

Tier-1 Background info for Jan 2024 JAC meeting

- The Tier-1 Engineering Initiative, originally conceived in 2012, first had funding available in the FY2015-2016 biennium budget. Original plans of the Wyoming Governor's Energy, Engineering, and STEM Integration Taskforce (WGEEISIT, often just called the Tier-1 Task Force) articulated four strategic goals:
 - Excellence in Undergraduate Education,
 - World-Class Research and Graduate Education,
 - Productive Economic Development,
 - K-14 STEM Education.
- Selected subset of Tier-1 accomplishments from 2015-2022:
 - added faculty and staff positions in key areas that had been lacking
 - added a new academic department for a world-class Petroleum Engineering program
 - promoted high-recognition, nationally-funded research programs across many engineering departments
 - provided seed funding for research clusters in areas beneficial to Wyoming industries
 - provided matching funds for new research projects
 - greatly increased Ph.D. production
 - built a Student Success Center from the ground up, that includes
 - professional advising for all undergraduates, career placement/services for all students, internship coordination with WY and out-of-state companies, K-14 outreach and state-wide programs, reaching hundreds of teachers and students across WY
- In 2023, the Wyoming legislature generously increased the Tier-1 Budget by \$5.5M annually, an increase of over 140%. Subset of what the additional Tier-1 Budget is allowing, for example:
 - Additional 40 students in the Undergraduate Research Awards program
 - Additional 28 students provided with Graduate Student support, across all departments
 - Initial support for School of Computing, aligned with Tier-1 goals
 - Additional 16 faculty positions across the college, in key specialty areas
 - A new college-sponsored Postdoc program being developed
 - Increased funding for Career Services, Makerspace, Proposal Development Specialists, critical-need Lab Technicians, student support services, increased K-14 outreach activities across the state
 - Funding for Research Seed Grants, Instrumentation Grants, Lab Refurbish Grants
- Reorganization (finalized in 2023) created the College of Engineering and Physical Sciences (CEPS), with four new science/math departments (now 10 depts total). Tier-1 funding is a key component to the success of CEPS.
 - Cross-department, interdisciplinary collaborations have increased markedly
 - Example: \$5M NSF grant awarded for Quantum Information Science and Engineering to a collaboration between the Electrical Engineering & Computer Science Department and the Physics & Astronomy Department
- Expanding both hiring and research activity to invest for future growth in new areas of opportunity in which CEPS can be competitive, while maintaining our historical areas of strength that remain important to Wyoming
 - Continuing: Energy (extraction, EOR, CCUS, etc.); Electric power grid stability modeling; Transportation and construction; Power generation, transmission, control, and distribution (includes traditional and renewable sources); Process control (primarily to support mining operations, e.g., Trona mines)
 - New/expanding: Quantum Information Science & Engineering; Artificial Intelligence/Machine Learning; Cybersecurity/Blockchain; Nuclear energy science & engineering; Controlled Environment Agriculture; Materials science & engineering; Critical elements, uranium, rare earths, etc.
- Developing new academic options for students, interdisciplinary across multiple departments
 - Undergraduate Minor in Quantum Information Science and Engineering
 - M.S. in Quantum Information Science and Engineering
 - M.S. in Artificial Intelligence
 - Undergraduate and Graduate certificates in Nuclear Energy Science