Board of Trustees Update: September 2025

SER's Mission: To advance energy-driven economic development for Wyoming

SER Administration:

- SER's budget request was approved by the Energy Resources Council. In addition to its standard budget, SER is requesting the following two exception funds:
    - Coal pyrolysis demonstration – inflation: $2,090,000
      In the 2022 Budget Session $8,000,000 was appropriated to the School of Energy Resources to be used for "coal refinery research, pyrolysis demonstration, or large-scale pilot project…" The costs for this request were developed in 2021; since 2021 the Nation has experienced historic inflation that has impacted the School of Energy Resources' costs for both contract services and capital equipment. Procurement and construction of the pyrolysis demonstration are underway at the Wyoming Innovation Center in Campbell County, Wyoming and this request will cover the impact of inflation for this one-time project completing it as designed.
    - State match - SER, $10,000,000
      These matching funds require 1:1 match from a non-state source (no in-kind). For the research funding, the match is limited to research focused on the production or consumption of Wyoming coal, oil, natural gas (as defined by the Wyoming Oil and Gas Conservation Commission), rare earth elements and critical minerals (as defined by the US Secretary of Interior). Uses of matching funds must be approved by the Energy Resources Council and the legislative Management Committee.

SER Academics:

- SER remains committed to providing high-impact experiential learning and mentorship opportunities for all SER students. During the 2024-2025 academic year, students had access to approximately twenty unique experiences, all offered at no cost, many of these supported through philanthropic support.
- To sustain and expand these opportunities, targeted fundraising is essential. In partnership with the UW Foundation, SER launched a Partner's Program to engage external supporters. More info here: https://www.uwyo.edu/ser/academic-programs/industry-partnership-program.html
- Although fall enrollment numbers are not yet final, SER seems to have matched its highest ever number of students in SER-offered credentials. We look forward to sharing numbers once they are final.

SER Outreach:

- The SER outreach team is planning the logistics for the following events:
    - 2025 Landscape Discussion on Energy Law and Policy in Rockies – October 16, 2025
    - Energy Day Football – October 9-11, 2025 (numerous activities scheduled for that week by SER and CEPS)

- Fall Distinguished Speaker Series includes speakers from USGS, INL (rare earths and critical minerals), Navajo Transitional Energy Company, WSGS, etc.

SER Research: The SER research program leads and supports a wide array of Wyoming-focused research programs to ultimately drive increased state revenue and graduate students with expertise important to Wyoming. The SER research program includes faculty staff and students across the university as well as internal to SER.

- The SER Center for Economic Geology Research (CEGR), in partnership with Frontier Carbon Solutions, has completed the second deep well to characterize the geology in an area north of Granger, Wyoming for geological CO_2 storage. This project will help provide carbon management options for regional mining and natural gas sectors at a storage hub owned and operated by Frontier Carbon Solutions. The second well has a total vertical depth of over 18,430 feet, making it one of the deepest carbon management wells in the US.
- CEGR is providing support to Williams for drilling a characterization well located in the Wamsutter gas field. The drilling began on August 3, and the project is designed to support the local natural gas industry. Later this year, a characterization well will be drilled in Oregon located near utilities that are burning Wyoming-sourced natural gas. This well will be used to assess the carbon storage potential of the region. Both projects are supported by competitive grants, and while SER is the prime recipient of the grant, these wells are owned and operated by SER's commercial partners.
- CEGR started a new project to evaluate Wyoming's lithium resources. This project will leverage recent critical mineral research to expand the assessment of lithium resource development.
- The Center for Carbon Capture and Conversion (CCCC) continues to work on demonstrating new uses for Wyoming coal, including the design and construction of a demonstration-scale coal refinery to develop coal-based products. Below is an update on the development of the coal refinery:
    - Construction is continuing for the pyrolysis portion of the coal refinery field demonstration plant located at the Wyoming Innovation Center, in Gillette. The construction process will complete all infrastructure for the pyrolysis portion of the coal refinery demonstration plant. The pyrolizer has a revised schedule for fabrication and will start in January of 2026 and aim for completion in May of 2026.
    - The solvent extraction team is conducting short runs on the pilot plant with longer runs starting in early September. The engineering data from the pilot plant will be used for the detailed engineering design of the solvent extraction field demonstration plant. Detailed engineering for the solvent extraction portion of the field demonstration plant will commence in the fall of 2025.
- CCCC's research program is expanding to include extraction and separation of critical minerals and rare earth elements (REE) using various "waste" streams from the coal refinery upstream processes, thanks to support from the Wyoming legislature.
- Mowry Project: Students have been successful in publishing the following papers, which are key indicators of progress for both their careers and the impact of the program in general. We expect more to come through the fall.

- Energy and Petroleum Engineering (EPE) student Ephraim Owusi-Banahene published an article “Capillary Condensation Measurements in Multimodal Nanoporous Media and Pore Critical Point Determination: Methane/Propane Mixture” in *Langmuir* and the paper has been sent to industry partners
- Geology and Geophysics (G&G) student Benard S. Oppong’s paper “Missing Well-Log Data Prediction Using a Hybrid U-Net and LSTM Network Model” was accepted for publication into *Petrophysics.* It will be published in the October issue. The code for this is being licensed by the University for potential distribution.
- EPE student Ifeanyi Nwankwo’s paper “A comprehensive review on analysis of permeability measurements and surfactant enhanced oil recovery in shale” will soon be published in *Physics of Fluids.*

- The Multidisciplinary Advanced Stimulation Laboratory in the SI Building, led by the Department of Energy and Petroleum Engineering, in collaboration with SER, is nearly operational and will attract talented students and industry partners to the University to work increasing primary recovery in unconventional oil and gas reservoirs.
- SER hosted the inaugural Critical Minerals Leadership Academy (CMLA) August 3-10, 2025 in Laramie and the Powder River Basin. The academy was sponsored by the Department of Energy and brought together a cohort of 19 graduate students and early career professionals with diverse backgrounds. The CMLA incorporated faculty and speakers from SER and across the country. Wyoming industry partners collaborated with the CMLA to offer field visits and the opportunity to learn from industry professionals. The vision of the CMLA is to build a strong domestic critical minerals network, foster leadership capabilities, catalyze growth and innovation in emerging critical minerals industries, and showcase critical minerals research and development taking place in Wyoming. The inaugural program was a success and has received positive feedback from DOE and the members of the cohort.
- The Center for Energy Regulation and Policy Analysis (CERPA) completed one research paper:
  - *Nuclear Series Whitepaper #6 – Electricity (authored by Alex Gebben and Daniel Cooley):* This report quantifies the economic outcomes of fostering a nuclear electricity generation sector in Wyoming. The unique challenges and opportunities of attracting the industry to Wyoming are identified. Additionally, an event study is performed that estimates economic outcomes under a range of future nuclear power development paths.
- The Hydrogen Energy Research Center (H2ERC) is collaborating with Hestia Corporation to locate and improve prospecting techniques for geologic hydrogen in Wyoming. The team held a field camp in August to collect samples. The camp included teaching students how to use the specialized field equipment and sampling techniques for hydrogen sampling. The data collected by the camp will enhance the field sampling data catalogue, which will, in turn, improve AI models.
- Geologic Hydrogen: Sustainable H2 Production from Abiotic Catalyst-enhanced Stimulation of Iron-rich Rocks: H2ERC is a subrecipient from the University of Texas’ Bureau of Economic Geology to study hydrogen generation from iron-rich rocks. The team has added additional Wyoming samples and performed experiments that show hydrogen can be produced with this “rusting-like” process. The team has been successful with rocks containing 14% reduced iron (30% total Iron), even without adding a catalyst. UT-Austin is now performing experiments with

a catalyst. UWyo will replicate those experiments this month to confirm the results. Biochemical experiments found that microbes in the rock were introduced during sample collection. If successful, this work could harvest energy stored in Wyoming's unminable iron deposits.

- H2ERC's Hydrogen: Make, Move, Use or Store Phase II funding program continues to receive technical updates from participants. This state-funded program led to additional, significant external funding, new technology development, and nine peer-reviewed publications to date, with additional publications forthcoming.

Enhanced Oil Recovery Institute (EORI):

EORI Overview

- Since its creation in 2004, projects on which EORI has worked have returned over ten dollars for every dollar provided by the state. For a total investment between 2004 and June 2024 of $53 million, EORI has generated tax revenue of $558 million to the state and Wyoming citizens.
- The mission of EORI is to work collaboratively with the Wyoming oil and gas industry and provide technical expertise to minimize stranded oil reserves, extend field life, and add revenue to the State of Wyoming through additional taxes from incremental production.
- EORI, funded directly by the Wyoming State Legislature through the Enhanced Oil Recovery Commission (EORC – Agency 070), is the only State institute exclusively focused on improving and enhancing oil recovery in Wyoming fields.

Team Development

- Amitabh Garg, Senior Petroleum Engineer, joined the EORI team on July 7th. Amitabh came to EORI from Anchorage where most of his career was working IOR and EOR projects for BP. His background is a great fit for EORI.
- An increase of $558,802 for 2 additional staff members will be included in the EORC FY27/28 Biennium Budget.

Project Highlights

- EORI is currently collaborating with industry partners on 18 projects. Highlights include:
    - Five CO_2-EOR projects involving 8 fields – an increase of 1 project and 3 fields since the last ERC meeting
    - The NGL-EOR project at Skull Creek Field (Muddy formation - Powder River Basin) began NGL injection last month. This is an EORI collaborative project with Sunshine Valley Petroleum and XOil. This project received matching-funds support from the Wyoming Energy Authority under the Energy Matching Funds program.
    - The Enriched Air-EOR project at Alpha Field (Minnelusa formation – Powder River Basin) began enriched air injection early last month. This is an EORI collaborative project with ATR (Advanced Thermal Resources). This project received matching-funds support from the Wyoming Energy Authority under the Energy Matching Funds program.
    - A collaborative project with the Montana and Wyoming Oil Company on Black Bank Field (Muddy formation – Powder River Basin) is being launched. EORI will collaborate with the operator on the best development plans for the field.
    - EORI launched an improved and updated online/interactive tool for the oil and gas industry: WYRIT – The Wyoming Reservoir and Information Tool. WYRIT incorporates extensive data for Wyoming oil and gas reservoirs and allows users to customize inquiries of publicly available data from the Wyoming Oil and Gas Conservation

Commission, the BLM, the Seismic Exchange and other data providers under one umbrella. Reviews and comments we have received from industry users have been very positive

Professional and Community Engagement

- EORI's Industry/Public forum, EOR Insights, continue quarterly. Our last forum was held on June 18th in Casper featured WYRIT, the Wyoming Reservoir Information Tool
    - Our next scheduled EOR Insights will be held on September 30th with David Daniel on the Wolf System for oil tank cleaning. This system has been adapted by several major oil companies in the Permian Basin but has yet to be used in Wyoming.
    - EORI is grateful for the continued support of the True Companies who provide their River Cross Commons facility in Casper for EOR Insights each quarter.
- The Joint Minerals Interim Committee Work – "Enhanced Oil Recovery / Carbon Dioxide Infrastructure"
    - On May 21st, EORI provided testimony on Enhanced Oil Recovery in Wyoming and potential state incentives to increase EOR activity in Wyoming
    - EORI will again provide testimony on EOR and potential incentives to increase enhanced oil recovery in the state on July 30th.
        - This is a coordinated effort between EORI, the Wyoming Oil and Gas Conservation Commission and the Petroleum Association of Wyoming
- The Enhanced Oil Recovery Commission (EORC) 3rd Quarter meeting will be held on September 10, 2025, in Gillette. The EORC meeting (1:30-4:30pm) will be preceded by an EORI/Industry Meeting and a Legislative Luncheon for state legislators from NE Wyoming. All events will be held at the Technical Education Center "Flex Room" at Gillette College. There is no cost to attend the Industry Forum, but pre-registration is required. Information and registration are available on the EORI website.