

FALL
2024

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UNIVERSITY
OF WYOMING

School of
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QUARTERLY NEWSLETTER

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ABOUT THE SCHOOL OF ENERGY RESOURCES

The University of Wyoming (UW) School of Energy Resources (SER) was created in 2006 to enhance the University's energy-related education, research, and engagement. SER directs and funds cutting-edge energy research and technology development, which integrates with the formulation and conduct of academic programs at UW and bridges academics and industry through targeted engagement efforts. The partnerships formed between academics and industry ensure programs are relevant, current, and deliver impact and high value to stakeholders and the State.

Since its inception, SER has maintained flexibility in its focus and structure to meet the changing needs of Wyoming's energy industries and the State's economy—which is now more critical than ever.

This quarterly newsletter highlights SER's significant achievements from August 2024 through October 2024, in academics, research, newly emerging areas of focus, and engagement to keep UW and Wyoming at the forefront of the energy sector.



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ACADEMICS

SER Professor of Environment and Natural Resources Publishes in Nature Energy

Bryan Leonard, a University of Wyoming School of Energy Resources (SER) associate professor of Environment and Natural Resources, published an article entitled, "Economic potential of wind and solar in American Indian communities" in *Nature Energy*, a highly ranked and cited journal.

The article combines data on wind and solar endowments, reservation characteristics and utility-scale renewable energy projects.

Leonard joined the SER faculty in fall 2024. Under SER's unique structure, faculty have a primary appointment in a home department with an affiliation to SER. He is housed in the Haub School of Environment and Natural Resources (Haub School).

He teaches Federal Public Land Law for SER's Energy Resource Management and Development (ERMD) undergraduate degree program, and Environmental Law and Policy for the Haub School.

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Energy Resource Management and Development Student Addison Potts named a Tomé Scholar

Addison Potts of Cheyenne, Wyo. was named as one of the first cohort of UW Tomé Scholars.

Majoring in Energy Resource Management and Development with a concentration in Professional Land Management, with a concurrent major in Environment Natural Resources. She also serves as the Chief Financial Officer of the Student Chapter of Energy Resources.

The Tomé program was established at UW in 2021 by a major gift from the Tomé Foundation. Tomé Scholars at UW are considered some of the nation's most distinguished students, recognized for seeking solutions that address the most complex environmental challenges of our time.

Through the Tomé Scholars to Fellows Program, students with exceptional talent and exemplary skills receive greater access to education through a full-ride, four-year scholarship and experiential learning opportunities. Following graduation, Tomé Scholars become Tomé Fellows.

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Tomé Scholar



Energy Resource Management and Development

About the Energy Resource Management and Development Degree

Embark on an exciting career in Energy Resource Management and Development from the University of Wyoming! With the 5th highest starting salary for all UW graduates, our students go on to successful employment opportunities straight out of college. Choose from 2 concentrations: *Professional Land Management* or *Energy and Environmental Systems*. **LEARN MORE >**

RESEARCH

Center for Economic Geology Research

UW SER Project Selected for Funding Under DOE Regional Carbon Management Initiative

The U.S. Department of Energy (DOE) has selected the University of Wyoming School of Energy Resources (SER) to lead a regional initiative for technical assistance partnerships to advance the deployment of basin-scale carbon transportation and storage.

With an anticipated \$4.7 million from DOE, the planned \$5.9 million Wyoming Technical Assistance Collaboration for Carbon Management (WYTAC-CM) project intends to build a comprehensive and intuitive central data repository of technical and nontechnical information to accelerate development of carbon storage projects in the Greater Green River Basin and Wind River Basin.

The three-year project aims to conduct a data aggregation campaign that will include technical inventories of CO₂ storage reservoirs and confining units; current and potential CO₂ sources; and current and pending CO₂ capture, transport and storage projects.

The project will be co-led by SER Research Professionals **Lily Jackson** and **Dan Eakin**.

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Wyoming CarbonSAFE Project Completes FEED Study for CO₂ Transportation

The Center for Economic Geology Research (CEGR) in the University of Wyoming School of Energy Resources (SER) completed a front-end engineering design (FEED) study for the Wyoming CarbonSAFE Project, which is developing a carbon storage hub around Basin Electric Power Cooperative's Dry Fork Station near Gillette.

In collaboration with Resolute Engineering, the FEED study evaluated, analyzed and presented various considerations in transporting carbon dioxide from Dry Fork Station to proposed Class VI injection wells that are being assessed under Phase III of the Wyoming CarbonSAFE Project.

Led by **Charlie Zhang**, an associate professor in the UW Department of Civil and Architectural Engineering and Construction Management, the study seeks to determine the potential buildout of a pipeline to connect the proposed well pads in the area to Dry Fork Station.

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SER Researchers Continue Education in Field

Continuing education and professional development are important aspects contributing to the success of the School of Energy Resources (SER). During the fall, a group of the research team representing interdisciplinary fields at SER attended a week-long field course in Moab, Utah.

Led by geologists **Autumn Eakin** and **Lily Jackson**, the team looked at geologic outcrops to explore concepts of saline storage and reservoir modeling to better inform assumptions made in modeling, managing uncertainty, and communicating effectively with stakeholders with varying levels of technical expertise.



Center for Carbon Capture and Conversion

UW Researcher Publishes Second Study on Coal Char Soil Amendments

Assistant Research Scientist **Resham Thapa** in the Center for Carbon Capture and Conversion (CCCC) published another article on the coal char soil amendment research. The article, "Enhancing Corn Yield and Soil Quality in Irrigated Semiarid Region with Coal Char and Biochar Amendments," was published in *Soil Systems*.

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UW Researchers Publish on Coal-Derived Building Materials

Professor **Kam Ng** and Assistant Research Scientist **ChooiKim Lau** in the Dept. of Civil and Architectural Engineering, in collaboration with Program Manager **Mark Behrens** in the CCCC, published in a top journal, *Construction and Building Materials*. The article is entitled, "Optimization of microwave-produced coal-derived char insulation foam using response surface methodology."

Part of the carbon engineering initiative in the CCCC, work focuses on supporting existing markets and creating new markets for Wyoming coal by growing the demand for coal as a feedstock that can be converted into chemical and high-performance engineered products. The team has developed an entire suite of coal-derived building products including bricks, structural supports, dry wall boarding, plaster, structural members, roofing and waterproofing materials.

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Hydrogen Energy Research Center

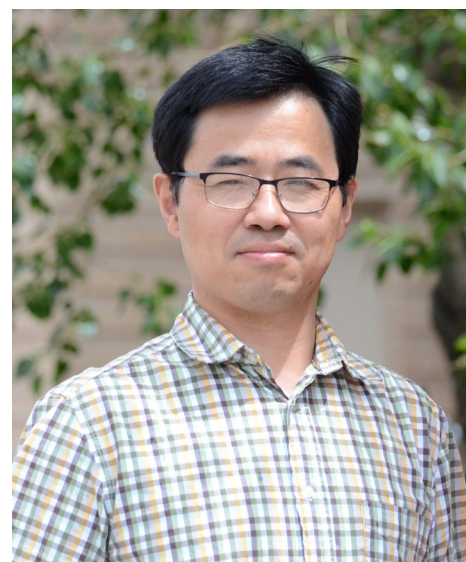
UW Researchers Explore Producing Low-Carbon Hydrogen from Wyoming Natural Gas

A new study from University of Wyoming researchers features Wyoming's potential to take a lead role in the advancement of low-carbon hydrogen production from natural gas.

Haibo Zhai, the Roy and Caryl Cline Distinguished Chair in Engineering and a UW College of Engineering and Physical Sciences professor, led the study that was published in *Environmental Science & Technology*, an impactful journal for a multidisciplinary and diverse audience of scientists, policymakers and the broad environmental community. Zhai's postdoctoral researcher, **Zitao Wu**, was the lead author.

The study, titled "Unlocking Potential for Low-Carbon Hydrogen Production from U.S. Natural Gas Resources," examines the resource availability – and environmental, economic, policy and societal impacts – of pairing low-carbon hydrogen production by steam methane reforming with carbon capture and storage in Wyoming and other natural gas-rich states.

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UW SER's Holubnyak Receives National Award for Hydrogen Work

Eugene Holubnyak, in the University of Wyoming's School of Energy Resources (SER), has been recognized by the Society of Petroleum Engineers (SPE) as a 2024 recipient of a regional award for his technical expertise and exceptional contributions to programs focused on hydrogen transportation and storage.

SPE honors members among 13 regions worldwide who have contributed outstanding service and leadership to the society, as well as those who have made major professional contributions to their technical disciplines at the regional level.

Nominated by peers among the SPE organization, Holubnyak was named the recipient of an SPE Projects, Facilities and Construction Award for the Rocky Mountain North America Region and is listed among other awardees here. He will be formally recognized at an SPE dinner and ceremony later this year.

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Research Highlights

- Co-Director **Jonathan Naughton** in the *Wind Energy Research Center* was awarded the Castagne Endowed Professorship for continued research excellence over his long career. Naughton plans to use the funds that come with the professorship to upgrade instrumentation in the wind tunnel laboratory, to supplement support of graduate and undergraduate students, and to provide additional travel for him and his students to further publicize the work they do at the University to the broader aerodynamics community.



- Associate Research Scientist **Stefan Holberg** in the *CCCC* presented at the International Elastomer Conference 2024 in Pittsburgh, PA on "Reinforcement fillers from low-grade coal."



- Senior Research Professional **Davin Bagdonas** in *CEGR* published an article entitled, "Coal ash resources and potential for rare earth element production in the United States," in the *International Journal of Coal Science & Technology*.



[READ ARTICLE >](#)

- The Nuclear Innovation Bootcamp (NIB) hosted by the *Nuclear Energy Research Center (NERC)* and SER Professor of Law **Tara Righetti**, was completed. The NIB brought together an international cohort of students and young professionals to learn about the nuclear industry, especially activities in Wyoming.



OUTREACH

UW's SER and Wold Foundation to Host Symposium on Wyoming's Energy Future

The University of Wyoming School of Energy Resources (SER) and the Wold Foundation again hosted a joint symposium that focuses on the state's energy future.

Examining different topics from an industry perspective as well as an academic perspective, the free event brought together leading experts across the spectrum of energy development and various state stakeholders to collaborate and learn about what comes next for energy in Wyoming.

Given its importance to Wyoming and relevant expertise at SER and across the state, the 2024 symposium had an emphasis on Wyoming economic geology opportunities. **Gov. Mark Gordon** gave the keynote luncheon talk.

As part of the symposium, students competed in a poster competition to showcase energy-related research projects across campus. Winners were selected from among 18 submissions.

First Place:

Charles Nuncio

Geology & Geophysics

"Evaluate What Ground-based Geophysical Methods Best Delineate the SU Roll Front in Shirley Basin, WY, Using Electrical, Electromagnetic, and Seismic Methods."

Second Place:

Alirza Orujov

Chemical & Biomedical Engineering

"Integrating CO₂ Storage Enhancement with Innovative Monitoring and Containment Approaches."

Third Place:

Sophia Stuart

Geology & Geophysics

"Machine Learning to Constrain Geologic Controls on Critical Mineral Occurrence at Wyodak Mine, Powder River Basin, Wyoming."



Pictured left to right: Wold Foundation Executive Director Glenda Thomas, Charles Nuncio, Sophia Stuart, Alirza Orujov, John and Jane Chair in Energy Excellence and SER Professor of Geology & Geophysics John Kaszuba

OUTREACH

UW SER Hosts Tribal Energy Summit

The University of Wyoming's School of Energy Resources (SER) hosted a Tribal Energy Summit Thursday, Oct. 17.

The first-of-its-kind conference for UW brought together leaders from energy-producing tribal nations and tribal energy companies to hear from them directly about challenges and opportunities for continued energy development in the rural American West.

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Wyoming Governor Mark Gordon Featured on Energy Frontier Podcast

The School of Energy Resources (SER) welcomed **Governor Mark Gordon** as a guest on its podcast, "Energy Frontier: The Wyoming Landscape."

Hosted by SER Executive Director **Holly Krutka**, the podcast brings together diverse energy professionals to explore energy topics, including SER's research efforts and developing Wyoming projects.

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Senator Affie Ellis, an enrolled member of the Navajo Nation, provides the Gina Guy Keynote Address



Outreach Highlights

- SER hosted Energy Roadshows in Casper and Rock Springs, Wyo. Both outreach meetings focused on carbon capture, utilization, and storage technologies.

- The Annual Report for Fiscal Year 24 was completed and submitted to the appropriate legislative committees on Oct. 1.

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- Please stay up to date on our upcoming events by checking the **EVENTS CALENDAR >**



- SER once again participated in UW's 10th annual Giving Day. In support of experiential learning opportunities for SER students, SER reached its \$20,000 goal!
- The School of Energy Resources and the College of Engineering and Physical Sciences celebrated the 11th annual Energy Day – in partnership with Wyoming Sports Properties at the Cowboys football game on Oct. 12.

UNIVERSITY OF WYOMING
ENERGY DAY

Looking for ways to stay connect to SER? Connect SER Director of Outreach Christine Reed at christine.reed@uwyo.edu | (307) 766-6708

PHILANTHROPIC SUPPORT

Ellbogen Foundation Gift Supports UW SER's Nuclear Energy Research Center

A major investment from the **John P. Ellbogen Foundation** will support nuclear energy instruction and the Nuclear Energy Research Center (NERC) in the University of Wyoming's School of Energy Resources (SER).

The \$1 million gift will be matched dollar for dollar by the state of Wyoming to establish the John P. Ellbogen Foundation Nuclear Energy Research Center Fund.

Dedicated to creating or causing change primarily for the benefit of the people of Wyoming through the support of science, education and charity, the John P. Ellbogen Foundation is a longtime and generous partner of UW, supporting the university's educational efforts, various programs, faculty and students.

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Fueling Futures Grant

SER received a \$10,000 gift from Enbridge to amplify student learning opportunities in energy.

Established in 1949, Enbridge delivers the energy that fuels quality of life by connecting millions of people around the world to the energy they rely on every day through four core businesses—liquids pipelines, natural gas pipelines, gas utilities and storage, and renewable energy.

The gift is intended to energize energy in the Cowboy State.



MAKE A GIFT

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