UNIVERSITY OF WYOMING | School of Energy Resources

REQUEST FOR PROPOSALS

PHASE II: HYDROGEN PRODUCTION AND TRANSPORTATION FOR WYOMING

ISSUED BY THE UW SCHOOL OF ENERGY RESOURCES HYDROGEN ENERGY RESEARCH CENTER

Proposals are due July 17, 2023

Selected projects will be notified by August 4, 2023

The School of Energy Resources (SER) at the University of Wyoming is focused on energy-driven economic development for Wyoming. To that end, SER recently stood up the Hydrogen Energy Research Center (H_2ERC) with support from the state of Wyoming, Anschutz, and Williams. H_2ERC focuses on applied research to support the growth of the hydrogen industry in Wyoming.

Hydrogen is a natural fit for Wyoming's energy production, as the state's natural resources and existing infrastructure are well-suited to launch a hydrogen economy. H_2ERC is seeking proposals across the hydrogen supply chain to support its mission.

H_2ERC called for proposals from current UW faculty members on hydrogen energy in 2022, where topics of interest include all supply chain levels, such as hydrogen production, use, transportation, and storage. This funding opportunity will cover the full two calendar years, and up to 3 project proposals will receive a maximum budget of $150,000. The previously selected projects focused on hydrogen storage and hydrogen made from natural gas, this RFP is focused on three potential areas of interest described below..

The ultimate goal of this seed funding is to support small projects and enable the principal investigators to have sufficient information and tools to pursue external research grants, ultimately growing the foundation of work focused on Wyoming-energy-driven economic development.

TOPICS OF INTEREST:

Area of Interest 1: Hydrogen Transportation

To support Wyoming's energy sector, the Western Interstates Hydrogen Hub (WISHH) activities and a growing ecosystem of hydrogen projects in Wyoming and the Rocky Mountain region an integrated multi-scale systems research rooted in engineering principles and economics is needed to determine the reliable, cost-effective strategies for hydrogen transport.

Hydrogen can be transported by various methods, such as trucks, dedicated hydrogen pipelines, or repurposing existing natural gas transport infrastructure. The choice of hydrogen transport methods depends on numerous factors, including its application, scale, and distance. Among various transport methods, pipelines are the most cost-effective option for delivering large volumes of hydrogen over a long distance. A sustainable hydrogen pipeline system should be designed to minimize pressure losses, associated energy consumption for transporting hydrogen, and the overall pipeline transport cost.

Area of Interest 2: Electrolysis Hydrogen Production Systems

Low-carbon (green) hydrogen can be generated via water electrolysis using photovoltaic, wind, hydropower, or decarbonized grid electricity. The seemingly simple process becomes very complex on a large, industrial scale. This method of hydrogen production proves to be a significant challenge. Understanding the supply chain ecosystem, availability of equipment, and production methods for electrolysis systems must be considered. Also, water availability, treatment, use, disposal, etc., must be well understood.

Area of Interest 3: Hydrogen Production from Wyoming's Coal Resources

Presently, coal gasification provides around 18% of the total hydrogen in the world and is the second largest and most cost-effective way of producing hydrogen. Coal gasification is a significant process for cleaner and more cost-effective energy generation and other chemical products. Other methods of hydrogen production are being considered, such as in situ steam reforming, partial oxidation, autothermal reforming and pyrolysis. Finding ways to utilize Wyoming's abundant coal resource will be the focus for this area of interest.

HOW TO APPLY:

Submit a 3 page (max) proposal that includes:

- PI college/department affiliation and expertise
- Research description
- Explanation of how the research will grow and/or diversify Wyoming's energy sector
- How funds will be spent
- Email the proposal and questions to Eugene Holubnyak (eholubny@uwyo.edu) with the subject "SER RFP PHASE II"

TIMELINE:

- Proposals are due July 17, 2023
- Selected projects will be notified by August 4, 2023
- Project duration September 1, 2023 to August 31, 2025

EXPECTED DELIVERABLES:

- Quarterly progress reports (1 page)
- Presentation and project progress and status and submittal of ppt. file annually
- Final report by August 31, 2025 (10 pages or less)

FUNDING OPPORTUNITY:

- $150,000 maximum budget
- Funds can be used for research purposes, including
  - Graduate or Ph.D. student support
  - Undergraduate student support
  - Research equipment, consumables and other needs for the proposed research
  - Faculty summer salary (maximum one month per fiscal year)
  - Travel
- All funds must be expended by August 31, 2025
- It is expected that up to 3 projects will be awarded, subject to the availability of funding.