

ERC Resources Council (ERC)

MINUTES

August 23, 2019

BP Collaboration Center

Laramie, Wyoming

CALL TO ORDER:

Chairperson Cindy Crane called the meeting to order at 8:00 AM.

ATTENDANCE:

ERC Members Present

Chairperson Cindy Crane, Vice Chairperson WY Senator Jim Anderson, Carl Bauer, David Emery, Dave True, Mindy Benson, UW President Neil Theobald

Calling in via conference call: WY Representative Mike Greear, Vello Kuuskraa

ERC Members Absent

Jeane Hull, Thomas M. Botts

SER Staff in Attendance

Mark Northam, Rob Hurless, Rachel Ferrell, Richard Horner, Kipp Coddington, Scott Quillinan, Emma Jane Alexander, Rachel Ferrell, Carrie Ver Burg, Samantha Velez, Cindy Ishkanian, Cydney Yost, Pam Henderson, Katrina Clymer, Jen Paintin

Others In Attendance

E.G. Meyer

Approval of Agenda

Action: Dr. Mark Northam asked to add a new business item regarding testimony to the Joint Minerals Committee to the agenda. Vice Chairperson Senator Jim Anderson moved to approve the agenda with the addition to new business. Carl Bauer seconded it. Motion passed without objection.

Approval of May 2019 Minutes

Action: A motion was made by Vice Chairperson Senator Anderson to accept the minutes as presented. Mr. Bauer seconded it. Motion passed without objection.

Chairwoman's Discussion – Cindy Crane

Update on SER Executive Director Search

Summary: Following one-on-one sessions with different departments at UW, an RFQ was launched, and approval from procurement was received. SpencerStuart was selected as the firm for the executive search

for the new executive director. Recruiters Jeff Hyler and Leo Espinoza from the search firm met with the search committee on August 22nd in Laramie to have an open dialogue on the strategy and vision of SER moving forward and to hear what the search firm should be looking for in the next executive director.

Chairperson Crane asked if ERC members or members within the university wished to be considered for the position, or if they wished to recommend someone, they direct inquiries directly to Mr. Hyler and Mr. Espinoza.

The search firm SpencerStuart has been provided with a draft of the candidate briefing document, which is a marketing brochure for the recruitment search, and the job position description. The search committee has planned to add a quote from Governor Gordon to the brochure.

The search firm will test candidate profiles with the search committee before looking for candidates directly. Chairperson Crane, the working search committee, and/or the search committee will have touch points every two weeks with the search firm. The search committee at the end of October or the beginning of November will conduct first round interviews tentatively. A short list of three candidates will move on to the second round of interviews. The search committee would like to extend involvement to ERC members who want to be involved in the second round of interviews. The provost will be involved. Input and advice from everyone in the ERC will be important.

The search committee anticipates going to the Board of Trustees in December for approval based on the parameters of anticipated employment.

Dr. Mindy Benson encouraged the search committee to think about an opportunity for the top three candidates to present their vision on the state of energy today to the university on Wyocast. Chairperson Crane responded that the search committee plans to bring the top three candidates to campus for such a forum.

Dave True asked if personality profiles or attitude profiles would be used during the search. Chairperson Crane explained that the search firm has a culture survey processes and will provide the results to the search committee to evaluate fit. Leadership style is an area of great emphasis.

ERC – President Neil Theobald, Rob Wallace Departure & Replacement

President Neil Theobald introduced himself to the ERC as the interim President for the University of Wyoming and expressed his concern for the future of energy in the state. He emphasized the importance of the work done here on campus regarding carbon capture and storage and expanding production of oil and gas.

Chairperson Crane asked about Assistant Secretary for Fossil Energy Steven Windberg's visit to UW. Assistant Secretary Windberg toured the ITC and the mine in Gillette and met with Governor Gordon and Senator Enzi. AS Windberg is scheduled to tour the High Bay Research Facility, the 3D Viz Center, and the drilling simulator on August 23, 2019. He is also being given an overview of Wyoming CarbonSAFE, Carbon Engineering, the Center of Air Quality, and the Produced Water Center in Engineering.

Chairperson Crane explained that Rob Wallace has accepted an appointment at the Interior Department, and therefore, had to resign from his position on the ERC. The ERC needs to determine if his position needs to be replaced. Chairperson Crane asked that ERC members provide thoughts to her on the subject. Ms. Crane noted that given SER's growing effort in policy analysis and increased engagement with the

Department of Energy, having someone connected in D.C. would be a good addition to the ERC. Mr. True stated that it would be beneficial to bring on someone with knowledge of natural gas to replace Mr. Wallace's knowledge.

Research & Outreach Update – Scott Quillinan (Full report available in August 2019 ERC Notebook)

Summary: Mr. Quillinan reported that the Centers of Excellence are thriving. The Center for Economic Geology Research (CEGR) is doing work on carbon capture storage and growing a program in critical materials and oil and gas. A well was successfully drilled and plugged at Dry Fork Station for the Wyoming CarbonSAFE project. The team may go back into the well if they are awarded Phase III funding by the DOE.

Mr. Quillinan presented the anticipated FY2020 federal fossil energy budget breakdown, which is still in appropriations. Currently, it appears coal is going to be 66% (\$720 million) of the research budget for fossil energy in FY2020. The budget also includes dedicated research to coal and rare earth elements (REE) for the first time (\$23 million). SER's research budget is designed to closely resemble the federal research budget. SER would like to add a project with natural gas to its portfolio.

In May, the ERC asked for other metrics to show SER's impact across campus. Mr. Quillinan presented scholarly output as a metric of research impact. The top areas of publication in energy studies at UW include CO₂ capture, porous media, carbon capture and storage, gasification, and hydraulic fracturing. 30% of publications by SER faculty and CEGR are in the top 30% of journals and over 50% are in the top 10% of journals. There is room to grow in publications within industry. Dr. Benson suggested Academics Analytics software for measuring scholarly output.

In Outreach, SER hosted the DOE sponsored Research Experience in Carbon Sequestration (RECS) conference for PhD students and early career professionals in July. SER also participated in Carbon County's Energy Day. The SER Speaker Series is planned for the 2019-2020 academic year. In September, SER will participate in Energy Day in the Indoor Practice Facility.

FPO Update

Summary: Black Diamond Financial Group, a venture capitalist with whom SER has been working with, is in process of purchasing the flameless pressurized oxy-fuel (FPO) combustion technology, which has been the subject of an exclusive research and development program with UW for the last three years. The DoE awarded \$3.75 million for the design and engineering phase to build, construct, and operate a 25 MW (th) FPO demonstration at the University central energy plant. If this phase is satisfactory, the expectation is to move straight into construction and building in 2021. The whole project, including in kind contribution, will cost \$105 million and is subject to legislative approval. The state will be asked to provide up to \$18.7 million, and the building will be left for the university with or without the FPO technology.

SER Budgets

Summary: Dr. Northam and Rachel Ferrell presented the estimate of closing out FY19. Over \$6 million was spent on in-house grants in FY19. Dr. Northam added that a large portion of that is the CarbonSAFE Phase II grant and that over \$2.5 million was spent in the local economy on contractors in Wyoming for drilling operations.

The ERC asked last year for the total amount in grants being brought in by faculty members. However, Mrs. Ferrell does not have access to this information; individual colleges manage grants brought in. SER has asked for a report in WYOCloud to be made available. Dr. Northam stated that dollars in corporate grants do not show up in this report, because the UW Foundation typically manages them. Going forward, corporate grants will no longer be going through the Foundation.

Dr. Northam explained that SER will be asking Occidental Petroleum (now the owner of Anadarko) if the Anadarko chair can be repurposed into an area in which SER has expertise and if the funds can be split into two chairs (one technical position and one business or policy/law position). SER continues to speak to the Wold family about an additional gift to size up the Wold chair to a full chair. In the meantime, a portion of the expendable amount will be used for the salary of a carbonate geologist, Dr. Brian Kelly.

Dr. Northam presented the "SER FY2021/2020 Budget Requests – Information for the Joint Minerals Committee." The request asks for \$19,603,168 – an increase of nearly \$1.3 million (\$650,000 per annum).

The exception budget request is for continuing development of the carbon-engineering program and the evaluation and demonstration of proven technologies:

- \$600,000 request for cost share for development and operation of a third-party technology pilot plant located near Denver (they have already been awarded \$2 million by the DOE). SER will evaluate its efficacy for using PRB coal to make a stream of products out of the plant.
- \$2 million request for matching (2 to 1; private: state) to support the development of a pre-commercial technology solution that will be located near Gillette to beneficiate PRB coal. An addition request of \$3 million in matching funds will be made for the FY2023/24 Biennium.
- \$2 million in matching funds (2 to 1; private: state) to allow continuation of the technology development of flameless pressurized oxy-fuel (FPO) and to establish a combustion test facility at UW.
- \$1.7 million to demonstrate the performance of coal-derived asphalt.
- \$1.2 million to manufacture a dry methane reforming catalyst for converting CO₂ in the presence of natural gas into valuable petrochemical products
- \$1.8 million to undertake pilot plant testing of UW-patented thermo-chemical processing of coal
- \$1.2 million for pre-commercial manufacturing of materials derived from PRB coal for construction materials and construction of a full-size building for demonstration
- \$1.1 million for pre-commercial manufacture and testing of carbon fiber products derived from PRB coal
- \$1.1 million to manufacture and test soil amendment and to measure its beneficial impact on crops and soils
- \$700,000 for scale up manufacture and testing of polymeric materials and coating materials derived from PRB coal

These one-time funding requests total to \$8.8 million spread over two years of the next biennium with \$6.2 million in the first year that demonstrates the sense of urgency to place these products in the commercial marketplace. \$2.9 million of that is very high priority; the others are highly desirable. SER will continue to look for other sources of funding in the private sector if these requests are not fully funded.

Chairperson Crane, Vice Chairperson Senator Anderson, and Dr. Northam met with Governor Gordon and presented this to him. Dr. Northam has presented it to the Board of Trustees. It will be presented to the minerals committee next Friday, August 30, 2019.

Tasks: Create a pie chart illustrating the impact of SER's projects in Wyoming to educate new legislators on the importance of the work being done.

Annual Report

Dr. Northam sent an electronic copy of the draft annual report to the ERC. He asked that the ERC provide comments to him by September 6th.

Preparation for UW Board of Trustees Meeting – November 15, 2019

The annual meeting with the Board of Trustees is scheduled for Nov 15, 2019. Dr. Northam will be presenting on the supporting budget request, which will determine where SER will be going under the next Executive Director and with the carbon-engineering program. Dr. Northam welcomed input on other topics or approaches to the discussion and asked the ERC how they would like to participate in the meeting.

Mr. True recommended informing the board of the funding already spent behind SER's efforts, and Chairperson Crane recommended emphasizing the potential value to the state and how carbon-engineering projects benefit the university, SER, and the state.

DIVISION UPDATES

Full copies of all SER division reports are available in the August 2019 ERC Notebook or upon request.

Special Projects and Emerging Technology - Horner

Summary: The focus of the carbon engineering projects is to transfer from research and technology development and move into scaling up and demonstrating technology. One of the current challenges is to develop the product and material science side of carbon. SER wants to develop core expertise in materials engineering. Activities in special projects and emerging technology include:

- Dr. Robert Bradley, a world expert in carbon engineering and carbon science, has accepted a position in the Department of Mechanical Engineering and will be exploring porous-based carbon products and the manufacture of these from Wyoming Powder River Basin (PRB) coal. He will be recruiting two assistant professors and will be handling some of the internal management of the program while Richard Horner develops programs in other areas.

- The private company Clean Coal Technologies (CCTI) has made a funding award of \$1 million to UW, matched by \$0.56 million of State funds, to further research their proprietary coal beneficiation technology (to increase the BTU of PRB coal) and to implement a field evaluation trial in Gillette at the Fort Union location. UW will support research evaluations and the engineering aspects of the technology development. A major coal miner in Wyoming has expressed a formal interest in working with SER and CCTI to bring the solution to market in Wyoming.
- A total expenditure of \$4.7 million has been committed to support twelve carbon-engineering projects this year, starting July 1st, 2019. Four of the original sixteen projects that did not meet the criteria for technology development have been cut. All ongoing projects have IP provisions associated with them, and all projects have an industry partner with the exception of the thermo-chemical processing of coal, because the IP is still being developed.
- A dialogue has been started with a major EPC to discuss technology scale up and implementation of successful carbon engineering technologies in Wyoming. Wood Group has been approached and is interested in helping to commercialize these technologies. The parties will work to establish a framework agreement for the design, construction, and operation of large-scale carbon technology demonstrations in Wyoming.

3D Viz Center- Alexander

Summary: Reorganization of the Viz Center is going through a search for three new positions: (1) Lead Scientific Developer, (2) Lead Creative Developer, and (3) Digital Asset Coordinator. Ms. Alexander and Dr. Northam met with the UW Foundation a few months ago to talk about sourcing foundation funds for the Viz Center.

Ms. Alexander is currently writing a paper on how to strategically lead digital innovation activity at UW. The Viz Center is working on a collaboration with the College of Business and an institution in Switzerland regarding virtual reality experiences in retail. The project is funded by the College of Business. In the last 3 months, the Viz Center has seen successful grant activity with 3 different departments: (1) Department of Ecology on the communication of bee behavior, (2) Department of Ecosystem and Science Management on the continuation of soil visualization work, and (3) Department of Anthropology on language elicitation application development.

Mr. True asked if a fee schedule has been implemented for the Viz Center. Ms. Alexander replied that the center is an official service center for the university. A fee model is implemented to provide appropriate costs to the private sector. The Viz Center has been submitting letters of support with grant applications for research usage for faculty on campus, and some departments are willing to put in dollars towards work. General teaching usage is free of charge.

Dr. Benson explained that the virtual reality work being done at the 3D Viz Center presents an opportunity to talk about pedagogy focused on distance learning with the Board of Trustees.

EORI – Rob Hurless

Summary: Rob Hurless stepped in to update the ERC on staff changes at EORI, including Steve Whitaker's promotion to Technical Director of EORI.

EORI has been awarded two DOE grants. The first grant is for a two-year field-based research project to characterize and test the Wall Creek ROZ interval at Salt Creek. The total award is \$4.5 million; just under \$3 million of that is federal money that will come to the state.

The second award is a new DOE-NETL grant. EORI is teaming with Wold Energy Partners and the Center for Innovation for Flow Through Porous Media on a four-year project to characterize and overcome the technical challenges of developing two large, emerging unconventional/shale oil formations, the Mowry Shale and the Belle Fourche Shale.

Both projects involve local Wyoming operators. Any revenues from these projects will be put back into a small cost share program.

Academics- Henderson

Summary: Pam Henderson introduced Jen Paintin, a new College Relations Representative at SER who will be recruiting students. Academics is developing strategies and goals for recruitment this upcoming season. Ms. Paintin will be the point person for recruitment off-campus at college fairs, and Katrina Clymer, Academic Advising Professional at SER, and SER's student ambassador will be working on the on-campus recruiting effort. Academics is also reaching out to students who are undeclared or who want to switch majors. Activity on the SER website and social media is being used in recruitment efforts. Recruiting materials are being revised and broadened to appeal to Generation Z and for students who are not interested in engineering to show that they do not have to be engineering focused to work in energy.

Activities in academics include:

- The Energy Summer Institute (ESI), organized by Mrs. Clymer, was very successful. Plans are in progress for ESI next summer; Mrs. Henderson is seeking a budget to expand the number of campers from 20 to 36-40 students. Mrs. Henderson and Dr. Northam may seek support from corporate sponsors.
- In the past, it has been difficult to articulate SER's academic program with community colleges, because of the multidisciplinary nature of the program. Academics is putting together a Transfer Planning Guide to help students self-advise and to share with advisors at community colleges. A new Transfer Center Director has been hired at UW who is adding tools for transferring students.
- Students are requesting information on study abroad programs. Academics has met with the Education Abroad Office and is going to develop a portfolio of study abroad opportunities that will work for SER students. SER faculty will be developing faculty-led student abroad courses. There is also a National Student Exchange program and academics will speak with the University of Calgary, which has an accredited land management program, to determine if they would like to participate.
- Students are requesting an energy minor, which may help increase enrollment. Mrs. Henderson will be asking three faculty members to form a committee to develop a minor (15-18 credit hours).
- The new budget request includes hiring an Academic Director, as Mrs. Henderson will be retiring in the near future.
- 74 students will be visiting from Rock Springs Energy Academy on September 11th to learn about the Professional Land Management Concentration.

WY Representative Mike Greear asked for insight into the obstacles of getting to articulation agreements with community colleges. Mrs. Henderson replied that the challenge is an internal situation due to the multidisciplinary nature of the program, but the new Transfer Center Director is dealing with these barriers. Dr. Northam explained that some departments would not accept some courses taught in two-year institutions as equivalent to the courses taught at UW.

15-day census numbers and the anticipated number of graduates for the 2019-2020 academic year will be provided in the November report to the ERC.

Center for Energy Policy and Economics - Coddington

Summary: The new energy policy center, the Center for Energy Regulation and Policy (CERP), was launched on July 1st with funding from SER. The center aims to bring together disparate skill sets on campus dealing with energy, including economists, lawyers, business experts, policy experts, engineers, and technologists. Kipp Coddington is the director of the new center and Robert Godby is the deputy director.

Areas of activity for the center include:

- Tracking basic information of relevance to Wyoming policymakers and making that information available online.
- Commissioning four interdisciplinary energy studies the first year with the support of faculty on campus. Four graduate students will be working on these studies, including one from the Haub School, the College of Law, and the College of Business. One of these papers will examine the four states on the Eastern edge of PacificCorp service territory (Montana, Wyoming, New Mexico, and Colorado) and the impacts of their approaches to their coal assets.
- Assessing and tracking states implementing low-carbon policies
- Publishing a list of fellows on the website. Currently, 15 faculty want to participate as fellows.
- Creating an advisory board approved by the ERC to build relationships with sister organizations and bring world-class expertise on these topics to the state.

Mr. Coddington provided an update on his activities throughout the state:

- Mr. Coddington is serving on a new task force created by Governor Gordon that is assessing the future of energy and related topics. He is also chairing the task force's policy working group.
- At the request of the Campbell County Commissioners, Mr. Coddington prepared comments on BLM's Supplemental Environmental Impact Statement for the PRB related to low-carbon policy (both coal and oil and gas production).
- Mr. Coddington published a white paper on the implementation of 45Q that adopts a favorable Wyoming position. He will be drafting comments on the EPA published proposed guidance under section 4.1 of the Clean Water Act.

Mr. Coddington shared a letter from Secretary of Energy Rick Perry who is commissioning the National Coal Council to write its next study on the topic of smart policies in support of advanced coal fired power generation technologies. Mr. Coddington has been asked to co-chair the paper with John Harju (EERC), and it will be delivered to the Secretary of Energy in April 2020.

New Business

New Meeting Dates FY20

Dr. Northam shared the suggested dates for the 2020 ERC meetings and asked ERC members to suggest locations for one off-site meeting. Vice Chairperson Senator Anderson suggested Cody and Sheridan where legislators may be available to attend the meeting.

Joint Mineral Committee

Dr. Northam discussed the plans for the upcoming Joint Minerals Committee presentation. SER has been asked by LSO to present on specific topics. Topics will include CarbonSAFE, the 45Q incentive for carbon storage, regional CO₂ partnerships, and SER's work on private products. Mr. Hurless has been asked to present on EORI.

Mr. Quillinan will present on the federal fossil energy budget and provide an update on Wyoming CarbonSAFE Phase II and the proposal for Phase III. Mr. Horner will discuss investments to date, successful projects on carbon products, and plans for scaling up and demonstration of technologies. Mr. Coddington will present on the status of 45Q. Dr. Northam will present the budget request and how the request has the potential to add value through potential commercialization of developed technologies; he will ask for the committee's support as it goes through the legislature.

Adjournment

David Emery moved to adjourn the meeting and Anderson seconded it. There were no objections. The meeting was formally adjourned at 11:51 AM.

Respectfully submitted:

Cindy Crane
ERC Chairwoman

WY Senator, Jim Anderson
ERC Vice Chairman