

## **2019-2020 Biennial Budget Request Agency 067 (University of Wyoming) Operating Budget Exception Requests**

### **1. PRIORITY #1 TOP TIER SCIENCE INITIATIVE, PHASE I – FUNDING RELEASE**

**Amount Requested: Release of previously appropriated construction funds in the amount of \$100,000,000**

#### **A. EXPLANATION OF REQUEST:**

The University of Wyoming requests release of all funds appropriated for deposit to the UW science initiative account created through Section 317(c), Chapter 142, Session Laws of Wyoming, 2015 [UNIVERSITY OF WYOMING TOP-TIER SCIENCE PROGRAMS & FACILITIES].

The University of Wyoming is ready to begin construction in the fall of 2018 and is requesting release of all previously appropriated funds. No new General Funds are being requested through this priority.

The Wyoming Governor's UW Top-Tier Science Programs and Facilities Task Force and the University of Wyoming have proposed a strategic investment, known as UW's Science Initiative, to build on emerging growth areas in scientific imaging and integrative biology that will elevate UW's core science disciplines to nationally recognized top-quartile status.

Two phases of development are envisioned for the Science Initiative. Development of both phases is essential to achieve the goal of top-quartile status in the core sciences. In Phase I, two new research centers, four large active learning classrooms, and a teaching and mentoring program would be developed. In Phase II, vacated lab spaces in the Biological and Physical Sciences buildings, the Aven Nelson Building, and the east wing of the Animal Sciences-Molecular Biology Building would be renovated, and a new 4.3-meter telescope center would be developed on Jelm Mountain.

Phase I of the Science Initiative involves the following central elements:

1. State-of-the-art facilities for scientific imaging in the Center for Advanced Scientific Imaging;
2. State-of-the-art plant growth facilities in the Center for Integrative Biological Research, and needed upgrades in existing animal rearing facilities;
3. A suite of four large active learning classrooms and programs to fundamentally transform science education in the state; and
4. Programs to enhance the initiative's goal of fundamentally transforming science education and research in Wyoming.

Two new research centers—the Center for Advanced Scientific Imaging and the Center for Integrative Biological Research—will form an innovative nexus to stimulate external funding and research productivity and to train the next generation of Wyoming science scholars, teachers and researchers. The centers will be designed to include strategically placed collaboration spaces to foster transdisciplinary research activities focusing on grand challenges facing Wyoming and the nation, and involving chemists, physicists, astronomers and biologists. The collaborative research activities across core sciences disciplines catalyzed by these centers will transform the way the university investigates and teaches science.

The Center for Advanced Scientific Imaging (CASI) will co-locate UW's highly regarded imaging scientists, their student teams, and unique instrumentation in a state-of-the-art staffed laboratory, allowing them to achieve unprecedented sensitivities and efficiencies in probing the fundamental interactions at the atomic, molecular, and cellular levels underlying all next-generation technologies. The Center will rank among the world's best, attracting faculty and students from across the globe as it spotlights Wyoming's commitment to the sciences that serve state and national needs. The CASI will consist of configurable, state-of-the-art rooms to host existing and new microscopy and imaging instruments that require vibration-free and radiation-free, climate-controlled environments. The new

microscopy and imaging instruments to be housed in the CASI will include atomic force microscopes, transmission electron microscopes, and X-Ray photoelectron spectrometers, which are essential to modern nanomolecular materials research.

The Center for Integrative Biological Research (CIBR) will bring together UW's world-recognized biologists into a single collaborative space to foster innovation and convergent research activities, which will address some of Wyoming's most pressing environmental, agricultural and health-related challenges. The CIBR will be organized around state-of-the-art plant growth and laboratory animal research facilities specially designed for studies using model and transgenic organisms with appropriate safeguards. The Plant Growth Facility will consist of a centralized shared facility with state-of-the-art greenhouses, growth chambers, and teaching and research laboratories. In addition, the CIBR will include shared faculty research labs and office suites for faculty, research staff, and graduate students from the departments of Botany and Molecular Biology.

A new suite of active learning classrooms (ALCs) will enable UW to surpass peer institutions in the proportion of students educated in such an immersive pedagogical setting, which will ensure their success in a 21<sup>st</sup> century technological society. These transformative classrooms will be fully leveraged with instructors who are appropriately trained in their use. In these ALCs, working groups of 6 to 9 students will gather around tables supported by computers and video displays that can be connected and shared across the class. The four ALCs will have the following capacities of student stations: one 200-person, one 150-person, one 100-person, and one 50-person.

The Center for Integrative Biological Research, which will house the four new, large active learning classrooms, is new construction. The Center for Advanced Scientific Imaging will use space vacated by the UW Library Annex in the basement of the plaza between the Biological Science and Physical Science buildings, and will require renovation.

### **Planning:**

The Exterior Design Advisory Committee (EDAC or Committee) for the Science Initiative Facility has been meeting regularly with representatives from the Division of Administration and the design architect to determine the exterior design concept of this new building as it will be the gateway to the northwest corner of campus.

The programmatic interior allocation of space has been guided by the December 2014 Top-Tier Science Task Force Report and the EDAC is supportive of the space assignment and utilization plans.

### **Anticipated Timeline:**

Start Date	End Date	Event
September 2017		UW Board Of Trustees (BOT) Vote on Exterior Design
October 2017	April 2018	Schematic Design (\$3M included in FY18 Budget Plan – funding would come from reserves established by the BOT)
March 2018		Anticipated Approval by Legislature & Governor of Release of Funds
May 2018	October 2018	Construction Documents
July 2018		Funds Officially Released by State
November 2018		Break ground- concrete piers and foundation
April 2019		Vertical concrete walls and steel erection

June 2020		Substantial Completion
July 2020	June 2021	Warranty Period
August 2020		Move-in

**2. PRIORITY #2 – Extended Approval- Chapter 31, Section 067, Footnote 3 & 4 of the 2016 Session Laws:- Aircraft replacement and sinking funds.**

**A. EXPLANATION OF REQUEST:** In the 2017-2018 biennial budget, the Wyoming legislature included budget footnotes at Section 067, footnotes 3 and 4 to SEA19 specifying the state’s commitment to allow the State Loan and Investment Board to loan funds to the University of Wyoming to acquire a replacement research aircraft. The loan interest rate was set at less than 3%. Specifically, the University requests the terms of the loan be continued and the following footnote be included within the 2019-2020 budget.

**“3. Upon application of the university board of trustees, the state loan and investment board may loan funds to the University of Wyoming for the purpose of acquiring a replacement research aircraft for the department of atmospheric science within the college of engineering and applied science. The loan interest rate shall not exceed three percent (3%) and the loan shall otherwise be in accordance with the provisions of W.S. 16-1-109. The aircraft shall be treated as a "facility" for purposes of the loan. The university shall develop a financial plan for repayment of the loan to cover the cost of servicing the loan over the expected life of the aircraft and to cover the cost of distributions to the reserve fund as specified in footnote 4 of this section. The university shall provide a report on this plan to the joint appropriations committee within thirty (30) days after the loan is executed.”**

**“4. For the use of the university aircraft, the university shall identify and distribute amounts to a reserve fund to cover the cost for routine and planned maintenance, engine replacement and propeller replacement. To the extent funds are available after servicing the loan provided for in footnote 3 of this section, additional amounts to support funding of replacement of the research aircraft shall be included in any contract for use of the aircraft to the extent practicable. Amounts received to support replacement of the aircraft shall be held in the reserve fund. Proceeds from the sale of the research aircraft, engine or any related research instrumentation shall be credited to the reserve fund.”**

The Atmospheric Sciences Department is a highly regarded program within the University of Wyoming College of Engineering and Applied Sciences and one of distinction among similar departments in the United States. The department operates the Wyoming King Air Research Aircraft, which is a national and international research platform and helps give Atmospheric Sciences its reputation.

The National Science Foundation (NSF) has supported this research aircraft as a national facility for more than three decades. Some 21 people are employed, in whole or in part, as a result of this funding supporting the aircraft and the associated equipment, including technicians, pilots, mechanics and specialized engineers involved in the design and deployment of the specialized equipment which flies in the plane. The Wyoming King Air Research Aircraft draws faculty and students to UW’s Atmospheric Sciences Department thus establishing an international reputation.

In FY 2014 Atmospheric Sciences received almost \$6.2 million in external funding, the majority of which is associated with projects either directly supporting the research aircraft or using the research aircraft. As a research platform it also creates opportunities for collaborating with faculty and students around the world. Atmospheric Sciences at the University of Wyoming has built a reputation around measurement of small particles in the atmosphere which are critical because all precipitation forms on such particles. Water condensed onto particles forms clouds, therefore cloud microphysics is another area of strength. The King Air and the instrumentation built by UW engineers to measure atmospheric phenomena are critical in understanding how precipitation forms, cloud structure and ultimately how these relate to precipitation in the form of snow or rain.

Manufactured in 1977, the current UW Research Aircraft is 40 years old. It has had to accommodate specific, very precise and unique equipment to make innumerable and extremely varied measurements of the atmosphere while flying. Due to airframe modifications, the weight of the plane and equipment, and heavy weather this airplane experiences due to the nature of the research, the Federal Aviation Administration (FAA) has limited the airframe to 10,000 hours. The aircraft is nearing this

limitation.

A new plane that continues to support cutting edge technology and research in atmospheric science is critical in maintaining this level of excellence. In addition a new replacement aircraft will enhance research capabilities by allowing for extended range while on missions, permitting an increased payload of instrumentation, making more electrical power available and increasing the altitude capabilities of the research platform. Without this aircraft, this highly regarded program will cease to exist at UW.

### **3. PRIORITY #3 – SCHOOL OF ENERGY RESOURCES – CARBON ENGINEERING RESEARCH**

**Amount Requested: \$ – 1,000,000 One-Time General Fund**

**A. EXPLANATION OF REQUEST:** The University of Wyoming, School of Energy Resources is requesting a one-time General Fund appropriation in the amount of \$1,000,000 to support research at the University of Wyoming for the purpose of development and demonstration of critical technology for conversion of Wyoming coal to value added carbon-based products. This request follows a special appropriation of \$2,000,000 by the Legislature in 2016 to commence the Carbon Engineering research program at UW.

UW's School of Energy Resources distributed the previous appropriation together with an additional \$2,000,000 among 15 separate research projects with better than expected results:

- Five patents awarded or in process in FY17
- Fifteen patents expected to be awarded in FY18
- Five non disclosure agreements executed with private sector groups that are interested in commercializing coal-to-products manufacturing endeavors in Wyoming

With continued success in technology development at the university, the aspiration is to identify the location, scale and scope of at least one “coal refinery” in Wyoming in partnership with an able private sector partner.

#### **B. REQUEST BY OBJECT CODE, FUNDING AMOUNT AND FUND SOURCE:**

	<b>Description</b>	<b>Amount</b>	<b>Funding Source</b>
1	0626 – Grant Pymt	<u>\$ 1,000,000</u>	General Fund - 1001
	Total	\$ 1,000,000	General Fund - 1001

**C. PERFORMANCE JUSTIFICATION:** The funds requested through Priority 3 will provide necessary support for the important research that is currently underway to improve the probability of successful implementation of this economy-expanding endeavor. Additionally, it would allow UW to continue to improve its statewide engagement and accelerate the development of technical solutions for continued use of coal.

### **4. PRIORITY #4 – UW RODEO**

**Amount Requested: \$100,000 – One-Time General Fund**

**A. EXPLANATION OF REQUEST:** The University of Wyoming is requesting that the legislature continue the state appropriation of \$100,000 for the FY 19-20 biennium for University of Wyoming Athletics to enhance the University of Wyoming Rodeo Team. This funding allows the Athletics Department to continue serving the rodeo team with strength and conditioning training. It also allows the Athletics Department to continue providing for graduate assistants to supervise and coach the students. Further, the appropriation provides for an assistant coach. This coach brings expertise in past National College Finals exposure.

These funds were first appropriated in FY 2015-2016 biennium and then were renewed in the FY 2017-2018 biennium.

**B. REQUEST BY OBJECT CODE, FUNDING AMOUNT AND FUND SOURCE:**

	<b>Description</b>	<b>Amount</b>	<b>Funding Source</b>
1.	0626 – Grant Pymt	<u>\$100,000</u>	General Fund - 1001
	Total	\$100,000	General Fund - 1001

**C. PERFORMANCE JUSTIFICATION:** Priority 4 would provide funding for the UW Rodeo Team. The funding has been appropriated as one-time funding since 2015-2016. This funding has been beneficial to the team. The athletic training that is funded with this appropriation allows for rapid return from injuries and strength conditioning that is essential to peak performance. The coach has provided an additional set of eyes in guiding the team. The teams have benefited greatly from the experience of two coaches in different areas of rodeo, and the weight room exposure enhances preparation.