

Goal #3

Growing UA's World Class Research



UNIVERSITY
of ALASKA
Many Traditions One Alaska

BACKGROUND/CONTEXT

Research contributes to every aspect of Alaskan life – it drives innovation and discovery, spurs outside investment, generates a significant percentage of UA's annual revenue and is critical for future growth. UA leads the world in Arctic research, which provides the foundation of our international reputation. We are a leader in climate research, atmospheric and biological science, geophysics, cold climate engineering, and natural resource management. We advance basic and applied knowledge by engaging on complex social, scientific and economic issues; and, we work to solve real-world challenges that will benefit our people, communities, environment and economy. Alaska is a living laboratory of glaciers, permafrost, oceans, subarctic climate and ancient cultures. UA is uniquely situated to study these rapidly changing ecosystems and to help our people, environment and economy adapt. UA is part of a national network of public research universities that account for 66 percent of all university research and development expenditures and which conduct much of the nation's core STEM research.

BENEFITS TO ALASKA

Drives economic development

- Research brings new money into Alaska, generating jobs and economic activity far beyond our campuses. Every state dollar invested in UA research generates an additional \$4-\$6.
- Since 2010, UA has generated \$1 billion in research revenue, primarily from federal, industry and private sources. In 2017, UA attracted \$159 million in external funding in addition to the \$24 million provided by the state; created \$90 million in direct wages; 1,250 jobs, an additional 350 jobs were created in the private sector, generating another \$27 million in wages.
- Research drives huge infrastructure investment including the R/V Sikuliaq, High Frequency Active Auroral Research Program (HAARP), the Toolik Field Station and Poker Flat Satellite Facility. These world-class assets sustain federal and international partnerships that bring economic activity.

Fuels innovation and discovery

- The knowledge economy relies on the interaction between universities, researchers, scientists, students, business leaders, and entrepreneurs in an interdependent cycle of innovation and discovery. UA is actively working to patent, license and commercialize its scientific discoveries.
- Ideas generated by UA researchers are helping fuel innovative new business ideas – from pharmaceuticals, plant and berry by-products, to thermally insulating biodegradable foams.

Solves real-world problems

- Alaska is changing in complex ways. We need big ideas, imagination and collaborative thinking to prepare for these changes and to improve the health and lives of Alaskans.
- UA has significantly advanced knowledge on energy and food security. Our research helps forecast and predict extreme weather and environmental hazards, snowpack, and spring breakup. We provide monitoring, analysis, situational awareness and advice on earthquake, tsunami and volcanic activity. We have developed engineering solutions for Alaska's mining, transportation, energy, aerospace, and oil/gas industries.

Supports sound policy and decision making

- UA can be a valuable resource as the state navigates an uncertain future. We can help anticipate change, provide strategic analysis and outline options to support sound policy and decision-making.

- We provide community learning resources, business research and emergency response support. We provide insight and analysis through our policy institutes and collaborative networks – Institute of Social and Economic Research, International Arctic Research Center, Justice Center, Scenarios Network for Alaska and Arctic Planning, Geographic Information Network of Alaska.
- We support the mission of many state and federal agencies including extensive research collaborations with U.S. Geological Survey, National Oceanic and Atmospheric Administration, National Aeronautics and Space Administration, and Department of Defense.
- The Alaska Fire Science Consortium is an excellent example of how science improves our ability to predict, prevent and mitigate wild fires down to a local community level.

Advances education and training

- Research is integral to maintaining the most up-to-date curriculum and bringing the latest advances into the classroom.
- Research attracts outstanding faculty who engage both undergraduate and graduate students and plays a vital role in preparing the next generation of innovators.
- Research students enter the workforce better prepared to make Alaska businesses more competitive, and choose to build a life and career in Alaska.

CHALLENGES

- Limited public understanding of our research mission, its benefits, and the extent to which academic success and reputation is judged. Teaching is still viewed as the primary role of faculty.
- The Arctic has captured the world's attention and well-funded private and academic interests. Competition is becoming more intense, and many of our competitors have well-funded initiatives to grow their research capacity and competence.
- The federal government is cutting environmental and climate research, and funding for many key research sponsors – National Science Foundation, National Institutes of Health, Department of Energy, U.S. Geological Survey, National Oceanic and Atmospheric Administration and others. Less discretionary funding is available to research universities.
- Faculty vacancies impact our ability to develop, propose and conduct research, negatively impacting competitiveness and capacity.
- The cost of participating in federally sponsored research continues to rise in the form of Facilities and Administrative cost-sharing, at the same time the state is disinvesting in higher education.

SOLUTIONS

- Build on our reputation as the world's foremost Arctic research institution. Build UA's competitive capacity through recruitment and investment in Arctic initiatives: One Health Circumpolar, Experimental Arctic Prediction Initiative, Arctic Domain Awareness Center and Center for Arctic Policy Studies.
- Build competitive capacity by making strategic science and technology investments in core research competencies: coastal ocean prediction, microgrids and power system integration, permafrost related hazards, unmanned aerial vehicles.
- Strengthen and enhance statewide collaborative research initiatives – Established Program to Stimulate Competitive Research, and IDeA Network of Biomedical Research Excellence.
- Build industry and community partnerships and collaboration especially in health, food and energy policy research, mariculture, and Alaska Center for Energy and Power.
- Leverage UA labs, assets and field facilities to promote strategic value and increase utilization.
- Pursue Department of Defense applications and national security assets and capabilities – University Affiliated Research Center, operational models, HAARP, Arctic communications
- Collaborate with U.S. Dept. of Energy on hosting a National Lab Day to showcase capabilities and generate opportunities for increased research collaboration.
- Increase our marketing initiatives to showcase research and innovation expertise.
- Leverage systemwide research councils to expand cross-campus planning and collaboration.