

University of Wyoming  
2005 Supplemental Budget Bill, Section 337 - Energy Institute

**School of Energy Resources**

- Based in part upon interest generated by a provision in 2005 Senate File 122 as introduced, the 2005 Supplemental Budget Bill, Section 337 requires UW to develop an academic and financial plan for an energy institute and submit it to the Governor and, based on action by the Management Council, to the Joint Minerals, Business, and Economic Development Interim Committee.
- In developing the plan, as required in Section 337, UW engaged in consultation with leaders of Wyoming's renewable and non-renewable energy industries. These efforts included meetings with industry members, circulation of draft plans, a public presentation, and solicitation of comments from a variety of stakeholders.
- The plan, calling for a School of Energy Resources, is nearing final form, after accommodating input from stakeholders received throughout the summer. The report is due October 1, 2005.

**The School's Mission**

The school's mission will be to bolster both Wyoming's economic development and the preparation of students in three major ways:

1. Academics – UW will add new faculty with established reputations in energy-related disciplines who will complement the University's existing strengths in those areas. This will increase UW's capacity and enhance its reputation regionally and nationally for instructional quality, and will include linkages to Wyoming's public schools and to the energy industry. While the faculty members will be assigned to mainstream academic departments, to maximize the impact on UW's teaching mission, their positions will belong permanently to the School of Energy Resources and may be moved at the discretion of the school's director.
2. Research – UW will expand the scope of the existing Institute for Energy Research (IER). In addition to housing the existing Enhanced Oil Recovery Institute, IER will use stable state funding to leverage external funding to establish new research centers focusing on other energy resources. Though the initial focus will likely be on coalbed natural gas and coal conversion research, the structure will be flexible enough in the long term to include centers related to other energy resources of relevance to Wyoming, including renewable energy. Each center's viability will hinge on the currency of the science and on the center's ability to garner sustained external funding from industrial and competitive federal sources.
3. Service - A new Energy Outreach Center will be established to facilitate technology transfer. The Center's mission will be to disseminate applied scientific and engineering information to support energy production and long-range energy planning, through the publication of reports and the timely organization of workshops and symposia.

Underlying the school will be a set of core questions related to Wyoming's energy portfolio:

- How can Wyoming sustain and optimize the long-term production of fossil energy resources, through better geologic understanding, more powerful engineering design, more refined process modeling, more sophisticated economics and regulatory practices, and enhanced reclamation?

- What curriculum will be required to prepare UW students for careers in Wyoming’s energy future?
- To what extent can Wyoming produce energy from renewable and sustainable resources, including wind, solar energy, and possibly coalbed natural gas?
- What are Wyoming’s roles in the emerging and potential markets for carbon dioxide sequestration, hydrogen production, and transportation fuels derived from coal?
- What are the potential land-use and environmental benefits of optimizing production, for example through more efficient utilization of already developed fields and more effective management and utilization of byproducts, such as flue gas, fly ash, and coalbed natural gas water?
- What planning measures — technological, economic, environmental, and policy-related — will smooth Wyoming’s transition to a long-range energy economy that may involve greater use of non-fossil energy resources?

### **The School’s Structure**

**Rationale:** The structure will be patterned after nationally recognized programs such as the Jackson School of Geosciences at the University of Texas at Austin and the Sarkeys Energy Center at the University of Oklahoma. Attachment A is a proposed organization chart for UW’s School of Energy Resources. A key aspect of the structure is that the director will control resources — such as senior-level faculty positions — for which deans from UW’s seven colleges will want to compete. Specifically, college deans will seek to build strength in energy-related teaching and research, precisely because doing so will position them to gain resources from the School of Energy Resources. In this structure, instead of competing with established colleges for additional faculty positions and resources, the school will create permanent market-like forces within the university that can sustain and augment the state’s direct investment in the school.

**University of Wyoming Energy Resources Council:** The University’s Board of Trustees will appoint a nine-member University of Wyoming Energy Resources Council, including representatives from energy industries operating in the state and region as well as representatives from appropriate state agencies. The purpose of the council will be to provide guidance and advice on the University’s directions and accomplishments in energy-related teaching and research, to the Trustees, President, and Vice President for Academic Affairs.

**Scope:** The school’s director will report directly to the Vice President for Academic Affairs and oversee three units:

#### I. **Academic Coordinator.** The Academic Coordinator will:

- Coordinate courses across department and college lines, to ensure greater opportunities for interdisciplinary instruction in upper-division and graduate curricula related to energy resources, including funding undergraduate research fellowships and graduate assistantships to help in the development and delivery of cross-departmental and cross-college coursework.
- Explore new curricular measures, including (a) certificate programs in areas such as natural resource accounting and legal issues in natural resource extraction, (b) a professional masters’ program in energy science, and (c) augmented degree options in traditional disciplines.
- Recruit talented Wyoming high-school and community-college faculty members to participate in funded sabbatical leaves to teach entry-level classes at UW in appropriate disciplines and take advanced courses in fields that enrich their careers.
- Run summer programs. One such program will be a summer school in energy science for high school students. Another program will be a set of summer internships for undergraduates

studying energy-related fields, to allow baccalaureate candidates to develop industrial field experience and to help facilitate opportunities for future employment. A third program will be a series of summer courses for high school teachers on topics related to energy science, technology, and economics.

- Initiate a series of annual articulation conferences with Wyoming community colleges to coordinate the development and delivery of curricula related to Wyoming’s energy industry, especially Casper College, Western Wyoming College, and Sheridan College’s Gillette Campus.

II. The Institute for Energy Research (IER). UW’s existing IER will:

- Serve as UW’s primary unit for outstanding interdisciplinary research and graduate education in energy-related fields of relevance to Wyoming. IER will be the umbrella for externally funded research centers dedicated to specific areas of energy-related research.
- Develop centers of research excellence in energy related disciplines with an initial focus on coalbed natural gas research, research in coal conversion technologies, and renewable energy resources.
- Establish a Technical Advisory Board of experts from internationally recognized industrial laboratories and national laboratories, representatives from government agencies, and academic representatives from other universities with distinguished programs in energy research.

III. The Center for Energy Outreach. This new center will:

- Disseminate technical reports on energy science, technology, economics, and long-term energy planning.
- Provide technical consulting, short courses, and symposia for independent energy producers, government agencies, and community leaders, as well as develop systems for data sharing, as appropriate, with the Wyoming Geological Survey, Rocky Mountain Oilfield Testing Center, the Wyoming Oil and Gas Conservation Commission, the Wyoming Pipeline Authority, the Wyoming Infrastructure Authority, and other organizations.

**Funding**

UW proposes that the School of Energy Resources be established over a three-year period so that efforts to hire new faculty, researchers and technical staff can be ramped up as follows:

Fiscal Year	New Funding Required	Sustaining Funding	Totals
FY 2007	\$4.4M	-	\$4.4M
FY 2008	\$3.3M	\$4.4M	\$7.7M
FY 2009	\$2.1M	\$7.7M	\$9.8M

**Petroleum Engineering Curriculum**

- UW now offers both a master’s degree and a Ph.D. in petroleum engineering. UW also offers a bachelor’s degree in chemical engineering with a concentration in petroleum engineering.

- At its September 2005 meeting, UW's Board of Trustees will consider a proposal to re-establish the bachelor's degree in petroleum engineering from internal UW resources. This initiative is not dependent upon legislative approval of the School of Energy Resources proposal.

