta as a leader in chemical looping hydrogen technology.
- Foster job creation and skill development in clean energy technologies.
- Contribute to Alberta's emissions reduction and decarbonization targets.
- Leverage existing expertise in salt caverns for cost-effective, large-scale hydrogen storage. Increase energy security and efficiency with innovative storage solutions.
- Support economic diversification through hydrogen applications in the energy sector.



5-20 Project Jobs



**50-100 Future
Jobs**



**2 New
Products/Services**



**240 kt/yr Future
GHGs Reduced**

CURRENT STATUS

MAY 2025

The project has received funding approval and is advancing through early-stage coordination and commercial alignment activities. Project partners are collaborating on detailed planning and preparing for the upcoming design and development phases, with engineering teams mobilizing to support next steps.