

**Minutes of the University of Wyoming Energy Resources Council
November 30, 2006**

Council members present:

Ron Harper – CEO& General Manager, Basin Electric Power Coop, (Council Chairman)
Senator Bill Hawks
Paul Lang – President Western Operations, Arch Coal Inc.
Representative Tom Lockhart (Council Vice Chairman)
Keith Rattie – Chairman, President & CEO, Questar Corporation
Bobby Shackouls – Chairman (retired), Burlington Resources Inc.
Tom Stroock – CEO, Alpha Development Corp; former US Ambassador
Ex officio, UW President Tom Buchanan
Ex officio, RIENR Director Harold Bergman

Council members absent:

Mark Davies, General Manager - Rio Tinto Energy America
Rob Wallace – Manager, Government Relations, G.E. Energy

Welcome and Approval of the Agenda and Minutes

Chairman Ron Harper called the meeting to order. Keith Rattie motioned and Bobby Shackouls seconded that the agenda and minutes be accepted. The motion passed unanimously. (Agenda-Appendix A) (Minutes 9/11-Appendix B)

Survey of Wyoming Energy

Bill Gern, V.P. of Research and Development compiled an extensive list of private industry listed with Dunn and Bradstreet that is sorted by energy category in Wyoming. Ron Harper, Chairman of the Energy Council stated that the list would best be served by each council member compiling from their specific category a contact name for the university to contact. Ben Blalock, VP of Institutional Advancement, has a governor approved, condensed list of industry that could be used for each council member to review, list contact information and get that information to Sarah Schulmeyer by Friday, December 8.

Burke Grandjean, with Wyoming Survey and Analysis Center, suggested that focus groups would be the best way to proceed in answering “How can the School of Energy Resources help private energy industry succeed?” It was decided that the council would obtain the contact name to specific companies, turn them in to Schulmeyer, and then Frost and Grandjean, with the aid of council member Keith Rattie, would determine the best direction to proceed with surveying from that point.

Legislation

The question was raised by Senator Kit Jennings whether the School of Energy Resources should be supporting the Stroock Forum since a DVD was being made of the Forum for public television. Jennings referred to items (ii), (iii) in the legislation. Both Senator Bill Hawks and Representative Tom Lockhart, along with the council agreed there wasn't a problem, and would speak with Jennings about it.

Stroock stated his convictions that it would be more harmful to not include the public in educating them about energy issues and the SER.

Rick Miller, legal representative for UW, stated that SER is a part of UW, and that if the principle purpose of supporting the Stroock Forum is to be involved in a public media education program, that is within the legislation, but if it is to have the agenda to convince the public of a specific point of view, that is not within the legislation. Representative Lockhart, along with all present council members, agreed that SER is supporting the Stroock Forum with the intent to educate the public so they are within the legislation, and he and Frost would speak with Jennings.

Hiring of Director and four Distinguished Faculty

Frost gave an update of the four faculty positions by stating searches were underway, and that they would be bringing in high profile people from outside the university. Bergman commented that the best timing would be for the director to be identified, and then they could organize their team. It was agreed that this would be an attractive benefit for a director.

The question arose again of how the council would be involved in the hiring of the director. The universal concern is that there be a balance of candidates with academic and industry background. David Mead-Fox, the KornFerry representative, stated his concerns over the confidentiality of anyone knowing the initial group of candidates. Mead-Fox assured the council that there was a balance in initial candidates, as that is the standard, but it is impossible to predict the outcome of the finalists' background. Bergman made a strong point that the search committee for the director was made up of the highest quality people to detect the best candidates, and that this procedure typically works 99% of the time.

Tom Stroock re-stated the conclusion from the morning meeting which was that the council would be involved in the final stage of candidates. Rattie agreed that Mead-Fox's job was to get us to that point.

Summary of morning meeting with Board of Trustees

Chairman Harper stated that the morning meeting went very well, and felt we were on our way to building a strong relationship together which would be essential to being successful.

Financial Report

The financial report was presented. (Appendix-C)

Summary of existing SER-related research and teaching activities at UW

Frost introduced the drafted SER brochure that will be produced sometime in January, 2007. It was noted that it would be an excellent tool to use with industry contacts, legislators, fundraising contacts, and others.

Stroock re-raised the issue about the question of SER being involved with the Stroock Forum. He stated his convictions that it would be more harmful to not include the public in educating them about energy issues and the SER.

Rick Miller, legal representative for UW, stated that SER is a part of UW, and that if the principle purpose of supporting the Stroock Forum is to be involved in a public media education program, that is within the legislation, but if it is to have the agenda to convince the public of a specific point of view, that is not within the legislation. Representative Lockhart, along with all present council members, agreed that SER is supporting the Stroock Forum with the intent to educate the public so they are within the legislation, and he and Frost would speak with Jennings.

Grant Matching Funds

Andy Hansen, Academic Coordinator, summarized the Grant Matching Fund proposals and stated that SER has received six proposals: three are being funded, two have been rejected, and one is a possibility.

Update from Academic Coordinator

Andy Hansen, Academic Coordinator gave an update on Summer Institute, Campus-Wide Initiatives, UW Read, and Spring Efforts. (Appendix-D)

Outreach Activities

Frost gave an update on high profile colloquial speakers for the spring, two spring workshops with WRI, an Energy project for Wyoming Conservation Corps volunteers, a Cost Benefit Analysis for Wyoming Infrastructure Authority, and Earth Visualization Educational Outreach Exhibit. It was agreed that an effort for strong publicity should be a priority.

Harold Bergman stated there is the opportunity to be involved in a potential program in Jackson in the summer of 2007 which would mean high visibility for UW.

Fundraising

Ben Blalock gave a summary of the fundraising efforts which included EnCana, Shell, and ConocoPhillips. Shackouls pointed out the importance of coordination in contacting and working with companies.

Future Meeting Dates

Harper stated that Fridays seem to be a day that works for most council members, and he would put together a calendar for future meetings. It would then be coordinated by council members.

The meeting adjourned at approximately 3:00.

Respectfully submitted,

Ron Harper, Chairman

Appendix A

Agenda – November 30, 2006 Energy Resource Council Meeting

- 1) Review of minutes from 9/11/2006
- 2) Survey of Wyoming's energy industry
- 3) Legislation
- 4) Update on the Director and 4 SER professorships
- 5) Summary of morning joint ERC-Board of Trustee meeting
- 6) Financial Report
- 7) Summary of existing SER-related research and teaching activities at UW
- 8) Request for Grant Matching Funds
- 9) Break
- 10) Written Update from the Academic Coordinator
- 11) Outreach Activities
 - Stroock Forum
 - SER Colloquia
 - WPTV production based upon Stroock Forum and Energy Futures lectures
 - Contract with WRI for 2 one day workshops spring 2007 on
 - Coal Gasification
 - Carbon Sequestration
 - Energy project for Wyoming Conservation Corps volunteers
 - Cost-Benefit Analysis for Wyoming Infrastructure Authority
 - Earth Visualization Educational Outreach Exhibit
- 12) Fundraising Activities
- 13) Future Meeting Times

Appendix B

Minutes of the University of Wyoming Energy Resources Council September 11, 2006

Council members present:

Ron Harper – CEO& General Manager, Basin Electric Power Coop, (Council Chairman
Representative Tom Lockhart (Council Vice Chairman)
Keith Rattie – Chairman, President & CEO, Questar Corporation
Bobby Shackouls – Chairman (retired), Burlington Resources Inc.
Tom Stroock – CEO, Alpha Development Corp; former US Ambassador
Ex officio, UW President Tom Buchanan
Ex officio, RIENR Director Harold Bergman

Council members absent:

Mark Davies, General Manager - Rio Tinto Energy America
Senator Bill Hawks
Paul Lang, President - Western Operations, Arch Coal Inc.
Rob Wallace – Manager, Government Relations, G.E. Energy

The Council meeting convened at approximately 1:00 p.m. on September 11, 2006 through a conference call in the UW Presidents Board Room.

Welcome and Approval of the Agenda and Minutes.

Chairman Ron Harper called the meeting to order. Bobby Shackouls moved and Tom Stroock seconded that the agenda for the meeting be accepted, and the motion passed unanimously. The agenda is attached as Appendix A to these minutes.

Bobby Shackouls and Tom Stroock seconded that the minutes from the meeting on August 10 – 11, 2006, be approved, with corrections identified by Tom Lockhart, and the motion passed unanimously. A copy of the approved minutes from the August 10 – 11 council meeting is attached as Appendix B

Financial Report

UW Vice President for Academic Affairs Myron Allen summarized the financial report, clarifying a question from Chairman Harper that the UW fiscal year ends 6/30/2006. The financial report reflects amounts based on 7/1/2006 until 6/30/2007, not a full year. Chairman Harper requested the report be changed to reflect an original amount budgeted for the year, YTD amount spent, and an amount for obligated funds to the end of the year. Allen stated it would be changed. Allen also clarified that the salary amounts would include salary, advertising expenses to fill the four Professorship positions, and moving expenses, but that in the following year, the entire salary amount would be salary. A copy of the financial report is attached as Appendix C.

SER Director

Vice President Allen introduced Carol Frost, Interim Director to the Council, and she summarized her duties and the initial scope of the work for Interim Director. They will include: searching and hiring a permanent director by chairing a search committee of which people have begun to be selected, oversee the hiring of the first four professorships, identifying space for the Director and staff, and assisting UW Vice President of Institutional Advancement Ben Blalock in fundraising by serving as spokesperson for the School of Energy. Frost stated that she would support the School of Energy Academic Coordinator Andy Hansen, and Engineering related fields, and would value any input the council could give her.

Vice President Allen gave an update on what has been done to procure a permanent director by explaining that an advertising schedule is in place in a diverse selection of periodicals which include Mathematics, Engineering, Physics, Economics, Oil & Gas, and Geophysics. The Council discussed the search process for a director indicating that it was the legislature's original intention that the largest sweep possible be made for a director; whether a search firm should be used; the background the candidate should have since the position involves a combination of several energy related areas. All members are to send Vice President Allen names of reputable search firms. A copy of the employment ad used for the Director is attached as Appendix D.

Vice President Allen explains two ways council members could be involved in the process of hiring the director. One is on the front end, which is where we are now, by recommending people, and providing guidance from an industry perspective. Secondly, members could be involved with the final interviewing process. President Buchanan stated that the council would be kept apprised on a regular basis of the status of the search.

President Buchanan explained that the director will report to the VP of Academic Affairs, who reports to the President, and who ultimately reports to the Board of Trustees. The Director will necessarily keep UW Energy Resources Council apprised of the School's activities.

Hiring of the Four Authorized Professorships

Frost stated that these searches are underway, and individual departments would be placing ads, and will review applications in December, 2006, in hopes of faculty beginning in summer or fall of 2007. This gives quality professors time to wrap up current teaching positions and start at UW. Specific ads can be viewed on the UW web site, and specific job descriptions, which all will include teaching, are communicated to faculty by the hiring dean. A copy of the hiring rationale is attached as Appendix E.

Links between Academic Units with the University

Vice President Allen explained how geology and geophysics, physics, engineering, mathematics, and economics are linked together to assist in solving industry related energy issues. A copy of his handout is attached as Appendix F.

Review of Annual Report to the Wyoming Legislature

Vice President Allen began by addressing a question raised by Chairman Harper about the partnership in paragraph three of Appendix B. Vice President Allen explained that the approved budget includes matching funds with the National Science Foundation to fund five undergraduates to the program in the summer of 2007; however, it may not happen until 2008.

Interim Director

Stroock wanted to go on record strongly endorsing the appointment of Carol Frost as Interim Director, and a motion was made and unanimously accepted to endorse Frost's appointment.

Arrangement of Council meeting with Board of Trustees

President Buchanan discussed the following dates of October 26, December 7, 2006, and January 25, 2007 as possible dates for the council and trustees to meet together, and he would communicate with everyone on an acceptable date.

Methods, Plans, and Programs for Contacts and Exchanges of view of Industry Players

This item was tabled for a later date.

Chairman Harper asked the council and they agreed, if it was acceptable for him to discuss future meeting dates with members and get back to them. Council Members will be notified about a future meeting date when minutes are distributed . He thanked the council for their time.

The meeting adjourned at approximately 3:00.

Respectfully submitted,
Ron Harper, Chairman

Appendix C

School of Energy Resources Financial First Year Expenditures as of November 15, 2006

		First Year Budget	Left to Spend
<u>ACADEMICS</u>			
Staff (includes EPB, support, undergraduate research, graduate asst, fees)	Budget Expenses Encumbrance s	\$157,300 (\$222) (\$41,065)	\$116,013
Distinguished Faculty - 4 (Salary & EPB, Fringe, search, interim instruction, support, colloquial speakers)	Budget Expenses Encumbrance s	\$1,079,000 (\$605,333) \$0	\$473,667
Visiting Professorships	Budget	\$0	
Teaching Internships (Salary, EPB, Fringe)	Budget Expenses Encumbrance s	\$101,000 \$0 (\$26,500)	\$74,500
Summer Program for H.S students salaries, EPB, expenses	Budget Expenses Encumbrance s	\$63,600 (\$327) (\$46,500)	\$16,773
TOTALS	Budget Expenses Encumbrance s	\$1,400,900 (\$605,882) (\$114,065)	\$680,953

<u>RESEARCH</u>			
Staff (includes EPB, support, equipment, software)	Budget Expenses Encumbrance s	\$518,550 \$0 \$0	\$518,550
Half-time Faculty Appointmnt	Budget Expenses Encumbrance s	\$410,099 \$0 \$0	\$410,099
Startup Assistance Fund	Budget Expenses Encumbranes	\$500,000 \$0 \$0	\$500,000

Grant Matching Fund	Budget	\$500,000	\$400,000
Pat Sullivan	Expenses	\$0	
Paul Heller	Encumbrance s	(\$100,000)	
TOTALS	Budget Expenses Encumbrance s	\$1,928,649 \$0 (\$100,000)	\$1,828,649

<u>STATEWIDE OUTREACH</u>			
Energy Outreach Center (includes support, editorial & production work, released time for faculty contributor) The Stroock Forum - \$27,000 WRI -2 workshops - \$201,765 WY. Pipeline Authority - \$27,000 Earthscope - \$7,900	Budget Expenses Encumbrance s	\$561,000 (\$12,003) (\$346,093)	\$202,904
TOTALS	Budget Expenses Encumbrance s	\$561,000 (\$12,003) (\$346,093)	\$202,904

<u>ADMINISTRATION</u>			
Staff (includes Director, staff, fringe benefits, EPB, support, search expenses) Construction renovations/ office space	Budget Expenses Encumbrance s Projected Exp	\$513,100 (\$90,187) (\$98,828) (\$143,000)	\$181,085
TOTALS	Budget Expenses Encumbrance s Projected Exp	\$513,100 (\$90,187) (\$98,828) (\$143,000)	\$181,085

Grand Totals		\$4,403,649	\$2,893,591
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Appendix D

30 November 2006

Academic Comments for:

SCHOOL OF ENERGY RESOURCES

ERC Board Meeting

MATCHING GRANT FUND

UW faculty and academic professionals are typically engaged in research as part of their commitment to the University. While not mandatory, a successful research program often requires significant external funds to meet the research objectives. These funds may be used for, among other things, support of undergraduate and graduate students, purchase of critical equipment, and summer salary for the PI.

The national landscape for funding is a highly competitive environment. For instance, proposals to national agencies such as DOE or NSF may have a success rates of 10-15 percent. As a result, review panels are forced to choose among many excellent proposal and subtle differences may dictate any proposal's fate. The SER Matching Grant Fund (MGF) program is intended to provide significant additional leverage to already strong proposals, thereby improving the chances of acquiring external funding.

A request for proposals to the MGF was issued campus-wide on 31 October 2006. As of 27 November 2006, SER has received six requests for MGF funds and has committed funding to three of these requests. Accepted proposals span a spectrum of energy related-research ranging from basic research to economic development. Specific subjects include:

- Solar energy, specifically, molecular-based photoelectrochemical cells (artificial photosynthesis). Submitted to DOE.
- Geology of channel-belt sand bodies related to natural gas reservoirs. Submitted to the Petroleum Research Fund of the American Chemical Society.
- Plant modeling of coal gasification—economic analysis of possible products. Submitted to the Idaho National Laboratory.

It is important to note that SER funding is contingent upon the proposal being accepted by the granting agency.

Currently the SER is receiving a steady stream of funding requests for the MGF program. The SER is also in the process of forming a campus-wide *Academic Council* whose partial charge will be to assist in evaluating proposals for the Matching Grant Fund program.

SUMMER INSTITUTE

In our annual report to the legislature, the SER provided details surrounding a summer program for high school students, teachers, and counselors. Specifically, we intend to bring 16 rising high school sophomores and 4 teachers/counselors to UW for an Energy Summer Institute. The length of the institute is planned for 2 weeks and is scheduled to run from June 10-23. The institute will consist of two independent programs, developed by UW faculty in the areas of energy science. Possible project areas include:

- Coal gasification
- EORI
- Renewable energy, alternative energy, or energy conversion
- CO₂ capture and storage.

All K12 participants will be involved with both energy programs. In addition, a major off-campus field trip will occur during the institute. Currently, we are focusing on the Jim Bridger power plant as a likely tour.

CAMPUS-WIDE INITIATIVES

Chemistry REU Program

The Department of Chemistry has submitted a proposal to the National Science Foundation to make UW a Research Experience for Undergraduates (REU) site for: "*Chemistry Research Related to Energy Science*." The current REU proposal from the Department of Chemistry outlines a program to bring 10 undergraduate students from neighboring colleges to UW for each of the next three summers to work on outstanding problems related to energy science and energy resource development. Educational activities will include hands-on research on projects related to the development of clean and renewable energy sources, energy-related field trips, and scientific seminars and discussions of the chemistry research needed for a sustainable energy plan for the nation.

The School of Energy Resources has partnered with the Chemistry Department REU proposal by committing to fund an additional five UW undergraduates to the program for the summer of 2007, bringing the total undergraduate research group to 15. If the REU proposal is not funded by NSF, the SER will work with the Chemistry Department to get an independent REU start-up program running in the summer of 2007, again with SER funding for five UW undergraduates. We should be able to use this program as a powerful primer for another run at the NSF/REU program.

DOE/EPSCoR Proposal

The *hydrogen fuel initiative* is an advanced energy initiative, sponsored by the Department of Energy, focused on researching and developing critical hydrogen and fuel cell technologies to support a hydrogen fuel economy. Faculty members in the Departments of Electrical Engineering and Chemical and Petroleum Engineering have submitted a large DOE/EPSCoR proposal to study hydrogen production using non thermal plasma reactors.

An important component of the DOE/EPSCoR program is the development of human resources in addition to the fundamental energy research. The proposed research cluster will directly involve six faculty members and at least 5 graduate students. In addition, SER has committed to support three undergraduate fellowships and one distinguished teacher in residence for each year of the three year grant. The teacher in residence program involves bringing a Wyoming K12 teacher to campus for an entire year. Teachers in this program will have the opportunity to interact with faculty and graduate students on a daily basis, teach courses in their field, as well as take UW courses to advance their knowledge base.

The exposure of undergraduate students and K12 teachers in this cluster will help in recruiting students for energy-focused programs in the future. Moreover, the experiences gained by participants will provide them with a fundamental understanding and appreciation for key technologies enabling a hydrogen based economy.

The UW proposal requests \$1.2 million from DOE with an SER match of \$402,000.

NSF Grand Challenge Proposal

The College of Education is submitting an NSF Grand Challenge proposal addressing capacity building in science, technology, engineering, and math (STEM). The proposal calls for forming a cadre of 5 Ph.D. students to work with an interdisciplinary team of faculty from across the institution to address problems associated with energy, the environment, and natural resource issues.

Addressing the energy, environment, and natural resources quandary requires a global view of earth systems science. The existing PhD program in Science Education at UW will be enhanced to focus on earth systems science. The School of Energy Resources can be a major contributor to this effort by providing content courses, mentoring through our distinguished faculty, and developing collaborative energy research projects that involve the STEM Ph.D. students. The SER will also support a K12 teacher in residence for each year of the four year grant. We view this program as an outstanding opportunity to expose Wyoming teachers to the energy problems facing the state and the nation. Moreover, the graduate students involved in the program can gain valuable perspectives on the challenges faced by K12 teachers in math and science.

The UW proposal requests \$1.3 million from NSF with an SER match of \$404,000.

Engineering Science 1060

ES 1060 (Introduction to Engineering Computing) is the first exposure to engineering for students in the College of Engineering. The course exposes students to computing tools for data presentation graphics, equation solving, and manipulation of tabular data. The present course suffers from a lack of focus to specific problems, thereby making it difficult to motivate students to continue their pursuit of an engineering career.

Recently there has been an interest in revamping ES 1060 to give it a thematic base that can provide students with a solid motivation to learn the subject content. Associate Dean Dick Schmidt and I are in discussions to revise the course to address concepts and problems surrounding renewable energy. The SER has agreed to provide 1.5 months of one-time summer faculty support to develop the new course.

UW READ

UW READ is a campus-wide initiative where incoming freshman read a book prior to coming to campus and engage in discussions of the book as well as attend seminars related to the book. The SER is in preliminary discussions with the UW READ committee on having the Fall 2007 book be devoted to energy. “Beyond Oil” by Kenneth Deffeyes has been suggested as one possibility. Discussions are ongoing.

SPRING EFFORTS

GA Allocations

SER has a total of 18 GA’s to be distributed to support the SER mission. Guidelines are being developed with the intent of releasing an RFP by spring break.

Half-Time Faculty Appointments

SER has a total of 3 half-time faculty appointments to be released for AY 2007-08. Guidelines are being developed with the intent of releasing an RFP by the end of the spring semester.

Curriculum Development

Widespread discussion among deans, department heads, and faculty has occurred in the fall of 2006. Curriculum proposals will begin to unfold in the spring with input from industry, UW faculty, administrators, and students. Our original efforts are focusing on undergraduate programs. Options currently under consideration include adding an energy stem to the recently created Earth Systems Science degree. Currently this program has a geology stem and an atmospheric science stem. Another possibility being examined is the development of a double major similar to the ENR program. We are also investigating business opportunities for students interested in energy—particularly at the graduate level.