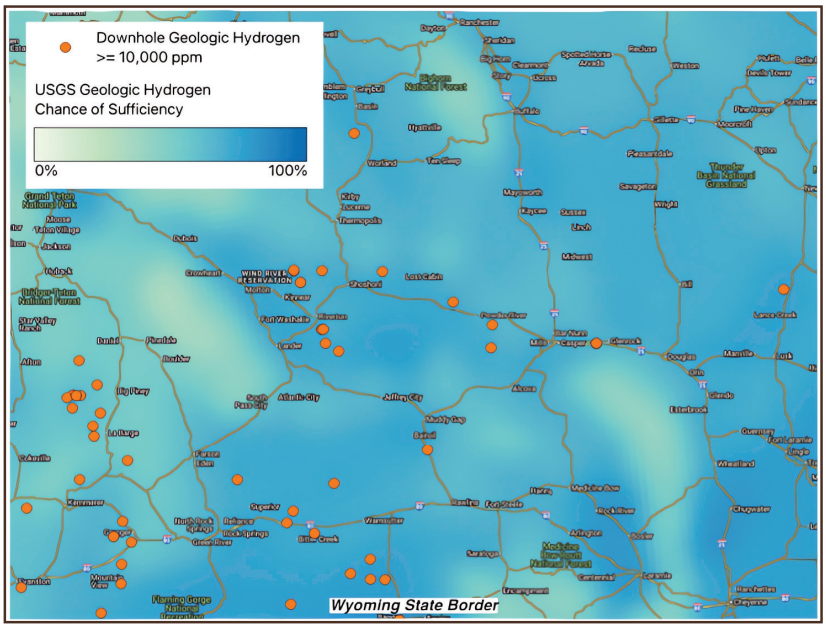
University of Wyoming | School of Energy Resources

WYOMING
Geohydrogen Exploration

Project Description

Wyoming has been identified by the United States Geological Survey (USGS) Geologic Hydrogen Prospect map as a region with meaningful potential for naturally occurring, or geologic, hydrogen. This creates an opportunity to develop a new abundant, low-cost energy resource by leveraging the state's existing strengths in the fossil fuel and mining industries. Advancing this resource could help diversify and future-proof Wyoming's energy economy.



Objectives

The objective of this project is to use artificial intelligence (AI) and machine learning (ML) technologies to investigate the potential of geologic hydrogen in the state of Wyoming. This will result in a predictive model that can be used in future geologic hydrogen scenarios and a bolstering of the University of Wyoming's AI/ML expertise.

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Methodologies

This project will begin by inputting currently known data, such as geologic records, well logs, and gas analyses, into an AI/ML model to locate high-confidence areas of prospective geologic hydrogen. These locations will then be physically sampled to determine the presence of geologic hydrogen and the results will be fed back into the model. In an iterative loop, the model will then be used to highlight the next areas for testing and sampling.

This project will support AI/ML development at the University of Wyoming by providing both undergraduate and graduate students with access to current industry AI/ML expertise with a real-world application.

Expected Results

This project will result in a better understanding of the occurrences of geologic hydrogen in Wyoming, a trained AI/ML model for geologic hydrogen location, and an established AI/ML expertise at UWyo. Early leadership in geologic hydrogen has the potential to position the state at the forefront of a market that is projected to expand nineteen-fold by 2033.

Team

This project is funded through the private company investment of from Hestia Energy Corporation, and through the UW AI Matching fund with a contribution. Together, the contributions cover the budget for the project's two year timeline beginning on April 1, 2025. The team for this project includes members from the Hestia Energy Corporation, in addition to researchers at the University of Wyoming School of Energy Resources Hydrogen Energy Research Center, including PI Sarah Buckhold and Co-PI Charles Nye.