

FY2021 Budget Hearing: School of Energy Resources

THE WORLD NEEDS MORE COWBOYS.



UNIVERSITY
OF WYOMING

School of
Energy Resources

SER's Mission:

Energy-driven economic
development for
Wyoming



*BUCKING
THE SYSTEM
SINCE 1886.*

SER Vision

- Academics
 - Revitalize program
 - Increase impact across university through collaboration
 - Develop a minor in Energy Resource Management
- Outreach
 - Expand core 3D Visualization Center technology and facilities
 - Grow online presence
- Research
 - Increase proportion of sponsored programs
 - Diversification of research portfolio
 - Serve as a conduit between industry and research programs at UW





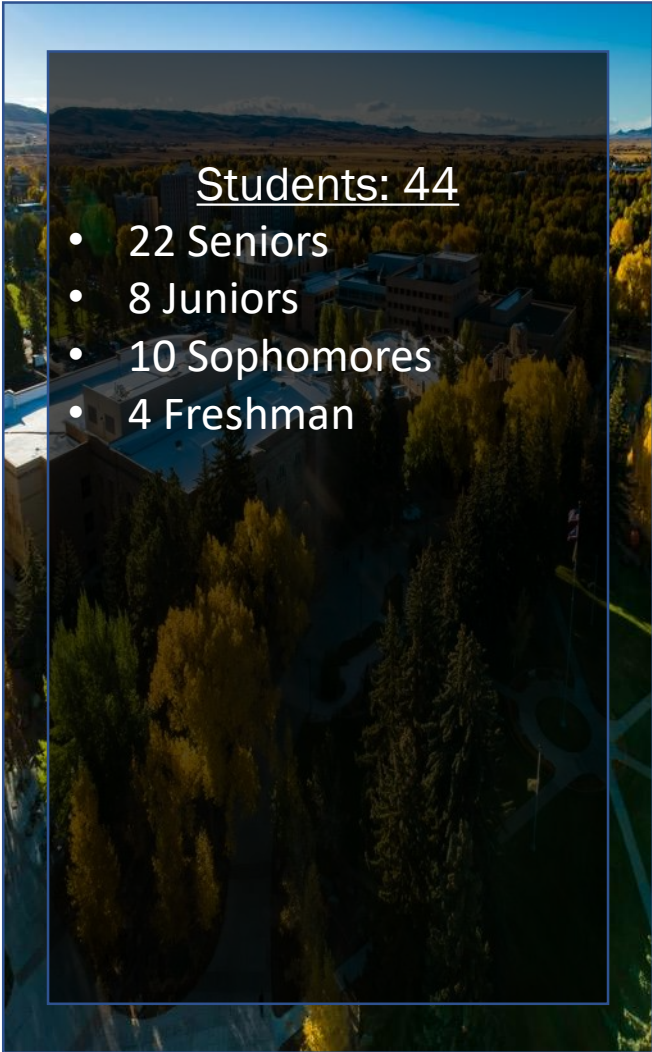
Faculty: 12

- Chemistry
- Chemical Engineering
- Economics
- Geology and Geophysics - 4
- Mathematics
- Mechanical Engineering
- Petroleum Engineering - 2
- Law
- SER (lecturer)



Staff: 26

- 4 at the 3D Visualization Center
- 4 Academic (one vacant position)
- 5 Administrative and accounting
- 13 Research and lab management (including 8 federal grant-funded)



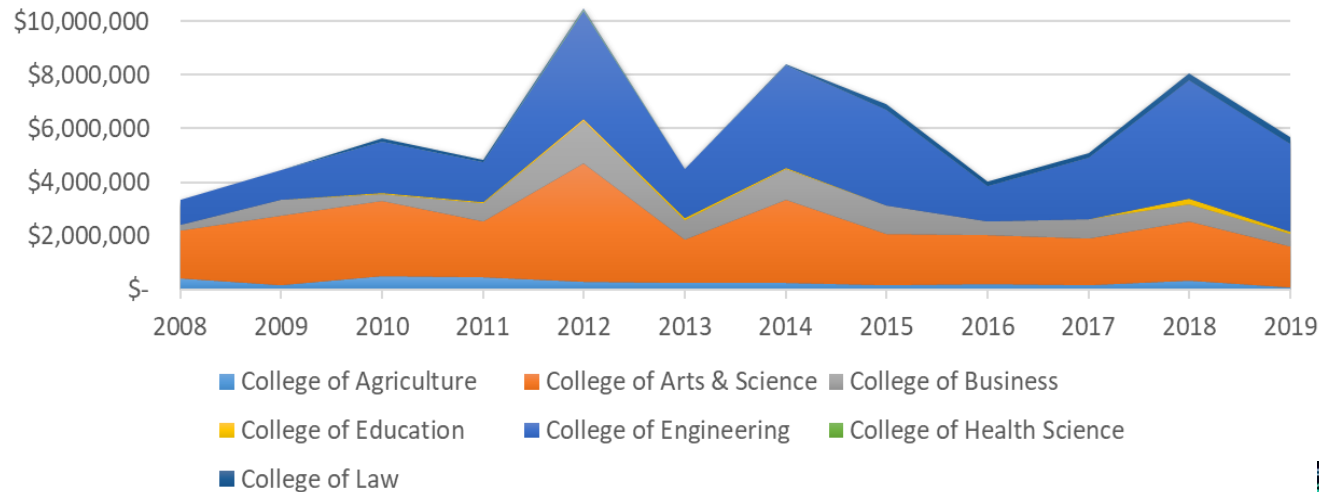
Students: 44

- 22 Seniors
- 8 Juniors
- 10 Sophomores
- 4 Freshman

Strengths

- Multi-disciplinary approach that promotes research and scholarship across university

College Funding By Fiscal Year



- Cutting edge facilities with diverse laboratories
- 3D Visualization Center serves customers across campus and beyond



Strengths

- Academics
 - 92% job and graduate school placement since the inception of the program in 2009
 - Energy Summer Institute targets high school students
- Outreach
 - Regular support of elected and appointed state officials
 - Collaboration with industry
- Research – Over \$15 million in active external grants* focused on Wyoming energy and minerals sectors
 - Carbon capture, use and storage – Recently awarded Phase III CarbonSAFE grant worth \$15.2 million (federal dollars), which will become active in October 2020 and contribute over \$1.7 million in indirects to UW
 - Carbon engineering program examines routes for coal to novel products
 - Rare earth element resource characterization
 - Center for Energy Policy & Regulatory Analysis brings together technical, economic, legal and policy expertise to benefit the state
 - Administrative responsibilities for large research efforts
 - Enhanced Oil Recovery Institute – nearly \$20 million in active external federal and industry sponsored research
 - Center of Innovation for Flow through Porous Media

*Amount does not include matching or cost share; excludes all grants to SER faculty

SER Research Benefits the University and State

- **Center for Economic Geology Research (CEGR) – Select Accomplishments over Last 5 Years***
 - Awarded **\$38** million in federal funding
 - SER supplied \$2.7 million in cost share, a **14:1** return for state funds
 - **\$4.3 million** in indirects to the university
 - Funded **26** graduate students in **8** departments
 - **\$11** million have been spent with Wyoming contractors
 - CEGR scientists have international reputations in the areas of carbon management, rare earth element resources and subsurface energy resources
- **Carbon Engineering – FY20 Select Accomplishments***
 - Coal beneficiation advancing with industry partnership
 - Advancing flameless pressurized oxy-combustion (FPO) power technology
 - Received \$250k DOE sub-grant for front end engineering and design (FEED) study – due Jan 2021
 - Potential to expand to \$60 million DOE project (\$12 million state matching appropriated) – Apr 2021
 - **8** patents filed on technologies focused on process to manufacture products from coal
 - Supported **11** faculty, **8** post-docs, **23** graduate assistants (8 with Tier 1), **8** undergraduate researchers, **2** senior design projects

FY 2020 Accomplishments

- General
 - Transition to a new Executive Director
 - Collaboration and bridge-building across campus
- Academic
 - Increased recruiting efforts
- Outreach
 - Carbon Day (legislators met students presenting their projects)
 - Widespread presentations and engagement, including Saturday U, Energy Law in the Rockies, AAPG Rocky Mountain Rendezvous, publications, etc.
- Research
 - Continued to demonstrate leadership and excellence in the field of carbon capture, use and storage
 - Awarded Phase III CarbonSAFE grant worth \$15.2 million (federal)
 - Continued rare earth element (REE) research
 - Advanced several technologies in the Carbon Engineering program
 - Launched the Center for Energy Regulation and Policy Analysis

Challenges and Opportunities

	Challenge	Opportunity
Academics	<ul style="list-style-type: none"> Declining enrollment Impact is limited to a small number of students 	<ul style="list-style-type: none"> Hire an interim Academic Director Increase collaboration across university to broaden impact and exposure to energy topics across student body Evolve messaging to be more focused on the energy transition
Outreach	<ul style="list-style-type: none"> Understaffed Ad-hoc approach 	<ul style="list-style-type: none"> Increase online presence
Research	<ul style="list-style-type: none"> Research portfolio is limited by size and expertise External grant administration 	<ul style="list-style-type: none"> Increase proportion of externally funded research Explore opportunities to diversify research portfolio Contribute to drive improvement in grant administration <ul style="list-style-type: none"> Continue working with ORED and OSP to drive improvement Depending on outcome, consider temporary solutions such as outsourcing

FY2021 Budget

*THE WORLD NEEDS MORE
ADVENTUROUS SPIRIT.*

FY2021-2022 Appropriations*

Funding Type	Total FY2021-2022 Appropriations	Description
Standard	\$18,885,027	Standard operating budget staff and faculty salaries and fringe, travel, building support, service to the state, legislative mandates, academics, research, outreach, etc.
Exception – One time (included in standard budget line in appropriations bill SF0001)	\$1,300,000	For an Academic Director hire, increased support for the Center for Energy Regulation and Policy Analysis and to reinvigorate Centers of Excellence
Exception – One time	\$7,000,000	Demonstration programs focused on coal-to-products – requires ERC approval
Exception – Matching	\$12,000,000	DOE project cost-share for pilot flameless pressurized oxy-combustion (FPO) power plant

*SER is funded separately from the UW block grant

FY2020-FY2021 Budget Comparison

Area	FY2020 Budget \$'000,000	FY2021 Budget \$'000,000	YOY Change \$'000,000	Notes
Academics	\$2.9	\$2.9	\$0.0	Addition of an Academic Director, which was funded by exception funds, faculty removed from this grouping because of eventual transfer to CEAS support
Administration	\$2.9	\$2.6	-\$0.3	No Executive Director search or overlap
Research Operations & Communication	\$1.2	\$1.8	+\$0.6	Cost share and seed funds for novel projects, ADNOC match for COIFPM, Centers of Excellence provided by appropriated exception funds
Policy Analysis	\$0.25	\$0.5	+0.25	Increasing in funds to expand Center for Energy Regulation & Policy Analysis was supported by exception funds
Emerging Technologies (i.e., Carbon Engineering)	\$2.3	\$2.3 (not including \$7 million from exception appropriations)	\$0.0	\$2.3 million from standard budget. Does not include exception funding with requirement for ERC approval (Note: \$7 million was for both FY2021 and FY2022)

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