

FALL  
2022

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UNIVERSITY  
OF WYOMING

School of  
Energy Resources

**QUARTERLY  
NEWSLETTER**

Vol. 3, Issue 3

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## MESSAGE FROM THE EXECUTIVE DIRECTOR

To the SER community,

This fall has perhaps been one of the busiest quarters to date. The season was filled with exciting new advancements in areas of research, which in turn afforded tremendous opportunities to engage with the Wyoming community and stakeholders.

The academic program has continued to grow and thrive, becoming a regularly visible fixture in campus and statewide conversations. Much of the success of the program is due to the high caliber of faculty guiding students and advancing deep, thoughtful studies of the energy sector. SER was pleased to recognize SER Professor Tara Righetti as the inaugural Occidental Chair of Energy and Environmental Policies, while in the same semester bid farewell to another academic leader, Professor Bruce Parkinson, upon his retirement after 14 years of service at UW. Professor Parkinson was awarded emeritus status and is busy continuing his collaborative research at UW.

Through its applied research program, SER reached many exciting milestones. In the Center for Carbon Capture and Conversion, the coal processing technology is undergoing the critical scale-up process as it advances towards commercialization. With the partnership of two commercial entities, the technology is poised for success in a first-of-a-kind field demonstration.

Meanwhile, SER has been able to provide support to other areas of research across campus and the state to help build interest and capacity. Exploration in nuclear, hydrogen, direct air capture, as well as projects investigating the Mowry Shale as Wyoming's largest unconventional source of oil and gas recovery, are becoming increasingly important topics of interest in addressing the current challenges facing the state.

Outreach this semester has reached an unprecedented level of activity. In addition to coordinating multiple events to promote the increasing advancement in SER research, SER outreach facilitated events to bring together multiple stakeholders within the realms of academia, industry, and the community.

Finally, we cannot achieve all that we do without the support of those that share the same commitment and investment in our mission to promote energy-driven economic development for the state of Wyoming. We are grateful to have received an incredibly generous gift from Arch Resources as well as the charitable support received through UW Giving Day. Any gift large or small has a ripple effect that will positively change the energy landscape in Wyoming. We are thankful for the commitment to Wyoming's energy sector and the dedication to long-term innovation. Most of all, thank you to the dedicated team at SER. I continue to be humbled by the passion, dedication and expertise of SER and our many collaborators across UW as well as the continued support and engagement from the Energy Resources Council, Wyoming legislature, and executive branch.

Sincerely,

*Holly Krutka*  
Holly Krutka, Ph.D.



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## ACADEMICS

### Righetti Named UW's Occidental Chair in Energy and Environmental Policies

**Tara Righetti** is the inaugural Occidental Chair in Energy and Environmental Policies, an endowed chair jointly administered by the University of Wyoming's School of Energy Resources and the Haub School of Environment and Natural Resources.

The Occidental Chair in Energy and Environmental Policies is one of two endowed chairs at UW created from a generous gift by Occidental. The policy-focused chair complements the Chair in Energy and Environmental Technologies to promote enhanced oil recovery technologies and cutting-edge carbon capture, use and storage (CCUS) projects. The donor's intent is to allow the collaboration of the two chairholders to advance CCUS in Wyoming.

Righetti, a law professor, teaches in both SER and the UW College of Law, where her research focuses on governance, property and administrative law issues related to energy development and carbon removal, including on split estates and federal lands.

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### UW Hosts Articulation Summit With State Community Colleges

The University of Wyoming hosted the Wyoming Articulation Summit – an annual statewide gathering of higher education administrators, faculty, staff and other professionals to discuss transfer articulation efforts, impacts and plans.

The summit began with a welcome address from SER Executive Director **Holly Krutka**, followed by comments from UW President **Ed Seidel** and **Ben Moritz**, the Wyoming Community College Commission deputy director, and a keynote address from **Raymonda Burgman Gallegos**, vice president of programs and services for the Western Interstate Commission for Higher Education (WICHE).

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## Academics Highlights

- SER Professor of Chemistry **Bruce Parkinson** has retired after 14 years of service at the University of Wyoming. He has been awarded Emeritus status and is the first SER Professor to achieve the honor.



- Led by **Charles Nye**, students in the Environmental Sensing Club (ESC) visited Dry Fork Station and Dry Fork Mine to gain a better understanding of the soil gas sensors they are working on improving as part of the Carbon XPrize award from 2021. In addition to the tours, student were able to view a live blast on a coal seam.



## RESEARCH

### Request for Expression of Interest for State Direct Air Capture Initiatives Released by UW's SER

The University of Wyoming School of Energy Resources, the Wyoming Business Council (WBC) and the Wyoming Energy Authority (WEA) have released a request for expressions of interest to solicit input from key stakeholders on direct air capture activities and initiatives in Wyoming.

The U.S. Department of Energy's Four Regional Clean Direct Air Capture Hubs program – part of the Investment in Infrastructure and Jobs Act – may present an opportunity for Wyoming to create economic growth and resilience by encouraging development in the direct air capture (DAC) industry.

The request for expressions of interest provides an opportunity for stakeholders such as industry leaders, elected officials, community groups, tribes and the public to provide essential information and input as the state of Wyoming considers the application and elements of a DAC hub.

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### Arch Resources Supports UW School of Energy Resources with \$500,000 Gift

Arch Resources Inc. has committed a \$500,000 gift to the University of Wyoming School of Energy Resources to advance the school's globally recognized carbon management initiatives as well as its ongoing efforts to drive innovative land reclamation practices.

The gift will augment the Arch Resources Technology and Sustainability Fund, an existing endowment the company first established more than a decade ago and that was matched by the state at that time. The gift reflects Arch's deep and long-standing commitment to Wyoming and to the highest principles of sustainability and good corporate citizenship.

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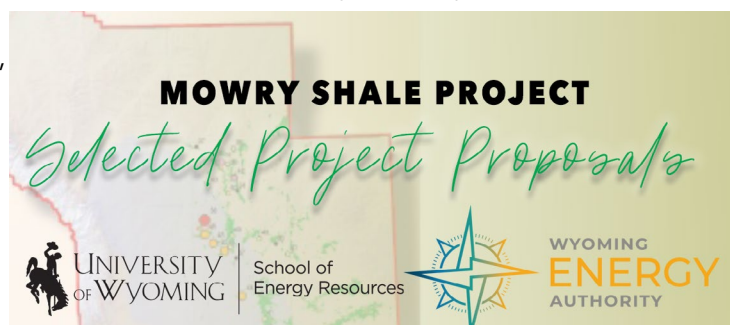
### School of Energy Resources Announces Proposal Winners for the Mowry Shale Project

The Mowry Shale is the largest hydrocarbon source for Lower Cretaceous petroleum system in the Powder River Basin (PRB). However, it has only rarely been a direct focus of unconventional oil production.

In order to define research gaps, develop faculty expertise, and create a workforce of graduate students, SER requested UW faculty submit proposals that addressed two areas of interest; the first, Shale Fundamental Studies, is aimed at advancing physics-based modeling and experimentation, and the second, Machine Learning and Artificial Intelligence, supports data driven approaches to draw meaningful insights from large data sets.

Six UW projects were awarded under the funding.

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## Center for Carbon Capture and Conversion

### UW SER, Wood, Atlas Carbon Collaborate on Potential Field Demonstration Project Near Gillette

Representatives of the University of Wyoming School of Energy Resources, Wood PLC and Atlas Carbon LLC held a groundbreaking ceremony on Friday, Sept. 2, to launch the site of a coal refinery field demonstration project near Gillette.

The thermochemical process technology developed in SER's CCCC efficiently decomposes Wyoming coal, yielding beneficial liquids and solids that are then used to create valuable, non-energy products, such as building and construction materials, asphalt products and agricultural soil amendments.

The site will be developed and operated collaboratively by the three stakeholders and will ideally showcase and develop – at pre-commercial scale – the sustainable coal refinery process, as well as product technologies using Wyoming PRB coal.



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## Center for Energy Regulation and Policy Analysis

### SER Center for Energy Regulation & Policy Analysis Releases Second Economic Analysis Paper on a Rare Earth Element Industry in Wyoming

The Center for Energy Regulation & Policy Analysis (CERPA) published a second resource paper to its website analyzing the economic viability of a Rare Earth Element (REE) and Critical Mineral (CM) industry in Wyoming.

The paper is the second in a two-part series authored by energy economist **Melissa Firestone**, working under contract with CERPA. The first paper aimed to provide a base understanding of REE, the REE production and extraction process, an overview of the global REE market. The most recent paper provides a more direct examination of Wyoming's REE resources and their potential.

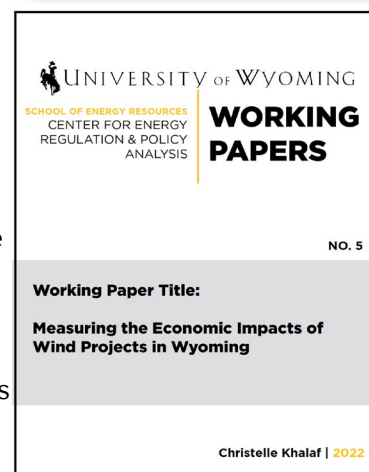
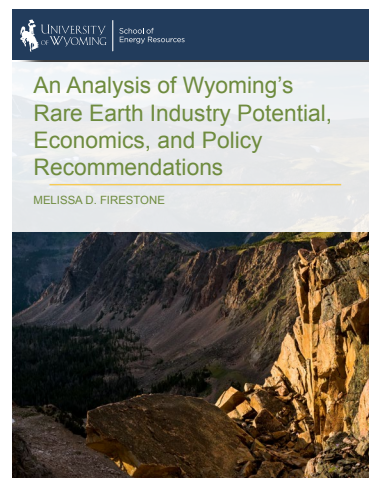
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### Working Paper on Economic Impacts if Wind Projects in Wyoming Released through School of Energy Resources

The School of Energy Resources (SER) and the Center for Business and Economic Analysis (CBEA) released a working paper measuring the economic impacts of future wind energy deployment scenarios in Wyoming, including potential income from federal revenue-sharing if such a provision were adapted for renewables. In addition, the working paper investigates the permitting process of wind projects and notes the significantly increased timeline when siting on federal land.

The study was led by **Christelle Khalaf**, the associate director of the CBEA, and was funded through CERPA.

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## Center for Economic Geology Research

### School of Energy Resources Hosts Annual Meetings for both CORE-CM Projects

The School of Energy Resources (SER), along with project partner Gillette College, hosted the first annual forum for the Carbon Ore, Rare Earth, and Critical Mineral (CORE-CM) project in the Powder River Basin on August 31 and September 1 at Gillette College in Gillette, Wyo.

Similarly, SER along with project partner Western Wyoming Community College, hosted the first annual forum for CORE-CM project in the Greater Green River Basin and Wind River Basin (GGRB-WRB). The event took place on October 19-20 at Western Wyoming Community College in Rock Springs, Wyo., as well as online.

The DOE awarded both projects as part of a national strategy to finding alternative domestic sources of rare earth elements and critical minerals, as well as to focus on expanding and transforming the use of coal and coal-based resources to produce coal-based products using carbon ore.

The annual forum is part of the project directive to form a coalition of private industry, university, and state, local, and federal government in an effort to stimulate regional economic growth and employment opportunities in prominent coal basins. Recordings of meetings can be found the project resource pages for the respective basins. **PRB ANNUAL MEETING >** or **GGRB ANNUAL MEETING >**



Stakeholders gather at Gillette Community College in Gillette for the CORE-CM Annual Forum in the PRB



Stakeholders gather at Western Wyoming Community College in Rock Springs for the CORE-CM Annual Forum in the GGRB-WRB

## Research Highlights

- The **Hydrogen Energy Research Center** announce seven selected projects to be funded under the "Hydrogen: Make, Move, Use or Store" initiative. **READ MORE >**
- SER is requesting proposals for a funding opportunity for University of Wyoming faculty and staff members on nuclear-related research projects as part of an initiative to grow nuclear research capacity among the campus community. Due Dec. 1. **READ MORE >**

- Senior research scientist **Yuri Ganshin** retired November 4, 2022. Ganshin was a founding member of the Center of Economic Geology Research.



- SER welcomed four new research scientists to the staff team in the fall. **Tao Bai, Lu Lee, and Lily Jackson** all joined CEGR, while attorney **Madeleine Lewis** will support research efforts in both CEGR and CERPA.



Pictured left to right: Bai, Lee, Jackson, Lewis

## OUTREACH

### UW School of Energy Resources, Wold Foundation Host Symposium on Wyoming's Energy Future

The University of Wyoming School of Energy Resources (SER) and the Wold Foundation hosted a joint symposium Thursday, Sept. 15, that focused on the state's energy future.

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

**Gov. Mark Gordon** headlined the event and provided the keynote address during the luncheon.



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### UW Energy Law and Policy in the Rockies Conference Oct. 14

The University of Wyoming's Landscape Discussion on Energy Law and Policy in the Rockies was held October 14, 2022.

The annual conference is presented in collaboration with the Wyoming State Bar's Energy and Natural Resources Section, and focuses on energy-related legal, regulatory and policy issues currently affecting Wyoming and the region.

Notable speakers included **Gov. Mark Gordon**, U.S. Deputy Secretary of the Interior **Tommy Beaudreau**, retired Wyoming Supreme Court Justice **Marilyn Kite**, and **Wahleah Johns**, the Director of the U.S. Department of Energy (DOE) Office of Indian Energy Policy and Programs.

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Former Wyoming Chief Justice Marilyn S. Kite moderates a fireside-style chat between Governor Mark Gordon and DOI Deputy Secretary Tommy Beaudreau

## Outreach Highlights

- Outreach hosted a joint webinar for the CORE-CM grants on Workforce Development and Training on September 27. A recording of the webinar has been posted online and is available as a continuing resource. **VIEW >**
- Outreach facilitated tribal outreach between the UW leadership and the Wind River Reservation by hosting **Wes Martel**, the Senior Wind River Conservation Associate of the Greater Yellowstone Coalition, to campus for a presentation on tribal governance.
- SER participated in the annual UW Giving Day event led by the UW Foundation. Over \$13,000 was raised for SER student support, which including a \$1,500 matching gift from SER Executive Director **Holly Krutka**, and a \$1,000 matching gift donor challenge from the Wyoming law firm of **Long, Reimer, Winegar, Beppler, LLP**.
- Please stay up to date on our upcoming events by checking the **EVENTS CALENDAR >**





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