

2022-2026 Fairbanks North Star Borough Comprehensive Economic Development Strategy (CEDS) Research & Innovation Summary – **DRAFT**

Includes: Strengths, Weaknesses, Opportunities, Threats | Targets | Goals | Strategies & Actions | Relevant Plans

Strengths *Internal attributes that contribute to success*

- Department of Defense has robust and growing research efforts in Interior Alaska
- FNSB has a skilled workforce and educated population
- Department of Energy recently reopened its UAF Arctic Energy Office
- National Renewable Energy Laboratory (NREL) joined forces with Cold Climate Housing Research Center with focus on energy systems
- UAF Center for Innovation, Commercialization, and Entrepreneurship launched its Innovation Accelerator
- The research sector creates jobs for Interior residents and offers solutions to challenges experienced in Interior Alaska communities

Weaknesses *Internal barriers to success*

- University/academic research at UAF does not always successfully transfer to implementation by the private sector or practical use in Interior Alaska communities
- Limitations of data processing power in Fairbanks, including higher costs and lower speeds due to data bottlenecks between Alaska and the Lower 48

Opportunities *External forces that contribute to success*

- Current and potential federal funding opportunities for new infrastructure through the American Rescue Plan, Infrastructure Investment and Jobs Act, and more
- National Science Foundation Established Program to Stimulate Competitive Research (EPSCoR) funds extensive Alaska research efforts and infrastructure improvements
- Autonomous systems and remote sensing technologies have the potential to lower costs and increase safety, with diverse applications throughout Alaska
- There are many funding opportunities available for research areas relevant to UAF, including ocean research

Threats *External forces that could be barriers to success*

- 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?	2026 Targets (5% growth from 2019)
\$49 M	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)	UAF 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>	\$116.5 M
49 (FY20)	Ph.D.s – Annual number of UAF students receiving Ph.D.s; <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 two to four)</i>	100

Other Potential Indicators (need baselines and targets): # of Small Business Innovation Research and /Small Business Technology Transfer to AK companies; # of businesses that select Fairbanks as their home for research development; # of phase 1 or 2 research awards to AK-based businesses that move to phase 3; # of awards @ UAF where prime awardee is SBIR/STTR company; # of contracts/subawards on research grants that go to entities (private, government, Tribal, etc.); successful application of research in solving local/regional challenges such as water-sewer

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

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



1. Interior Alaska is a renowned research hub that attracts scholars, entrepreneurs, and institutions 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.

Strategies & Actions – the activities we will implement over the next 5 years to accomplish goals & targets	Lead
<p>1. Enhance Research Institutions – Position UAF and other Interior Alaska institutions as global leaders in research and innovation. (Goal 1)</p> <ol style="list-style-type: none"> 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 Cold Climate Housing Research Center and NREL to further grow renewable energy research facilities and programs. 	
<p>2. Expand Research and Development – Celebrate, promote, and expand research efforts that support economic development, resiliency, and quality of life in Alaska communities. Support: (Goals 1, 2)</p> <ol style="list-style-type: none"> a. Research of agricultural and mariculture technologies and harvesting potential. b. Research aimed at climate change documentation and adaptation. c. Research exploring energy solutions including renewable energy technologies, microgrids, nuclear, and energy efficiency. d. Military-relevant research, including cold weather testing, unmanned aircraft systems, satellite remote sensing, aerospace, natural hazards, and Arctic-relevant topics such as infrastructure, emergency response, transportation, and safety. e. Biomedical and public health research efforts such as the One Health concept. f. Geologic and mineral research. g. Research that identifies solutions to meet Alaska’s unique housing needs including design techniques, water-sewer improvements, and increasing utilization of local materials. h. Fisheries and oceans research that supports coastal communities and ocean-based economic activities. 	
<p>3. Support Entrepreneurs– Assist innovators in building on their discoveries and pivoting into private sector and business opportunities. (Goal 2)</p> <ol style="list-style-type: none"> a. Promote and expand the Center for Innovation, Commercialization, and Entrepreneurship (ICE)’s new Innovation Accelerator program and Students2Startups internship program. 	
<p>4. Build Community Partnerships – Engage communities and Tribes as critical partners in research efforts. (Goals 1, 2)</p> <ol style="list-style-type: none"> a. Collaborate with Tribes and Tribal communities to elevate the role of traditional ecological knowledge (TEK) in research efforts. b. Support greater community participation and local hire in research efforts and ensure community-based research is communicated back to communities in stakeholders in accessible and usable formats. c. Involve communities in the design phases when crafting research proposals. 	

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 and Technology Council. Dec. 2021. [View here.](#)



Interior Alaska Economic Summit, February 22-23, 2022

Research & Innovation Breakout: Discussion Summary (02-22-22)

To view results from the other sessions, visit <https://fnsbceds.com/> (results will be posted by March 11th)

This document compiles feedback and notes from the breakout session. The other tools that were used to guide the discussion include:

- An economic cluster/influencer one-pager that identified a preliminary SWOT analysis, goals, strategies, actions, and measures of success
- A worksheet identifying a proposed economic vision statement and guiding questions for each of the activities. The guiding questions have been copied into this document for reference. The feedback on the economic vision statement was compiled separately and will be released by March 11th.

Participants *(alphabetical by first name, based on sign in sheet)*

First	Last	Affiliation	Email
Brent	Sheets	UAF	bjsheets2@alaska.edu
Gary	Euloe	MTA	geuloe@mtasolutions.com
Hajo	Eicken	UAF International Arctic Research Center	heicken@alaska.edu
Joshua	Knicely	n/a	knically_joshua@yahoo.com
Juliet	Shepherd	Shepherd et al	julietsshepherd@gmail.com
Kevin	Huo	Alaska Center ICE	khuo@alaska.edu
Peter	Webley	UA Center for Innovation, Commercialization, and Entrepreneurship	pwwbley@alaska.edu
Renee	Linton	Fairbanks Economic Development Corporation	rlinton@investfairbanks.com
Robert	Rouse	City of North Pole	Rous9972@yahoo.com
Terry	Chapin	University of Alaska Fairbanks	terry.chapin@alaska.edu
Tim	Jones	Doyon Utilities	tjones@doyonutilities.com

Facilitated by Molly Mylius, Agnew::Beck Consulting

RSVPs: 39 participants

Feedback on the Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis

Guiding Questions:

1. What did we get right?
2. What's missing?
3. What would you change?
4. What's the most important item in each quadrant?

Discussion Notes:

Color Key: Blue = proposed revision | red = proposed deletion | green = proposed addition

Strengths	Weaknesses
<ul style="list-style-type: none"> • Revise: clarify the bullet about a skilled workforce and educated population – is this enough? Is there still a gap in skills? Not just general educational attainment, but relevant skills and training for the specific opportunities/jobs available • Add: unique environment – subarctic, unique environmental attributes • Add: vast areas of uncontrolled airspace and undeveloped lands • Add: Eielson AFB innovation team • Add: more prominently feature UAF on the strengths list 	<ul style="list-style-type: none"> • Revise: finesse wording of the data speeds strategy to make it more focused and identify where the actual gap occurs – is it the middle mile infrastructure to institutions, or a statewide bottleneck? Could this be addressed with more local computing power? • Add: lack of clarity around workforce needs in this area • Add: UAF resource capacity is not accessible to the community; need for greater education and inclusion on how the community can work with UAF • Add: Private sector research needs are not always effectively communicated back to the research community • Add: lack of a strategy on how to communicate UAF research efforts and fundings back to the community • Add: UAF is seen as a business for residents, with costs that make it inconvenient/inaccessible – such as fees for parking and library access
Opportunities	Threats
<ul style="list-style-type: none"> • Revise: for last bullet, reword to be, “...for research areas relevant to economic development in the region” • Add: funders want to see demonstrated impact/community relevance, thus increasing the usability and impact of research projects • Add: improvements in cloud computing technology could help address some of the data processing challenges/limitations in the region • Add: increase cold weather testing – promote FNSB’s unique research attributes (military is helping move some of this forward) • Add: FNSB could grow as a DBIR/STTR hub to drive additional economic activity in the region • Add: industry liaisons around thematic areas • Add: state budget surplus (could some be given back to UAF?) • Add: NASA testing activities (including Martian habitat studies) could bring extra funding and jobs 	<ul style="list-style-type: none"> • Add: Federal funding is often time-limited and cannot be used to sustain long-term projects (over 10 years) • Add: Potential for technology improvements to outsource jobs (e.g., unmanned aircraft system technologies) • Add: issues with security barriers and proprietary research (especially with military facilities) resulting in testing facilities closed off/not accessible to other researchers • Add: budget uncertainty and constantly shifting funding priorities at the federal level • Add: recruiting for technical positions

Goals, Strategies, Actions Discussion Questions

Guiding Questions:

1. What did we get right?
2. What would you change?
3. What's missing?
4. Who will lead each of the strategies? What do you see as you/your organization's role?
5. Which of the strategies is most important for us to focus on over the next year?

Discussion Notes:

- Goals
 - Revise: add “experts from rural communities” to the list of stakeholders identified in Goal #1
 - Revise: reword Goal #1 to be, “...hub and attracts future...”
- Strategy 1: Enhance Research Institutions
 - Revise: expand action b to not just be focused on Fairbanks International Airport
 - Revise: expand action c to also include energy conservation
 - Revise: modify action c to apply lessons learned from the collaboration to identify and execute other potential partnerships
 - Add: need more pilots – expand training
 - Add: build a community of research practice, utilize diversity of the community
 - Leads: FNSB, FEDC
 - Add: invest in “middle ground” expertise, including vocational and trade skills needed to support research efforts (also supports action 4b)
 - Add: retain high level expertise in region (e.g., those graduating UAF)
- Strategy 2: Expand Research & Development
 - Revise: add carbon capture utilization and storage to action b.
 - Revise: work with and build from TCC and Interior Regional Housing Authority to help implement action 2g.
 - Revise: all actions will require public, private, and institutional participation to be successful
 - Add: pursue 10-year research funding to support all of the focus areas
 - Add: throughout this strategy, consider how industry needs get identified and communicated back to research institutions like UAF; how do they get elevated to research priorities?
- Strategy 3: Support Entrepreneurs
 - Revise: “support” is too broad for the strategy, recommend using a more specific word
 - Add: better engagement with the entrepreneurial community, including supporting networking with Center ICE; contracting out special technical skills such as social media and research
 - Add: community space for early-stage innovators to hang out, collaborate, ideate

- Discussion: Center ICE contributed to a local coworking space going out of business; is there an opportunity for community based coworking space to come back? Is there still a need for physical space, now that work habits have evolved?
- Add: establish network of entrepreneurial mentors to act as advisors to be able to support opportunities
- Add: focus on building more SBIR-ready local businesses with skills to prosper
- Add: training programs to support entrepreneurs to be more resilient
- Strategy 4: Build Community Partnerships
 - Revise: include the word “diverse” when discussing local hire in action b.
 - Add: Add action addressing the global aspect of research – need for global public and private partnerships
 - Add: Address lack of diversity, increase invitations to participate
 - Add: Create and distribute a database of UAF research projects and outcomes

Measures of Success Discussion Questions

Guiding Questions:

1. What did we get right?
2. What’s missing?
3. What would you change?
4. Which of these indicators will be the most effective at measuring our success?

Discussion Notes:

- Revise: consider adding more detail to the PhD data – specialties? Demographics? For UAF Tier 1 status, PhDs in the humanities are most important
- Revise: change name of measure #2 from “UAF Research” to “Academic Sector Research”; suggest raising the target higher
- Add: private research and development funds
- Add: new business growth
- Add: graduation retention; tracked via existing surveys of graduates
- Add: number of trade school/vocational school graduates/certificates awarded annually
- Add: military research expenditures – is there a way to track this?