



2022-2027 Fairbanks North Star Borough Comprehensive Economic Development Strategy

Research & Innovation Summary

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Strengths <i>Internal attributes that contribute to success</i>	Weaknesses <i>Internal barriers to success</i>
<p>Natural Resources & Environment</p> <ul style="list-style-type: none"> Interior Alaska offers a unique subarctic environment for study and exploration, with vast areas of uncontrolled airspace and undeveloped lands <p>Businesses, Organizations, & Government</p> <ul style="list-style-type: none"> Department of Defense (DoD) has robust and growing research efforts in Interior Alaska National Renewable Energy Laboratory (NREL) joined forces with Cold Climate Housing Research Center (CCHRC) with focus on energy systems University of Alaska Fairbanks (UAF) Center for Innovation, Commercialization, and Entrepreneurship (Center ICE) launched its Innovation Accelerator UAF is a major driver of innovation <p>Education & Workforce</p> <ul style="list-style-type: none"> The sector creates jobs for residents and offers solutions to unique challenges experienced in Alaska communities 	<p>Businesses, Organizations, & Government</p> <ul style="list-style-type: none"> Private sector research needs are not consistently communicated to UAF UAF is perceived as inaccessible/uninviting to local residents, with fees for parking, library access, etc. UAF research capacity is not well understood or accessible to the community or private sector University/academic research at UAF does not always successfully transfer to implementation by the private sector or practical use in Interior Alaska communities <p>Education & Workforce</p> <ul style="list-style-type: none"> Shortage of skilled workforce and lack of clarity around specific workforce needs <p>Infrastructure</p> <ul style="list-style-type: none"> Limitations of data speeds limit processing power
Opportunities <i>External forces that contribute to success</i>	Threats <i>External forces that could be barriers to success</i>
<p>Businesses, Organizations, & Government</p> <ul style="list-style-type: none"> National Science Foundation Established Program to Stimulate Competitive Research (EPSCoR) funds extensive Alaska research efforts and infrastructure improvements <p>Funding & Markets</p> <ul style="list-style-type: none"> Current and potential federal funding opportunities for new infrastructure through the American Rescue Plan, Infrastructure Investment and Jobs Act, and more Many funding opportunities available for research areas relevant to regional economic development <p>Infrastructure</p> <ul style="list-style-type: none"> Autonomous systems and remote sensing technologies have the potential to lower costs and increase safety Improvements in cloud computing technology could help address some of the data processing challenges in the region 	<p>Businesses, Organizations, & Government</p> <ul style="list-style-type: none"> Issues with security barriers and proprietary research (especially with military facilities) resulting in testing facilities closed off/not accessible to other researchers <p>Education & Workforce</p> <ul style="list-style-type: none"> Potential for technology improvements to outsource jobs (e.g., unmanned aircraft system technologies) <p>Funding & Markets</p> <ul style="list-style-type: none"> Budget uncertainty and constantly shifting funding priorities at the federal level Federal funding is often time-limited and cannot be used to sustain long-term projects (over 10 years) State budget challenges and uncertainty with direct negative impacts to UAF

Where We Are	What measurements can we use to track progress? Where do we want to be in 5 years?	2027 Targets
\$49 M (FY20)	Private Sector Business Research – Business research and development expenditures (80% privately funded by companies, 8% federal, 10% other) <i>Helps identify private sector investment since it excludes universities and federally funded research centers</i>	\$51.4 M
\$110.9 M (FY20)	Academic Sector Research – Research-related expenditures from external research funding, including federal grants, state pass throughs, and state research grants <i>Up 14% from FY2015 (\$97.5 M)</i>	\$130 M
49 (FY20)	Ph.D.'s – Annual number of UAF students receiving Ph.Ds. <i>Increasing this number will be key (FY20) for achieving Tier 1 Research University status (requires increasing the annual # of PhDs by a factor of 2-4)</i>	100

Sources: Business Enterprise Research and Development Survey, 2019; UAF Fact Sheets



“Research funding brings in dollars and employs people. The translation of research also supports economic development by providing innovative solutions to business challenges.”

“There are so many opportunities. Even though we’re not a coastal town, UAF supports coastal communities through mariculture, fisheries research, ocean energy, transportation, tourism. We support the fisheries industry with research. There are many funding opportunities for ocean research and most require University partnerships.”



Photos courtesy of University of Alaska Fairbanks

Research & Innovation Objectives – Long term improvements and changes we want to see in five years or more



1. Interior Alaska is a renowned research hub and attracts scholars, entrepreneurs, institutions, and experts from rural communities to generate innovative solutions to modern challenges, with both local and global applications.



2. Research efforts in Interior Alaska are successfully translated into private sector application and catalyze the growth of new and existing businesses.

“We need to consider how industry needs get identified and communicated back to research institutions like UAF; how do they get elevated to research priorities?”

“Large companies are coming in and hiring UAF graduates to manage aerial and underwater autonomous equipment; those employees can stay here but support high tech jobs from a distance. Fairbanks could continue to grow as a hub for these remote, high-skilled workers.”

Strategies & Actions – Activities we will implement over the next five years to accomplish objectives & targets. See Chapter 3 for a detailed action plan.

Icon Key: Capital Project Military-related

- 1. Enhance Research Institutions** – Position UAF and other Interior Alaska institutions as global leaders in research and innovation. *(Objective 1)*
 - a. Achieve Tier 1 Research University status for UAF.
 - b. Establish Fairbanks International Airport as an unmanned aircraft system hub.
 - c. Leverage the collaboration between CCHRC and NREL to further grow renewable energy research and energy conservation facilities and programs; use as a model for other partnerships.
 - d. Identify sector needs and create workforce pipelines to fill needed “middle ground” research roles, including the vocational and trade skills needed to support research projects.
 - e. Better retain UAF students in the community after graduation.
- 2. Expand Research and Development** – Celebrate, promote, and expand research efforts that support economic development, resiliency, and quality of life in Alaska communities. *(Objectives 1, 2)*
 - a. Develop an Arctic Emergency Services Center of Excellence.
 - b. Research and promote of agricultural and mariculture technologies and harvesting potential.
 - c. Conduct research aimed at climate change documentation, adaptation, and carbon capture and storage.
 - d. Research and advocate for energy solutions including renewable energy technologies, microgrids, nuclear power, and energy efficiency.
 - e. Conduct military-relevant research, including cold weather testing, unmanned aircraft systems, satellite remote sensing, aerospace, natural hazards, and Arctic-relevant topics like infrastructure, emergency response, transportation.
 - f. Conduct biomedical and public health research efforts such as the One Health concept.
 - g. Conduct geologic and mineral research, including improved reclamation strategies.
 - h. Conduct research that identifies solutions to meet Alaska’s unique housing needs including design techniques, water-sewer improvements, and increasing utilization of local materials.
 - i. Conduct fisheries and oceans research that supports coastal communities and ocean-based economic activities.
 - j. Expand research collaboration with FNSB businesses to fill unique niches.

- 3. Engage Entrepreneurs**– Assist innovators in building on their discoveries and pivoting into private sector and business opportunities. (*Objective 2*)
- Promote and expand the Center ICE’s new [Innovation Accelerator](#) program and [Students2Startups](#) internship program and other internship programs with local businesses.
 - Create a dedicated community space for early-stage innovators to collaborate and share resources. 
 - Establish a network of entrepreneurial mentors who can connect with new entrepreneurs.
 - Expand networking and engagement between entrepreneurs, Center ICE, and other relevant programs.
- 4. Build Community Partnerships** – Engage communities and Tribes as critical partners in research efforts. (*Objectives 1, 2*)
- Collaborate with Tribes to elevate the role of traditional ecological knowledge (TEK) in research efforts.
 - Support greater community participation and diverse local hire in research efforts and ensure community-based research is communicated back to communities in stakeholders in accessible and usable formats, including the potential creation of a database of UAF research projects and outcomes.
 - Involve communities and businesses in the design phases when crafting research proposals.
 - Create a research communications strategy for better reporting and updating the community on research achievements, priorities, and projects, and to solicit industry research needs.
 - Actively address the lack of diversity in the research field and identify strategies for improvement.



Photo courtesy of University of Alaska Fairbanks

Other Relevant Resources

- **UAF Strategic Plan 2027.** University of Alaska Fairbanks. November 2021. [View here.](#)
- **UAF Department of Defense Support.** University of Alaska Fairbanks webpage. [View here.](#)
- **List of UAF Research Facilities.** University of Alaska Fairbanks. [View here.](#)
- **North to Opportunity: Aerospace Industry Summary Page.** The State of Alaska. [View here.](#)
- **Arctic Research Plan.** Interagency Arctic Research Policy Committee, National Science & Technology Council. Dec. 2021. [View here.](#)

Research & Innovation Action Plan

See Appendix A for a list of acronyms.

Strategy #1: Enhance Research Institutions – Position UAF and other Interior Alaska institutions as global leaders in research and innovation.

Capital Project?	Action	Lead	Support	Estimated Resources	Target Completion
✓	a. Achieve Tier 1 Research University status for UAF.	UAF		TBD	2026
	b. Establish Fairbanks International Airport as an unmanned aircraft system hub.	DOT&PF	UAF, DoD	TBD	TBD
	c. Leverage the collaboration between CCHRC and NREL to further grow renewable energy research and energy conservation facilities and programs; use as a model for other partnerships.	CCHRC, NREL	UAF	Varies	Ongoing
	d. Identify sector needs and create workforce pipelines to fill needed “middle ground” research roles, including the vocational and trade skills needed to support research projects.	UAF	Alaska Job Center Network, industry partners, GFCC	Varies	Ongoing
	e. Better retain UAF students in the community after graduation.	UAF	Alaska Job Center Network, unions, GFCC	Varies	Ongoing

Strategy #2: Expand Research and Development – Celebrate, promote, and expand research efforts that support economic development, resiliency, and quality of life in Alaska communities.

Capital Project?	Action	Lead	Support	Estimated Resources	Target Completion
✓	a. Develop an Arctic Emergency Services Center of Excellence.	UAF	FAA, BLM Alaska Fire Service, Alaska Division of Forestry	TBD	TBD
✓	b. Research and promote agricultural and mariculture technologies and harvesting potential.	UAF	National Oceanic and Atmospheric Administration (NOAA), Southeast Conference, coastal communities, IAFN, Fairbanks Soil and Water Conservation District	Varies	Ongoing
✓	c. Conduct research aimed at climate change documentation, adaptation, and carbon capture/ storage.	UAF	NREL, REAP; FCAC, ANTHC, DoD, FEDC	Varies	Ongoing
✓	d. Research and advocate for energy solutions including renewable energy technologies, microgrids, nuclear power, and energy efficiency.	NREL	REAP, GVEA, UAF, DoD, ANTHC, FCAC, Solarize Fairbanks, GVEA, AEA, FEDC	Varies	Ongoing

Capital Project?	Action	Lead	Support	Estimated Resources	Target Completion
✓	e. Conduct military-relevant research, including cold weather testing, unmanned aircraft systems, satellite remote sensing, aerospace, natural hazards, and Arctic-relevant topics like infrastructure, emergency response, transportation.	DoD	UAF, Federal Emergency Management Agency (FEMA), state agencies, FEDC	Varies	Ongoing
✓	f. Conduct biomedical and public health research efforts such as the One Health concept.	UAF	Foundation Health Partners, DoD, TCC, Alaska Division of Public Health	Varies	Ongoing
✓	g. Conduct geologic and mineral research, including improved reclamation strategies.	UAF	DNR, Alaska Mining Association, mining companies, USGS	Varies	Ongoing
✓	h. Conduct research that identifies solutions to meet Alaska's unique housing needs including design techniques, water-sewer improvements, and increasing utilization of local materials.	CCHRC	UAF, ANTHC, TCC, IRHA, FEDC	Varies	Ongoing
✓	i. Conduct fisheries and oceans research that supports coastal communities and ocean-based economic activities.	UAF	NOAA, Southeast Conference, coastal communities, fish harvesting and processing companies, community development quota organizations, Alaska Marine Conservation Council	Varies	Ongoing
	j. Expand research collaboration with FNSB businesses to fill unique niches.	UAF	GFCC	Varies	Ongoing

Strategy #3: Engage Entrepreneurs – Assist innovators in building on their discoveries and pivoting into private sector and business opportunities.

Capital Project?	Action	Lead	Support	Estimated Resources	Target Completion
	a. Promote and expand Center ICE's new Innovation Accelerator program and Students2Startups internship program and other internship programs with local businesses.	GFCC	UAF, SBDC, FEDC	TBD	TBD
✓	b. Create a dedicated community space for early-stage innovators to collaborate and share resources.	TBD	FEDC	TBD	TBD
	c. Establish a network of entrepreneurial mentors who can connect with new entrepreneurs.	GFCC	UAF Center ICE, SBDC, FEDC	TBD	TBD
	d. Expand networking and engagement between entrepreneurs, Center ICE, and other relevant programs.	GFCC	UAF Center ICE, SBDC, FEDC	TBD	TBD

Strategy #4: Build Community Partnerships – Engage communities and Tribes as critical partners in research efforts.

Capital Project?	Action	Lead	Support	Estimated Resources	Target Completion
	a. Collaborate with Tribes to elevate the role of traditional ecological knowledge in research efforts.	UAF	Tribes, Regional Corporations, state and federal agencies	Varies	Ongoing
	b. Support greater community and business participation and diverse local hire in research efforts and ensure community-based research is communicated back to communities in stakeholders in accessible and usable formats, including the potential creation of a database of UAF research projects and outcomes.	UAF	FEDC	Varies	Ongoing
	c. Involve communities in the design phases when crafting research proposals.	UAF	Tribes and Tribal organizations, municipalities, GFCC	Varies	Ongoing
	d. Create a research communications strategy for better reporting and updating the community on research achievements, priorities, and projects, and to solicit industry research needs.	UAF	FEDC, DoD, FNSB	TBD	TBD
	e. Actively address the lack of diversity in the research field and identify strategies for improvement.	UAF	Fairbanks Diversity Council, FEDC	Varies	Ongoing