



BrightLoop™ - CCS Demonstration Plant: Converting Wyoming PRB Coal to Hydrogen Wyoming Energy Matching Funds

Executive Summary

Project Applicant: Black Hills Energy and The Babcock & Wilcox Company

Qualifications: **Black Hills Energy** has a long history of providing electricity and natural gas services to Wyoming and investing in local infrastructure and resources. BHE pioneered the first air cooled condensing technology and demonstrated the first mercury emissions controls on coal-fired power plants. This project continues their spirit of innovation. **The Babcock & Wilcox Company** is a global leader in the development of steam generation, environmental equipment, innovative technologies for hydrogen production, and decarbonization. B&W has a distinguished history marked by consistent success in managing large and intricate projects, as well as unwavering dedication to safety and ethical business practices. B&W and BHE share a longstanding partnership in advancing power generation and this collaboration stands as a testament to their collective goal to create new value streams for Powder River Basin (PRB) coal, and aid in decarbonization of industry.

Project Vision and Plan: [BrightLoop](#) is a groundbreaking chemical looping process that converts PRB coal and other natural resources into low carbon hydrogen and isolates a stream of carbon dioxide (CO₂) without requiring expensive carbon capture equipment. The ultimate goal of this project is the construction and demonstration of a BrightLoop facility that produces 15 metric tons of H₂ per day (MT/day).

Phase I: Complete FEED, detailed engineering, review of local supply chain capabilities, permitting and definitive business agreements including project financing. Within this phase there is a gated decision-point, after which will begin the completion of a detailed EPC design package, civil works and foundation, the technical report, and the executive summary.

Phase II (Future): Complete equipment procurement, plant construction, and commissioning of core reactor system, final verification, final technical report, and executive summary.

The successful completion of this project will set the foundation for expanded hydrogen production using PRB coal, not only at the WyoDak mine but across the State of Wyoming. The Project Partners envision this project as a stepping stone towards a larger endeavor capable of supplying an additional 200 MT/day of H₂ to BHE's Neil Simpson Complex. Such an expansion will significantly contribute to the reduction in CO₂ since the H₂ can be used in combustion turbines and boilers. More BrightLoop plants will bring broader economic impacts, including the potential production of useful chemicals such as ammonia, methanol, and fuels.

Benefits to the State of Wyoming: BrightLoop technology has the potential to transition Wyoming from a traditional “mineral” economy to a higher value “molecule” economy, which will provide renewed growth in the decades to come. In addition to supporting the long-term development of the local supply chain, the proposed project will lead to immediate job generation due to civil works and laying down foundations in Phase I. Further construction, operation and maintenance jobs will be created during Phase II. Finally, a Phase III construction and operation of a 200 MT/day facility would provide an economically favorable path to continue use of Wyoming’s coal reserves and allow Wyoming to attain an industry leading leveled cost of hydrogen below \$1 per kg.

EMF Funding Request: \$15,995,451

Matching Funds: The Project Partners are eager to secure 50% (\$15,995,451) of the BLH-15 project's Phase I expenses through the WEA Energy Matching Funds program. B&W will provide the balance of funding needed for the Phase I project, while working with public and private investors to fund Phase II.