

Alaska Needs Engineers

“We need to grow our own engineers for Alaska’s future economic success. This is an investment in our state’s future economic development.”

Chantal Walsh, PE, Petroleum Engineer
PRA - Petrotechnical Resources of Alaska

The Case

Let the 7.0 earthquake on November 30th and continuing aftershocks serve to remind and reassure Alaskans how resilient we are – and how we prepared after the 1964 earthquake for these events to equip our infrastructures for future earthquakes. The profound contributions of engineers kept us safe by designing for Alaska's reality more than we know...until it is obvious **Alaska Needs Engineers to prepare for the future.**

The Past – Alaska Needed Engineers

History has demonstrated we must be prepared for the rise in our cyclical economy to be ready for upcoming developments. Past projects include the Trans-Alaska Pipeline, and earthquake safety requirements to our infrastructure throughout Alaska. Although we have experienced a downturn in our economy, we are rebounding and we must be prepared to face the challenges ahead.

The Present - Alaska Needs Engineers

There is a demonstrable link between engineering and economic development across the world. Alaska is no different.

Current projects including the reinvigorated exploration and development on the North Slope, aerospace development, ramping up of military bases throughout Alaska, and maintenance of our state building and transportation infrastructures, demonstrate the rebound of Alaska's economy.

Engineering plays a key role in supporting the growth and development of our Alaskan resource-driven economy as well as in improving our quality of life.

The Future – Alaska Will Need More Engineers

Resource development will continue to be necessary in Alaska to supply energy, metals, minerals and materials needed for our world economy. Developments require innovative and forward-thinking engineers for our changing environment and logistical challenges. As such, there are important links between our educational resources, engineering capacity, necessary infrastructure and economic development to address these opportunities.

Preparation

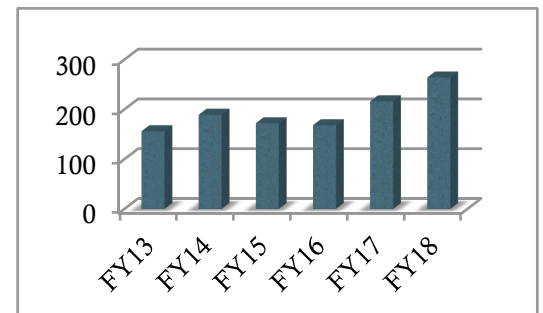
Alaska continues to face a shortage of qualified engineers. Engineering graduates are in high demand in this state, and the demand exceeds the supply.

Many Alaska employers prefer to hire UA graduates, as they are better prepared for Alaska's conditions and more likely to remain in Alaska. Engineering graduates from both UAA and UAF are essential.

Many engineers working in Alaska are non-residents - up to 35 percent in some disciplines. Many of these employees lack education and experience in Arctic engineering principles and remote logistics.

Rigorous Standards

UA is addressing industry requirements for arctic-trained engineers in cold-region environments to fulfill current and future employment needs in Alaska and beyond. The University of Alaska offers **fully accredited, collaborative and complementary** academic training and expertise, supported by Arctic engineering principles. **And** the students are paying a 20% tuition surcharge for the benefits of a quality education at UA.



UA Baccalaureate engineering degrees
FY13 – FY18

Industry Sectors

Engineers provide the necessary and key management functions in all industry sectors. Engineers develop the physical infrastructure we all rely upon in Alaska including, but not limited to: transportation networks, roads, bridges, water and wastewater management, ports, energy supplies, and buildings. In addition, we have them to thank for our digital infrastructure – communications and navigation networks that are integral to life in Alaska.

Energy

- Alaska's North Slope is an emerging Super Basin – investments are predicted to increase over the next several years – spending is up by 13 percent in 2019
- **Big discoveries means BIG JOBS.** .5 to >1 Billion barrels
- Pikka (Oil search) and Willow (CPAI) discoveries transitioning from Exploration to Development phases
- Industry-wide technological advances – industry requires engineers to advance and refine exploration and development practices
- Hydroelectric power and alternative energy projects

Mining & Resource Development

- Six major mines are currently in operation in Alaska. Ongoing expansion and new investments to increase efficiency and develop new prospects are also being made. Capital spending is predicted to be up by 18% at \$265 million
- Environmental management is an integral part of any natural resource endeavor
- Water and Wastewater management is also a necessary factor in any sector working in resource development

Transportation (Roads, Bridges, Aviation, Ports, Railroad, Marine)

- Construction/maintenance of infrastructure - \$8.1B infrastructure investment - \$900M annually
- Expedited repair of earthquake damage throughout state (est. at \$200M)
- On-going improvements at major and smaller airports throughout Alaska
- Aerospace missions – Kodiak Launch Facility
- Opening of Bering Strait to international commerce

Technology (Telecom and IT)

- Integrated communications systems built around IT solutions and automated systems are being updated throughout Alaska
- Increased connectivity and bandwidth projects throughout the state

Private and Public Facilities and Infrastructure

- \$1 Billion in new military construction projects underway
- \$5.8B appropriated for Missile defense in Alaska (Ft. Greeley and Clear AFB)
- Alaska Railroad Positive Train Control project moving forward
- Housing and village safe water programs throughout Alaska
- "On the Street" construction spending is expected to be \$7.2B in 2019

Cool Jobs! Great Pay!	<i>Projected jobs</i>	<i>Median salary</i>
Civil Engineer	32,200	\$84,770
Mechanical Engineer	25,300	\$85,880
Petroleum Engineer	5,100	\$132,280

[*\(US News & World Report 2019\)*](#)

UA Programs

The geographic expanse of Alaska and resulting geophysical divisions alone guarantee there are no "one size fits all" engineering solutions to support Alaska's challenges.

Here are the programs available at UA:

- **Aerospace Engineering**
- **Civil Engineering**
- **Design and Construction Management**
- **Computer Engineering**
- **Computer Science**
- **Electrical Engineering**
- **Geological Engineering**
- **Geomatics**
- **Mechanical Engineering**
- **Mining Engineering**
- **Petroleum Engineering**
- **Project Management**
- **Water and Environmental Science**

For more information:

[*UAA College of Engineering*](#)

[*UAF College of Engineering and Mines*](#)

Provided by the UA Joint Engineering Advisory Council, (JEAC) established to support collaboration between UA's two engineering colleges, and connect Alaska industries with UA research, graduates, ongoing needs, industry priorities and private and public sector needs.

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