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HIGHER EDUCATION RESEARCH STRATEGIC PLAN

2023-2027

Submitted by the Higher Education Research Council
to the Idaho State Board of Education

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I. INTRODUCTION

Industry, government, and education organizations recognize and value research as a key factor in student success and the future economic vitality of Idaho. Research conducted at Boise State University, Idaho State University, and University of Idaho, and Lewis-Clark State College, (hereafter “institutions”), both creates the foundation for major advances in areas such as energy, health and medicine, agriculture, communications, and national security, and helps educate Idaho’s future leaders and innovators. Creating greater research productivity and collaboration within Idaho will further our state’s ability to compete in today’s global environment.

Research is foundational to the mission of Idaho’s institutions. Knowledge discovery, experiential student learning, addressing community problems, growing student skills, and technology commercialization via patents, copyrights, licenses, and startup companies all contribute to a vibrant teaching and research ecosystem. Furthermore, Idaho’s institutions serve as a point of connection between fundamental research that improves scientific theories, translational research which moves ideas beyond basic discovery through proof-of-concept, and applied research which seeks to solve practical problems. The institutions also foster collaboration among public and private entities and serve as anchors for talent attraction and retention.

II. PURPOSE

The purpose of this plan is to provide strategic direction to Idaho’s institutions and inform the general public, especially industry, in order to further the shared research agenda for the state. This agenda includes promoting student success, driving economic and workforce development, and addressing the needs and challenges of the state and beyond. This strategic plan is a tool for identifying and attaining quantifiable goals for research and economic growth and success. The plan outlines the scope and the manner in which the research and development goals will be met through actionable and measurable oversight. The plan will be reviewed annually and updated as needed amid the fast-changing pace of research discovery.

III. VISION

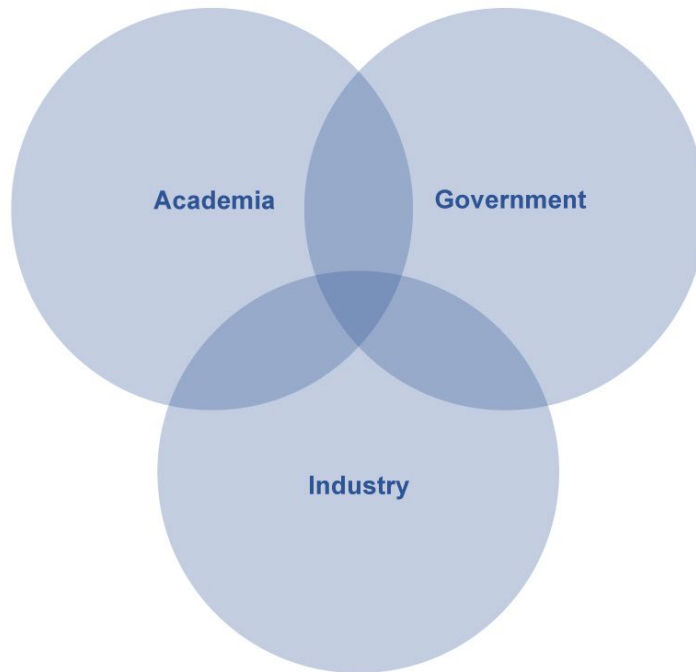
Through this strategic plan, Idaho’s institutions will continue to build a vibrant higher education research ecosystem in Idaho that catalyzes the creation of knowledge, technologies, products, and industries. This will lead to increased student success, advances and opportunities for economic growth, and enhanced quality of life in Idaho and beyond.

IV. MISSION

This strategic plan supports the Idaho State Board of Education’s mission to “drive improvement of the K-20 education system for the citizens of Idaho, focusing on quality, results, and accountability.” The plan will support this mission by providing direction to Idaho’s institutions in their development of enduring and robust research programs that contribute to student learning, knowledge generation, and economic development.

V. BACKGROUND

Recognizing the need to emphasize existing strengths and advance new areas of expertise to provide opportunities for Idaho’s research community, this strategic plan aims to ensure the greatest potential for achieving a vital and sustainable research base for Idaho. The plan identifies the key research areas (fundamental, translational, and applied) that will become the focal points for research and economic development through partnerships among academia, industry and government in science, technology, and creative activity.



Partnerships between academia, government, and industry are critical to effective research and economic development in Idaho.

Today's Research

Research at Idaho's institutions is the foundation for innovation and application that provides wider benefits across the state, a state that has an incredible opportunity to expand the impacts of research. Research performed at Idaho's institutions is funded through a number of federal agencies, including the National Science Foundation (NSF), National Institutes of Health (NIH), Department of Energy (DOE), Department of Defense (DOD), US Department of Agriculture (USDA), National Aeronautics and Space Association (NASA), and the Environmental Protection Agency (EPA), among others. Research opportunities span these agencies. For example, NSF, an independent federal agency created by Congress in 1950 "to promote the progress of science; to advance national health, prosperity, and welfare; to secure the national defense..." funds about 25% of all federally supported basic research conducted by colleges and universities in the U.S. However, collectively, Idaho institutions have a 5-year average level of total funding that is just 0.27% of the total NSF budget, which ranks 41st among the 50 states. By comparison, public institutions in New Mexico have a 5-year average level of funding that is 0.64% of the total NSF budget, with Montana and South Dakota receiving 0.37% and 0.14%, respectively.¹

Research also enhances the national reputation of Idaho's institutions and researchers. Through novel and thought-provoking programs and labs that provide unique cutting-edge learning experiences in research laboratories, studios, field sites and classrooms, Idaho can attract top graduate and undergraduate students with research excellence. As a result, these students become well trained through research experiences and enter the Idaho workforce with the skills needed by industry, business, and development. On a basic level, and bolstered through collaborative, interdisciplinary and interprofessional research, such activities strengthen an institutions' primary product: Innovative, well-educated students ready to enter a competitive workforce. Moreover, research is a highly effective retention tool², and students who engage in research are more likely to graduate.³

Research is the foundation of Idaho institutions' responsibility for economic development, both on campus and within the larger community. The influx of research dollars from external grants and contracts creates new jobs and student funding at the institution, along with the attendant purchases of supplies, services, materials and equipment, driving local private-sector economic activity that would otherwise not exist. Industry collaborates with individuals and teams of faculty to develop lines of inquiry into problems impossible to solve in the vacuum of either realm. The resulting knowledge, ideas, and processes have led to patents, startup companies, more efficient businesses, as well as a highly trained workforce prepared to tackle current and future challenges. Furthermore, applied research and the associated industry engagement is a key driver of economic growth and productivity, contributing through commercialization of research, and adding value to existing businesses and vitality to new businesses.

1. [HTTPS://WWW.NSF.GOV/OD/OIA/PROGRAMS/EPSCOR/ELIGIBILITY_TABLES/FY2022_ELIGIBILITY.PDF](https://www.nsf.gov/od/oia/programs/epscor/eligibility_tables/fy2022_eligibility.pdf)

2. NAGDA, B., GREGERMAN, S., JONIDES, J., VON HIPPEL, W., & LERNER, JS. (1998). UNDERGRADUATE STUDENT-FACULTY RESEARCH PARTNERSHIPS AFFECT STUDENT RETENTION. *REVIEW OF HIGHER EDUCATION*, 22, 55-72

3. RODENBUSCH, S. E., HERNANDEZ, P. R., SIMMONS, S. L., & DOLAN, E. L. (2016). EARLY ENGAGEMENT IN COURSE-BASED RESEARCH INCREASES GRADUATION RATES AND COMPLETION OF SCIENCE, ENGINEERING, AND MATHEMATICS DEGREES. *CBE LIFE SCIENCES EDUCATION*, 15(2), AR20. [HTTPS://DOI.ORG/10.1187/CBE.16-03-0117](https://doi.org/10.1187/cbe.16-03-0117)

The Future of Research

To align and emphasize existing strengths and opportunities in Idaho's research community, be competitive at a regional level, attract industry, and address the need to build capacity in new and emerging areas of importance to the state, Idaho must expand investment to build a stronger research base. Enhancing the research base will aid the institutions in increasing the number of federal competitive grants received, help provide the best experiences and impacts for students, and help strengthen the economy. These actions are necessary for both direct and indirect economic inputs for the state, to provide top-notch experiential learning for our students, and support a platform to recruit the highest caliber faculty, researchers, and industries to Idaho.

Idaho's public research institutions have emerging strengths and opportunities for development in five key areas:

1. Energy, Sustainability, and Resilience
2. Natural Resource and Agricultural Utilization and Conservation
3. Biomedical and Healthcare Sciences
4. Novel Materials
5. Data Science, Computer Science, and Cybersecurity

By collaborating on these research areas of strength, Idaho's institutions will broaden their success by:

- Strengthening collective expertise across Idaho's public institutions and creating opportunity for collaboration with the nation's top institutions;
- Providing opportunities that bring private and institutional teams together to build productive relationships;
- Providing opportunities that will contribute to the economic development of the state;
- Providing opportunities that enhance education and professional development through interdisciplinary and inter-professional research and scholarly activity;
- Providing resources that build and improve the research infrastructure of Idaho's public institutions to meet current and future research needs;
- Producing highly trained students who will use their skills to strengthen Idaho and its economy; and
- Increase the likelihood of student retention and graduation of those who participate in research experiences.

VI. GOALS, OBJECTIVES, AND MEASURES

Goal 1: Increase research at, and collaboration among, Idaho's institutions.

Objective 1.A: Increase expenditures for research efforts at the institutions.

Performance Measure 1.A.1: Statewide amount of total annual research and development expenditures as reported in the National Science Foundation (NSF) Higher Education Research and Development Survey.

Benchmark: 5% average increase across the previous five years

Objective 1.B: Expand joint research ventures among Idaho's institutions.

Performance Measure 1.B.1: Number of new sponsored project proposals submitted by an institution that are collaborative, and have a subaward (or are NSF Collaborative) with another Idaho public postsecondary institution (in either direction).

Benchmark: 5% increase per year

Performance Measure 1.B.2: Number of new sponsored project awards to an institution that are collaborative, and have a subaward (or are NSF Collaborative) with another Idaho public postsecondary institution (in either direction).

Benchmark: 3% increase per year

Performance Measure 1.B.3: Number of competitive research projects per year supported by the Idaho Higher Education Research Council that directly address research opportunities outlined in this strategic plan and that involve at least two Idaho public postsecondary institutions.

Benchmark: 1 per year

Objective 1.C: Ensure the growth and sustainability of collaborative research between the institutions and the Idaho National Laboratory.

Performance Measure 1.C.1: Statewide amount of awards with the Idaho National Laboratory by the institutions as reported in the National Science Foundation (NSF) Higher Education Research and Development Survey.

Benchmark: 5% average increase across the previous five years

Goal 2: Strengthen the research relationship between Idaho's institutions and the private sector.

Objective 2.A: Create research and development opportunities between the institutions and the private sector

Performance Measure 2.A.1: Number of new sponsored project proposals with private sector contribution (funds, in-kind, etc.).

Benchmark: 5% average increase across the previous five years

Goal 3: Contribute to the economic development of the State of Idaho through research at the institutions.

Objective 3.A: Increase the amount of institution-generated intellectual property introduced into the marketplace.

Performance Measure 3.A.1: Number of technology transfer agreements, as defined by the Association of University Technology Managers, resulting from research at the institutions.

Benchmark: 5% average increase across the combined institutions from the previous five years

Performance Measure 3.A.2: Number of invention disclosures resulting from research at the institutions.

Benchmark: 5% average increase across the previous five years

Performance Measure: 3.A.3: Number of invention disclosures vetted through entrepreneurial competitions or industry partnerships resulting from research at the institutions.

Benchmark: 2 per year per institution

Goal 4: Enhance learning and professional development through research and scholarly activity at the institutions.

Objective 4.A: Increase the number of university and college students, faculty and staff involved in research project activities.

Performance Measure 4.A.1: Number of undergraduate and graduate students at the institutions paid from sponsored projects.

Benchmark: 3% average increase across the previous five years.

Performance Measure 4.A.2: Percentage of degree-seeking undergraduate students at the institutions who had a research experience.

Benchmark: 10% average increase across the previous five years.

Performance Measure 4.A.3: Number of faculty and staff (combined metric) at the institutions paid from sponsored projects.

Benchmark: 3% average increase across the previous five years.
