

Energy Resources Council Meeting (ERC)
Minutes
May 19, 2017
Energy Innovation Center
8:00 AM – 2:00 PM via ZOOM Meeting

CALL TO ORDER:

The meeting was called to order at 8:06 AM by Chairwoman Hull.

ATTENDANCE:

ERC Members Present

Sen. James Anderson (Natrona), Carl Bauer, Sen. Eli Bebout, Wy House Representative Mike Greear, Tom Lockhart, Vello Kuuskraa, Dave True, Cindy Crane, and Jeane Hull

ERC Members Absent

Dave Emery, Tom Botts, and Laurie Nichols

SER Staff in Attendance

Mark Northam, Diana Hulme, Rob Hurlless, Trish Steger, Richard Horner, Pam Henderson, Emma Jane Alexander, Steve Carpenter, Kipp Coddington, Mark Wittstock and Kimmie Takaki.

MEETING ITEMS BY DETAIL:

Approval of Agenda

Action: A motion was made by Mr. Lockhart with two changes — adding an Integrated Test Center presentation by Carl Bauer and deleting presentations by President Nichols and Provost Miller. It was seconded by Ms. Crane. Motion passed without objection.

Approval of March 2017 Minutes

Action: A motion was made by Mr. Bauer and seconded by Sen. Anderson to accept the minutes as presented. Motion passed without objection.

Upcoming Dates

Summary: Dr. Northam informed the board that the School of Energy Resources (SER) will be attending the Joint Minerals Committee Meeting in Casper on June 28th to present on three separate topics. Mr. Coddington explained that SER has been asked to provide a draft letter of support for the ongoing SCC grant (that will be completed shortly) and to offer views on the floor space legislation that was produced earlier this year. Dr. Northman added that he has been tentatively asked to attend the meeting to talk about the Carbon Engineering Program. He plans to

present on highlights of results from the program and set the stage for a potential ask for an additional one-time dollars to move winners of the technology readiness level. Rep. Greear confirmed the Joint Mineral Committee will be present at the meeting in Casper. Dr. Northman agreed to provide a five-minute summary of the last ten years to bring new members up-to-date, and he suggested that Mr. Coddington assist with the update as well.

Dr. Northman noted that Thursday, August 17th, 2017, is the date of the grand opening ceremonies for the new High Bay Research Facility. The ribbon cutting will take place at 10:30 am followed by a luncheon. The ERC dinner will take place on Thursday night at the Train Depot. The normal ERC meeting will take place on Friday, August 18th, in the BP Center in EIC. An additional Joint Minerals Committee is anticipated sometime during the end of August or the beginning of September. Dr. Northman suggested that Ms. Hull attend and make a statement on behalf of the ERC to start off the presentation. Ms. Hull confirmed she will be available.

Dr. Northman informed the board that November 16th and 17th are the dates of the following ERC meeting, as well as the joint meeting with the Board of Trustees. He reminded the Board that this meeting did not take place last year because of the Board's concerns over getting budget items completed.

Comments/Tasks: Rep. Greear noted that a Minerals Committee meeting will take place on October 23rd-24th, and that he will not be able to make the November meeting.

DIVISION UPDATES

Full copies of all SER division reports are available in the **March 2017 ERC Notebook** or upon request.

Research

Comments/Tasks: Dr. Northman explained the status of an agreement with the Charles Koch Foundation for a short-term arrangement to start an energy regulation initiative led by Tim Considine and Mr. Coddington, as well as five to six other faculty and some students. The Koch Foundation will provide a fairly sizeable first-year grant of approximately \$300,000 to cover the rest of this calendar year.

Mr. Wallace asked what SER will do with the information that is developed from the grant. Dr. Northman replied that the expectation is that the work will be reviewable on a regular basis by the Koch Foundation. The Foundation will be welcome to suggest and collaborate with ERC on direction, but their only recourse is to decide whether or not to continue funding the work. Mr. Coddington agreed that everything with the Koch Foundation will be transparent and that SER's role will be as an academic institution publishing peer-reviewed literature. Mr. True inquired

whether staff would be available at the committee meeting, and Dr. Northman confirmed his availability.

Outreach

Summary: Ms. Hulme addressed the council. A meeting from June 4th to June 6th is planned in China at the 6th Annual Advanced Energy Technology Conference. Several SER members as well as Mr. Bauer will attend, and preparation from SER is underway to present on carbon engineering efforts. The remaining outreach events include a delegation from Japan from September 21st - 22nd for J-Coal (a conglomeration of Japanese companies interested in Wyoming coal). Tentative plans involve holding the meeting in Gillette and taking the delegation on a field trip to a coal mine and the Dry Fork power station. Future outreach plans may include elevating the previous speaker series with one or two high level speakers of prominence featured once or twice a semester. Ms. Hulme welcomed the council to share ideas for speakers.

Comments/Tasks: Ms. Hull offered assistance in getting a coal mine visit. Ms. Hull added that a visit to a coal mine close to Gillette (i.e. those north of town) would be the best use of the limited travel time for the meeting.

EE&P/CMI

Summary: Mr. Coddington described Carbon Management Institute's (CMI) major grants, including a federally funded rare earth element grant and a federally funded grant from the U.S. China Clean Energy Research Center. Dr. Erin Phillips was recently hired and will be working on the next round of grant applications under the carbon storage program. Dr. Erin Phillips brings her experience with NSF grants, so CMI may try to apply for those in the future. An application will be completed for both the Rock Springs and the Gillette sites. Both applications are due on December 1st. Besides these, there are no immediate research grant opportunities on the horizon due to uncertainties regarding the federal budget. Mr. Coddington reported that the continuing resolution through the end of the fiscal year did not impact any ongoing sources of funding.

Comments/Tasks: Mr. Coddington addressed concerns regarding potential funding cuts on the fossil energy side and noted that CMI has ongoing concerns whether there may be reductions on the fossil energy side going forward.

Carbon Engineering

Summary: Mr. Horner addressed the council and presented developments with the Carbon Engineering Initiative and the 14 projects SER is funding. The expectation (still under development) is that next year SER will have half a million dollars remnant in the special appropriation for Carbon Engineering, and SER will match a similar amount. Of the 14 projects, five or six have seen exceptional success and the others are a little bit below average. Those that did not meet expectations might be reshaped and taken into slightly different directions. Mr. Horner also touched on the intellectual property being filed, including 8 patents. Technology

companies have expressed encouraging interest. Mr. Horner is hopeful that SER may be able to attract some funding between now and next July (probably several thousands of dollars, not millions) from three or four of these companies to match seed funding SER has put into the Carbon Engineering Initiative. He added that SER will continue to bring in individuals on a consulting basis who are capable of doing techno-economic appraisals.

Mr. Horner explained that this year SER has funded one project for a new member of faculty in the College of Engineering and Applied Sciences to do basic work benchmarking Wyoming's geologies and propensity for CO₂ EOR. Earlier this year the Enhanced Oil Recovery Institute did economic evaluations looking at what point would it be economic for Wyoming independent operators to start to introduce CO₂ EOR as oil prices go up. SER is planning a visit to Japan to follow up with J-Coal. The last visit was successful and a number of utility technology companies and others were significantly interested in being able to utilize PRB coal in Japan. SER will commission a study over the next six months to truly understand the potential of PRB coal in Japan from the technical side and the product offer side of it as well. The study may also help SER understand how to leverage the supply of PRB coal with Japanese technology transfer to help with the future of Wyoming in terms of carbon management. Additionally, SER is supporting the initiative for the Carbon Innovation Center in Gillette, which is being developed by Energy Capital Economic Development (a non-profit) and awaiting approval on June 12th. SER supports this initiative because there is not a proper technology development ecosystem.

Comments/Tasks: Dr. Northman added that he, Mr. Horner, and Mr. Bauer attended a Clean Coal Technology Conference overseas that was hosted by the IEA Clean Coal Technology Group. Dr. Northman believes SER is thinking as innovatively about the future of coal as anyone in the world right now. Rep. Greear asked if SER has a mechanism in place to protect intellectual property. Mr. Horner replied that they are considering hiring a patent attorney, and Dr. Northman added that they started working with an attorney on staff at the office of the VP of Research and Economic Development. They have also been contracting different patent attorneys (depending on the field of practice).

Sen. Bebout asked how J-Coal feels about opportunities in Wyoming moving forward (considering the new Administration) and whether there is any difference on the political side. Dr. Northman replied that they met with the bank Japan Commercial (JCDC) and several industries. He believes they made ground on some expressions of interest of Japanese entities investing in the millennial bulk terminal. Dr. Northman felt encouraged that they have a strong interest in seeing an export market of PRB to Japan considering their dependence upon Australian and Indonesian coal. Mr. Horner added that one of the utilities they met in Japan had an ITTC capability and traditional boilers tested and have an amazing database of coal performance of different types from different geographies. They are prepared to share that information, so SER may understand what needs to be done with PRB coal to make it more attractive.

Rep. Greear asked if they had spoken with the company Coal Link and if Japan would not consider us a reliable source if we did not have the millennium capacity. Mr. Horner explained that they have had extensive discussions, and that Coal Link was one of their hosts. Mr. Horner added that the millennium capacity is attractive, because of the potential reliability of it as an imported resource (especially in comparison to the limitations of the supply Japan imports from Australia and Indonesia).

3D Visualization Lab

Comments/Tasks: None

Academic

Comment/Tasks: Ms. Henderson reported that graduates are beginning to get job offers. One of the professional line management students received a job offer from BP as a Service Land Negotiator at the Denver office. Ms. Hull asked if it looked like enrollment numbers were going to drop. Ms. Henderson indicated it would.

EORI

Comment/Tasks: Mr. Carpenter explained that there are several states identified as key infrastructure states with a strong linkage to the 45Q tax credit. The initiative is focusing on an outreach event with Kentucky slated for June. Governor Mead has indicated his support to have Wyoming be one of those three or four hub areas or hub states. It was added that Governor Mead and the Western Government Association working group are supportive. Kentucky and Wyoming are willing to sponsor these outreach events which are designed for the legislature for the decision makers to understand the technical import and aspects. The Western Government Association that Governor Mead co-sponsors is looking at a CO₂ EOR initiative, and the Great Plains Institute is working with Governor Mead.

SER Budgets

Summary: Ms. Ferrell explained to the board the various charts and what they represented. She noted that future changes would include a varied color bar chart which would demonstrate how SER's salary totals are actually broken down to specifically show commitments to the colleges and faculty. Dr. Northam briefly discussed research funding stating that research programs are made up of a number of different budget dollars i.e., equipment, graduate student support, consulting contracts, and summer salary for faculty. Faculty earn their salary in 9 months and they have 3 months in the summer where they can be paid out of grants and other areas. One thing to ensure if SER funds a 200K research program in the college of engineering is to absolutely differentiate SER staff salaries and outside department faculty salaries.

The discussion shifted from the use of the current budget to a future one-time request for additional funding for the carbon management project. SER recognizes that economic conditions may not be favorable for funding growth and that SER knows it must do a very good job of developing a business case to justify why the money is wanted and more importantly what the potential is if that money was given. SER will need to develop a very coherent strategy. Additional attention will also be spent speaking with the Joint Minerals committee and building the case for why this would be a good investment for the state of Wyoming.

Energy Education Initiative Update

Summary: A board has been convened and are currently meeting in Casper, Wyoming. They will develop and assign agenda items. The ERC will receive a full update at the August 2017 meeting.

MBA Energy Update

Summary: Dr. Northman explained that SER made a four-year commitment to provide funding to the program to recruit faculty and students and that the amount has varied over time, including a commitment of \$400,000 a year for two faculty and a few other items. Without the money, the college cannot sustain the MBA program. Metrics were set for the college to grow enrollment, develop an online piece of the program (which has happened), and an Executive MBA in Energy program (which has not materialized). An upcoming review will determine whether or not SER will continue to support it.

Science Initiative Overview

Summary: Until recently SER has had relatively little to no involvement in the Science Initiative; however going forward SER will provide undergraduate funding support and fundraising support with direct involvement by Dr. Northman. A full report will be available at the August ERC meeting.

SER Strategic Plan

Provost Kate Miller is leading the Strategy Development, and she issued an initial draft that is available online on the Strategic Planning Page on wyoweb.edu. Ms. Miller hopes to provide a stable vision statement and objections with some suggestions for the metrics by June 30th. Dr. Northman explained that SER wants to align with UW's Strategic Plan, and that he'd like to look at a final draft for SER's Strategic Plan at the August 18th ERC meeting. He would also like to be able to include that in the annual report to the Joint Minerals Committee in September. Dr.

Northman expects to have a semi-final draft ready by the first of July. He will seek online feedback for this version, and expects a final discussion of it in August. The university's timeframe for having this done is sometime Fall 2017.

Rep. Greear commented that he feels SER has been able to be financially nimble and therefore stay abreast or in front of the issues rather than being behind them. Rep. Greear asked if that is reflected overall in SER's strategies.

Dr. Northman replied that 80% of dollars go to pay salaries at the university and there is very little flexibility to pursue new opportunities. SER's flexibility depends upon the size of the reserve funds, but SER has been able to facilitate opportunities that are both beneficial to the university. The reserve funds have made it possible to hire really good people. The Research Office is meant to give departments that ability to be nimble and change directions. However, in the past they basically keep the money spent committed to the point where they cannot make big changes or find dollars to do things that weren't already in the budget.

Rep. Greear stated that the legislators see the opportunities SER pursues with reserve funding as a benefit to the state when looking at the diversity of Wyoming's economy, the Governor's Endowed Program Innovation, development of our young people, and trying to keep resources within the state. Dr. Northman asked the council to continue to give feedback on the strategic planning draft. He plans on moving detail from goals/objectives into the tactical document and start to develop the metrics. He will also seek input from the council before finalizing the draft.

Integrated Test Center

Following Mr. Bauer's slide presentation (available upon request), Sen. Anderson asked if there were other people who want the facilities besides the X-prize contestants? Mr. Bauer replied yes. Sen. Anderson added that SES is a company that received funding from Coal Coalition through Wyoming, and they are raising money to perform tests. Mr. Bauer replied that Pacific is interested in the technology, and Link DSAF is being approached by Illinois Energy Institute, but there is the potential for them to test at UW. Several other institutes are bidding in.

Mr. Bauer expressed his enthusiasm for the project and felt that the facility would definitely be constructed. There has already been some discussion about enlarging the facility, but of course that would be dependent on funding. Hull questioned whether there is a white paper or any sort of position paper that discusses the issue of CO₂ (the anthropogenic and non-anthropogenic) for the edification of our council members. Dr. Northman replied that Dr. Carpenter and Mr. Coddington are working on one for SER to discuss the issue of regulated versus unregulated and the impacts of the existing regulation on the use of it. Mr. Carpenter replied that there is information out there but it probably does not address more specifically the questions SER has raised and how it effects

Wyoming. Dr. Carpenter asked if SER could impose on the council's patience until the August meeting when they would be able to share their work to address the issue. He also offered to provide something in the interim. Ms. Hull said nothing was needed at this time and that August will be fine.

Dr. Northman described the development of the white paper he revised with 20-30 percent additional input from faculty, and developed a strategic plan from the revised white paper. Ms. Hull asked if exploitation of oil shells for silica based materials production (page 58, item 4) is something new. Dr. Northman replied that it was and SER was focusing on ways to develop technology and academic activities to strengthen the WY economy.

Adjournment

Rep. Greear proposed adjournment and it was seconded by Mr. Lockhart. No objections. The meeting was formally adjourned at 11:27 AM.

Respectfully submitted:

Jeane Hull
Chairwoman

James Anderson
Vice-Chairman