



University of Alaska

The Power of UA Research

University of Alaska
Senate and House Education Committees

February 23rd, 2018

Investment by Strategic Objective

(UGF Millions \$)

FY2018 Base Operating Budget	\$317
• Compensation	\$0.0
• Fixed Cost Increases	\$9.7
• Facilities Maintenance	\$3.7
• Utilities	\$3.1
• UAF Engineering Building Operating Costs	\$2.1
• Academic & Research Subscription Increases	\$0.9
• Strategic Investments by Objective	\$14.7
• Increase Degree Attainment	\$7.3
• Grow Our World Class Research	\$3.7
• Provide A Skilled Alaskan Workforce	\$2.1
• Contribute to Alaska's Economic Development	\$1.6
• Operate More Cost Effectively	\$0.0
FY2019 Board of Regents Budget Request	\$341



An Important Alaskan Industry

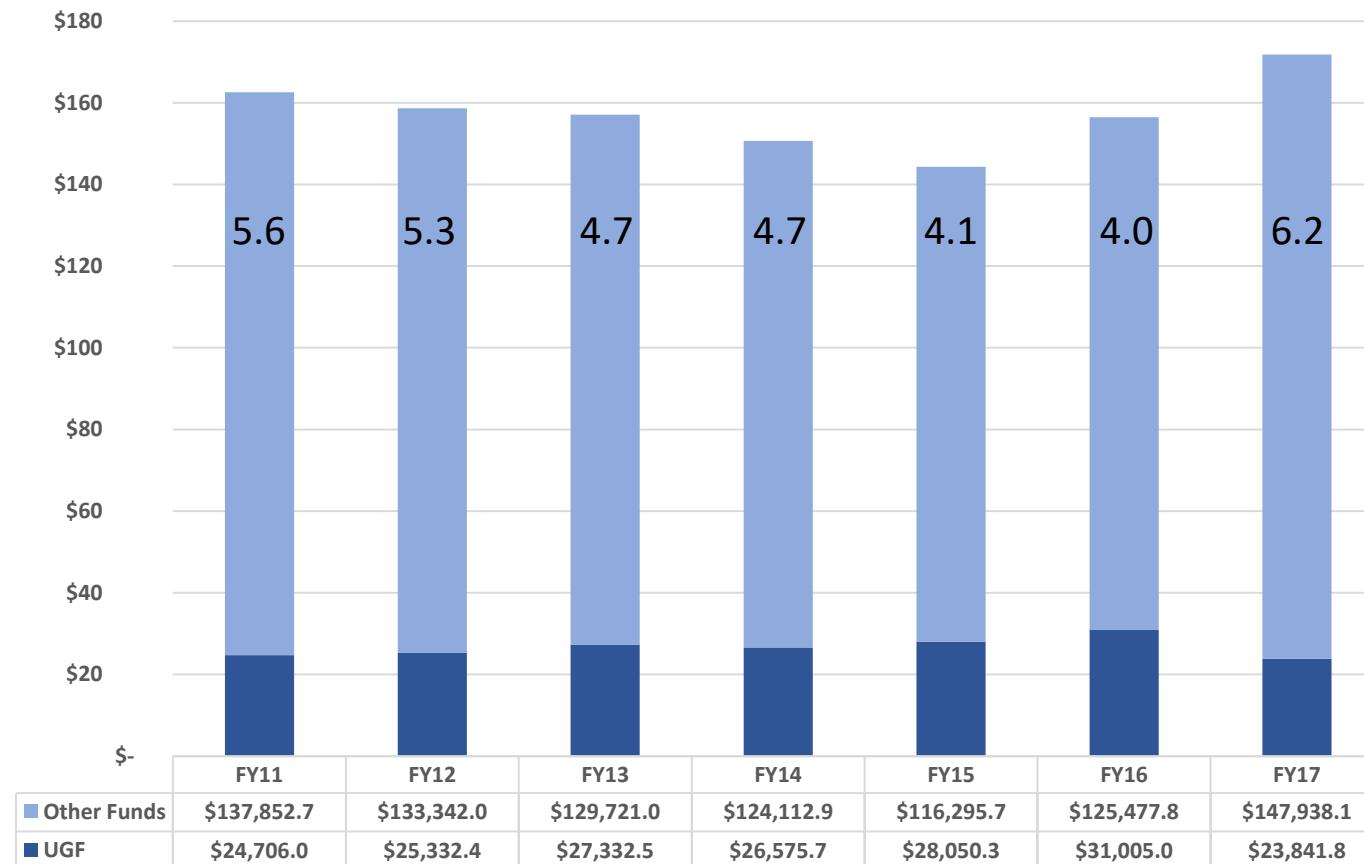
*Since **FY10**, research revenue
generated by the
University of Alaska has
exceeded **\$1 billion***

An Important Alaskan Industry

- ❖ In 2017, UA had over \$148 million in external research expenditures
- ❖ The \$24 million in state research funding was multiplied by 6
- ❖ \$90 million in direct wages and salaries; about 1250 direct jobs
- ❖ Another \$27 million indirect income, 350 jobs from multiplier effects of direct employment
- ❖ \$70 million in purchases, contracted services, travel, student aid and equipment

UA Research Return on Investment

(Millions of \$)



The ratio of UGF research revenue to other revenue measures the return on State investment in research

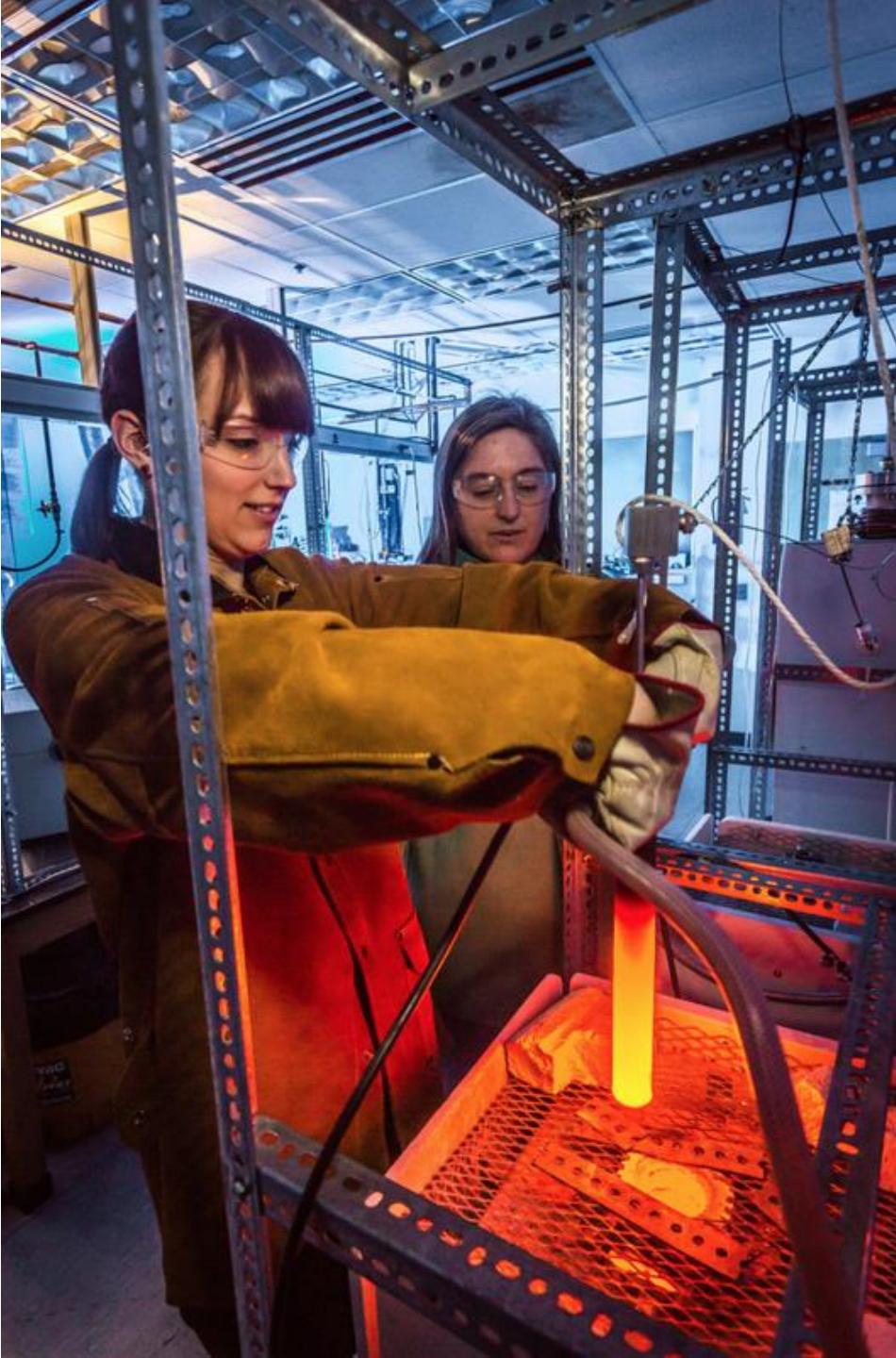
Research and Quality Education

- ❖ Research opportunities attract outstanding faculty
- ❖ Research is integral to a curriculum that reflects the most up-to-date knowledge
- ❖ Undergraduate and graduate student involvement in research
- ❖ Quality research institutions attract out-of-state students and retain outstanding resident students. Builds a pipeline of outstanding students who become employees of Alaska businesses and institutions

Research is Central to Education

- Both graduate and undergraduate students are a key part of our research activities.
- 40% of Fairbanks Campus undergraduates participate in research.
- 164 of 964 total UAF graduate students are graduate research assistants.
- UAF Publications with student authors are more than 40% of the total.

Fiscal Year	FY14	FY15	FY16
Total UAF publications (faculty, staff, student authors)	639	606	646
Publications with at least one student author	266	298	265



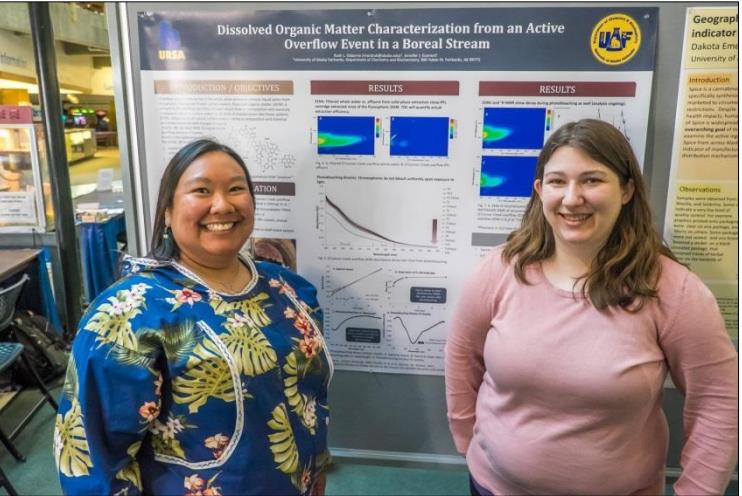
Instruction, mentoring, research and outreach are brought together within undergraduate, graduate and continuing education programs to benefit Alaska, the nation and the world.



And training to be critical thinkers and problem solvers



Undergraduate Research and Scholarly Activity (URSA)



Ruth Osborne and her
faculty mentor
Jennifer Guerard –
Chemistry and
Biochemistry



Rose Crelli -
Music

Luke Rogers – Biology
& Wildlife Program



BLaST: Biomedical Learning and Student Training



BLaST is a large (>\$23M) NIH funded program focusing on undergraduate research mentoring of students from all backgrounds, including rural Alaska and Alaska Native students.

BLaST provided mentored research experiences to over 200 undergraduate students from diverse backgrounds at UAF, UAS and Iliisagvik College.



Graduate Students and Research

- Research is central to education of graduate students.
- The students are a key part of UA's research activities.



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Many Traditions One Alaska

Graduate Student Research



Thilo Klenz, Ph.D. student in Oceanography, Harper Simmons advisor

Thesis: Comparing lagrangian drifter statistics in a numerical model to observations



Stanley Edwin, Ph.D. student in Atmospheric Sciences, Nicole Moelders advisor

Thesis: Air quality in interior Alaska villages.

UA Research Education and Economic Geology in Alaska



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Office of Intellectual Property and Commercialization

- Moving research from ideas to markets.
- Fostering a culture of innovation & entrepreneurship.
- Diversifying & enriching the Alaska economy.
- Spring 2018: Lean Launch Workshop.
- Spring 2018: Innovation Initiative gatherings.
- Spring 2019: new course based on Stanford's Lean Launch.
- Innovation Ambassadors
- Center for Innovation, Commercialization & Entrepreneurship
(Center ICE)

Alaska's “Innovation Pipeline”

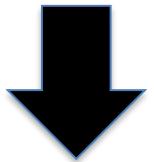
Image courtesy of Launch Alaska



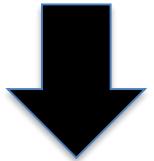
V-ADAPT, Inc.

- Federally funded research, 15 years+.
- Market opportunity in aviation sector.
- Formed company, June 2013.

Invention disclosures.



Declared intellectual property.

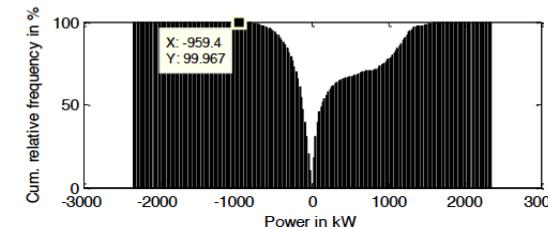
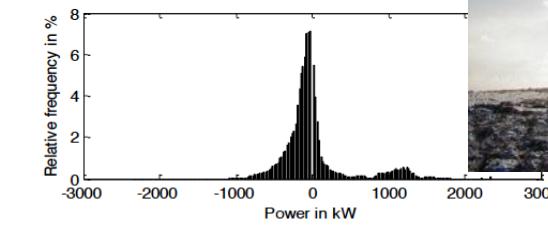


Licensed technology.



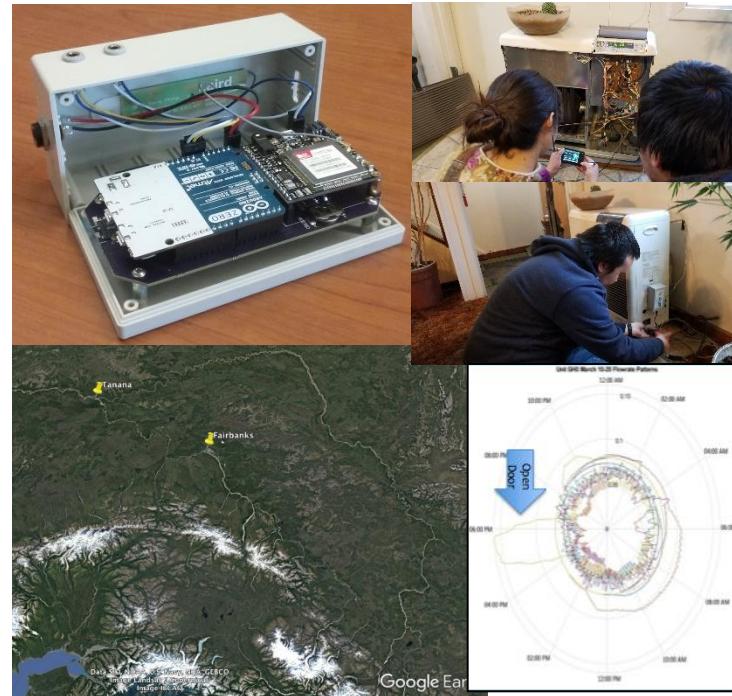
Grid Bridging System

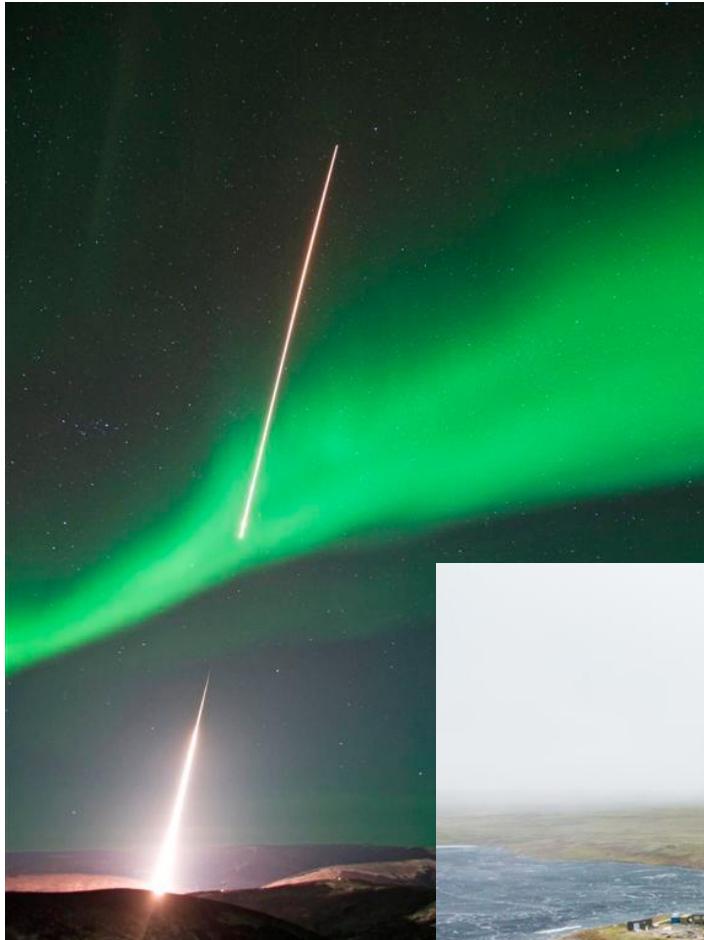
- AVEC-ACEP-ONR collaboration
- Reduce spinning reserve diesel
- Enable “right-sized” generators
- Maximize renewable asset benefit
- Broadly applicable storage sizing
- Technology characterization at ACEP
- Field deployment



Pump Monitoring Apparatus (PuMA)

- Background: 75+% of rural Alaska households heat with diesel
- Problem: Objective data needed to characterize trends in fuel use
- Approach: Field install kits for oil-fueled space heaters
- Proof of concept in Fairbanks
- Initial deployment in Tanana
- NW Alaska site possible
- In-state production possible
- Benefits: Savings for homeowners, insights for utilities and technologists





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of ALASKA

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