

# SUMMER 2023

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UNIVERSITY  
OF WYOMING

School of  
Energy Resources

## QUARTERLY NEWSLETTER

Vol. 4, Issue 2

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## MESSAGE FROM THE EXECUTIVE DIRECTOR

To the SER Community:

Moving through the summer months of 2023, the School of Energy Resources has been experiencing an unprecedented period of growth.

Over the last year, the team at SER submitted new proposals for funding opportunities totaling over \$90 million, and we have been fortunate to see a vast majority of those projects selected. In addition, the state has continued to step up and support many projects led by SER. Teams undertaking innovative research within SER's centers of excellence are now gearing up to launch new projects serving the needs of Wyoming's diverse energy sector including mitigating methane in Wyoming and Colorado basins, producing hydrogen from Wyoming feedstocks, and continuing our leadership role in developing carbon capture and storage technologies and carbon engineering.

The Center for Economic Geology Research was selected by the Department of Energy to lead what will become the single-largest competitive award in the University of Wyoming's history - \$40.5 million to develop a commercial carbon storage site in southwest Wyoming.

Meanwhile, exciting developments have occurred in the northwest corner of the state. SER recently incorporated the Wyoming Integrated Test Center - a test center for carbon capture and use on flue gas from a coal-fired power plant - into its management portfolio, while the Center for Carbon Capture and Conversion officially executed a lease with the Wyoming Innovation Center to advance the scale-up of the processing technology that is a critical component of the carbon engineering initiative.

Though research is often at the forefront, we remain diligent in training and educating our students on all these forms of energy and so much more. We are proud of the practical learning opportunities afforded to our students ensuring that they are prepared for their careers. Students leverage these opportunities to engage with industry and professional organizations, and employers have taken note. The most recent round of skilled graduates has maintained SER's 100% employment rate at graduation and the academic program continues to enjoy growth and interest from students all over the country.

Finally, the recognition of our efforts on the national stage are growing. SER was honored to recently host Administrator Michael Regan from the Environmental Protection Agency (EPA) along with Governor Mark Gordon to showcase the work that SER and our Centers of Excellence undertake for Wyoming. We hope he will return to the Nation's Capital and share what he saw in terms of Wyoming's ability to balance energy production and environmental stewardship.

Advancing into autumn and a new semester, we encourage folks to follow us on our social media platforms for up-to-date news and events.

Sincerely,

*Holly Krutka*  
Holly Krutka, Ph.D.



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## ACADEMICS

### SER's Kaszuba Announced as Recipient of UW Foundation Stewardship Award for 2023

**John Kaszuba**, the University of Wyoming's John and Jane Wold Centennial Chair in Energy and School of Energy Resources Professor of Geology and Geophysics, was named a 2023 recipient of the UW Foundation Stewardship Award.

The Award recognizes commitment to providing high-quality stewardship through meaningful and personalized interactions with donors, students, and faculty. It is designed to bring about a greater knowledge and awareness of effective stewardship practices and relationship-building opportunities and to give special recognition to those faculty members who make outstanding contributions to the culture of philanthropy at UW.

Kaszuba was nominated by SER Executive Director **Holly Krutka** and SER Academic Director Kami Danaei. He was recognized for his dedication to building a lasting relationship with the Wold Foundation and the Wold companies.

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### UW Hosts Rocky Mountain Professional Landman Conference

The University of Wyoming's School of Energy Resources and the Student Chapter of Energy Resources hosted the second Rocky Mountain Professional Landman (PLM) Conference Friday, May 5.

The in-person forum brought together energy industry professionals, legal practitioners and PLM alumni in the Rocky Mountain region to highlight the profession, discuss current topics and issues facing the industry, and explore career paths and opportunities for future graduates.

### UW SER Academic Program Appoints Director of Energy and Environmental Systems Concentration

The School of Energy Resources welcomes **Randall Violett** as the Program Director for the Energy and Environmental Systems (EES) Concentration in the Energy Resource Management and Development (ERMD) degree program.

Originally from Gunnison, Colo., Violett joined UW in November of 2022 as associate director of the newly launched Ranch Management and Agricultural Leadership Program in the College of Agriculture, Life Sciences, and Natural Resources (CALSNR). In his capacity in CALSNR, he works to integrate multidisciplinary classroom learning with practical experience, connecting students with producers and industry professionals.

As EES director - which is an additional, part-time administrative position - Violett will be tasked with providing administrative support to students in the concentration, and to facilitate connections between students, professional organizations, and potential employers in the field.

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## School of Energy Resources Celebrates Spring Class of 2023 Graduates

The School of Energy Resources was pleased to celebrate the spring graduates in the Class of 2023. With an increasingly growing program, this semester nine students in the Energy Resource Management and Development (ERMD) degree program walked at the spring commencement ceremony on Saturday, May 13.

Six of the nine graduates completed their Bachelor of Science degree in ERMD and completed their studies in the PLM concentration:

**Montgomery Hughes, Kieran McMullin, Dayton Reese, Lily Simon, Elijah Vigil, and Christopher Welch.**

The remaining graduates in the class of 2023 completed the ERMD in the EES concentration: **Michael Fenton, Shane Heavin, and Molly Murnane.**

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## SER and CEPS Students Participate in Knauss Employment Shadowing Externship Program

During the end of the spring semester, students in the School of Energy Resources and College of Engineering and Physical Sciences (CEPS) participated in an employment shadowing externship program to gain insights into a professional environment.

Supported by a gift from engineering alumnus **Martin Knauss**, six students from both the undergraduate and graduate levels spent between four and eight hours during the month of April shadowing employees at the Laramie offices of energy and environmental companies Trihydro Corporation and Millipore Sigma.

The experience allowed students the opportunity to observe real world practices, ask questions, and engage in discussions on various issues with members of the industry.

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## Academics Highlights

- Senior **Jacob Schneider** attended the 69th Annual meeting of the American Association of Professional Landmen (AAPL) alongside rising junior **Kendall Klos**. Both students are pursuing their degree in the Professional Land Management (PLM) concentration of the ERMD program. **READ MORE >**
- Students in the ERMD degree program, once again, traveled to Casper, Wyo. in order to visit the Wyoming Oil and Gas Conservation Commission (WOGCC) for the April session. **READ MORE >**



- Soheil Saraji**, a UW associate professor of energy and petroleum engineering and adjunct professor for SER, co-wrote a book examining blockchain technology and its applications in the energy industry. **READ MORE >**



- Representatives from the School of Energy Resources Academic program will be in attendance at the NAPE Summit February 7-9, 2024 in Houston, Texas. Register now and come network with our brilliant students and academic professionals! **REGISTER >**

**NAPE**

Where Deals Happen

## 3D Visualization Center

### SER's Kyle Summerfield Leads Virtual Reality Integration in Education through Wyoming Innovation Partnership

**Kyle Summerfield**, the program manager of the 3D Visualization Center in the School of Energy Resources, has been leading virtual reality (VR) and augmented reality (AR) integration into the state's community colleges as part of the Wyoming Innovation Partnership (WIP).

Created at the request of Governor **Mark Gordon**, WIP is a collaboration to align education and workforce development and support innovation, entrepreneurship, and research to help drive Wyoming's economy.

Summerfield is a co-lead alongside **Ben Mortiz** for the VR subcomponent of the Consortial Infrastructure program within Phase I of WIP.

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## Center for Air Quality

### UW Center for Air Quality Collaborates With CSU on Methane Project

The Center for Air Quality (CAQ) at the University of Wyoming will help conduct research to accurately depict methane emissions from oil and gas supply chains in Wyoming and Colorado basins.

The U.S. Department of Energy's Office of Fossil Energy and Carbon Management recently selected the Colorado State University (CSU) Energy Institute's Methane Emissions Program to lead the project.

With intentions to advance innovative methane measurement, monitoring and mitigation technologies, the collaborative team of CSU, UW and Penn State University aims to demonstrate that high-frequency sampling can be used to create inventory emissions estimates that accurately represent emissions in a basin.

While the project will focus on the Denver-Julesburg Basin in Colorado, an important component will be to demonstrate that the methods developed in one basin can be replicated in other basins with equal success. UW's CAQ project team plans to lead a secondary study under the scope of the project in Wyoming's Upper Green River Basin to demonstrate the relevance and applicability of the approach.

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## Hydrogen Energy Research Center

### UW to Lead \$10M Hydrogen Project With Award From Department of Energy

The Hydrogen Energy Research Center (H<sub>2</sub>ERC) in the University of Wyoming's School of Energy Resources (SER) is set to lead a collaborative project integrating a produced water thermal desalinization technology along with autothermal or steam methane reforming (ATR/SMR) for efficient hydrogen production.

Partnered with Los Alamos National Laboratory, Engineering, Procurement and Construction LLC (EPC), and Williams, one of the nation's largest energy infrastructure companies, the project aims to demonstrate hydrogen production using water produced during oil and gas extraction.

The U.S. Department of Energy (DOE) Office of Fossil Energy and Carbon Management announced that the project had been selected to negotiate a nearly \$5 million award as part of the expanded "Clean Hydrogen Production, Storage, Transport and Utilization to Enable a Net-Zero Carbon Economy" funding opportunity with cost share among the project partners, bringing the total endeavor up to \$10 million.

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## Nuclear Energy Research Center

### UW Receives Faculty Advancement Grant From Nuclear Regulatory Commission

The U.S. Nuclear Regulatory Commission's (NRC) Office of Nuclear Regulatory Research recently announced the University of Wyoming has been selected for a Faculty Development Advancement Award as part of the NRC's University Nuclear Leadership Program.

The award was announced in person by Commissioner **Annie Caputo** and **Raymond Furstenau**, director of the Office of Nuclear Regulatory Research from the NRC, at UW's Research Explorations for Nuclear Energy in Wyoming (RENEW) event April 14.

The \$600,000 award is intended to support new faculty in the nuclear-related fields of nuclear engineering, health physics and radiochemistry, and it advances the NRC's goal of focusing on university-led projects that complement current and future research needs.

The School of Energy Resources will augment the funding with an additional \$100,000.

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### UW to Receive \$300,000 to Establish Nuclear Chemistry Core Facility

The University of Wyoming will receive a \$300,000 award from the U.S. Department of Energy (DOE) to support the establishment of a nuclear chemistry core facility on campus.

The award is part of \$6.3 million in funding from DOE to bolster infrastructure and upgrade research reactors at universities as part of its Nuclear Energy University Program.

Led by **Caleb Hill**, the UW project will launch a nuclear chemistry core facility that will enable the first practical nuclear chemistry research and educational programs in Wyoming.

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## Center for Carbon Capture and Conversion

### UW School of Energy Resources Executes Lease at Wyoming Innovation Center

The University of Wyoming School of Energy Resources executed a lease at the Wyoming Innovation Center (WylC) to advance technologies that consume Wyoming natural resources, including coal processing technology, in the large research complex.

Ideally positioned in the heart of the Powder River Basin northeast of Gillette, the facility boasts close proximity to three major coal mines in the area enabling easy access for large scale technology testing on coal.

The lease is the second project affiliated with SER to take up residence in the facility. The first tenant, the National Energy Technology Laboratory in collaboration with SER, will be utilizing space at the venue to advance a project extracting rare earth elements from fly ash. The research is intended to culminate in a pilot-scale facility at the Center and is aimed at launching a new industry in extracting critical REE materials from the ash of Wyoming's Powder River Basin coal.

The new lease will allow SER to further expand its research and demonstration of a coal processing technology developed in SER's Center for Carbon Capture and Conversion (CCCC), which is focused on developing non-thermal products from coal.

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## UW's SER and WRI Collaboration on Green Coal-based Asphalt Featured at Conference

Coal-based asphalt currently being developed in a collaborative project between Western Research Institute (WRI) and the University of Wyoming's Center for Carbon Capture and Conversion (CCCC) was a featured product at the Peterson Asphalt Research Conference held in July.

**Jeramie Adams**, vice president of WRI's Renewable Upcycling, Materials and Asphalt Technologies, is the lead scientist developing the coal-based asphalt. He discussed the current developments of the technology and how it could help the asphalt industry meet lower emissions standards, while providing a new high-volume, alternative, domestic source of flexible asphalt pavement binder.

Using the coal extract produced from the CCCC's patented solvent extraction technology, the coal-based asphalt binder has shown promising results in performance and superior benchmarks in achieving net-zero emissions goals.

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## Center for Economic Geology Research

### UW Selected to Receive \$40.5M From Department of Energy for New CarbonSAFE Project

The U.S. Department of Energy (DOE) has selected UW's School of Energy Resources (SER) to receive a \$40.5 million award over three years to support the development of a new and expanded large-scale, commercial carbon storage project in the Greater Green River Basin.

The project will develop the Sweetwater Carbon Storage Hub in collaboration with Frontier Carbon Solutions LLC. This is the largest single competitive award in UW history.

In addition to the federal funding from DOE, the project will receive \$10.1 million in cost sharing, bringing the total project to \$50.6 million.

The project, which will be led by researchers in SER's Center for Economic Geology Research along with Frontier, the owner and operator of the Sweetwater Carbon Storage Hub, will develop a permanent carbon management solution for the region's critical hydrocarbon industries and support the sequestration of carbon from direct air capture.

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## UW and Partners to Create Geologic Database for Carbon Storage

A collaborative project proposed by the Center for Economic Geology Research (CEGR), the Wyoming State Geological Survey (WSGS) and the Wyoming Department of Environmental Quality (DEQ) will create a data-verified Class VI geologic database providing a unique service to carbon storage developers and regulatory agencies for the state of Wyoming.

To be funded, in part, by the U.S. Department of Energy's (DOE) Office of Fossil Energy and Carbon Management, the award will advance DOE's regional initiative to accelerate carbon management deployment.

The proposed database will provide geotechnical information that has been compiled and verified from established, public geologic databases and entities. It also will include a record of key social considerations and community benefits that developers should consider when preparing Class VI well permit applications to DEQ.

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## Other Research Initiatives

### UW School of Energy Resources Adds Integrated Test Center to Portfolio

As Wyoming continues to support and advance carbon capture technologies, management of the Integrated Test Center (ITC) has been added to the University of Wyoming School of Energy Resources' portfolio of activities.

Formerly under the purview of the Wyoming Energy Authority, the ITC is a carbon capture and utilization test center located at Basin Electric Power Cooperative's Dry Fork Station near Gillette. Opening its doors in 2018, the center provides space for researchers to test carbon capture, utilization and storage technologies using actual coal-based flue gas.

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### UW and Australian Company Sign Agreement to Support Energy Technology Development

A memorandum of understanding (MOU) between the University of Wyoming School of Energy Resources and Low Emission Technology Australia (LETA) was signed last week for collaborative research efforts in the advancement of energy technology.

The new MOU, signed by SER Executive Director **Holly Krutka** and LETA representatives, enables the exploration of joint research for carbon capture, utilization and sequestration projects. The projects will identify other innovative technologies with the potential to significantly reduce greenhouse gas emissions and identify novel approaches to consume natural resources such as SER's carbon engineering program focused on Wyoming coal.

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## Research Highlights

- The University of Wyoming School of Energy Resources released a request for proposals for Phase II of the **Mowry Shale project**. The project studies the potential of the tight, hydrocarbon bearing formation.
- The Hydrogen Energy Research Center** partnered with Cardiff University in Wales, United Kingdom, to launch a webinar series that focuses on emerging topics in hydrogen energy. The goal of the monthly seminar series is to provide a discussion and networking platform for researchers at Cardiff University and UW who have interests in hydrogen energy research. [MORE INFO >](#)

**CARDIFF**  
UNIVERSITY

- Three University of Wyoming research proposals recently were selected to receive seed funding through the **Hydrogen Energy Research Center's** Hydrogen Production and Transportation for Wyoming initiative. Proposals selected to receive funding were submitted by **Saman Aryana**, **Haibo Zhai**, and **Charlie Zhang**, and focus on three areas of interest: hydrogen transportation, electrolysis hydrogen production systems or hydrogen production from Wyoming's coal resources. [READ MORE >](#)



Saman Aryana



Haibo Zhai



Charlie Zhang



## OUTREACH

### EPA Administrator Regan Visits UW's SER on Tour of Wyoming

**Michael Regan**, administrator of the U.S. Environmental Protection Agency (EPA), wrapped up a two-day tour of Wyoming – at the invitation of Gov. **Mark Gordon** – with a visit to the University of Wyoming School of Energy Resources (SER).

The visit, which took place Aug. 8-9, showcased the robust energy sector in the state, as well as the commitment to advanced technologies and the work occurring at SER and across UW to support the state's energy sector while balancing environmental protection. The visit comes amid much discourse related to the EPA's proposed new carbon pollution standards for coal- and gas-fired power plants.

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### UW's SER Releases Landowners' Resource Guide for Carbon Capture and Storage

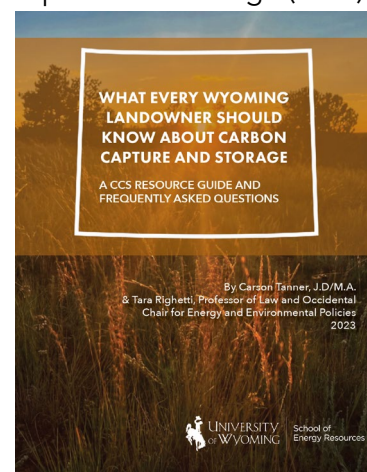
The University of Wyoming's School of Energy Resources (SER) has released a new resource guide for Wyoming landowners addressing frequently asked questions regarding carbon capture and storage (CCS).

The publication, "What Every Wyoming Landowner Should Know About Carbon Capture and Storage (CCS)," provides a general overview of common issues that have arisen during the development of CCS technology and helps to provide landowners with some guidance when exploring options to lease their pore space.

The publication was written by **Carson Tanner**, a UW College of Law graduate, as part of an independent study and supervised by **Tara Righetti**, an SER professor of law.

The guide can be downloaded directly from the SER website, or a hard copy can be requested by emailing **Christine Reed**, SER director of outreach, at [christine.reed@uwyo.edu](mailto:christine.reed@uwyo.edu).

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## Outreach Highlights

- The School of Energy Resources hosted a webinar exploring the current role of energy in Ukraine. Moderated by SER's **Eugene Holubnyak**, a panel discussed energy challenges in times of crisis; the difference between a traditional light water nuclear reactor and the Sodium nuclear reactors being developed by TerraPower; and approaches to building resilient energy infrastructure. **WATCH >**



- Members of the School of Energy Resources presented at the American Association of Petroleum Geologists (AAPG) Carbon Capture, Utilization, and Storage (CCUS) conference in April. SER Executive Director **Holly Krutka**, along with researchers **Tao Bai** and **Peng Li** in the Center for Economic Geology Research presented on the advancements SER has made in the area of carbon storage.
- Please stay up to date on our upcoming events by checking the **EVENTS CALENDAR >**





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