

School of Energy Resources Update
September 9, 2021

1. SER Academics program update:
 - a. The newly-launched Energy Resource Management minor will see the first two graduates in FA21.
 - b. SER added a SOAR platform for ERMD majors. SOAR is a competency based program at UW made up of experiences that shape, engage and prepare students to meet unpredicted and complex challenges for the future.
 - c. SER's block articulation agreements are published on the Transfer Relations website. These will remove many barriers for Wyoming transfer students and allow for a more seamless transition from a Wyoming community college to UW and SER.

2. SER's Center for Economic Geology Research (CEGR) continues its research on carbon storage, hydrogen and critical minerals research. Select highlights include:
 - a. Phase III of the Department of Energy-funded Wyoming CarbonSAFE project is underway and focused on implementing field operations. The project is building a fully-permitted, commercial-scale carbon storage site around two sequestration wells at Dry Fork power station near Gillette and lay the foundation to develop a regional carbon storage hub.
 - b. CEGR was successful in obtaining nearly \$3 million from the U.S. Department of Energy for research focused on expanding and transforming the use of coal and coal-based resources to produce coal-based products, using carbon ore, rare earth elements (REE) and critical minerals (CM). These multi-phase projects started in September and will last for two years, with potential for additional funding in subsequent phases.
 - c. CEGR was recently awarded two awards to study research gaps associated with developing both blue and green hydrogen industries in Wyoming. The first grant, led by Tallgrass Energy Partners, will complete a blue hydrogen-focused FEED study designed to assess the engineering and economic feasibility of incorporating a carbon capture unit on a hydrogen-producing gas processing plant near Douglas, Wyoming. CEGR, in collaboration with the Enhanced Oil Recovery Institute, will study carbon storage potential and lead a techno-economic assessment. The second grant, led by Williams Corporation, is a feasibility study that will study the development of a green hydrogen facility near assets in southwest Wyoming. CEGR, in collaboration with CERPA and the Center of Excellence for Produced Water Management, will lead a study of water resources and regulatory issues affecting the water needed for hydrogen pyrolysis.

3. SER's Center of Excellence for Carbon Capture & Conversion (CCCC) is progressing activity associated with the future of Wyoming coal, and is supporting and collaborating with an interdisciplinary faculty and staff team from across campus. While invented at the lab-scale, the UW team is now focused on pilot testing, scale up, demonstrate and commercialize technology in support of the Wyoming economy.
 - a. A site has been selected and approved for the building of a demonstration house made from sustainable coal derived building materials. Estimates for constructing the building are being compiled.

- b. The first phase of the engineering feasibility study, to design and construct a field demonstration of the UW proprietary coal refinery is complete. Detailed designs will commence shortly.
 - c. Performance assessments of the impacts on crop growth from using coal derived soil amendments at UW Powell and Lingle agricultural research stations are underway. There are notable improvements from addition of the coal derived soil amendment on crop growth, which is being quantified.
 - d. A formal research and technology agreement has been executed with a leading asphalt products manufacture, to collaborate on development of coal-derived paving and roofing material products.
4. The Center for Energy Regulation and Policy Analysis (CERPA)
- a. CERPA testified before the Joint Minerals Committee twice over the summer on pending Wyoming legislation related to voluntary carbon markets
5. The 3D Visualization Center
- a. Development is underway of the fundraising proposal called 'Angling for a Blue-Ribbon Future' in response to external interest. This brief unites various academic, public, and private stakeholders to provide digital tools to better manage the North Platte River.
 - b. The community-based proposal called 'Once Upon an Aquifer' is now receiving letters of support from various agencies, and will be seeking funding from a wide variety of sources. The project is celebrating through science, technology, and art, Albany County's unique 'Water Story,' enabling the public to become responsible stewards of the natural resources upon which we all depend.
 - c. The Technology Associate Program (providing internships to UW students) continues to bring digital experience and skills to participants, skilled students further their learning regarding application design, 3D modelling and virtual reality hardware and to contribute to projects with real world clients.
 - d. The following projects are examples of existing work in development:
 - i. Human Centered AI Learning Platform (UW Strategic Provost fund, collaboration with Dept. Computer Science, and the College of Education)
 - ii. The Pioneer Program (UW Strategic Provost fund, collaboration with the Makerspace)
 - iii. Adapting Pandemic Driven Technological Advancement to Expand Ecosystem Service Reach and Virtual Access to Wyoming's National Parks (UW Grand Challenges)