

# Northern Opportunity

*Alaska's Economic  
Development Strategy*

# ALASKA

NORTH TO OPPORTUNITY



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## Project Summary

*Northern Opportunity: Alaska's Economic Strategy* is a five-year (2017-2022) economic development plan for Alaska. Driven by the need to improve the resiliency of the state's economy and intentionally lay a foundation for future growth, this plan follows the U.S. Economic Development Administration's Comprehensive Economic Development Strategy (CEDS) framework. This is the first statewide CEDS developed for Alaska.

The decline in global oil prices in 2014-2015 made clear the need for a coordinated statewide economic development strategy, as Alaska's economy has seen significant contraction. Employment in oil and gas extraction, construction, business services, state government, and others have seen sharp declines. At the same time, a thriving entrepreneurship scene as well as healthy seafood, visitor, mining, and health care sectors provide a basis for optimism. The state's abundant natural resources and recent oil discoveries also point to opportunities for growth. As such, this plan comes together in the spirit of optimism, to capitalize on strengths, as well as to mitigate challenges to economic resilience.

*Northern Opportunity: Alaska's Economic Strategy* is the result of eight months of extensive outreach and reflects the input of communities, businesses, public entities, non-profits, Tribal organizations, and individual Alaskans. Information for this project was gathered through research, regional CEDS documents, a series of community forums in every region of the state, business forums, and two online surveys: one directed to individual Alaskans and the other toward business leaders.

**VISION** Northern Opportunity: Alaska's Economic Strategy's vision is that Alaska will have a stable and sustainable economy that generates quality jobs, capital investment, and new revenue to benefit the people and businesses of Alaska.

**MISSION** Northern Opportunity: Alaska's Economic Strategy's mission is to arrive at a consensus among Alaskans regarding our economic future, which will result in the articulation of priorities and goals for the state economy. These efforts will promote new investment and economic opportunity for the benefit of all Alaskans.

Most regions throughout the state of Alaska have a CEDS or some version of a regional economic development strategy. *Northern Opportunity: Alaska's Economic Strategy* utilized the most recent regional economic planning documents from around the state to inform all aspects of this strategy. The statewide strategy is not meant to replace any regional strategies, rather highlight areas of focus that have commonality from region to region, and provide a coordinated, high-level economic strategy for the entire state.

This five-year strategy is meant to be a roadmap for economic development in Alaska and will span 2017 through 2022 with yearly updates. Research and community feedback allow for a clear understanding of Alaska's current economic position and underlying trends affecting recent economic performance, while highlighting areas in need of greater resilience. Conversations with community and business leaders throughout the state, investigation of economic development best practices, and additional research were used to identify the most strategic directions forward for the state. Actions were identified that can be taken by public and private sector partners to maximize economic opportunity and collectively mitigate the challenges faced by Alaska businesses and residents. This CEDS also identifies a wide range of stakeholders and strategic partners from government, regional economic development organizations, industry associations, and private businesses.

The CEDS development process began in September 2016 and ran through April 2017. During that time, project staff worked with over 13 communities, gathered input from all major industry sectors in Alaska, and analyzed data from more than 700 individual and business survey respondents. This CEDS was facilitated and compiled by the State of Alaska's Department of Commerce, Community, and Economic Development (DCCED), with the core project team from the DCCED Division of Economic Development (DED), and contracted assistance from the University of Alaska Center for Economic Development (UACED). The project was jointly funded by the Federal Economic Development Administration (EDA), and the State of Alaska.

The State of Alaska's DED supports the growth and diversification of Alaska's economy through business assistance, financing, promotion, and public policy. The division works closely with industry leaders, allied agencies, and economic development organizations across the state, including the ten state-designated Alaska Regional Development Organizations (ARDORs).

### Communities Engaged:

Barrow	Anchorage
Bethel	Kenai Peninsula
Kotzebue	Glennallen
Nome	Valdez
Kodiak	Ketchikan
Fairbanks	Juneau
Mat-Su Borough	

### Business Sectors Engaged:

Seafood	Entrepreneurial and Business Start-Up
Oil and Gas	Telecommunications
Visitor Industry	Alaska Native Corporations
Mining	Timber
Agriculture	

### Stakeholders Engaged:

Tribes	Industry Associations
Regional Non-Profits	Economic Development Organizations
Non-Profit Sector	University of Alaska
Alaska Regional Development Organizations	Municipalities
Chambers of Commerce	Boroughs

## Strategy Committee

A group of business and community leaders representing the state's major industries and regions were engaged in the process as the project's Strategy Committee. Members of the committee were asked to assist in the process of crafting an enduring statewide economic development strategy that is inclusive of all community members and industries. The committee assisted by:

- **Attending committee meetings and providing input on the project strategy and activities.**
- **Assisting with, and attending where possible, community and industry forums to gather input from business and community leaders of specific regions and industries throughout the state.**
- **Promoting the project to community members and colleagues, with the purpose of encouraging participation in the online forum and community and industry forums.**
- **Reviewing the strategy and making recommendations prior to the document being released for public comment.**

The Strategy Committee represents the main economic interests of Alaska, with private sector representatives as a majority of its membership, and including public officials, community leaders, representatives of workforce development boards, representatives of institutions of higher education, minority communities, labor groups, and private individuals. Throughout the process there were minor changes to the committee; the list below is made up of members that were involved at one time or another in the process.

## Strategy Committee: Northern Opportunity: Alaska's Economic Strategy

- Joe Beedle, Northrim Bank
- Larry Cash, RIM Architects
- Sue Cogswell, Prince William Sound Economic Development District
- Deantha Crockett, Alaska Miners Association
- Tim Dillon, Kenai Peninsula Economic Development District
- Kathryn Dodge, University of Alaska Cooperative Extension Small Business & Economic Development
- Jim Dodson, Fairbanks Economic Development Corporation
- Doug Griffin, Southwest Alaska Municipal Conference
- Representative David Guttenberg, Alaska State Legislature
- Scott Habberstad, Alaska Airlines
- Marleanna Hall, Resource Development Council
- Jason Hoke, Copper Valley Development Association
- Senator Shelley Hughes, Alaska State Legislature

- David Karp, Northern Air Cargo
- Brian Kleinhenz, Sealaska Corporation
- Brent Latham, Yukon Kuskokwim Economic Development Council
- John MacKinnon, Associated General Contractors of Alaska
- Kara Moriarty, Alaska Oil and Gas Association
- Kris Norosz, Icicle Seafoods
- Crystal Nygard, Mat-Su Business Alliance
- Christine O'Connor, Alaska Telephone Association
- Lisa Parker, Parker Horn Company
- Bill Popp, Anchorage Economic Development Corporation
- Kim Reitmeier, ANCSA Regional Association
- Meilani Schijvens, Rain Coast Data
- Hugh Short, Pt Capital
- John Springsteen, Alaska Industrial Development and Export Authority (AIDEA)
- Andy Teuber, Alaska Native Tribal Health Consortium (ANTHC)
- Curtis Thayer, The Alaska Chamber of Commerce
- Rick Thomas, The Chariot Group
- Norman Van Vactor, Bristol Bay Economic Development Corporation
- John Wanamaker, Alaska Venture Partners
- Doug Ward, Vigor Alaska / Alaska Workforce Investment Board
- Laurie Wolf, The Foraker Group
- Shelly Wright, Southeast Conference

# Key Goal Areas

The CEDS process identified six key goal areas of focus. These goals were developed by distilling the input the project team received from individual and business surveys, community and industry meetings, and Strategy Committee engagement.



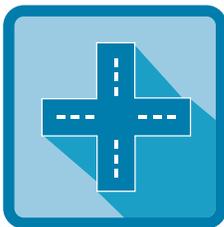
## **Business Development:**

Cultivate a resilient business climate that supports growth and expansion of existing and emerging industries.



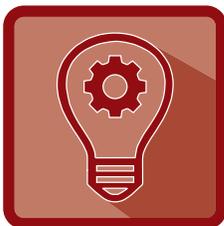
## **Finance and Investment:**

Maximize the productive use of capital for Alaska business expansion.



## **Economic Development Infrastructure:**

Build the transportation, energy, and technological foundations for economic growth.



## **Entrepreneurship and Innovation:**

Position Alaska to thrive in a technologically advanced global economy.



## **Economic Development Capacity Building:**

Strengthen the ability of Alaska organizations to execute economic development initiatives that create jobs and investment.



## **Quality of Life:**

Improve the attractiveness and livability of Alaska communities to attract and retain a quality workforce and set the foundations for economic well-being.



# Introduction

Vast in size, sparsely populated, and removed from the major population centers of the continent, Alaska is socially, culturally, and economically unique. Rich in natural resources and scenic beauty but challenged by its remote location, the state has enjoyed considerable prosperity in recent decades. High levels of oil production and prices, a strong military presence, and healthy visitor, mining, and fishing industries have served Alaska well. Alaska's historical challenge continues to be the state's lack of a diverse economic base. Oil has provided roughly one-third of all jobs (directly or indirectly) and as much as 90 percent of state revenues, and recently the state has been facing the dual forces of oil production declines and a sharp and persistent drop in value.

The state weathered the 2008 global financial crisis relatively well compared to other U.S. states, seeing only a modest increase in unemployment as the national rate spiked. Alaska enjoys high median wages and relatively low income inequality. Since 2012, however, Alaska's economic output and state revenue have both been on the decline (see Figure 1). A glut in the worldwide oil and gas supply has decreased the value of Alaska's chief export from over \$100 per barrel to less than \$50 per barrel. At the same time, the state's aging oil fields currently produce only about one-quarter of their peak volumes.

Several factors make this current slump particularly troublesome. The state's small population, harsh environment, and distance from major global markets impede the development of manufacturing or agricultural sectors. The high cost of doing business inhibits the formation of export sectors in business or financial services. Limited infrastructure makes delivery of basic government services like education and public safety expensive. Rural Alaska communities, with proud traditions of subsistence and adaptation to the environment, suffer from persistent unemployment and low incomes.

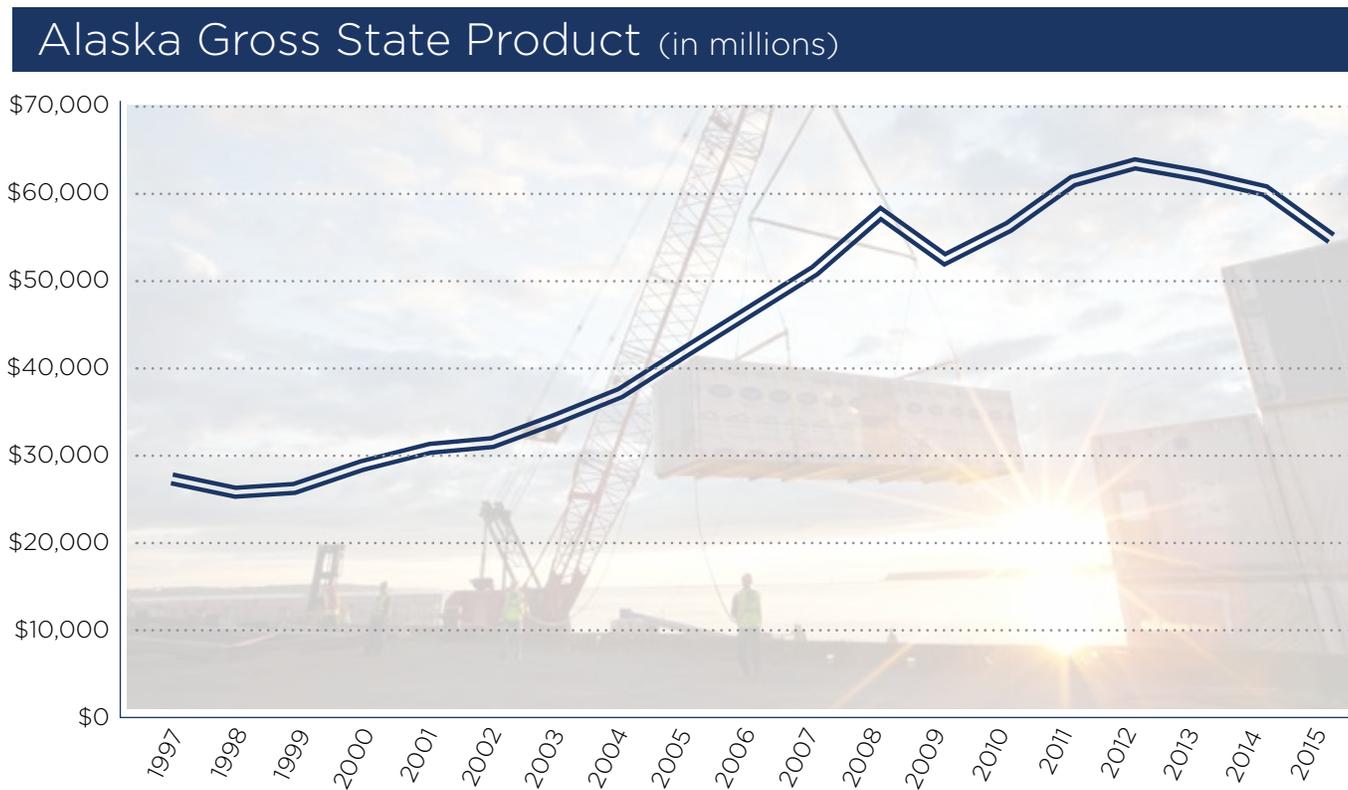


Figure 1: Alaska gross state product (in millions)

Source: U.S. Bureau of Economic Analysis

Business and community leaders around the state recognize a need to take proactive measures to grow a more diverse economy. Alaska's historical dependence on natural resources creates a boom-and-bust cycle, and collectively, Alaskans must work to mitigate painful downturns. Contractions in Alaska's oil and gas industry lead to fiscal shortfalls in state government, which diminish government support of public safety, infrastructure, education, and other core services, as well as assistance to municipal and tribal governments. The first step in mitigating Alaska's boom-and-bust economic cycle is through the creation and implementation of a CEDS. This strategic plan, *Northern Opportunity: Alaska's Economic Strategy*, represents an effort to determine the most promising areas of focus for the state's economic future.

The plan includes an honest review of what is needed to improve economic resilience, as well as an examination of Alaska's strengths, weaknesses, opportunities, and threats (a SWOT analysis). The collaboration identifies targeted strategies for growing the Alaska economy, as well as productive investments in the state's economic foundations given current budget realities. Finally, *Northern Opportunity* includes an evaluation framework which stakeholders will use to measure progress in building a stronger, more resilient economy. This framework will help judge the effectiveness of the plan's implementation over the upcoming five years.

This plan is intended to act as a living document that will guide the activities of the State of Alaska DCCED as well as key stakeholders in private sector business, government, and civic organizations throughout the state. *Northern Opportunity* will be updated annually to reflect changing conditions, and progress will be recorded against well-defined targets. This approach requires buy-in and participation from Alaskans around the state. Only through coordinated, systematic action can Alaska positively shape its own economic future.



# Goals and Action Items

The action items for this strategy have been developed through the process of community and industry engagement, with consideration of resilience issues and the SWOT analysis that was conducted as part of the process. Through community forums, the individual economic survey, business forums and the business survey, the project team began to formulate goal areas, objectives and action items, which were refined by sessions with the *Northern Opportunity* Strategy Committee and continued business and community engagement. Specific targets were arrived at through collaboration with industry and policy experts.



## Business Development

**GOAL:** Cultivate a resilient business climate that supports growth and expansion of existing and emerging industries.

### Measurements to be completed by 2022:

- Five percent increase in international exports.
- Increased capital investment and subsequent jobs in rural Alaska.
- Decrease of imports of manufactured commodities by five percent and increase of in-state food production of five percent.
- Increase of Alaska-grown share of food consumed by five percent.
- Increase in total number of visitors to state by five percent annually, demonstrated increase in rural communities' visitation, increase cruise ship visits by ten percent, increase shoulder season and winter visitation by five percent.
- Maintain number of commercial fishing permit holders held by residents, grow mariculture into a one billion dollar industry by 2045.
- Increase share of Alaska-built commercial vessels to 20 percent, increase Alaska ownership of commercial fishing vessels and quota, increase employment in maritime sector by ten percent.

- Increased production of oil, gas, and mineral resources, measurable increase in natural resource exploration projects and spending, three major projects with forward progress to production in five years.
- Increase in forestry employment by five percent, consistent annual increase in board feet harvested annually, increase biomass utilization for energy by ten percent.

**Objective: Increase the value of Alaska's international exports by five percent**

**Objective Partners:** Alaska Governor's Office of International Trade, World Trade Center Alaska, U.S. Commercial Service Alaska office, U.S. Small Business Administration (SBA), Export-Import Bank of the United States.

**Objective Resources:** Federal State Trade Expansion Program (STEP) grants, U.S. Commercial Service Gold Key programs.

**Action Items:**

- Utilize federal STEP grant funding to encourage small Alaska businesses to participate in international trade.
- Promote use of export assistance resources available to Alaska businesses through U.S. Commercial Service, SBA, Export-Import Bank, and Small Business Development Centers.

**Objective: Increase tools and resources available to rural businesses**

**Objective Partners:** Alaska Small Business Development Center (SBDC), UACED, ARDORs, State of Alaska DED, Alaska Department of Labor and Workforce Development.

**Objective Resources:** U.S. Department of Agriculture (USDA) Rural Development Grants, SBDC rural outreach and training programs, UACED and SBDC web resources, and Alaska Energy Authority (AEA) rural training resources.

**Action Items:**

- Develop consistent mechanisms to provide industry-specific training and technical assistance in rural areas utilizing Regional Training Centers, including distance delivery and a travel circuit for service providers.
- Create web resources targeted at rural business, and non-web resources to be made available in the case of connectivity gaps.
- Create new and support existing business mentorship programs in rural Alaska.
- Continue expanding Registered Apprenticeship programs to improve worker productivity and reduce turnover.

### Objective: Encourage import substitution with the promotion of Alaska made products

**Objective Partners:** DED, Alaska SBDC, National Institute of Standards and Technology Manufacturing Extension Partnership (NIST MEP), UACED.

**Objective Resources:** Buy Alaska Program, State of Alaska AK Loyal branding programs (Made in Alaska, Alaska Grown, Silver Hand).

#### Action Items:

- Develop metrics to better calculate the use of Alaskan-grown and Alaskan-made products and the impact on import substitution.
- Engage in a public relations campaign that highlights the importance and economic impact of Alaska products and services.
- Promote the programs of the state meant to highlight Alaska made products:
  - Alaska Grown (Alaska agriculture)
  - Made in Alaska (Items 51 percent or more made in Alaska)
  - Silver Hand (Alaska Native-made products)
- Decrease Alaska's food imports from 95 percent to 90 percent.
- Inform Alaska businesses of options for growth in import substitution.

### Objective: Increase the output and value of Alaska agriculture

**Objective partners:** Alaska Food Policy Council (AKFPC), UAF Cooperative Extension Service, State of Alaska Division of Agriculture, DED, USDA, Alaska Farmland Trust, Alaska SBDC Cooperative Development Center, Sustainable Southeast Partnership.

**Objective Resources:** Alaska Grown program, USDA financing, AKFPC, and Cooperative Extension tools and resources.

#### Action Items:

- Provide shared marketing of in-state agriculture through the Alaska Grown program.
- Establish accurate baseline measures for Alaska food consumption and production.
- Facilitate succession planning for farm business owners seeking to retire.
- Introduce youth to the business of farming to encourage interest in Alaska agriculture.
- Reduce barriers to entry by facilitating financing options to purchase agricultural lands and equipment.

- Maintain and increase capacity for processing, storage, and distribution.
- Where appropriate, assist in the formation of agricultural cooperatives to share marketing, processing, or other services.
- Explore options to increase the availability of land for cultivation.
- Provide technical and promotional assistance to high potential, emerging crops such as peonies, hemp fiber, and others.
- Facilitate the development of agricultural land trusts to increase the availability of land to prospective farmers.

**Objective: Grow the impact of Alaska's Visitor Industry in existing regions and market segments, and increase the impact of the industry to Alaska communities**

**Objective Partners:** Alaska Travel Industry Association, DED, American Indian Alaska Native Tourism Association, Regional Destination Marketing Organizations, ARDORs, U.S. Bureau of Indian Affairs.

**Objective Resources:** Cooperative marketing programs, potential Tourism Improvement District Legislation, USDA Rural Development, Community Tourism Assessment Model, Native American Tourism and Improving Visitor Experience (NATIVE) Act, Cruise Passenger Vessel Tax funds.

**Action Items:**

- Increase sustainable growth in emerging visitor industry segments: Cultural Tourism, Eco Tourism, Geo Tourism, Adventure Tourism, and Arctic Tourism.
- Grow rural and cultural tourism development by utilizing Community Tourism Assessment Models.
- Increase statewide cruise guests by ten percent.
- Upgrade port facilities to be compatible with larger next generation cruise ships.
- Increase peak season capacity by maximizing utilization of existing infrastructure, and new infrastructure investment.
- Increase shoulder season and winter visitor capacity and infrastructure by promoting Alaska specific products, iconic features, and events to targeted markets.

### Objective: Maximize employment and opportunity in Alaska's Seafood Industry

**Objective Partners:** United Fishermen of Alaska, Alaska Seafood Marketing Institute, Alaska Commercial Fishing and Agriculture Bank, Community Development Quota organizations, Pacific Seafood Processors Association, UAF Sea Grant Marine Advisory, Alaska Department of Labor and Workforce Development.

**Objective Resources:** Commercial fisheries loan programs, CDQ investments, Sea Grant resources and trainings.

#### Action Items:

- Ease barriers to entry in commercial fishing for Alaskans through increased utilization of public and private financing options.
- Increase resource value to Alaskans by performing value added activities (e.g. processing) in Alaska and supporting processing workforce development activities.
- Maintain the sustainability of Alaska's seafood resource for the benefit of Alaska industry participants (large and small operators) and all Alaskans.
- Address "graying of the fleet" through workforce development initiatives specifically targeted towards school age participants and leveraging Young Alaska Fishermen's Network / Young Fisherman's Summit.
- Grow the emerging mariculture and kelp farming industry in coastal regions of the state.
- Promote the sustainability of Alaska's fisheries resource.
- Increase the rate of Alaska hire in the seafood industry.

### Objective: Maximize opportunities in all aspects of the Alaska Maritime Sector

**Objective Partners:** Alaska Process Industry Careers Consortium, Alaska Workforce Investment Board, DED, ARDORs, National Institute of Standards and Technology's Manufacturing Extension Partnership, municipalities, Alaska Department of Labor and Workforce Development, Alaska ship and boat builders, AIDEA, Alaska Ocean Cluster Initiative.

**Objective Resources:** Federal Workforce Innovation and Opportunity Act (WIOA) funding, EDA funding for infrastructure, public-private partnerships.

#### Action Items:

- Position Alaska ship yards to benefit from the increased demand for ship restoration and new builds as the Alaska based fleet ages and requires replacement and refurbishment.

- Continue to develop the maritime industry support sector workforce by implementation of the Alaska Maritime Workforce Development Plan.
- Increase the use of existing regional repair and maintenance facilities for local vessel needs.
- Identify opportunities that take advantage of the increasing traffic through the Northwest Passage and increased resource development for the benefit of the maritime sector.
- Continue expansion of maritime Registered Apprenticeship programs.
- Continue expanding maritime vocational training programs that train Alaskans for jobs in the maritime sector.
- Utilize ongoing and existing analyses of Alaska's overall ocean economy, which will provide a framework for developing a long term, all-encompassing ocean economy strategy in Alaska.

**Objective: Strengthen existing resource extraction industries, including the Oil and Gas and the Mining Sectors**

**Objective Partners:** Alaska Oil and Gas Association, Alaska Miners Association, Resource Development Council Alaska, Council of Alaska Producers, Alaska Support Industry Alliance, DED, Alaska Minerals Commission, Alaska Native Corporations, Alaska Gasline Development Corporation, AIDEA.

**Objective Resources:** Alaska's congressional delegation, Alaska's abundant natural resources, AIDEA's infrastructure funding.

**Action Items:**

- Promote a consistent business environment that includes a stable tax regime, a development and exploration mentality at regulatory agencies, and encouragement of responsible oil, gas, and mining exploration and production.
- Market Alaska's vast resources to potential investors seeking new projects.
- Improve access to resources through improved infrastructure, and work with federal agencies on land access and potential onerous state and federal permitting requirements.
- Take advantage of potential opportunities associated with the increased access through the Northwest Passage, including spill response, emergency response, and search and rescue infrastructure needs.
- Support increased mapping to identify high potential areas for resource development.
- Identify "high priority" natural resource projects that are hindered by access to resources and make measurable progress moving them forward.

### Objective: Sustain and grow the timber and forest products industry in Alaska

**Objective Partners:** Alaska Division of Forestry, U.S. Forest Service, The Nature Conservancy, ARDORs and local economic development organizations, Cold Climate Housing Research Center, Resource Development Council, Sustainable Southeast Partnership, Wood Energy Task Group.

**Objective Resources:** Alaska Forestry Academy, Alaska Native Corporation forest lands.

#### Action Items:

- Promote and support the wood product manufacturing industry.
- Improve access to sustainable timber resources and inventories in Southeast Alaska.
- Support local timber industry specific workforce development programs and potential apprenticeships.
- Maintain existing timber industry infrastructure.
- Grow biomass energy use in Alaska by 10 percent.

### Objective: Create stronger alignment between workforce development and economic development programs and services.

**Objective Partners:** Alaska Workforce Investment Board, Alaska Department of Labor and Workforce Development, DED, ARDORs and local economic development organizations, University of Alaska, APICC, Alaska Vocational Technical Center, Tribal organizations.

**Objective Resources:** WIOA programs, regional CEDS plans, state and federal workforce funds.

#### Action Items:

- Support the Alaska Department of Labor and Workforce Development's implementation of the WIOA, calling for sector-specific strategies for health care, oil and gas, mining, construction, maritime, and transportation.
- Continually assess unmet workforce needs through business retention and expansion surveys and other outreach.
- To ensure Alaskans have the skills necessary to meet anticipated workforce needs, maintain awareness of existing apprenticeships, curriculums, and training programs and identify any unmet workforce development needs.
- Strengthen linkages between secondary schools' Career and Technical Education programs and employers' on-the-job training programs, including but not limited to Registered Apprenticeships.
- Continue expanding the number of college programs that award credit for Registered Apprenticeship programs.



## Finance and Investment

**GOAL:** Maximize the productive use of capital for Alaska business expansion

### **Measurements to be completed by 2022:**

- A formal report on sources and gaps in available capital for all business investment in Alaska.
- A developed training program for use of business crowdfunding and availability and deployment to regional partners and statewide businesses, a feasibility study on international microfinance programs applicable to rural Alaska.
- Adoption of consistent system similar to AIDEA's project vetting methodology for co-investment as a model for large scale public-private investments by four state agencies or public corporations in five years.
- Establish a state early stage fund that operates across a multiple of agencies, maybe located under the AIDEA umbrella as a separate fund, or capitalize a fund of funds program such as the Utah Venture Capital Enhancement Act.
- Deployment of \$10 million in EB-5 financing to projects in Alaska, demonstrated increased foreign investment in Alaska projects.
- Ten Alaska municipalities have deployed new financing tools or tax exemption programs for economic development projects, a measured increase in use of traditional project financing use.
- Demonstrated use of new tax incentive and abatement programs tied to economic development activities.
- Completed study on available tax based programs and their potential use in Alaska.

### Objective: Assess needs, maximize existing sources, and seek new sources of capital in Alaska

**Objective Partners:** AIDEA, U.S. Bureau of Indian Affairs, USDA, SBA, UACED, ARDORs, DED, Community Development Financial Institutions (CDFIs), AEA, AHFC.

**Objective Resources:** DED Finance section, EDA funding, private foundation funding, state corporation assets, Boston Consulting Group report completed in fall 2016.

#### Action Items:

- Conduct a formal assessment of capital availability for businesses at all stages of development in Alaska.
- Seek new sources of capital that spread out risk to multiple parties. (i.e. Bureau of Indian Affairs, USDA, U.S. SBA).
- Develop and utilize a consistent system similar to AIDEA's project vetting methodology for co-investment as a model for large scale public-private investments.
- Increase early stage business and project investment from state agencies.

### Objective: Expand use, availability, and knowledge of microfinance and crowdfunding

**Objective Partners:** DCCED's Division of Banking and Securities, statewide angel funds, Launch:Alaska, Alaska Small Business Development Center, The Foraker Group.

**Objective Resources:** Knowledge base distributed throughout nonprofit leaders, Statewide Small Business Development Centers, AIDEA, and The Foraker Group's education outreach.

#### Action Items:

- Expand public awareness of allowable uses of crowdfunding under recent legislation through promotional channels: web content, news media, and speaking engagements.
- Use international microfinance models to increase capital for small businesses in rural Alaska not eligible for traditional financing.

### Objective: Systematically attract and increase foreign direct investment

**Objective Partners:** Select USA, DED, Invest in the USA EB-5 trade association, ARDORs.

**Objective Resources:** Alaska EB-5 regional center.

#### Action Items:

- Utilize EB-5 foreign investment to finance projects in high unemployment areas of Alaska.
- Identify three priority investor nations on which to focus investment marketing.
- Identify three priority Alaska industries for foreign direct investment.
- Work closely with the federal SelectUSA program and participate in targeted promotional activities that reach out to target investment markets.

### Objective: Increase financing literacy among Alaska businesses and municipal governments

**Objective Partners:** Municipalities, Foraker Group, Alaska Community Foundation, Alaska Municipal Bond Bank Authority, University of Alaska, .

**Objective Resources:** Alaska Community Foundation Strengthening Organizations grants, DCCED's Division of Community and Regional Affairs, Alaska Municipal League.

#### Action Items:

- Hold municipal, tribal and borough focused listening sessions to assess and address financial system education needs.
- Educate municipalities and boroughs about the uses of financing tools and tax exemption programs for economic development.
- Identify gaps in financing literacy among Alaska businesses and address these gaps through education to increase the number of investible companies in Alaska.
- Facilitate a transition from grant funding to debt financing for community projects.
- Involve local Community Foundation Affiliate organizations in facilitation of organizational capacity building.
- Assist community organizations with credit worthiness in order to access debt financing.

**Objective: Implement tax incentive and abatement programs that specifically spur economic development projects**

**Objective Partners:** Municipalities, ARDORs, UACED, DED, private sector developers.

**Objective Resources:** Other jurisdictions' knowledge base and use of tax abatement programs that have not been utilized in Alaska.

**Action Items:**

- Explore the use of Tax Increment Financing for use in urban areas to finance economic development and community development projects.
- Assess the potential impact for additional tax-based incentives to spur economically beneficial development.



## Economic Development Infrastructure

**GOAL:** Build the transportation, energy, and technological foundations for economic growth

**Measurements to be completed by 2022:**

- The Broadband Task Force Report has been updated to reflect current technologies and changes in the broadband landscape of the state.
- Increase of access speed by 20 percent to 25 megabits per second.
- Identification of five specific business opportunities related to increased Arctic shipping.
- Increased port capacity that addresses impending Arctic needs.
- Increased efficiency in major shipping hubs by ten percent.
- Three top priority major maintenance needs for major shipping hubs are identified and met.
- Actions identified by the Interior Energy Project have been implemented.
- One to two percent reduction in fossil fuel consumption per year for electric and heat utilities.
- Implementation of Alaska's energy efficiency goals as outlined in House Bill 306.
- Implement the recommendations developed for the 2016 Alaska Affordable Energy Strategy.

### Objective: Improve access to statewide broadband

**Objective Partners:** Federal Communications Commission, Alaska Telephone Association, Alaska Broadband Task Force, Private sector telecommunication companies, ARDORs.

**Objective Resources:** National Telecommunications & Information Administration, Federal Communications Commission funding resources, upcoming private sector development projects that bring utilities to rural areas of Alaska.

#### Action Items:

- Update and implement key provisions from the Alaska Broadband Task Force Report.
- Encourage new federal infrastructure investment for critical broadband infrastructure needs.
- Utilize potential development projects in rural Alaska to meet surrounding community needs.

### Objective: Encourage improvement and development of intermodal hubs and ports

**Objective Partners:** ARDORs, Municipalities, U.S. Army Corps of Engineers, Alaska Department of Transportation, Alaska Military Force Advocacy and Structure Team (AMFAST).

**Objective Resources:** EDA, U.S. Department of Transportation, U.S. Army Corps of Engineers, NOAA, private sector investment.

#### Action Items:

- Improve port access and infrastructure in major Alaska shipping hubs.
- Expand development of port facilities in western and southwest Alaska that facilitate future opportunities related to increased Arctic shipping and business opportunities.
- Expand military infrastructure and associate research and development to support Arctic operations to include deep water ports and airfields.

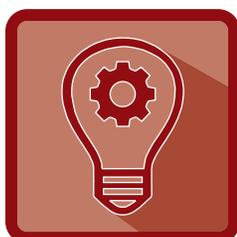
## Objective: Reduce the energy cost burden on Alaska businesses and households

**Objective Partners:** AEA, Alaska Power Association, regional power providers, AHFC, Cold Climate Housing Research Center, municipalities, Alaska Native Corporations.

**Objective Resources:** U.S. Department of Energy, SBA, U.S. Environmental Protection Agency's Energy Star Program, private sector development projects, Alaska Affordable Energy Strategy.

### Action Items:

- Utilize existing programs to increase residential and commercial heating efficiency statewide.
- Improve electricity infrastructure through upgrades of existing generation and distribution infrastructure.
- Identify the most efficient means of electricity production by region and encourage the development of these regional energy sources.
- Continue funding and implementation of the Interior Energy Project in Fairbanks.
- Identify new and leverage existing sources of debt financing for rural power projects.
- Utilize development projects in rural areas to create economies of scale for rural power and heating needs.
- Identify and use mechanisms to effectively leverage non-state funds.



## Entrepreneurship and Innovation

**GOAL:** Position Alaska to thrive in a technologically advanced global economy

### Measurements to be completed by 2022:

- All funds from the 49th State Angel Fund are deployed.
- Two angel funds or similar are making investments in businesses in rural Alaska with demonstrated investment in businesses outside of Anchorage.
- 1 Million Cups program exists in three communities around Alaska.
- Existing Global Entrepreneur in Residence Program at University of Alaska Anchorage.
- A study is produced that outlines workers and industries internally and externally that will be affected by the rise in automation. This study includes a strategy to attract new industry and place existing workers in these new fields in Alaska.

- Entrepreneurial resource book printed and distributed to eight Alaska communities, online distribution of 100 downloads.
- Three public-private working groups to monetize innovations in building technology, construction methods, microgrids and renewable energy, unmanned aircraft, remote sensing, and others developed for Alaskan conditions are formed.

**Objective: Increase the pipeline of bankable start-up companies in Alaska by 10 percent**

**Objective Partners:** Angel funds, University of Alaska Business Enterprise Institute, ARDORs, Kauffman Foundation, The Boardroom.

**Objective Resources:** Angel fund resources, existing technical assistance programs.

**Action Items:**

- Deploy \$9.8M from the Municipality of Anchorage's 49th State Angel Fund (49SAF) by 2019.
- Locate and leverage additional sources of private capital to expand 49SAF model outside of Anchorage.
- Develop Launch:Alaska into a world-class energy accelerator, graduating 30 companies with \$2.5 million in investment by 2019 through recruitment of scalable firms, intensive mentorship and validation, and relationships with the military, Alaska Native Corporations, utilities and the University of Alaska system.
- Feed regional business plan competitions into a statewide competition and expand similar resources into rural Alaska.
- Support and expand Alaska Startups (alaskastartups.com) a central, online statewide hub of startup information, events, resources, and partnerships.
- Conduct a needs assessment of the entrepreneurial space both in urban centers and rural regions.
- Extend entrepreneurship events like Startup Weekend, Startup Week, and 1 Million Cups to communities statewide, including rural hubs.
- Support and expand Global Entrepreneur in Residence program, bringing entrepreneurial talent to Alaska to build capacity and mentorship opportunities for Alaska entrepreneurs.
- Create and expand organized mentorship programs for all Alaska startup companies - ranging from small size to high growth companies.
- Create and expand coworking spaces in multiple statewide communities for entrepreneurs to gather, collaborate, learn, and grow companies together.

**Objective: Position Alaska workers and firms to thrive within global trends of automation, robotics, and other disruptive technologies**

**Objective Partners:** University of Alaska Business Enterprise Institute, DED, private sector entrepreneurs, Alaska Department of Labor and Workforce Development, U.S. Department of Labor.

**Objective Resources:** WIOA programs.

**Action Items:**

- Assess the industries in Alaska most likely to be immediately impacted by automation.
- Identify workers with potential to be attracted to Alaska and can utilize existing Alaska infrastructure to take advantage the changing trend.
- Develop a resiliency plan that uses disruptive technology to Alaska's advantage and that enables workers in affected industries.
- Continue expanding on-the-job training programs that help workers upskill for new jobs in evolving industries.

**Objective: Connect rural Alaska to the entrepreneurial resources of the urban centers**

**Objective Partners:** Alaska Department of Labor and Workforce Development's Job Centers, ARDORs, Alaska Small Business Development Centers, Launch:Alaska, Path to Prosperity, Alaska Native Corporations, Tribes, municipal governments.

**Objective Resources:** SBA, existing rural entrepreneurial resources.

**Action Items:**

- Continue expanding multi-employer apprenticeship programs that bring apprenticeship training resources to rural employers.
- Support rural entrepreneurs' awareness of and involvement in Alaska's "innovation pipeline" of annual startup support and networking activities.
- Support local business plan competitions in rural communities', which feed into larger state entrepreneur activities and competitions.
- Promote, celebrate, and spotlight rural entrepreneurs and startups through statewide media.

**Objective: Commercialize Alaska grown technologies and intellectual property to fuel start-up companies and high-skilled employment**

**Objective Partners:** University of Alaska, Small Business Development Centers, ARDORs, DED.

**Objective Resources:** Technologies under development specific to Alaska that can be monetized for the benefit of Alaska institutions.

**Action Items:**

- Link university technology transfer offices to entrepreneurs and companies with the ability to commercialize new technologies.
- Form public-private working groups to monetize innovations in building technology, construction methods, microgrids and renewable energy, unmanned aircraft, remote sensing, and other technologies developed for Alaskan conditions.
- Provide technical assistance to innovative companies seeking Small Business Innovation Research and Small Business Technology Transfer.
- Develop “proof of concept” centers or incubators to validate technologies with commercial potential.
- Encourage adoption of housing designs and construction methods developed for Alaskan conditions with export potential.
- Develop and refine microgrid and energy innovations to reduce the cost of energy for Alaskan communities.



## Economic Development Capacity Building

**GOAL:** Strengthen the ability of Alaska organizations to execute economic development initiatives that create jobs and investment

### Measurements to be completed by 2022:

- Statewide convening of private sector businesses and partners to assess statewide economic development efforts.
- Published review of current and potential economic development models for Alaska.
- Ten communities participating in Business Retention & Expansion programs.

### Objective: Improve the resiliency and health of existing businesses

**Objective Partners:** ARDORs, AEA, USDA, municipalities, local chambers of commerce.

**Objective Resources:** Executive Pulse software system, DED training program, USDA's Rural Development Energy Programs.

#### Action Items:

- Continue and expand the DED's Business Retention & Expansion program.
- Help businesses improve operational expenses through energy audits and other energy cost reducing measures.

### Objective: Create new statewide coordination mechanisms for economic and business development

**Objective Partners:** Statewide private sector businesses, ARDORs, AIDEA, International Economic Development Council (IEDC), University of Alaska Business Enterprise Institute, DED.

**Objective Resources:** EDA, DED, AIDEA, private sector businesses.

#### Action Items:

- Convene statewide business leaders to gauge desire for new statewide business development group or entity that remains consistent through political changes.
- Assess the potential for different statewide economic development models, such as business roundtables, public-private partnerships, state corporations, and others.
- Host economic development training events and venues for sharing of best practices.

- Provide a centralized source of resources and technical assistance that community and economic development organizations throughout the state can utilize for sustainability and growth.
- Expand a nimble network-based approach to economic and community development through frameworks such as Strategic Doing and Collective Impact.



## Quality of Life

**GOAL:** Improve the attractiveness and livability of Alaska communities to attract and to retain a quality workforce and to set the foundations for economic well-being

### Measurements to be completed by 2022:

- Anchorage Economic Development Corporation's (AEDC) metrics revised and adopted as measurements in eight statewide communities.
- Utilization of new metrics to inform and implement quality of life programs on a local level.
- Five rural communities participating in holistic approaches to rural community development, ten rural Alaska communities show quantitative improvement in housing conditions.
- Five percent increase in Alaskans who possess a post-secondary degree or credential.
- 90 percent high school graduation rate.
- Demonstrated growth in real median wages.
- Measured increase in Alaska communities integrating arts into their economies and community planning.

**Objective:** Improve community development foundations that influence economic development

**Objective Partners:** AEDC, ARDORs, municipalities, DCCED's Division of Community and Regional Affairs, Denali Commission, Alaska Native Corporations, Bureau of Indian Affairs, Alaska Department of Labor and Workforce Development, Alaska Department of Health & Social Services, AMFAST.

**Objective Resources:** AEDC's Live. Work. Play initiative metrics, USDA Rural Development, Alaska Municipal Conference, AHFC, Alaska Department of Natural Resources' Division of Parks & Outdoor Recreation, DCCED's Division of Insurance.

**Action Items:**

- Utilize AEDC's Live.Work.Play Initiative's matrix as a template to identify key livability issues in Alaska communities.
- Assess options for reducing the cost of health insurance for individuals and firms.
- Assess variables that affect worker well-being, such as education, community safety, recreation, and housing; use these to define metrics.
- Expand and promote recreational access to public lands.
- Improve the quality and availability of housing throughout the state to reduce costs and alleviate overcrowding.
- Assess options to improve the accessibility and affordability of child care.
- Support developing intergovernmental and public-private military installation-community partnerships, focused on reducing costs and risks at Alaska military facilities.

**Objective: Improve quality of life metrics in Rural Alaska**

**Objective Partners:** Denali Commission, U.S. Army Corps of Engineers, U.S. Department of Housing and Rural Development (HUD), USDA Rural Development, Association of Village Council Presidents, ARDORs, Cold Climate Housing Research Center, DCCED's Division of Community and Regional Affairs, Bureau of Indian Affairs.

**Objective Resources:** USDA grants, HUD block grants.

**Action Items:**

- Pursue funding for villages requiring relocation due to coastal or riverbank erosion.
- Leverage new funding sources and mechanisms to build newer, higher quality housing in rural hub communities and villages.
- Expand "Holistic Approach" model from the Alaska community of Oscarville project to other rural communities, aligning economic development priorities with energy, transportation, water/wastewater, housing, and other community development needs.

## Objective: Strengthen educational offerings for Alaskans

**Objective Partners:** Alaska Commission on Postsecondary Education, Alaska Department of Labor and Workforce Development, University of Alaska, local school districts.

**Objective Resources:** WIOA funds, sector-based state workforce plans.

### Action Items:

- Support the goal of 65 percent of Alaskans possessing post-secondary degree or certificate by 2025.
- Improve coordination between secondary training programs and post-secondary on-the-job training programs.
- Increase support for career and technical education programs statewide.

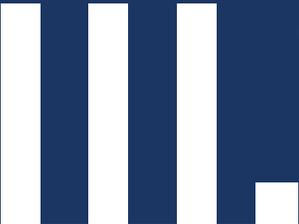
## Objective: Strengthen and grow the existing Arts Industry in Alaska

**Objective Partners:** Alaska State Council on the Arts, Rasmuson Foundation, Alaska Community Foundation, Alaska Native Corporations, ARDORs, The Foraker Group.

**Objective Resources:** Public and private funding for arts programs, statewide K-12 art curricula, Alaska Native Corporations' art programs, Silver Hand program, Alaska Native Artist Resource Workbook.

### Action Items:

- Develop partnerships with agencies and organizations promoting cultural tourism and economic development.
- Provide business training opportunities for artists online or in person, including train the trainer programs to widen the reach of such programs.
- Conduct Informational campaigns regarding ivory and marine mammal products aimed at artists, stores, customers to explain the law, ensure legality of purchasing legally produced and sold ivory and marine mammal products.
- Support professional development for teaching artists, arts educators, classroom teachers, and administrators.
- Actively encourage and support Alaska Native Arts, culture, language, history, and respect across all educational venues and institutions.



# Geography

Alaska is the both the northernmost and westernmost state in the United States. The Canadian provinces of British Columbia and the Yukon Territory border the state to the east. The westernmost point, Attu Island, shares a maritime border with the Russian Federation. To the north are the Chukchi and Beaufort seas, and the vast Arctic Ocean. Alaska is the largest state by area, the third least populous, and the least densely populated of the 50 states. Roughly 40 percent of Alaska's residents live in Anchorage, the state's largest city.

Alaska has 34,000 miles of marine shoreline, more than any other state and as much as the rest of the country combined by some measures.<sup>1</sup> It is also home to more than three million lakes, marshlands, and wetlands.<sup>2</sup> Permafrost covers almost 10,000 square miles. Glacial ice covers a total of 28,000 square miles of Alaska (5 percent),<sup>3</sup> with 16,000 square miles of land and 1,200 square miles of tidal zones being covered in glacier ice.

Alaska is home to numerous mountain ranges. The Alaska Range is approximately 670 miles long,<sup>4</sup> and includes Denali, the highest mountain peak in North America at 20,310 feet.<sup>5</sup> The Brooks Range to the far north spans about 620 miles and separates Alaska's forested interior from Arctic tundra.<sup>6</sup> Coastal mountain ranges include the Wrangell-St. Elias and Chugach ranges.

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1 United States, Department of Commerce, NOAA Office for Coastal Management. (n.d.). *Shoreline Mileage Of the United States*. Retrieved from <https://coast.noaa.gov/data/docs/states/shorelines.pdf>

2 State of Alaska, Department of Natural Resources, Division of Mining, Land & Water. (n.d.). *Surface Water*. Retrieved from <http://dnr.alaska.gov/mlw/water/hydro/components/surface-water.cfm>

3 Molnia, B.F., 2008, *Glaciers of North America -- Glaciers of Alaska*, in Williams, R.S., Jr., and Ferrigno, J.G., eds., *Satellite image atlas of glaciers of the world*: U.S. Geological Survey Professional Paper 1386-K, 525 p. [pubs.usgs.gov/pp/p1386k/pdf/O2\\_1386K\\_part1.pdf](https://pubs.usgs.gov/pp/p1386k/pdf/O2_1386K_part1.pdf).

4 Ibid.

5 Ibid.

6 Ibid.

## A. Alaska's Economic Regions

Alaska's regions have been defined in various ways using differing boundaries. This document uses the Alaska Department of Labor and Workforce Development's definitions of the state's economic regions, which divides the state into six regions: Northern, Interior, Anchorage/Mat-Su, Gulf Coast, Southwest, and Southeast.

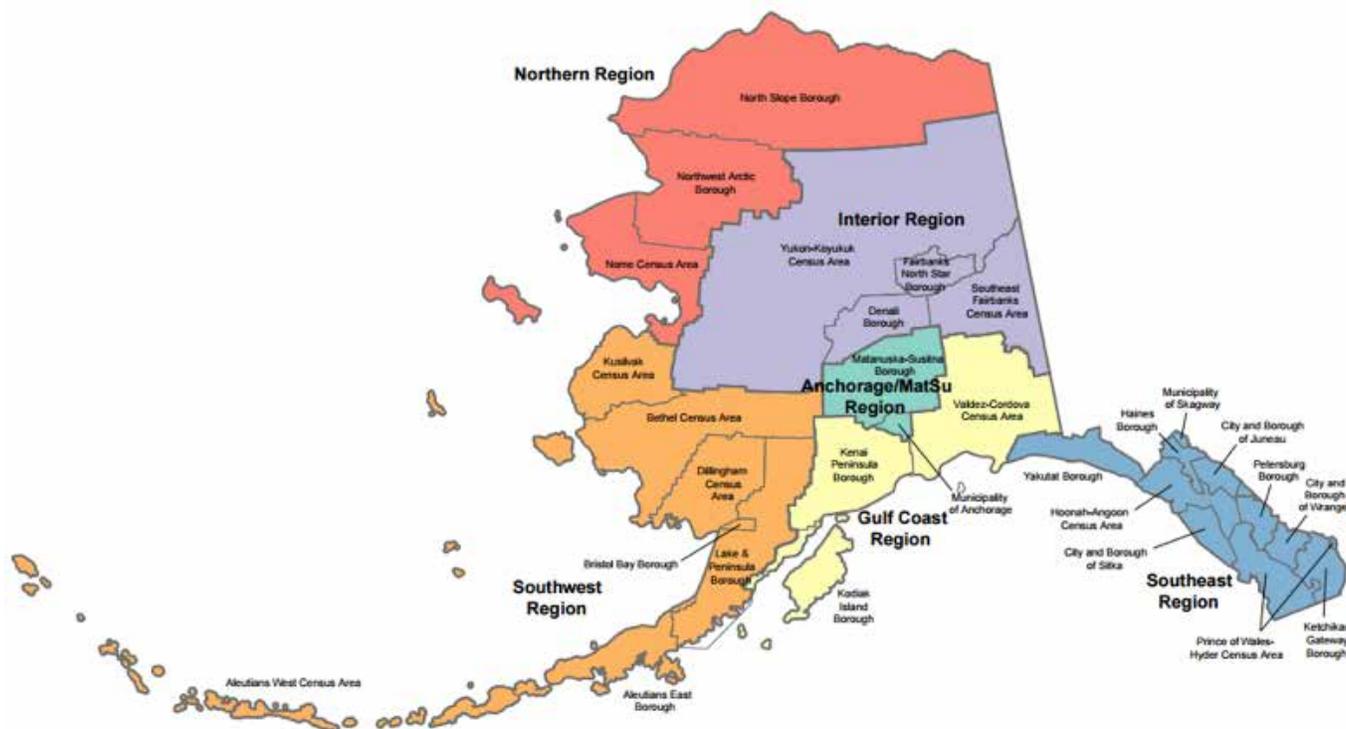


Figure 2: Alaska's economic regions

Source: Alaska Department of Labor and Workforce Development

**The Northern Region** includes the North Slope and northwest portions of the state, with the largest cities being Barrow, Kotzebue, and Nome. With the exception of the highway connecting Fairbanks to Prudhoe Bay, the region is disconnected from the road system and relies mostly on waterways and small airports for transportation. The predominant Alaska Native cultures are the Inupiaq and Yup'ik; large mammals such as whales, walrus, seals, caribou, moose, and others have anchored the inhabitants' subsistence way of life for millennia. Home to some of the continent's largest oilfields, the major industries by employment are oil and gas development followed by mining and professional services.<sup>7</sup>

**The Interior** includes a vast section of Alaska's heartland, crisscrossed by huge rivers and bounded to the south by the Alaska Range. Its largest city is Fairbanks and the road system connects Fairbanks to Canada, Prudhoe Bay, and Southcentral Alaska. Fairbanks is also home to an international airport and the terminus of the Alaska Railroad System. The predominant Alaska Native cultural group is Tanana Athabascan. Military bases, the University of Alaska, mining, oil and gas, and the visitor industry all have a major presence in the region. The largest employment sectors are education and health, retail trade, and accommodation and food services.<sup>8</sup>

<sup>7</sup> United States, Department of Labor, Bureau of Labor Statistics. *Quarterly Census of Employment and Wages Location Quotient*. 2017. [www.bls.gov/cew/cewlq.htm](http://www.bls.gov/cew/cewlq.htm).

<sup>8</sup> Ibid.

**Anchorage/Matanuska-Susitna (Mat-Su)** is home to more than half of the state's population, with Anchorage being the largest city and the Mat-Su Valley to its north being the fastest growing part of the state. The region is Alaska's best connected region, with the Port of Anchorage, Ted Stevens Anchorage International Airport, and the Alaska Railroad servicing the area. As such, it is the commercial center of the state. Traditionally the area was home to the Dena'ina Athabascan, and now hosts significant numbers from all of the state's indigenous groups. Economically diverse compared to the rest of the state, the Anchorage and Mat-Su economy is closely tied to government, oil and gas, international air cargo, and the visitor industry. Major employment sectors in the region are health care and social assistance, retail trade, and accommodation and food service.<sup>9</sup>

**The Gulf Coast Region**, which consists of Kodiak Island, the Kenai Peninsula, and Prince William Sound, is an economically diverse region with abundant natural beauty and deep ties to fisheries and the visitor industry. The predominant Alaska Native cultures are Alutiiq and Dena'ina Athabascan. The major communities are Kenai, Kodiak, and Valdez. The Kenai Peninsula is on the road system and connected by the Alaska Railroad and The Alaska Marine Highway System. Communities in Prince William Sound are serviced by ports or roads that may be closed during the winter months, and airports that are used year-round. The largest employment sectors are health and social assistance, retail trade, and food manufacturing.<sup>10</sup>

**Southwest Alaska** spans some of the greatest distances in Alaska, ranging from Attu Island in the far west through the Yukon-Kuskokwim Delta and onto the Alaska Range in the east. The Aleutian Islands are serviced by the Alaska Marine Highway System and the region depends heavily on aviation and maritime transportation. Southwest Alaska is the traditional home of the Yup'ik people of the Yukon-Kuskokwim and Bristol Bay regions, as well as the Aleut people of the Aleutians. Many of the far-flung communities depend on fishing for subsistence as well as commerce, as the region includes the rich fisheries of the Bering Sea and Bristol Bay. Outside of the fishing industry, the region depends heavily on public sector spending to drive the economy. The largest employment sectors are food manufacturing (fish processing), retail trade, and transportation and warehousing.<sup>11</sup>

**Southeast Alaska** has the mildest climate in the state, and is known for its lush temperate rainforest and dependence on the ocean for transportation and commerce. The major population centers are Juneau (also the state capital), Ketchikan, and Sitka. The region relies heavily on the Alaska Marine Highway System, as well as aviation for transportation, because most of the region is not connected to the road system. The predominant Alaska Native cultures are Tlingit, Haida, and Tsimshian. Fisheries, the visitor industry, and state government are the major economic drivers. By employment, the largest sectors are retail trade, health care and social assistance, and accommodation and food services.<sup>12</sup>

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9 Ibid

10 Ibid

11 Ibid

12 Ibid

## B. Land Ownership

The federal government retains about 222 million acres (over 60 percent) of the land in Alaska. Federal lands in Alaska include national parks, national forests, wildlife refuges, military lands, and land held by the Bureau of Land Management for a variety of purposes.<sup>13</sup> Access to development on federal land is an ongoing issue in Alaska, as considerable oil, gas, mineral, and timber resources exist or show strong potential in many of these places. The coastal plain of the Arctic National Wildlife Refuge (ANWR) for instance, has long been believed to host significant quantities of oil and gas, and the Tongass National Forest once supported a major timber industry in Southeast Alaska.

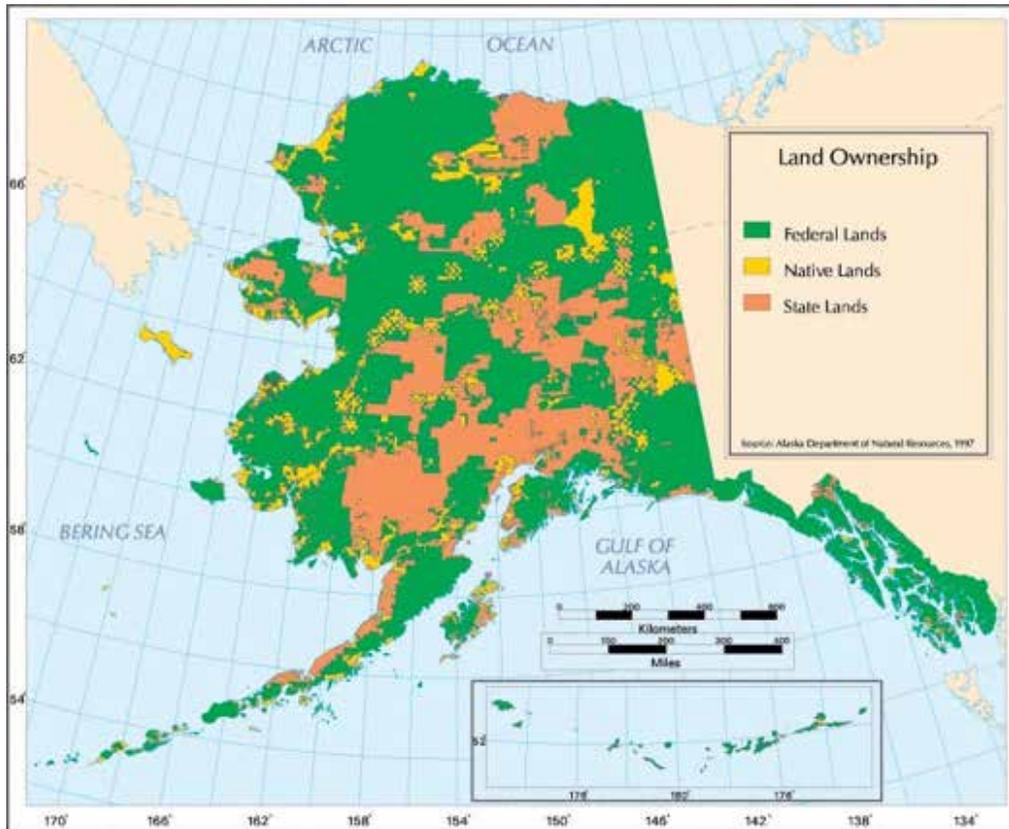


Figure 3: Land ownership in Alaska

Source: Alaska Humanities Forum

Federal land ownership imposes constraints as well as advantages for economic development. Resources on these lands often cannot be easily developed. On the other hand, national parks such as Denali, Katmai, and Glacier Bay have notable economic significance as they attract millions of annual visitors. Military bases, the largest of which are Army and Air Force bases located near Anchorage and Fairbanks, occupy large land holdings near those urban centers and generate considerable economic opportunity.

The Statehood Act of 1958 granted 104.5 million acres (about 25 percent of the state's total landmass) to the State of Alaska and in certain instances, the state cedes that land to local municipalities and boroughs. In 1971, the Alaska Native Claims Settlement Act (ANSCA) granted 44 million acres (over 10 percent of the state's total landmass) to 12 newly-created Alaska Native Corporations. A 13th corporation based in Seattle, Washington was later created for Alaska Natives residing outside of Alaska, and received a cash settlement. Excluding Native lands, less than one percent of land ownership in Alaska is private.<sup>14</sup>

<sup>13</sup> State of Alaska, Department of Natural Resources, Division of Mining, Land & Water. (2000, March). *Fact Sheet: Land Ownership in Alaska*. [http://www.dnr.alaska.gov/mlw/factsht/land\\_fs/land\\_own.pdf](http://www.dnr.alaska.gov/mlw/factsht/land_fs/land_own.pdf).

<sup>14</sup> Ibid.

## C. Native Cultures of Alaska

According to the Alaska Native Heritage Center, an educational and cultural institution located in Anchorage: "Alaska's Native people are divided into 11 distinct cultures, speaking 11 different languages and twenty-two different dialects."<sup>15</sup> The 11 cultures are organized into five cultural groupings:

1. Athabascan
2. Alutiiq (Sugpiaq) and Unangax
3. Cup'ik and Yup'ik
4. Eyak, Haida, Tlingit, and Tsimshian
5. Inupiaq and St. Lawrence Island Yupik

These five groupings encompass cultures that share similar practices as well as geographic proximity.<sup>16</sup> While there are unique characteristics within each specific region and culture there are also similarities among Alaska Native cultures including a deep connection to traditional lands, a subsistence lifestyle, and use of local materials for clothing and shelter purposes.<sup>17</sup> Additionally, governance was often decentralized, with most clans, families, or villages resolving issues through traditional customs and practices.

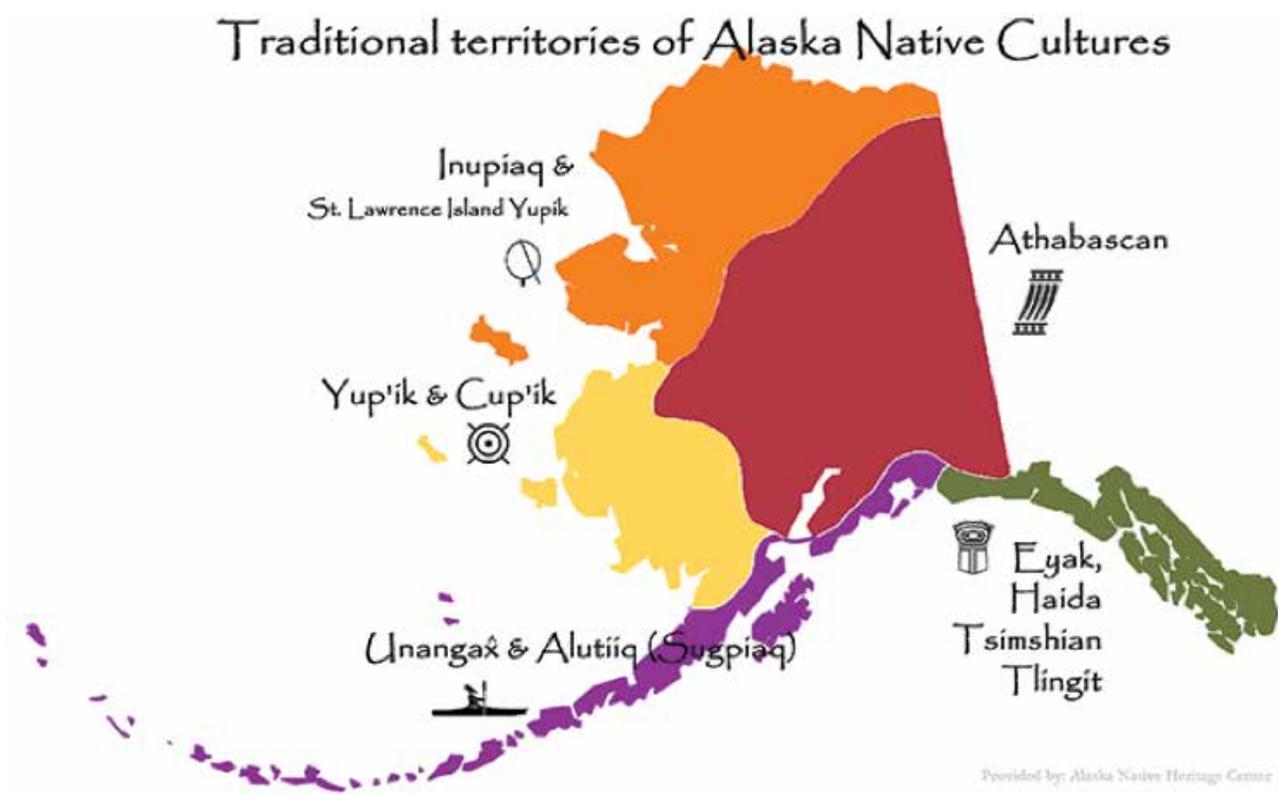


Figure 4: Traditional territories of Alaska Native cultures

Source: Alaska Native Heritage Center

<sup>15</sup> Alaska Native Heritage Center Museum. *Cultures of Alaska*. (n.d.). Retrieved January 4, 2016, from <http://www.alaskanative.net/en/main-nav/education-and-programs/cultures-of-alaska/>

<sup>16</sup> Ibid.

<sup>17</sup> Ibid.

Various colonial powers such as Spain, Britain, and Russia interacted with the Alaska Native peoples beginning in the 1700s, sometimes establishing trade routes and posts, and often in search of the elusive Northwest Passage. European involvement in Alaska began with Russian fur traders in the mid-late 1700s and led to a profound impact on the religious and cultural practices of the coastal communities of Alaska Natives, as many were forced or coerced into taking part in the fur trade. Many Alaska Native groups endured subsequent hardship as a result of epidemics, discrimination, attempts to eliminate the use of traditional languages, and in some cases the depletion of fish and game animals by settlers.<sup>18</sup>

Today, Alaska Natives make up roughly 15 percent of the state's population, the largest Native American share of any state.<sup>19</sup> Alaska Native Corporations are the largest private landowners in Alaska. There are 12 regional Alaska Native Corporations (listed below). In addition, there are approximately 250 village and urban corporations affiliated with the regional corporations. With business units operating in government contracting, oil and gas, mining, real estate, telecommunications, and other areas, Alaska Native Corporations are major economic players in the state's economy.

- **The Aleut Corporation, representing the Unangax (Aleut) people of Aleutian Islands in Southwest Alaska.**
- **Arctic Slope Regional Corporation, representing Inupiaq shareholders of the North Slope in the Northern region.**
- **Bering Straits Native Corporation, serving Inupiaq and Yup'ik shareholders in the Norton Sound area of the Northern region.**
- **Bristol Bay Native Corporation, representing Yup'ik, Athabascan, Alutiiq, and Unangax shareholders of the Bristol Bay area of Southwest Alaska.**
- **Calista Corporation, serving Yup'ik and Athabascan shareholders in the lower Yukon and Kuskokwim drainages in Southwest Alaska.**
- **Chugach Corporation, serving the Alutiiq and Eyak people of the Prince William Sound area of the Gulf Coast region.**
- **Cook Inlet Region Incorporated, with shareholders from numerous Alaska Native groups but holding lands in traditional Dena'ina Athabascan territory in the Anchorage/Mat-Su and Gulf Coast regions.**
- **Doyon, Inc., serving Athabascan shareholders in the Interior region.**
- **Koniag, Inc., with Alutiiq/Sugpiaq shareholders with ancestral ties to the Kodiak Archipelago in Southwest Alaska.**
- **NANA Regional Corporation, with Inupiaq shareholders in the Northwest Arctic area of the Northern region.**
- **Sealaska Corporation, with a shareholder base of Tlingit and Haida tribal members in Southeast Alaska.**

<sup>18</sup> Alaska Humanities Forum. *Alaska's Cultures*. (n.d.). Retrieved January 6, 2016, from <http://www.akhistorycourse.org/alaskas-cultures/table-of-contents>

<sup>19</sup> United States, Department of Commerce, Census Bureau. (2016). *QuickFacts Alaska*. Retrieved January 6, 2016, from <https://www.census.gov/quickfacts/fact/table/AK/PST045216>

# IV. Economic Profile

After roughly two decades of relative stability and prosperity, Alaska's economy began showing signs of contraction following the collapse of oil prices in the summer of 2014. The price drop combined with a long-term trend of declining oil production resulted in a state government budget deficit of more than \$3 billion. This brought to the forefront a lack of economic diversity and resilience, as weakness in one sector exerted strong negative pressure on the rest of the economy, even while sectors like the visitor industry, mining, and fisheries showed growth or stability. This section will provide an overview of the state's economic structure and recent performance to outline the current situation as well as prospects for future growth. Key points about the state economy include:

- A high degree of dependence on oil and federal spending, which together account for a large majority of jobs in Alaska (directly and indirectly).
- Strong economic specialization in resource extraction, which includes oil and gas, mining, timber, and fisheries.
- Declining economic output, as measured by Gross State Product (GSP). By this measure, the Alaska economy has been shrinking since 2012.
- Unusually low levels of employment in manufacturing and agriculture compared to the national average.
- A statewide unemployment rate that is usually higher than the national rate, but less sensitive to recessions at the national level (see Figure 5).
- While some parts of the state are generally high-income with low unemployment, others show consistently high rates of joblessness. Many of these are in rural Alaska.
- Steady growth is projected in visitor industry-related sectors and healthcare.
- Relatively high wages, which have grown in real terms over most of the last 40 years, and low income inequality.

While unemployment rates vary based on region, overall Alaska has had relatively steady unemployment rates compared to the U.S. average. However, that changed around 2013, with Alaska's unemployment rate surpassing those of the U.S.

## Unemployment in Alaska and the U.S.

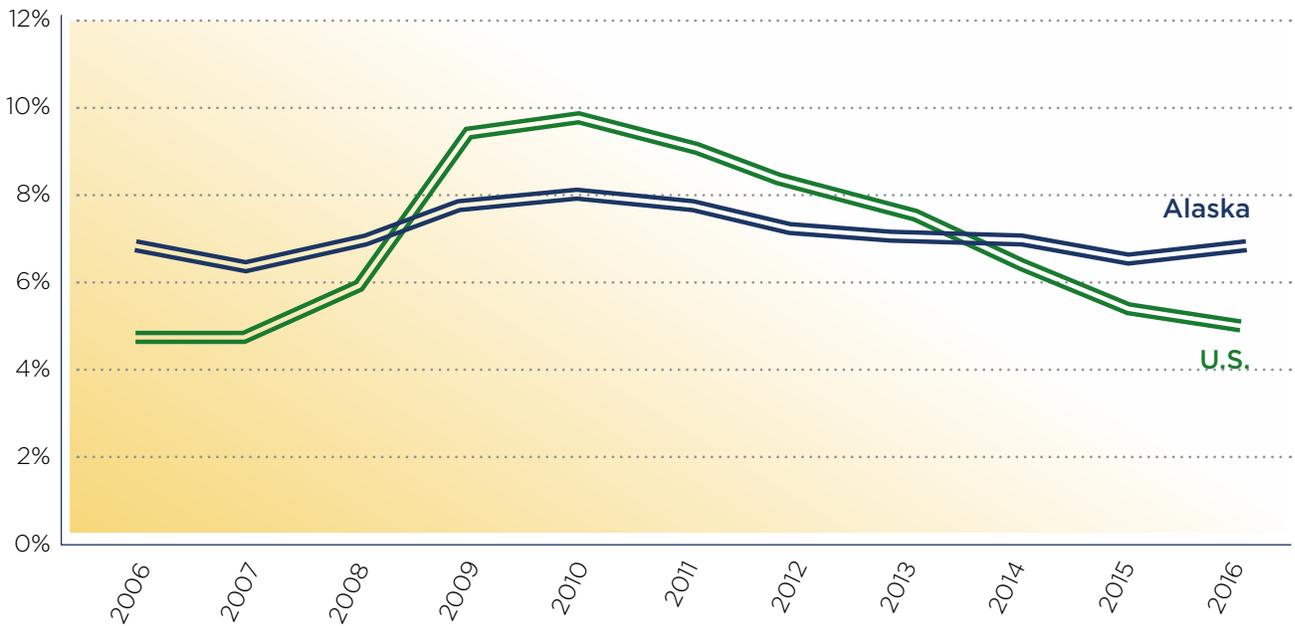
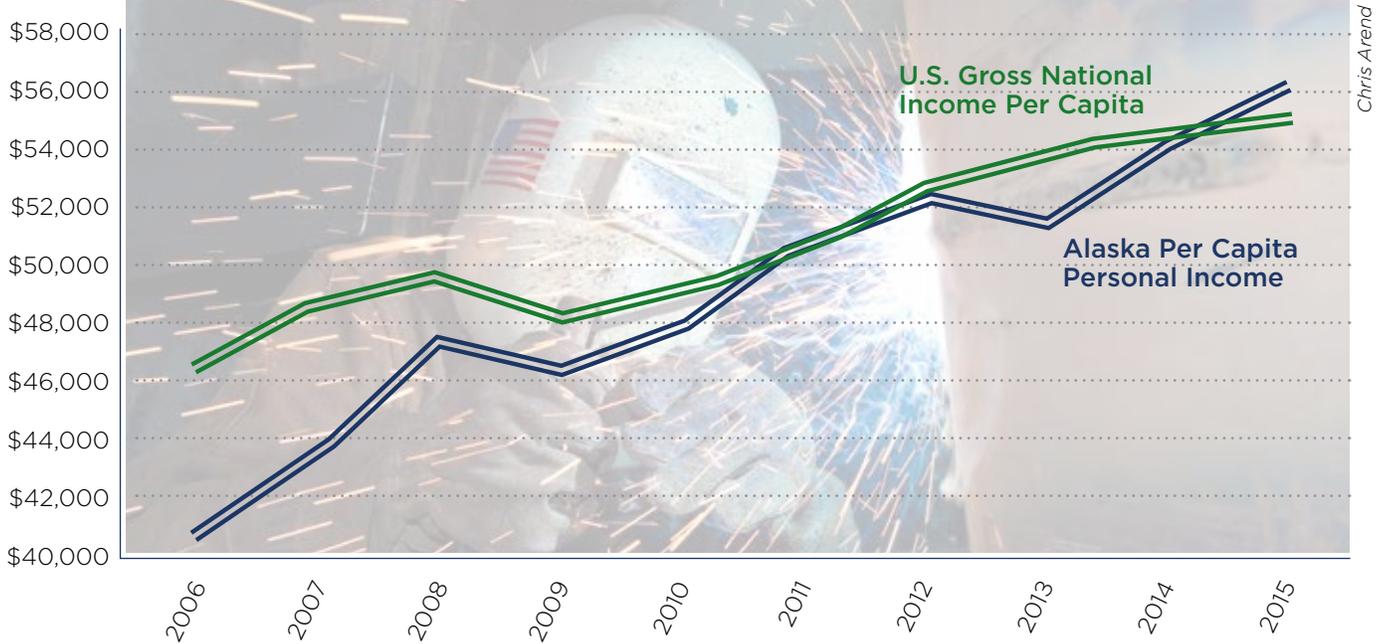


Figure 5: Unemployment in Alaska and the U.S.

Source: Alaska Department of Labor and Workforce Development and U.S. Bureau of Labor Statistics

While some parts of the state have higher concentrations of high-income earners, as mentioned above, the overall per capita income for Alaska has been on the rise. With the exception of the decline in per capita income from 2011-2013, Alaska has kept pace, and in 2014 surpassed the U.S. per capita income figure.

## Alaska and U.S. per capita income



Chris Arend

Figure 6: Alaska and U.S. per capita income

Source: Alaska Department of Labor and Workforce Development

## Economic Background

A majority of jobs and income in the state economy are due, directly or indirectly, to money flowing into Alaska from outside the state. The base sectors of the economy are those that bring money to Alaska, which then circulates within the state as goods and services are sold, producing additional economic activity. As mentioned previously, Alaska's economy is heavily dependent on two base sectors, which are federal government and petroleum. Economist Scott Goldsmith of the University of Alaska Anchorage Institute for Social and Economic Research (ISER) defines five categories of basic sectors, which collectively account for all inflows of money to Alaska, enabling all other economic activity. While this analysis has not been updated since 2010, the basic structure of the state economy has not changed. Relative contributions of each are as follows:<sup>20</sup>

- **Federal government**, which includes military spending, federal employment, benefits and transfer payments like Social Security, and healthcare spending. Collectively, federal spending accounted for 35.3 percent of all Alaska jobs either directly or indirectly in the 2010 analysis.
- **Petroleum**, including the production of crude oil, state and local revenues, as well as income from the Alaska Permanent Fund. The Alaska Permanent Fund was created to capture proceeds and royalties from production of Alaska's natural resources. The petroleum industry accounted for 31.2 percent of employment.
- **Traditional resources**, consisting of seafood, mining, timber, and agriculture. Together, these accounted for 13.1 percent of Alaska jobs.
- **New resources**, which include visitor industry, air cargo, and other manufacturing or services are responsible for a similar share of employment as traditional resources, at 13.3 percent.
- **Personal assets**, including income from retirees and non-earned income such as investments, contributed 7.2 percent of employment.

Petroleum and federal spending together are responsible for creating roughly two-thirds of all jobs in Alaska, with all other drivers contributing to the remaining third. For this reason, the state economy is sometimes characterized as an off-balance three-legged stool, which highlights the lack of a diverse economic base.

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<sup>20</sup> Goldsmith, O. S. (2010, March). *Structural Analysis of the Alaska Economy: What are the Drivers?* (Rep.). ISER. Retrieved <http://hdl.handle.net/11122/4287>

## Ties to the Global Economy

Alaska has had a role in the global economy since the late 1700s, when Russian fur traders first traded Alaska sea otter pelts with the Chinese. Sale of natural resource commodities to world markets has been an economic theme ever since, and today the state's major international exports are seafood, minerals and ores, and petroleum. Combined, these three categories account for over 90 percent of the state's exports. The largest contributors to the "other" category are forestry products and transportation equipment.<sup>21</sup>

## Alaska Export Values by Industry in 2015

Industry	2015	Total
Seafood	\$2.4 B	53.0%
Minerals and Ores	\$1.5 B	31.9%
Oil and Gas	\$246 M	5.3%
Petroleum and Coal Products	\$163 M	3.5%
Other	\$290 M	6.3%
<b>Total</b>	<b>\$4.6 B</b>	<b>100%</b>

Table 1: Alaska export values by industry in 2015

Source: International Trade Administration, U.S. Department of Commerce.

Breaking down Alaska's exports by specific product offers further detail. Zinc is the state's single most valuable export, sourced from Red Dog Mine, located in the Northwest Arctic region of the state with one of the largest known reserves of zinc in the world.<sup>22</sup> Various seafood and petroleum products, (which sometimes follow inconsistent classifications) make up most of the remainder of international exports, as shown below.

## Alaska's Top 10 Exports in 2015

Rank	Description	2015 Value (in Millions)	Share of Total
1	Zinc ores and concentrates	\$898	20.5%
2	Fish meat, frozen	\$374	8.5%
3	Lead ores and concentrates	\$317	7.2%
4	Alaska Pollock fillets, frozen	\$299	6.8%
5	Pacific Salmon, frozen	\$281	6.4%
6	Cod, frozen	\$267	6.1%
7	Fish livers and roe, frozen	\$256	5.8%
8	Fish, frozen (other)	\$246	5.6%
9	Natural gas, liquefied	\$188	4.3%
10	Petroleum (bitumen)	\$163	3.7%

Table 2: Alaska's top 10 exports in 2015

Source: U.S. Census Bureau

<sup>21</sup> United States, Department of Commerce, International Trade Administration. *2016 NAICS Total All Merchandise Exports from Alaska to World*. Retrieved from <http://tse.export.gov/tse/>

<sup>22</sup> NANA Regional Corporation, Inc. *Red Dog Mine*. (n.d.). Retrieved December 8, 2016, from <http://www.nana.com/regional/resources/red-dog-mine/>

Alaska maintains strong international trading relationships with Pacific Rim countries. Six of the top 10 importers of Alaska goods are on the western edge of the Pacific Rim, and account for almost 70 percent of Alaska's exports. The state's top export markets are as follows:

## Alaska's Top Export Partners

Rank	Trade Partner	% Value of All Alaska Exports
1	China	26.1%
2	Japan	20.9%
3	South Korea	15.9%
4	Canada	9.1%
5	Germany	6.0%
6	Spain	3.3%
7	Netherlands	2.6%
8	Malaysia	2.3%
9	Taiwan	2.3%
10	Australia	1.9%

Table 3: Alaska's top export partners

Source: International Trade Administration, U.S. Department of Commerce

A similar mix of commodities is exported to the Pacific Rim, Europe, and Canada, with some exceptions. Virtually all of Alaska's oil and gas exports, for instance, go to East Asia. While Europe and the Pacific Rim are prolific consumers of Alaska seafood, Canada imports small amounts of seafood, ores and minerals.<sup>23</sup>

Alaska's import partners closely match its export partners: China, Japan, South Korea, Canada, and Taiwan were the top trade partners in both categories in 2015. Seven of the top 10 trading partners are located on the Pacific Rim, and account for 67 percent of all Alaska imports.<sup>24</sup>

## Alaska's Top Import Partners

Rank	Trade Partner	% Value of Alaska Imports
1	China	26.6%
2	Canada	24.5%
3	Japan	21.2%
4	South Korea	13.2%
5	Taiwan	2.7%
6	Russia	1.9%
7	Mexico	1.3%
8	United Kingdom	1.2%
9	Singapore	1.1%
10	Thailand	0.7%

Table 4: Alaska's top import partners

Source: International Trade Administration, U.S. Department of Commerce.

<sup>23</sup> United States, Department of Commerce, International Trade Administration. *2016 NAICS Total All Merchandise Exports from Alaska to World*. Retrieved from <http://tse.export.gov/tse/>

<sup>24</sup> United States, Department of Commerce, Census Bureau. *State Import Data (State of Destination)*. Retrieved from <https://usatrade.census.gov/>

# V. Demographics

With a population of just under 740,000 people, Alaska is one of the least populated U.S. states, and has the lowest density in the nation. The small population contributes to the state's "frontier" character, as vast regions are uninhabited or dotted with small villages. It also places important constraints on business development, as employers often note the limited availability of a qualified local workforce. The small population also means the in-state market for goods and services is relatively small, which limits the scalability of firms unless they have the ability to invest out-of-state to access new markets. Key trends characterizing Alaska's demographics include:

- **Transient nature of the population**, with a large share of residents having been born elsewhere. Jobs in military, construction, oil and gas, the visitor industry, and fisheries attract new arrivals to the state every year.
- **Population growth slowdown**, which is likely associated with the current economic recession and viewed as a negative indicator (see Figure 8).
- **A large Alaska Native share of the population**, many of whom are located in rural parts of the state.
- **Concentrated population**, with Southcentral Alaska hosting the majority of the state's population at 401,635 residents, compared to the closest two regions; the Interior Economic Region and Southeast Economic Region at 113,154 and 73,812 residents respectively.

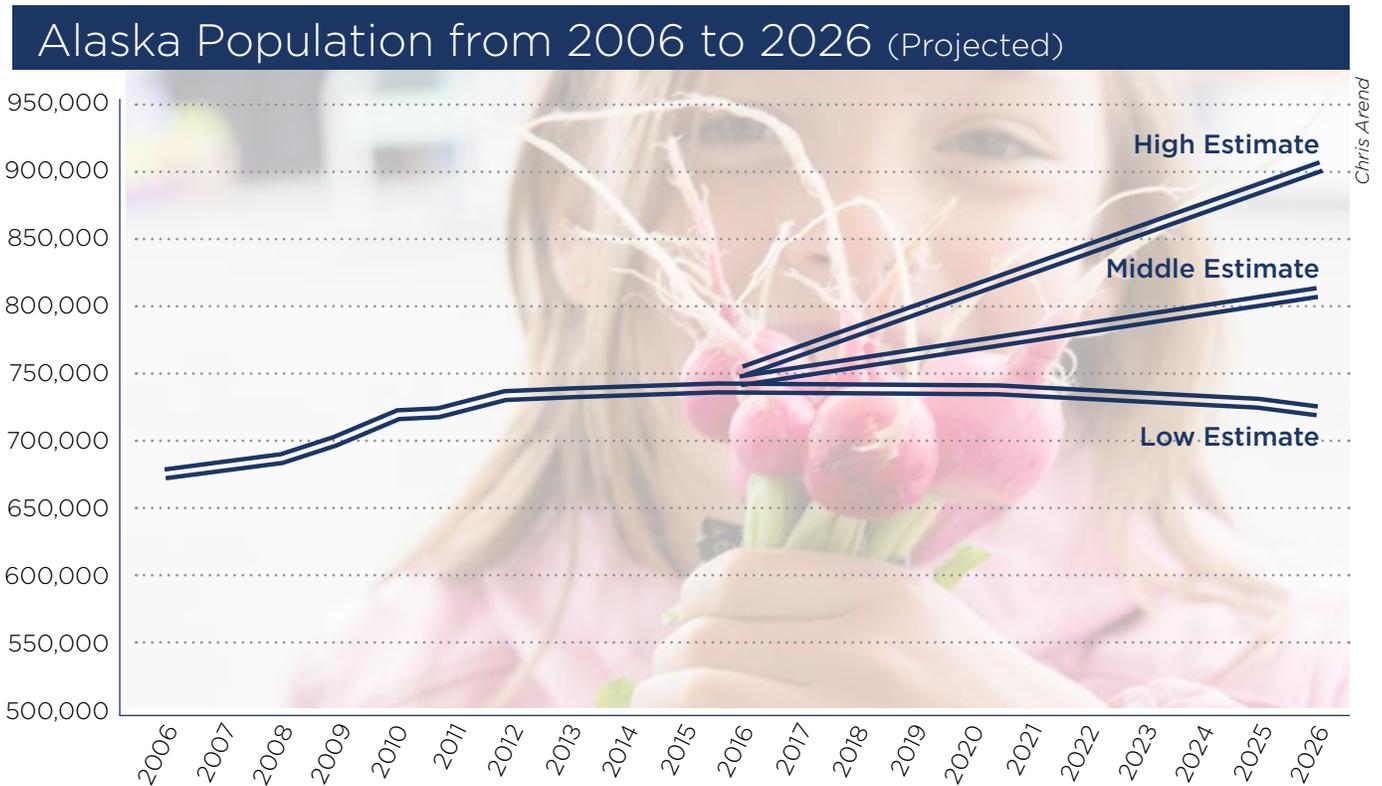
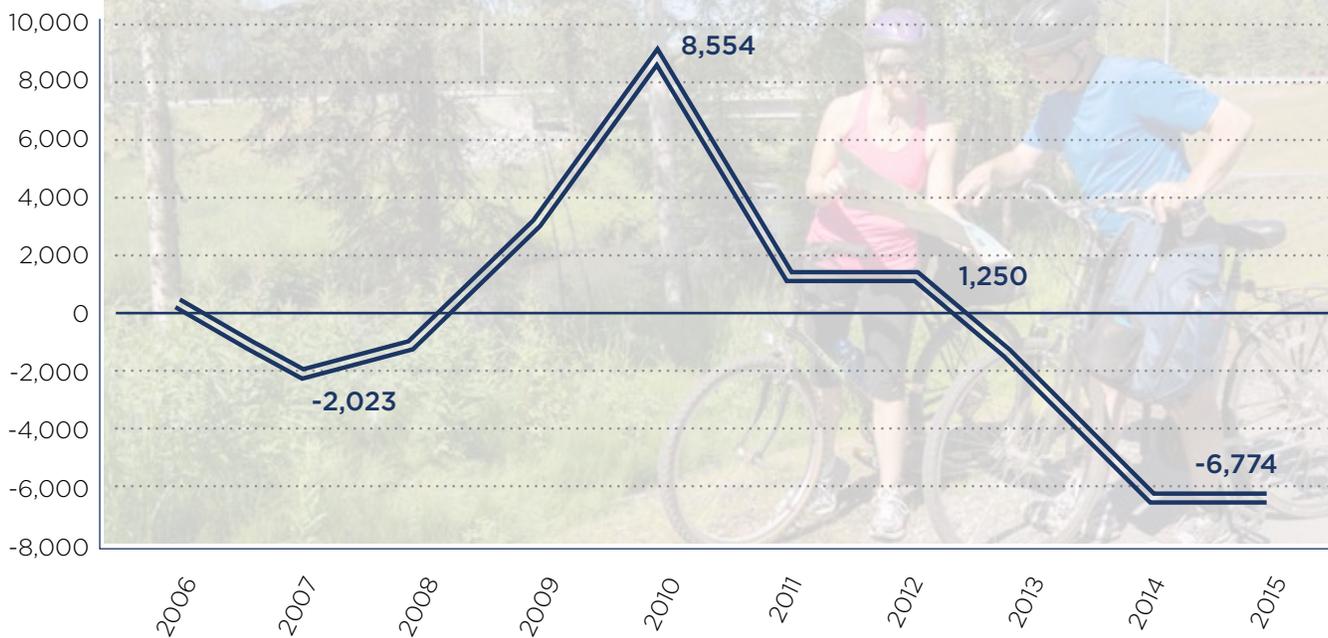


Figure 7: Alaska population from 2006 to 2015 & population forecast for 2016 to 2026

Source: Alaska Department of Labor and Workforce Development

Population growth is impossible to predict with any degree of certainty, and the Alaska population is especially sensitive to economic events as evidenced by the building of the Trans-Alaska Pipeline System, which fueled rapid growth in the 1970s, or the Gold Rush from 1896 to 1899. Based on past trends and other analysis, the Alaska Department of Labor and Workforce Development estimates that Alaska's population will grow by roughly 8.5 percent from 2016 to 2026. Essentially, the Department of Labor creates three models that estimate the future population growth, based on past data. The low, middle, and high estimates (see Figure 7) represent what the population growth could be, ranging from conservative to optimistic. This growth is expected to come primarily from new births, as the trend in net migration is negative, meaning more people are leaving Alaska than entering. Alaska did see a positive net migration in the years after the 2008 financial crisis as commodity prices spiked. The state's strong labor market stood in contrast to rising unemployment nationally, attracting new arrivals.

## State of Alaska Net Migration (2006-2015)



Chris Arend

Figure 8: Alaska net migration, 2006 to 2015

Source: Alaska Department of Labor and Workforce Development

## Alaska by Age and Gender, 2015

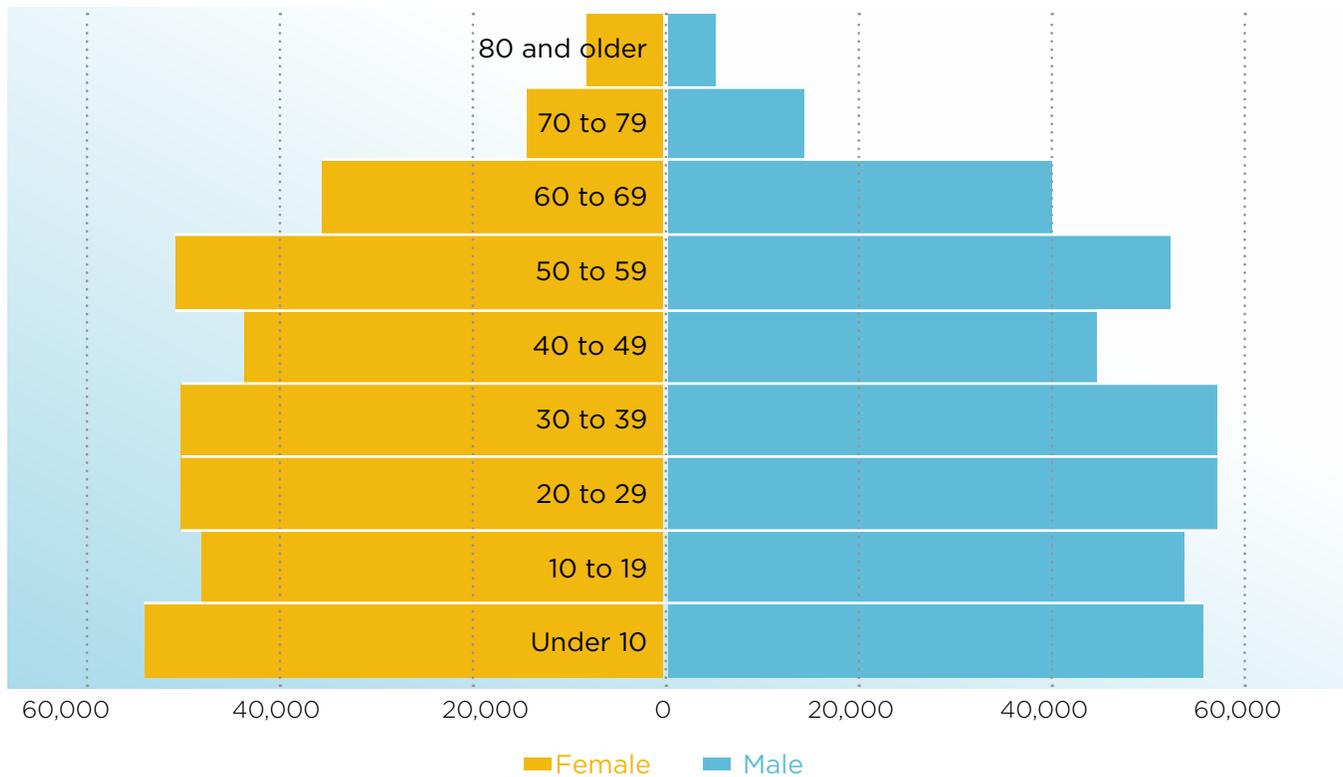


Figure 9: Alaska age pyramid

Source: Alaska Department of Labor and Workforce Development

Men outnumber women in Alaska, a trend that is particularly pronounced among younger Alaskans (see Figure 9). This may be due to the nature of jobs in Alaska, with large employment concentrations in construction, oil and gas, fisheries, and mining that historically employ more men than women.

Alaska is also home to an increasingly diverse population. Alaska Natives make up a significant share of the population—much larger than the overall share of Native Americans in the U.S. population. The state is also home to rising Black, Hispanic, Pacific Islander, and Asian communities.

## Alaskans by Ethnicity

Ethnicity	% of Population in 2010	% of Population in 2015	% Change
White	66.7%	66.5%	-0.02%
American Indian and Alaska Native	14.8%	14.8%	0%
Two or more races	7.3%	7.2%	-0.01%
Asian	5.4%	6.3%	0.9%
Black or African American	3.3%	3.9%	0.6%
Hispanic or Latino	5.5%	7.0%	1.5%
Native Hawaiian and Other Pacific Islander	1.0%	1.3%	0.3%

Table 5: Alaskans by ethnicity

Source: U.S. Census Bureau



# VI. Identifying Major Alaska Sectors

In addition to analyzing the base sectors, it is worth exploring the employment changes for all industry categories, as well as projections. The information below reports the growth or contraction of employment according to industry classification for the period from 2006 to 2015, as well as projections from 2014 to 2024, based on figures from the Alaska Department of Labor and Workforce Development.<sup>25</sup> Projections are always subject to caveats, as they depend on assumptions that are subject to changing conditions and specific events like major construction projects, or transfer of military personnel. Still, examining the past decade and the best estimates for the future can provide a useful framework for assessing the overall health and prospects for the growth or decline in major sectors. Most notably, the oil and gas sector has heavily contributed to employment growth in the past, but is unlikely to continue in that role to the same degree.

## Industry Sector Growth and Projections

Industry Sector	2006-2015 % Change	2014-2024 % Change
Mining and Logging (includes oil and gas)	47%	-5%
Educational and Health Services	26%	11%
Professional and Business Services	16%	7%
Leisure and Hospitality	11%	11%
Manufacturing (includes Seafood Processing)	7%	-2%
Other Services	4%	9%
Trade, Transportation, Utilities (includes Retail)	4%	8%
Government	1%	2%
Financial Activities	-3%	-1%
Construction	-6%	2%
Information	-10%	2%

Table 6: Past growth and future projections for Alaska's major industries

Source: Alaska Department of Labor and Workforce Development

<sup>25</sup> Past employment by sector is based on the Alaska Department of Labor and Workforce Development's *Monthly Employment Statistics*. Projections are based on DOL&WD's *Industry Employment Forecast*.

Several of the fastest growing sectors of the past will likely continue to see continued growth. These include:

- **Educational and Health Services**, driven in large part by the growth of healthcare professions in the state as demand for services increases.
- **Professional and Business Services**, which include a variety of management, professional services (such as legal and accounting), as well as technical and scientific activities.
- **Leisure and Hospitality**, which is closely associated with, but not identical to, the visitor industry. It includes restaurants and overnight lodging.
- **Other Services**, including repair and maintenance, personal services, and religious or civic organizations.
- **Trade, Transportation, and Utilities**, of which retail makes up the largest share.

Others are expected to show slow growth or declining employment:

- **Government**, which is projected to grow slightly overall, but with declines in state government employment.
- **Financial Activities**, including banks, investments, and insurance.
- **Construction**, which is tied to the oil and gas sector and others, and tends to experience volatility based on federal and state government spending and commodity prices.
- **Information**, consisting of media, publishing, software, and communications. This sector has seen significant decline in the past but is expected to grow modestly.
- **Mining and Logging**, which consists largely of oil and gas employment (public data sources usually list oil and gas under the mining classification, which sometimes generates confusion). While it has been a major engine of employment growth in the recent past, falling employment is projected.

The following subsection provides additional analysis on the state's largest base industries, including their current status and prospects for future growth.

## A. Oil and Gas

Alaska's oil and gas sector accounts for roughly one-third of all jobs in the state, including direct employment, contractors, and public sector jobs created through oil revenues. Oil was first discovered in Cook Inlet in the late 1950s, prior to statehood, and in Prudhoe Bay a decade later on a much larger scale. Production of North Slope crude exceeded 2 million barrels per day in 1988, but has declined gradually since then to roughly 500,000 barrels per day. Cook Inlet production reached a peak of 225,000 barrels per day in 1970, but less than 18,000 in 2015.<sup>26</sup> While a much smaller basin, Cook Inlet has provided relatively inexpensive natural gas to Southcentral Alaska as well as for export markets for decades.

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<sup>26</sup> State of Alaska, Department of Administration, Alaska Oil and Gas Conservation Commission. (n.d.). Production Charts - Historical: 1960 - 2015. Retrieved from <http://doa.alaska.gov/ogc/ActivityCharts/Production/NGLProductionRatesStatewide1960-2015.pdf>

While Alaska's oil reserves are vast, a majority are in very remote areas, or contain types of oil that do not yet have a commercially viable way to get the resource to market (e.g., heavy oil). The potential for oil and gas to be a mainstay industry in Alaska still exists, with several decades of known reserves.

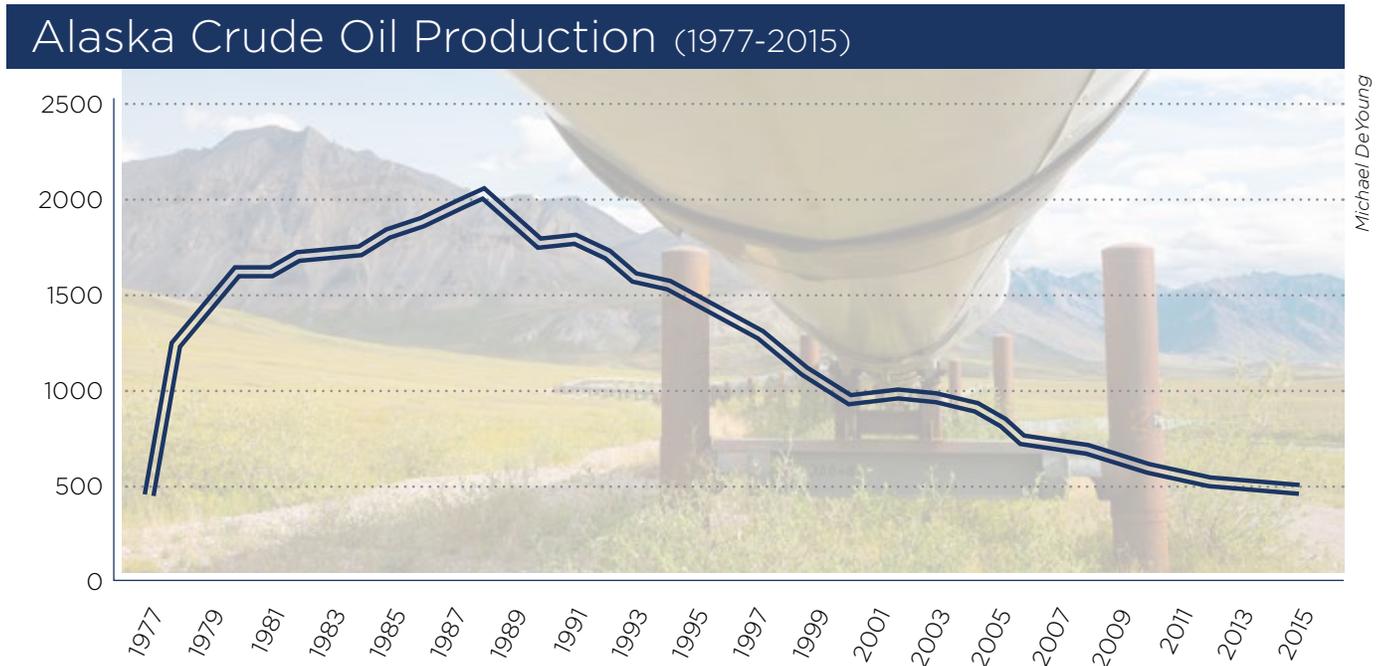


Figure 10: Alaska crude oil production, 1977-2015

Source: U.S. Energy Information Agency

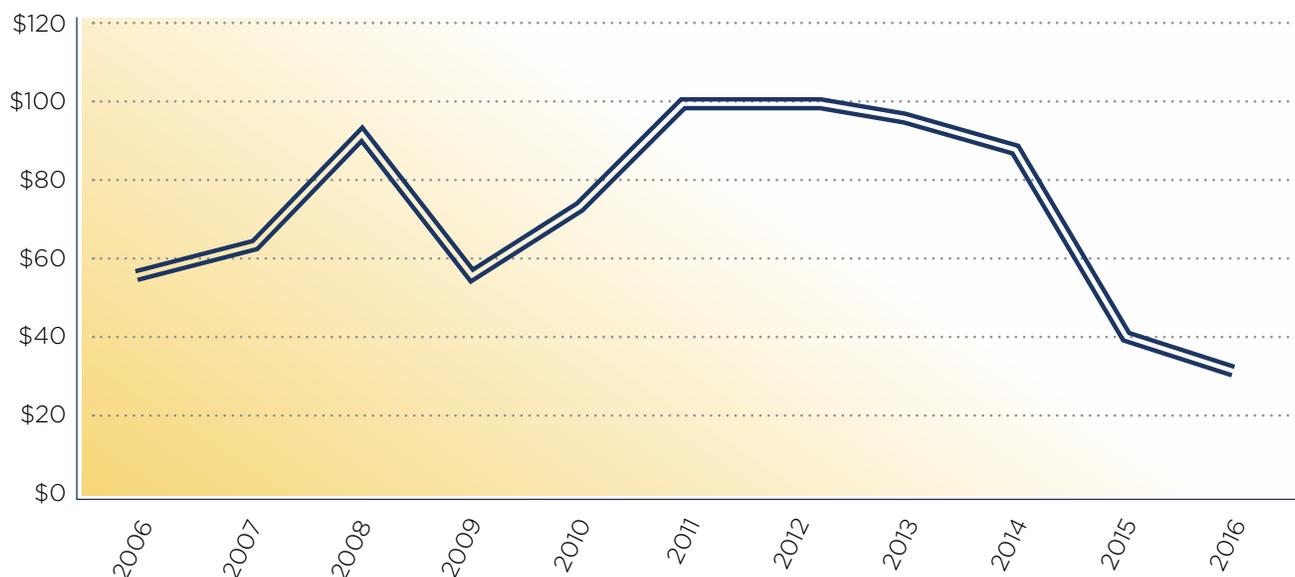
The importance of oil and gas goes well beyond direct employment; taxes and royalties earned from the petroleum industry have historically funded as much as 92 percent of the state government's annual unrestricted revenue. State services ranging from education to public safety and capital projects have existed in large part because of oil royalties, and represent an important mechanism for circulating wealth throughout the Alaska economy and improving quality of life. Oil taxes and royalties have also capitalized the Alaska Permanent Fund, with a current value of roughly \$55 billion, as savings for a future of uncertain oil revenues.

Oil production has been falling steadily since the 1988 peak (see Figure 10), but until 2014, high oil prices shielded the state economy from substantial negative effects. The price decline that began in 2014 created the current predicament of a multi-billion dollar state budget deficit. In calendar year 2016, the daily price averaged about \$43 per barrel,<sup>27</sup> equal to less than half the annual average price from 2011 to 2014 (see Figure 11).

Figure 11: Crude oil price history, 2006-2016 (based on first purchase price)

<sup>27</sup> State of Alaska, Department of Revenue, Tax Division. (n.d.). Crude Oil and Natural Gas Prices. Retrieved from <http://tax.alaska.gov/programs/oil/dailyoil/dailyoil.aspx>

## Price per barrel of Alaska North Slope Crude (2006-2016)



Source: U.S. Energy Information Agency

Oil will continue to play a vital role in Alaska's economy for generations to come. Exploration on both the North Slope and in Cook Inlet is still active, and new fields will likely begin production in the coming years. Recent test wells at Smith Bay on the North Slope, for instance, show that as many as six billion barrels may exist at that site alone.<sup>28</sup> However, overall volumes are unlikely to return to historical levels as a field the size of Prudhoe Bay is a rare discovery. Furthermore, global markets determine crude prices, and new sources in the shale formations of the continental U.S. and elsewhere around the world have produced a supply glut that will likely keep prices relatively low for some time.

The U.S. Energy Information Agency expects Alaska crude production to decline through 2040, when it forecasts daily production at a level of 150,000 barrels per day, or about one third of 2016 output.<sup>29</sup> As a result of long-term decline, the Alaska Department of Labor and Workforce Development expects oil and gas extraction employment to shrink by 10 percent by 2024, and state employment, with its close relationship to petroleum revenues, to contract by 3.4 percent.<sup>30</sup> The overall outlook for Alaska's oil industry is continued dominance in the Alaska economy, but at a contracted level. New sources of employment will be needed to sustain and grow statewide prosperity.

### Natural Gas

Although oil and gas are closely linked and usually treated as a single industry, natural gas production offers different possibilities for the future than crude oil. The North Slope fields contain both oil and gas, and without a means of transporting the gas, very little has ever been sold. Proven gas reserves are roughly 35 trillion cubic feet, and potential reserves are far greater than this. Building a gas pipeline to bring this resource to market has been a longstanding priority for the state, and the current plan by the Alaska Gasline Development Corporation (AGDC) – an independent, public corporation owned by the State of Alaska – calls for the creation of a gas pipeline stretching from the North Slope to Nikiski on the Kenai Peninsula, where the gas will be liquefied and used to satisfy in-state demand and shipped to global markets. AGDC reports that the project could create as many as 12,000 jobs during the construction phase and 1,000 jobs once operational. In addition to generating billions in

<sup>28</sup> DeMarban, A. (2016, October 4). Caelus Energy CEO calls offshore Arctic oil discovery a 'game-changer'. Alaska Dispatch News. Retrieved from <https://www.adn.com/business-economy/energy/2016/10/04/caelus-chief-calls-smith-bay-discovery-a-game-changer/>

<sup>29</sup> United States, Department of Energy, Office of Energy Analysis. Annual Energy Outlook 2016 (Rep. No. DOE/EIA-0383(2016)). (2016, August). Retrieved [https://www.eia.gov/outlooks/aeo/pdf/0383\(2016\).pdf](https://www.eia.gov/outlooks/aeo/pdf/0383(2016).pdf)

<sup>30</sup> State of Alaska, Department of Labor and Workforce Development. (2016, October). Industry Employment Forecast. Retrieved from <http://live.laborstats.alaska.gov/indfctst/index.cfm>

new state revenues, the effort would provide an economical source of energy to state residents. A startup date is targeted between 2023 and 2025.<sup>31</sup>

The pipeline holds promise as an engine of future growth, but the effort still faces significant obstacles from regulators and market forces. Since 2008, the price of natural gas has fallen by 75 percent as new supplies have been found around the world.<sup>32</sup> To become reality, the Alaska gas pipeline effort must find a path forward in this environment of high competition and low prices.

## B. Federal Government

The federal government has historically had a strong presence in Alaska, and currently accounts for roughly one third of all employment in Alaska (direct and indirect). Federal money circulates through the state economy in a variety of ways, including direct employment through federal jobs based in Alaska, spending on construction and other procurement, grants to in-state organizations, the payment of pensions to federal retirees, and payment of benefits such as healthcare and Social Security.

On a per capita basis, Alaska receives the highest share of federal expenditures of any state except Virginia as of 2013 (the last year for which expenditure data is available). Roughly 25 percent of these expenditures were in direct payroll, 15 percent in contracts, 25 percent in grants, and the remainder in retirement and non-retirement benefits (35 percent combined).<sup>33</sup>

Multiple federal agencies have employees based in Alaska, including:

- Department of Defense
- Department of Interior
- Department of Transportation
- Department of Agriculture
- Department of Veterans Affairs
- Department of Health and Human Services
- Department of Commerce
- Department of Homeland Security<sup>34</sup>

The Department of Defense (DOD) jobs are mainly civilians employed on military installations throughout the state. Department of Transportation jobs are mainly Federal Aviation Administration employees. Health and Human Services employs those working for the Indian Health Service. A vast majority of Department of Agriculture employees in Alaska work for the Forest Service. The Department of Commerce includes the National Weather Service and National Marine Fisheries Service. The Department of the Interior's presence in the state includes employees of the National Park Service, Bureau of Land Management, U.S. Geological Survey, U.S. Fish and Wildlife Service, and Bureau of Indian Affairs, among others.

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<sup>31</sup> Alaska Gasline Development Corporation. "Alaska LNG." (n.d.). Retrieved from <http://alaska-lng.com/>

<sup>32</sup> Ibid.

<sup>33</sup> The Pew Charitable Trusts. "Federal Spending in the States 2004 to 2013." (2014, December 2). Retrieved from <http://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2014/12/federal-spending-in-the-states>

<sup>34</sup> Federal Employees By State. (2016, May). Governing.com. Retrieved from <http://www.governing.com/gov-data/federal-employees-workforce-numbers-by-state.html>

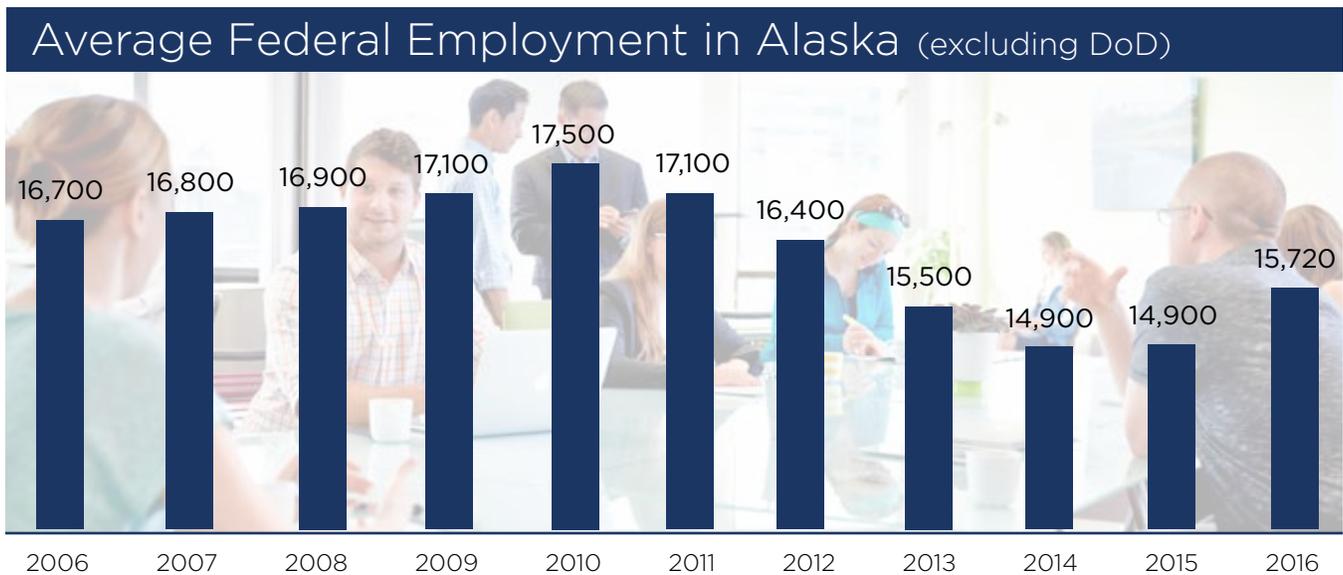


Figure 12: Average federal employment in Alaska (excluding Department of Defense)

Source: Alaska Department of Labor and Workforce Development

The number of federal jobs in the state has fluctuated since 2001. However, federal employment has risen recently after several years of decline and stagnation. Federal employment as a share of the Alaska workforce has increased to 4.7 percent in 2016, up from 4.4 percent in 2015. Federal government employment is expected to continue growing, if present trends continue, increasing up to 6.2 percent by 2024.<sup>35</sup>

This is significant, because total state government employment is predicted to decrease in the decade ahead. In addition, there is expected to be an increase in DOD personnel based in Alaska. The Department of Defense (DoD) employment had been shrinking in Alaska, down four percent from 2015 to 28,188 employees. However, that is expected to change with large scale upgrades to Fort Greely Army installation and Clear Air Force Base, as well as the upcoming installation of F-35 aircraft at Eielson Air Force Base in Fairbanks.

In addition to an increase in federal employees, large federal sums are spent on construction in the state. For instance, a majority of transportation construction, for roads, ports, and airports, is financed with federal dollars. Construction projects focusing on transportation are estimated at over \$1 billion for 2016

<sup>35</sup> State of Alaska, Department of Labor and Workforce Development. (2016, October). Industry Employment Forecast. Retrieved from <http://live.laborstats.alaska.gov/indfcst/index.cfm>



Figure 13: Federally funded construction in 2016 (in millions)

Source: ISER Construction Forecast, 2016

The DoD spent an estimated \$552 million in 2016 on various construction projects throughout the state, including Eielson Air Force Base for the F-35 expansion and the beginning phases of missile defense-related construction at Fort Greeley and Clear Air Force Base. These are multi-year projects which will provide inflows of money for years to come, with overall economic impacts measured in the billions.<sup>36</sup> Alaska's federal spending ranks 33rd in defense contract spending for the nation, but significant on a per capita basis. The \$1.5 billion in defense contracting in 2014 (up from \$1.3 billion in 2013), accounted for 2.6 percent of the state's GDP.<sup>37</sup>

## C. Mining

Mining has been a cornerstone in the development of Alaska's economy since Russian gold explorers discovered the commodity in the mid-1800s. Gold became the first commodity mined in Alaska originating with a quartz and gold mix found in Southeast Alaska.<sup>38</sup> This discovery encouraged many to settle in the state. The later discovery and production of zinc, lead, silver, coal, copper, and construction materials such as sand, gravel, and rock have all played a role in the development of the state's modern economy. Fairbanks, Juneau, Nome and other cities were founded on mining exploration and production. Today gold and silver mining employ the largest numbers within the industry, followed by gravel and polymetallic mines producing multiple minerals.<sup>39</sup> Over the past five years, the number of jobs has remained relatively constant at around 3,000 (see Figure 14). Impacts go beyond direct employment, however and include payment of state and local taxes as well as construction activity.

<sup>36</sup> Goldsmith, S., & Cravez, P. (2016, February 1). 2016 Construction Spending Forecast (Rep.). ISER. Retrieved [http://www.iser.uaa.alaska.edu/Publications/2016\\_01-2016ConstructionForecast.pdf](http://www.iser.uaa.alaska.edu/Publications/2016_01-2016ConstructionForecast.pdf)

<sup>37</sup> Brancato, K. (2015, November). Defense Contract Spending (Rep.). Bloomberg Government. Retrieved [https://www.bbhub.io/bgov/sites/12/2015/10/BGOV\\_StatebyStateStudy.pdf](https://www.bbhub.io/bgov/sites/12/2015/10/BGOV_StatebyStateStudy.pdf)

<sup>38</sup> Spengler, T. (2013, January 30). Overview of Mining in Alaska (Legislative Research Report 13.156). Retrieved [http://www.akleg.gov/basis/get\\_documents.asp?session=28&docid=1137](http://www.akleg.gov/basis/get_documents.asp?session=28&docid=1137)

<sup>39</sup> Alaska's Mineral Industry 2014 (Special Report 70). (2014). Alaska Department of Natural Resources. Retrieved <http://pubs.dggs.alaskagov.us/webpubs/dggs/sr/text/sr070.pdf>

## Mining Employment (2006-2016)

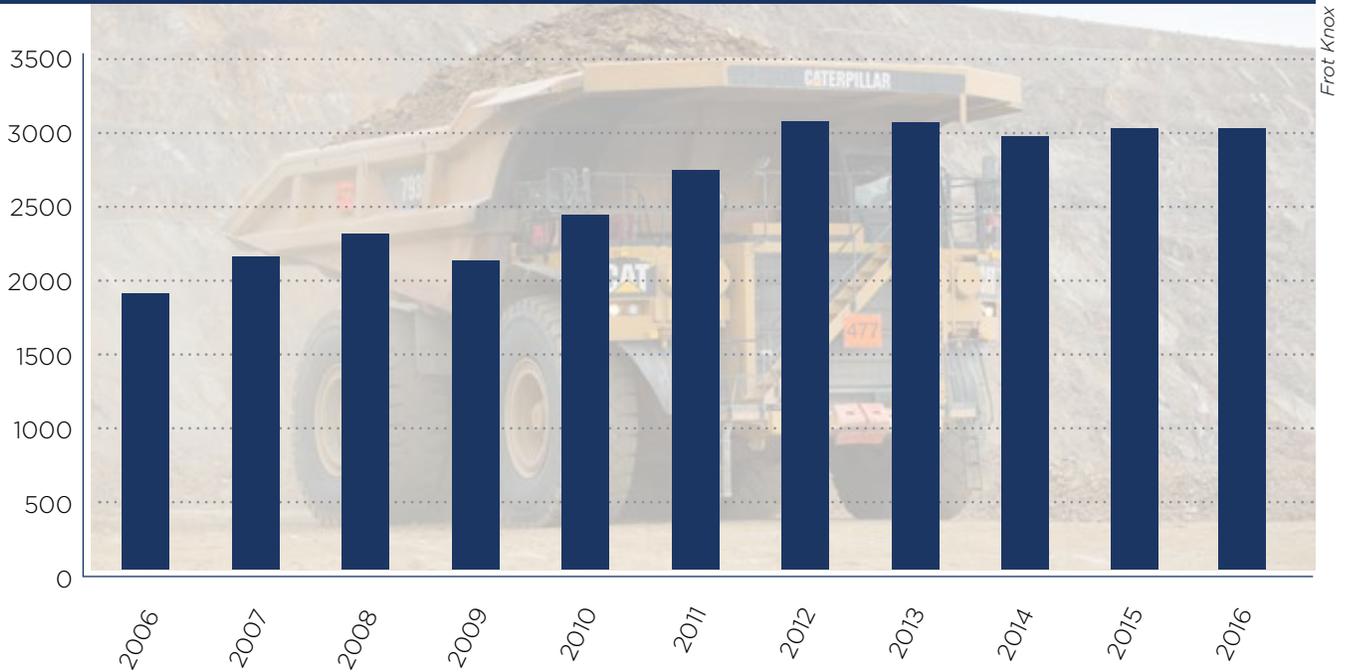


Figure 14: Mining employment, 2006-2016  
 Source: Alaska Department of Labor and Workforce Development

The Department of Labor and Workforce Development has outlined industry employment projections showing an increase of 5.5 percent in mining employment between 2014 and 2024. Zinc is the single most valuable commodity produced in Alaska for export outside the U.S., with the Red Dog Mine being one of the world’s largest zinc mines. In recent years, the gross value of the mineral has ranged from roughly \$800 million to \$1 billion on export markets (see Figure 15).

## Export Value of Alaska Zinc (in millions of dollars)

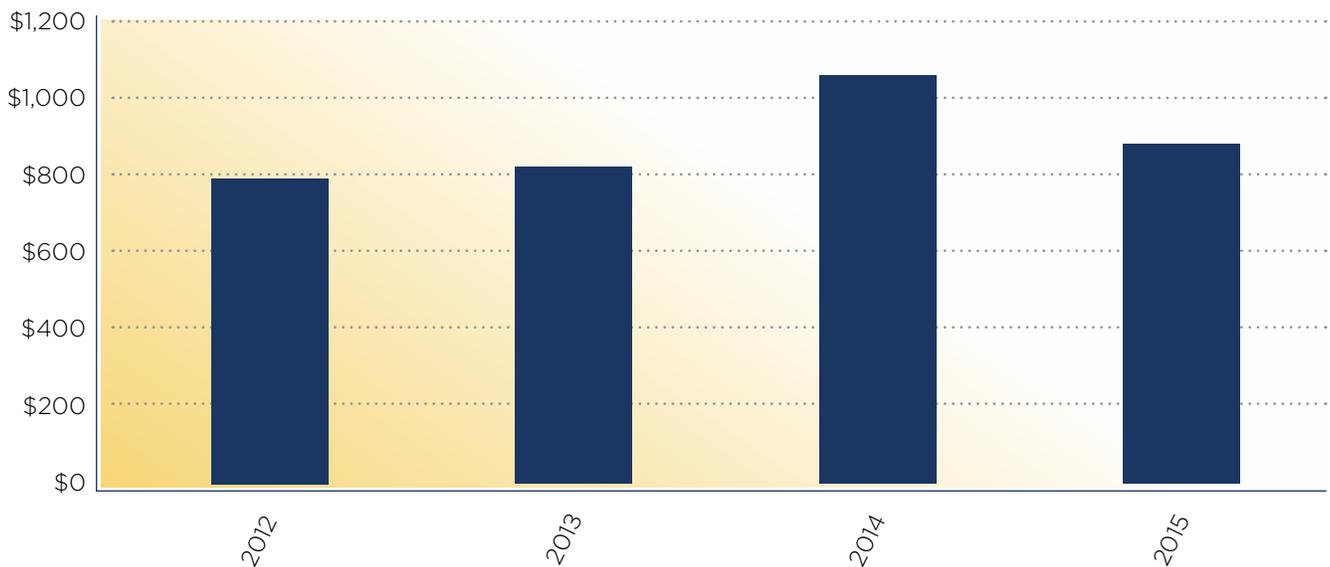


Figure 15: Export value of Alaska zinc  
 Source: U.S. Census Bureau, "State Exports from Alaska"

Alaska has six major mines, over 150 small placer mines, and 23 active exploration projects with diverse deposit types. The six large mines are described below, and are generally recognized as key employers in their respective regions.

## Alaska's Major Mines

Mine	Details
<b>Fort Knox Mine (Interior)</b>	<ul style="list-style-type: none"> <li>• Produces gold</li> <li>• Employs over 600</li> <li>• Operated by Kinross Gold Group</li> </ul>
<b>Greens Creek Mine (Southeast)</b>	<ul style="list-style-type: none"> <li>• Produces zinc, lead, silver, and gold</li> <li>• Employs over 400</li> <li>• Operated by Hecla Mining Co.</li> </ul>
<b>Red Dog Mine (Northern)</b>	<ul style="list-style-type: none"> <li>• Produces zinc, lead, and silver</li> <li>• Land owned by NANA Regional Corporation</li> <li>• Employs over 450</li> <li>• Operated by Teck Alaska, Inc.</li> </ul>
<b>Usibelli Mine (Interior)</b>	<ul style="list-style-type: none"> <li>• Produces coal</li> <li>• Employs 115</li> <li>• Operated by Usibelli Coal Mine, Inc.</li> </ul>
<b>Pogo Mine (Interior)</b>	<ul style="list-style-type: none"> <li>• Produces gold</li> <li>• Employs 300</li> <li>• Operated by Sumitomo Metal Mining</li> </ul>
<b>Kensington Mine (Southeast)</b>	<ul style="list-style-type: none"> <li>• Produces gold</li> <li>• Employs 330</li> <li>• Operated by Coeur Alaska, Inc.</li> </ul>

Table 7: Major Alaska mines

Source: Alaska Department of Natural Resource

As mentioned previously, some employment growth is expected within this industry. The mining industry in Alaska is heavily affected by trends in global commodity prices, and the regulatory climate as it relates to environmental regulations and permitting processes. As such, projects have long lead times that are sometimes measured in decades. Advanced exploration projects, with potential to begin operations in the coming years, include the following:<sup>40</sup>

- **Pebble:** in Southwest Alaska, containing copper, gold, and molybdenum.
- **Bokan Mountain:** in Southeast Alaska, which contains rare earth elements.
- **Donlin Gold:** 33.8 million ounce gold reserve within a 45 million ounce gold resource. On the upper Kuskokwim River in Southwest Alaska.
- **Livengood:** 20.1 million ounce gold resource in Interior Alaska.
- **Niblack:** in Southeast Alaska, which contains copper, gold, silver, and zinc.
- **Arctic:** in the Northwest Arctic region, with gold, silver, copper, and zinc.

40 Alaska Miners Association. (n.d.). "Major Mines". Retrieved December 1, 2016, from <http://alaskaminers.org/major-mines/>

- **Bornite:** 6.4 billion pound copper resource in Northwest/Interior regions.
- **Graphite Creek:** in the Bering Strait region is one of the largest deposits of large-flake graphite in the world. 9.9 million ton graphite resource.
- **Palmer:** in Southeast Alaska. 8.1 million tons grading 1.41 percent copper, 5.25 percent zinc, 31.7 grams of silver per ton, 0.32 grams of gold per ton.
- **Peak (Tetlin):** More than 920,337 ounces of gold, with significant copper in Interior Alaska.

## D. Seafood

Alaska's oceans play a vital role in the state's economy, with a history that stretches back to the 1800s, when fish were first harvested commercially. Today a majority of the nation's wild seafood is caught in Alaska waters.<sup>41</sup> In addition to directly employing over 17,000 Alaska residents in harvesting, many local governments receive revenues from gross fish taxes and the sector supports a large number of jobs in processing. According to analysis by McDowell Group, the seafood industry ultimately accounts for the largest share of private employment in Alaska after oil and gas at roughly 41,200 jobs, or 20 percent of all employment in 2014. The industry generates nearly \$6 billion in annual economic activity in Alaska.<sup>42</sup>

Numerous species of fish and crab found in Alaska have high market value, with salmon and pollock being the two largest categories by ex-vessel value (the price fishermen receive when selling their catch from the catching vessel).



Figure 16: Ex-vessel value by species in 2015

Source: NOAA Fisheries

41 United States, Department of Commerce, NOAA Fisheries. (2016). Fisheries of the United States, 2015. Retrieved from <https://www.st.nmfs.noaa.gov/Assets/commercial/fus/fus15/documents/FUS2015%20Fact%20Sheet.pdf>

42 McDowell Group. (2015, December). The Economic Value of Alaska's Seafood Industry (Rep.). Retrieved from [http://ebooks.alaskaseafood.org/ASMI\\_Seafood\\_Impacts\\_Dec2015/pubData/source/ASMI%20Alaska%20Seafood%20Impacts%20Final%20Dec2015%20-%20low%20res.pdf](http://ebooks.alaskaseafood.org/ASMI_Seafood_Impacts_Dec2015/pubData/source/ASMI%20Alaska%20Seafood%20Impacts%20Final%20Dec2015%20-%20low%20res.pdf)

Alaska's commercial seafood industry is significant by national standards. The state leads in both the value and gross weight of the landings, with Alaska accounting for 60 percent of the volume of wild seafood landed in the U.S.<sup>43</sup> Of the top ten ports in the U.S. ranked by value of catch, five are located in Alaska. These are Dutch Harbor (ranked 2nd), Kodiak (3rd), Aleutian Islands (4th), Alaska Peninsula (7th), and Bristol Bay (8th)—all within the Southwest and Gulf of Alaska. By pounds landed, Dutch Harbor is the largest fisheries port in the U.S.<sup>44</sup>

The economic impacts of fisheries are distributed widely throughout coastal Alaska, with the Southwest region hosting about half of the state's harvesting jobs, and the remaining share are split mostly between the Southeast and Gulf Coast regions. The Northern region hosts smaller—but locally important—fisheries as well.<sup>45</sup>

Alaska's fisheries have been relatively flat in terms of both value and volume (see Figure 17 below) for the past decade, although prices and catches for each individual species may vary considerably from year to year, depending on natural and market forces.

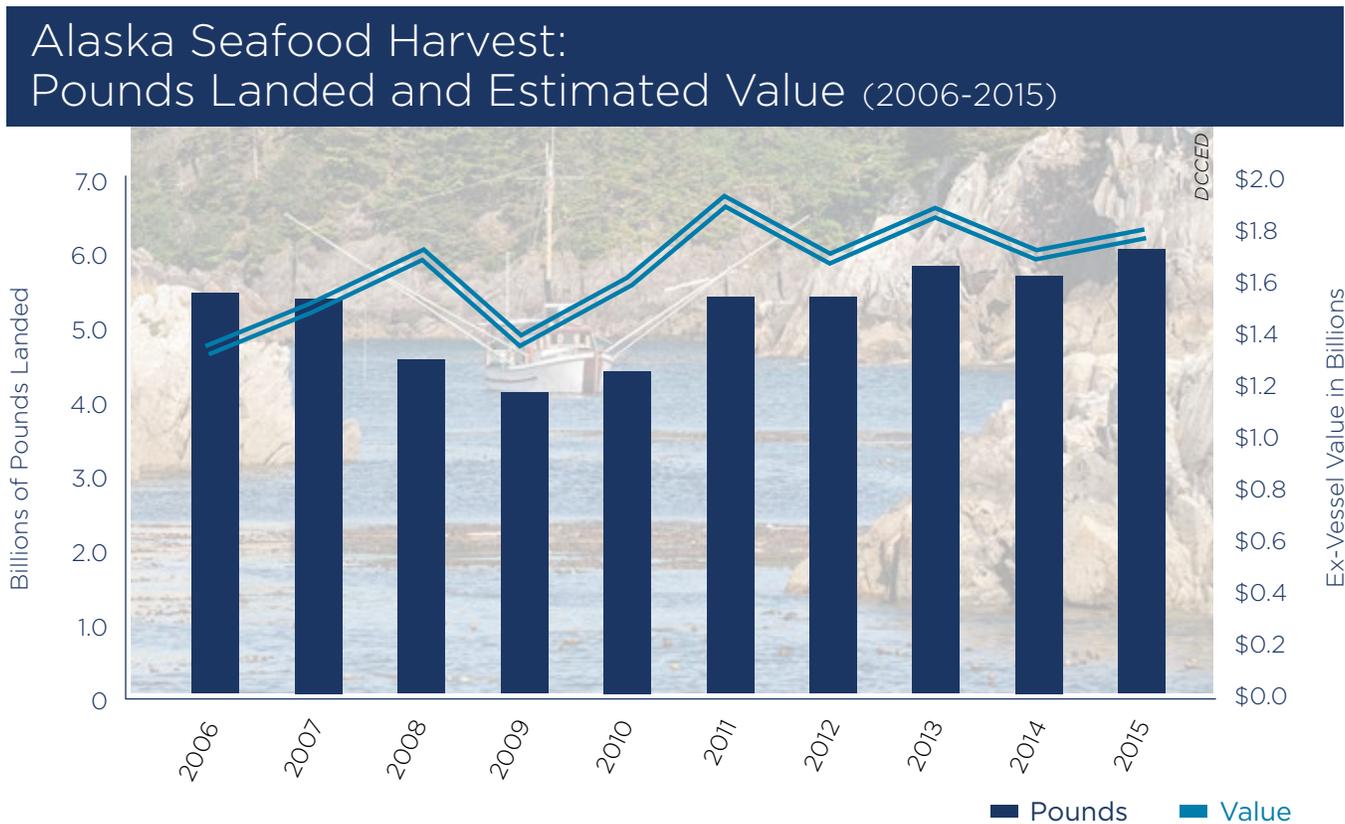


Figure 17: Alaska seafood harvest: pounds landed and estimated value

Source: NOAA Fisheries

While the industry has not seen rapid growth in recent years, there are opportunities to capture even more value from Alaska's oceans. For instance, a number of experts have noted that value-added products such as smoked salmon, jerky, fish oil tablets, and other preparations have higher profit margins than minimally processed fish. Some businesses have found creative ways to use fish waste for dog treats, fertilizer, and salmon skin leather products. Mariculture activities like shellfish farming and kelp farming offer additional opportunities for coastal communities.

43 United States, Department of Commerce, NOAA Fisheries. (2016). Fisheries of the United States, 2015. Retrieved from <https://www.st.nmfs.noaa.gov/Assets/commercial/fus/fus15/documents/FUS2015%20Fact%20Sheet.pdf>

44 United States, Department of Commerce, NOAA Fisheries. (n.d.). Total Commercial Fishery Landings At Major U. S. Ports Summarized By Year And Ranked By Dollar Value. Retrieved January 6, 2017, from <https://www.st.nmfs.noaa.gov/commercial-fisheries/commercial-landings/other-specialized-programs/total-commercial-fishery-landings-at-major-u-s-ports-summarized-by-year-and-ranked-by-dollar-value/index>

45 Warren, J. (2016, November). Seafood Harvesting Jobs. Alaska Economic Trends, 36(11), 8-11. Retrieved from <http://labor.alaska.gov/trends/nov16.pdf#cover>

## E. Visitor Industry

Alaska's natural beauty and abundant wildlife have long made it a popular destination for visitors, particularly during the summer months. Between October 2014 and September 2015, for instance, over two million visitors traveled to the state—this figure is equal to nearly three times the state's population. Visitor expenditures span several industry categories ranging from retail and lodging to transportation, generating nearly 40,000 full- and part-time jobs.<sup>46</sup> State and local governments benefit as well: the industry brought in an average of \$54.3 million in revenue to the state government and \$82.6 million to municipal governments between 2010 and 2014.<sup>47</sup> The Alaska Department of Labor and Workforce Development also expects visitor industry-related employment to grow over the next decade, with employment in accommodations to grow by roughly 10 percent.<sup>48</sup>

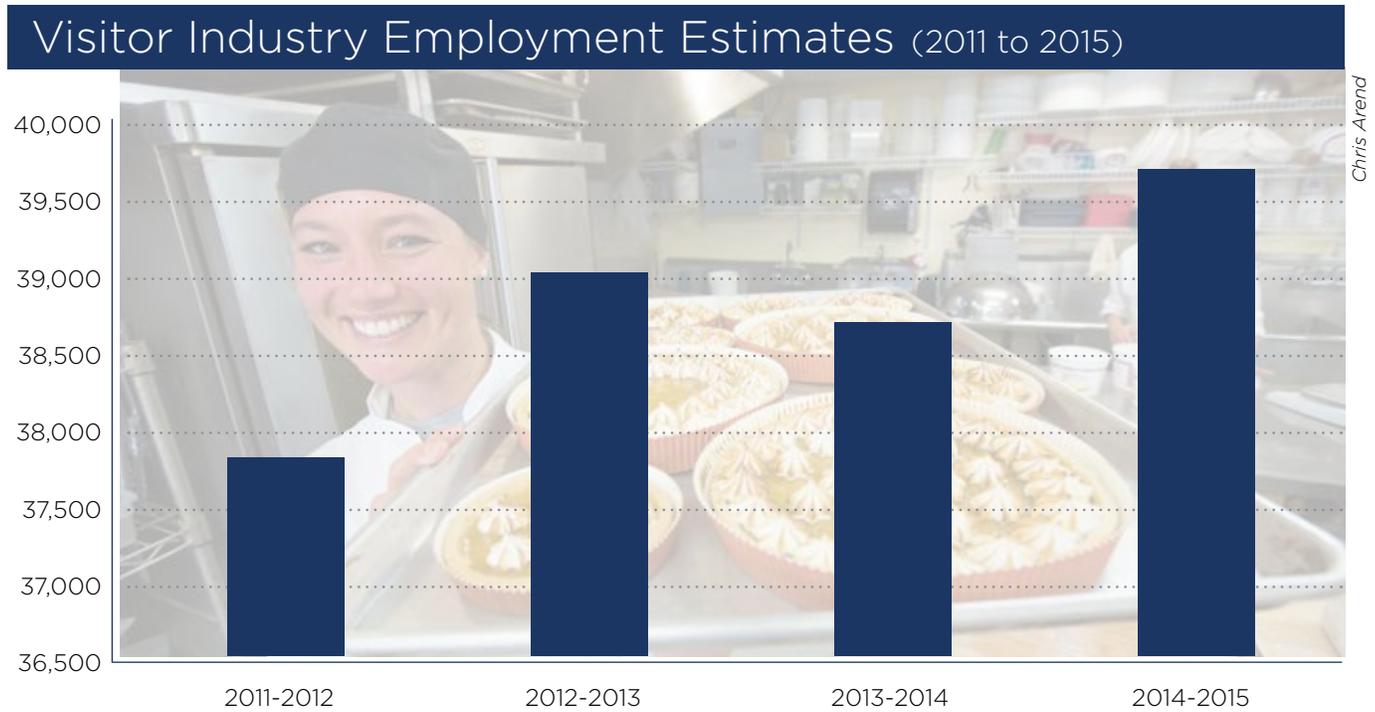


Figure 18: Visitor industry employment estimates

Source: McDowell Group, *Economic Impacts of Alaska's Visitor Industry*

While the visitor industry is not as sensitive to commodity prices like the oil and gas and mining sectors, national and international economic trends exert a strong effect, such as the 2008 financial crisis. There was a notable decline in visitors following this downturn (see Figure 19), which had only modest effects on the state's other key industries.

46 McDowell Group. (2016, April). *Economic Impact of Alaska's Visitor Industry 2014-2015* (Rep.).

47 Loeffler, B., & Colt, S. (2015, December 2). *Fiscal Effects of Commercial Fishing, Mining and Tourism* (Rep.). ISER. Retrieved [http://www.iser.uaa.alaska.edu/Publications/2015\\_12-FiscalEffectsOfCommercialFishingMiningTourism.pdf](http://www.iser.uaa.alaska.edu/Publications/2015_12-FiscalEffectsOfCommercialFishingMiningTourism.pdf)

48 State of Alaska, Department of Labor and Workforce Development. (2016, October). *Industry Employment Forecast*. Retrieved from <http://live.laborstats.alaska.gov/indfcst/index.cfm>

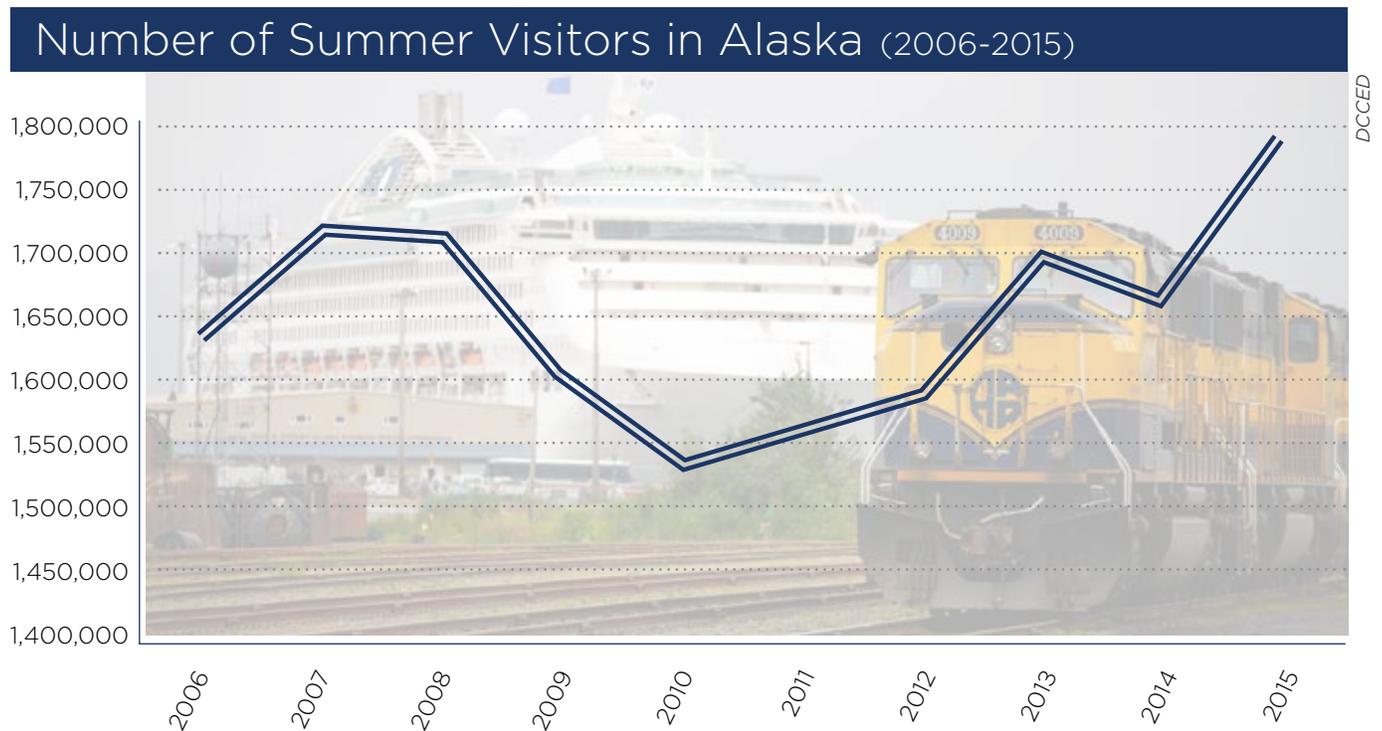


Figure 19: Number of summer visitors in Alaska, 2006-2015

Source: McDowell Group, 2016

While all regions of the state receive visitors, the industry is most deeply rooted in Southcentral, Southeast, and the Interior regions. During the 2014-2016 visitor season, about half of the visitor industry-related employment was based in Southcentral, with Southeast and the Interior making up 28 percent and 18 percent respectively. Southcentral and Southeast each receive similar numbers of visitors, but a larger share of Southeast's visitors arrive by cruise ship, and generally spend less money in Alaska than independent travelers. Cruise ships account for about 48 percent of arrivals, and another 47 percent travel by air. Highways and AMHS ferries account for the remaining four percent.<sup>49</sup>

The outlook for the visitor industry is generally positive, but changes in the national economy will continue to influence this, as Alaska is an expensive destination for travelers. The industry also relies upon cooperative marketing partnerships between industry associations, convention and visitor bureaus, and private businesses. In a state budget-constrained environment, the public money for these programs is a challenge to sustain.

<sup>49</sup> McDowell Group. (2016, April). Economic Impact of Alaska's Visitor Industry 2014-2015 (Rep.).

# VI Infrastructure

## A. Transportation

Alaska is the most sparsely populated state in the U.S. which, combined with its vast distances, poses unique transportation challenges for the movement of people and goods. Only two percent of Alaska's landmass is accessible via roads, and a majority of Alaska's communities are not connected to the road system.<sup>50</sup> Where there are no roads, the Alaska Marine Highway System connects communities with ferry service from Southeast Alaska to the Aleutian Islands. Small airports and landing strips provide air transportation options to many communities as well. Approximately 75 percent of the population of Alaska lives on the road system, which connects the Fairbanks North Star Borough to the Kenai Peninsula, as well as parts of the eastern Interior and corridor leading to the North Slope (mainly for industrial use).

Much of Alaska's infrastructure has historically been supported in the annual capital budget, decided by the Alaska State Legislature. The capital budget appropriates funds for one-time expenditures such as roads, schools, and port construction; and public works infrastructure. This budget fluctuates with the amount of revenue the state receives. In the current fiscally-constrained environment, the capital budget - and its funding for infrastructure projects and maintenance - has been significantly reduced. Capital budgets have gone from highs of over \$2 billion in unrestricted general funds to roughly \$100 million today.

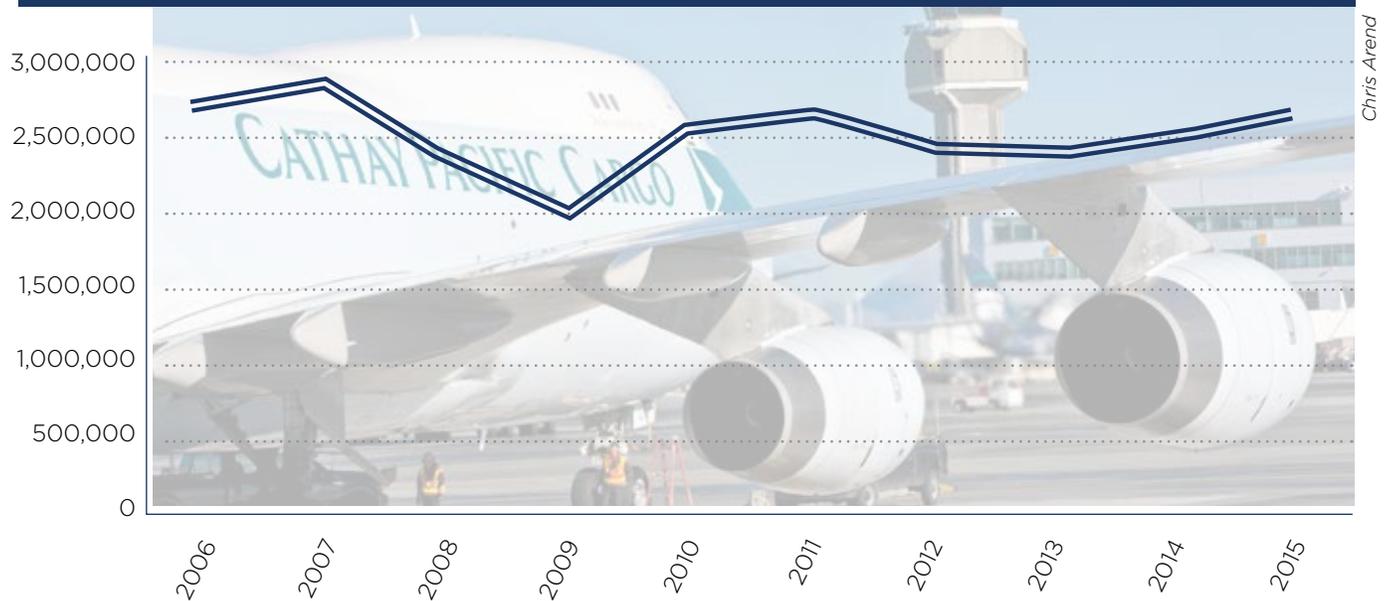
### Airports

Due to Alaska's unique geographic location, air freight shipments from Anchorage can reach 90 percent of the industrialized world within 9.5 hours. For the last 15 years, Ted Stevens Anchorage International Airport has been in the top 10 busiest airports in the world (and is often in the top five) as measured by loaded and unloaded freight. This trend has continued despite the fact that many jets have the range to bypass Anchorage. This is because it is more economical for airlines to carry more freight and less fuel, stopping in Anchorage to refuel.<sup>51</sup> Freight volume at Ted Stevens International Airport is somewhat susceptible to nationwide economic trends. The amount of freight handled dropped 17 percent in 2008 and 15 percent in 2009 during the U.S. financial crisis, before rebounding 33 percent in 2010. Air freight volumes have remained relatively flat since 2010.

<sup>50</sup> Anchorage Economic Development Corporation. (n.d.). Airport Overview. Retrieved November 5, 2016, from <https://aedcweb.com/tsaia/airport-overview/>

<sup>51</sup> Goldsmith, O. S. (2008, December). What Drives The Alaska Economy? (Rep.). Retrieved <http://hdl.handle.net/11122/4372>

## Ted Stevens Airport Freight (in tons)



Chris Arend

Figure 20: Ted Stevens Airport freight (in tons), 2006 to 2015

Source: Airports Council International

## Waterways

Alaska is home to more than half of the U.S. coastline,<sup>52</sup> with 58 ports, 24 of which have capacity to handle cargo containers.<sup>53</sup> Due to Alaska's remote location, shipping dominates inbound freight to the state, with over 90 percent of non-petroleum freight arriving by maritime shipping.<sup>54</sup>

The Port of Anchorage handles 55 percent of the freight volume entering Alaska through its three bulk carrier berths, two petroleum berths, and one barge berth.<sup>55</sup> About 50 percent of the inbound freight through the Port of Anchorage is distributed in Anchorage, 20 percent to the Mat-Su Valley, 15 percent to the Fairbanks North Star Borough, and 10 to 15 percent to the Kenai Peninsula.<sup>56</sup> As of 2013, it received 20 percent of all the refined fuel in the state. Since the closing of the Fairbanks Flint Hills Refinery in 2014, this number is assumed to have gone up, but current figures are unavailable.<sup>57</sup>

52 Beaver, J. C. (2006, November 9). U.S. International Borders: Brief Facts (CRS Report No. RS21729). Retrieved from <https://fas.org/sgp/crs/misc/RS21729.pdf>

53 World Port Service. (n.d.). Ports with Container Liner Service. Retrieved November 16, 2016, from [http://www.worldportsource.com/shipping/country/ports/USA\\_AK.php](http://www.worldportsource.com/shipping/country/ports/USA_AK.php)

54 McDowell Group. (2016, March). Southcentral Alaska Ports Freight and Fuel Analysis 2016 Update (Rep.). Retrieved from [http://www.portofanc.com/wp-content/uploads/McDowell\\_Group\\_2016\\_Report.pdf](http://www.portofanc.com/wp-content/uploads/McDowell_Group_2016_Report.pdf)

55 Ibid.

56 Ibid.

57 Ibid.

## Alaska Marine Highway System



Figure 21: Map of Alaska highway, railway, and marine highway routes

Source: Alaska Public Land Information Center

The Alaska Marine Highway System (AMHS) services 33 communities in Alaska, one in British Columbia, and another in Washington state. There are 11 vessels, including seven vessels in Southeast, and four vessels in Southwest and Southcentral. It was estimated that in 2014 the AMHS supported 1,017 direct jobs and another 683 jobs through indirect impacts.<sup>58</sup> Its role in facilitating commerce in Alaska doubtless goes far beyond this. In the last four years, the AMHS has lost nearly one-third of its state funding, due to overall state budget cuts which has had a significant effect on service levels and funding for maintenance on the fleet of aging vessels.<sup>59</sup>

About two-thirds of AMHS passengers are Alaska residents (215,000). The other third (103,000) are non-resident passengers, many of them visitors and non-resident workers. Survey information shows that most of the non-resident passengers do not stay within the bounds of the AMHS, but rather move on to various locations around Alaska. The AMHS also plays an important role in Alaska's seafood industry, providing a lifeline for the movement of seasonal crew members and processing plant employees.

Finally, the AMHS is vitally important for healthcare. Air travel can be unreliable between the various communities the AMHS serves, and ferry service can be the only way many residents in Southeast or Southwest can reliably travel to larger communities for healthcare.

58 McDowell Group. (2016, January). The Economic Impacts of the Alaska Marine Highway System (Rep.). Retrieved from [http://www.dot.state.ak.us/amhs/doc/reports/econ\\_15.pdf](http://www.dot.state.ak.us/amhs/doc/reports/econ_15.pdf)

59 Block, M. (2017, June 6). In Southeast Alaska, The Ferry System Is A Lifeline. NPR. Retrieved from <http://www.npr.org/2017/06/06/531243619/in-southeast-alaska-the-ferry-system-is-a-lifeline>

## Arctic Deep Water Port

There is presently no deep water Arctic port in Alaska, nor one that can effectively serve the needs of the Arctic region of the state. In 2008, the Alaska Department of Transportation and Public Facilities, in conjunction with the Army Corps of Engineers, cosponsored the Alaska Deep Draft Arctic Ports Study to evaluate potential deep-water port locations. The Port of Nome was being considered as the best option for initial investment. The study was placed on a 12-month pause in October 2015, citing Royal Dutch Shell's cessation of operations in the Arctic for the foreseeable future. The project was not terminated entirely, ". . . because of the nature of the oil and gas industry and the strong interest in enhanced Arctic marine infrastructure, the [Army] Corps [of Engineers] and its partners have decided to pause the study, rather than terminate it."<sup>60</sup>

## Roadways

There is a limited road system in Alaska. The road system connects the population centers in Southcentral Alaska and the Interior, but not the Northern, Southwest, or Southeast regions (aside from Haines and Skagway in Southeast). However, this limited system is able to serve the majority of the Alaskan population. There are 12 Alaska routes and they include various highways, which go by more common names:

- **Route A-1** runs from Homer, through Anchorage to Tok and includes the Richardson, Glenn, Seward, and Sterling Highways.
- **Route A-2** runs from Manley hot Springs, through Fairbanks to the Yukon Territory of Canada. It includes the Alaska, Richardson, Steese and Elliot Highways.
- **Route A-3** connects Anchorage to Fairbanks and is also known as the Parks Highway.
- **Route A-4** runs from Valdez to Fairbanks through Delta Junction and is known as the Richardson highway.
- **Route A-5** runs from Tetlin Junction near Tok to Eagle and is known as the Taylor Highway.
- **Route A-6** runs from Fairbanks to Circle and is known as the Steese Highway.
- **Route A-7** consists of four unconnected segments serving several communities in the Southeast with the Alaska Marine Highway providing connections. A-7, along with the Alaska Marine Highway. It service Haines, Juneau, Petersburg and Ketchikan and contains the Haines, Glacier, Mitkof and Tongass Highways.
- **Route A-8** runs from Paxson to Cantwell and connects the A-3 to A-4.
- **Route A-9** runs from Seward to Anchorage and is known as the Seward Highway.
- **Route A-10** is two discontinuous highways. The Copper River highway connects Cordova to the Miles Glacier and the Edgerton highway connects Copper Center to Chitina.
- **Route A-11** connects Deadhorse to the Elliot Highway and is known as the Dalton Highway.
- **Route 98** connects Skagway to the Dawson City in the Canadian Yukon Territory and is known as the Klondike Highway within Alaska.

60 U.S. Army Corps of Engineers. (2015, October 23). *Corps, partners temporarily suspend study for Alaska Deep-Draft Arctic Port System* [Press release]. Retrieved November 16, 2016, from [http://www.dot.state.ak.us/stwddes/desports/assets/pdf/arctic\\_study\\_pause.pdf](http://www.dot.state.ak.us/stwddes/desports/assets/pdf/arctic_study_pause.pdf)

Only 31 percent of Alaska's road miles are paved and only two percent of Alaska's landmass can be reached by road.<sup>61</sup> During the winter, additional ice roads are often used as shortcuts across bodies of water such as lakes and rivers. Large ice roads are used on the North Slope to service some oil fields.

## Railway

The Alaska Railroad Corporation (an independent, public corporation of the State of Alaska) owns and operates 450 miles of mainline railroad. The railroad connects Whittier and Seward to Anchorage, then onto Fairbanks and the military bases of Ft. Wainwright and Eielson. In 2015, the Alaska Railroad Corporation became the first railroad authorized by the Federal Railroad Administration to transfer liquefied natural gas (LNG).<sup>62</sup>

The Alaska Railroad is vital to the visitor industry, as it transports visitors from Southcentral to Denali National Park and Fairbanks. In recent years, the Alaska Railroad Corp. has seen an increase in winter tourism and has added new round trips between Anchorage and Fairbanks in the winter months.<sup>63</sup> The independently-owned White Pass and Yukon Route, which runs between Skagway and Whitehorse, Yukon Territory, fulfills a similar function for many Southeast visitors, allowing them to travel inland from the Port of Skagway.

The Alaska Railroad is connected to the rest of North America via rail barge, meaning it accepts shipping containers in the Southcentral Port of Whittier for rail transport. Year-over-year, freight volume has been trending downward. The Alaska Railroad Corporation attributes the decline to lower oil and coal production. Declining freight volume led to a \$4.4 million operating loss in 2016.<sup>64</sup>

## B. Communications and Broadband

The importance of broadband communication is difficult to overstate. Having access to high speed and reliable internet service is a building block of participating in the modern economy, increasing efficiency and quality of life. A recent World Bank analysis of 120 countries showed that for every 10-percentage point increase in the penetration of broadband services, there is a 1.2 percentage point increase in per capita GDP growth.<sup>65</sup>

About 62 percent of Alaskans have access to broadband of 25 megabits per second (MBPS) or faster,<sup>66</sup> which is generally considered fast enough for typical business and personal activities. However, much of the state does not have reliable and quality bandwidth, lacking a modern level of service. Outside of Anchorage, Fairbanks, the Mat-Su Valley, and parts of Southeast Alaska, coverage drops off rapidly. Even where it is available speeds are generally lower and coverage is expensive. Access in rural Alaska has thus been limited, even as telecommunications companies like GCI work to build broadband infrastructure, at times with the assistance of federal funding. Alaska ranks 43rd in share of residents with access to high-speed internet.<sup>67</sup>

Two major initiatives hold strong potential to expand coverage of broadband in Alaska. GCI's TERRA project is an ongoing, multi-year effort to expand internet coverage throughout rural Alaska through a mix of fiber-optics and microwave relay stations. Early phases of the project brought service to parts of Southwest Alaska, with subsequent phases reaching northward into the Yukon-Kuskokwim

61 Alaska: Logistics at the Global Crossroads. (2013, April). *Inbound Logistics*. Retrieved November 15, 2016, from <http://www.inboundlogistics.com/cms/article/alaska-logistics-at-the-global-crossroads/>

62 Alaska Railroad Corporation. (n.d.). *Annual Report 2015* (Rep.). Retrieved November 21, 2016, from [https://www.alaskarailroad.com/sites/default/files/Communications/2015\\_ARRC\\_Annual\\_Report.pdf](https://www.alaskarailroad.com/sites/default/files/Communications/2015_ARRC_Annual_Report.pdf)

63 Baird, K. (2017, April 4). Alaska Railroad loses \$4.4 million in 2016 from declining freight. *Fairbanks Daily News-Miner*. Retrieved from [http://www.newsminer.com/news/local\\_news/alaska-railroad-loses-million-in-from-declining-freight/article\\_5e242880-190f-11e7-bb74-c3dbe7a28ca6.html](http://www.newsminer.com/news/local_news/alaska-railroad-loses-million-in-from-declining-freight/article_5e242880-190f-11e7-bb74-c3dbe7a28ca6.html)

64 Ibid.

65 Statewide Broadband Task Force. (2014, October). A Blueprint for Alaska's Broadband Future (Rep.). Retrieved from <http://www.alaska.edu/oit/bbtaskforce/docs/Statewide-Broadband-Task-Force-Report-FINAL.pdf>

66 BroadbandNow. (n.d.). Broadband Internet in Alaska. Retrieved December 1, 2016, from <https://broadbandnow.com/Alaska>

67 Ibid.

Delta and Norton Sound. The 2016-2017 expansion plan includes additional microwave stations around Norton Sound and Kotzebue area stretching toward Red Dog Mine. This should result in higher internet speeds to these areas.<sup>68</sup>

The second major broadband related initiative is the Quintillion Subsea Cable System being built by Quintillion, a private company headquartered in Anchorage. Quintillion's fiber optic cable system will bring high speed internet (30 terabytes per second capacity) to the Alaska communities of Nome, Kotzebue, Point Hope, Wainwright and Barrow, and expanded services to Prudhoe Bay in 2017. Quintillion is building the infrastructure and sells capacity on a wholesale basis to telecommunications providers. Quintillion's system is compatible with existing telecommunications infrastructure. Quintillion plans to add spurs into Alaska and the Canadian Arctic, and extend the system internationally to Asia and Europe. Once complete, the Quintillion system will provide a diverse digital route out of Alaska and North America, and between Asia and Europe.

## C. Energy

Although the energy sector is one of Alaska's largest industries because of oil and gas extraction, many Alaskans pay high costs for energy. Much of Southcentral and Southeast have access to relatively inexpensive natural gas or hydroelectric power generation but rural areas in the state have some of the nation's highest energy costs.

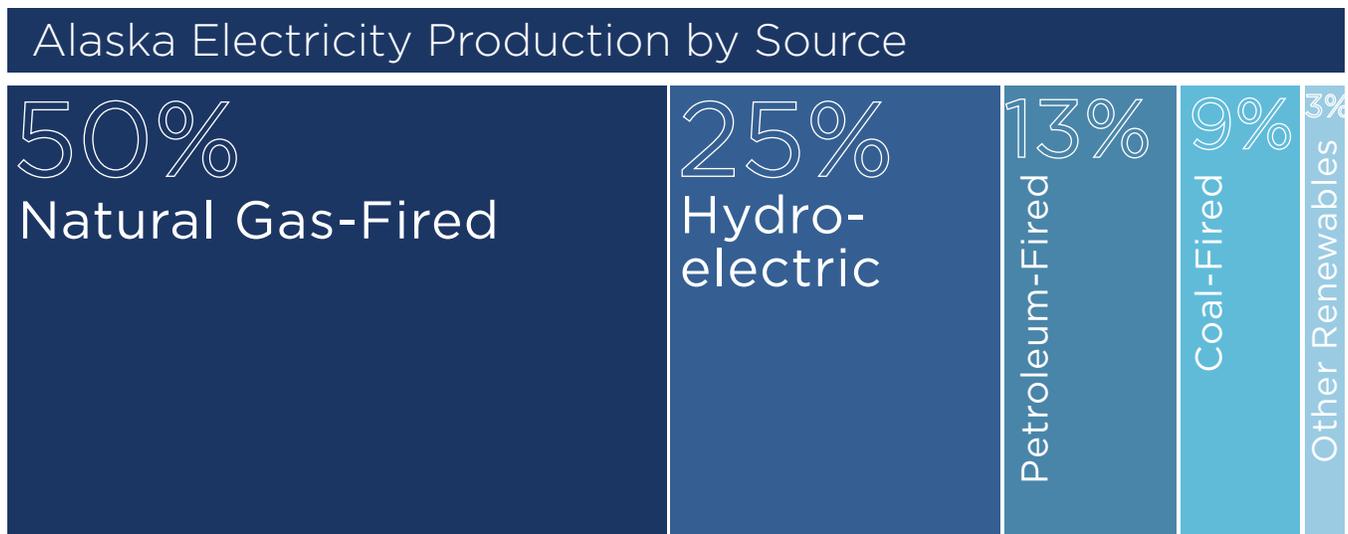


Figure 22: Alaska electricity production by source  
Source: U.S. Energy Information Agency

<sup>68</sup> GCI. (n.d.). TERRA. Retrieved December 1, 2016, from <http://terra.gci.com/home>

## Railbelt Energy

A little more than 2,000 mega-watts (MW) of installed power generation capacity exists along the Railbelt, serving an average annual load of about 600 MW and a peak load of more than 800 MW. Nearly 75 percent of the Railbelt's electricity comes from natural gas.<sup>69</sup>

- Anchorage based Chugach Electric has five plants generating 531.2 MW of installed capacity.<sup>70</sup>
- Anchorage based Anchorage Municipal Light and Power has three plants generating 379.2 MW.<sup>71</sup>
- Homer based Homer Electric Association has three plants that generate 208 MW.<sup>72</sup>
- The statewide Alaska Energy Authority has the Bradley Lake plant producing 120 MW.<sup>73</sup>
- Fairbanks based Golden Valley Electric has eight plants producing 356 MW.<sup>74</sup>
- Mat- Su Valley based Matanuska Energy Authority has one plant producing 171 MW.<sup>75</sup>
- Seward based Seward Electric has a 13.5 MW capacity in the form of backup generators.<sup>76</sup>

The Alaska Energy Authority-owned Alaska Intertie, completed in 1986, runs from Willow in the south to Healy in the north, and allows transfer of power from diverse energy sources to the six Railbelt electrical utilities.

## Rural Energy

Vast distances and difficult terrain often make interties between the Railbelt and remote rural communities prohibitively expensive. The cost of constructing transmission lines can vary from \$200,000 per mile to \$2,000,000 per mile depending on factors such as wire size, terrain, and climate conditions.<sup>77</sup> The high cost of creating transmission lines has led to the development of over 200 microgrids that locally generate and distribute power within communities with populations from 50 to several thousand. These microgrids can be powered by diesel generators or integrated electrical systems, which combine various sources of energy, such as hydro, solar, geothermal, or wind. According to the Alaska Energy Authority, nearly 30 wind systems have been installed or are in the advanced design phase, with an equal number being studied for feasibility.<sup>78</sup> Because of these projects, Alaska has emerged as a global leader in the integration of wind power and diesel in microgrids.

The small populations and remote natures of rural communities make economies of scale difficult to achieve, and with many systems working solely as islanded microgrids (with no connections to an outside grid), it is not possible to sell energy to another utility. There are also limited options in these communities to store or utilize surplus electricity.

69 Alaska Energy Authority. (2013, April). *Renewable Energy Atlas of Alaska* (Rep.). Retrieved November 17, 2016, from <http://www.akenergyauthority.org/Content/Publications/2013RenewableEnergyAtlasOfAlaska.pdf>

70 Chugach Electric Association, Inc. (n.d.). *Annual Report 2015* (Rep.). Retrieved November 16, 2016, from [http://www.chugachelectric.com/system/files/annual\\_reports/2015\\_annual\\_report\\_final\\_for\\_web.pdf](http://www.chugachelectric.com/system/files/annual_reports/2015_annual_report_final_for_web.pdf)

71 Municipal Light & Power. (n.d.). About ML&P. Retrieved November 18, 2016, from <https://www.mlandp.com/About-ML-P/Utility-Profile>

72 Homer Electric Association, Inc. (2015, August). *Annual Report 2014* (Rep.). Retrieved from <http://www.homerelectric.com/wp-content/uploads/2015/08/annual-report-total-proof-2.pdf>

73 Alaska Energy Authority. (n.d.). Owned Assets. Retrieved November 18, 2016, from <http://www.akenergyauthority.org/EnergyInfrastructure>

74 Golden Valley Electric Association. (2016, April). *At A Glance 2016* (Rep.). Retrieved November 18, 2016, from <http://www.gvea.com/images/pdf/AtAGlance041816.pdf>

75 Matanuska Electric Association. (n.d.). Eklutna Generation Station. Retrieved November 18, 2016, from <http://www.me.a.coop/about-mea/eklutna-generation-station/>

76 Loshbaugh, D. (2000, October 29). Proposed deal could lower electrical rates. *Peninsula Clarion*. Retrieved from [http://peninsulaclarion.com/stories/102900/new\\_102900new0020001.shtml#Wcyr9ItSycr](http://peninsulaclarion.com/stories/102900/new_102900new0020001.shtml#Wcyr9ItSycr)

77 AIDEA. (2010, April 1). *Transmission Lines in Rural Alaska* (Rep.). Retrieved December 1, 2016, from <ftp://ftp.aidea.org/2010AlaskaEnergyPlan/2010%20Alaska%20Energy%20Plan/Transmission%20Section%20Current%204-1-2010.pdf>

78 Alaska Energy Authority. (n.d.). Wind Program Overview. Retrieved December 1, 2016, from <http://www.akenergyauthority.org/Programs/AEEE/Wind>

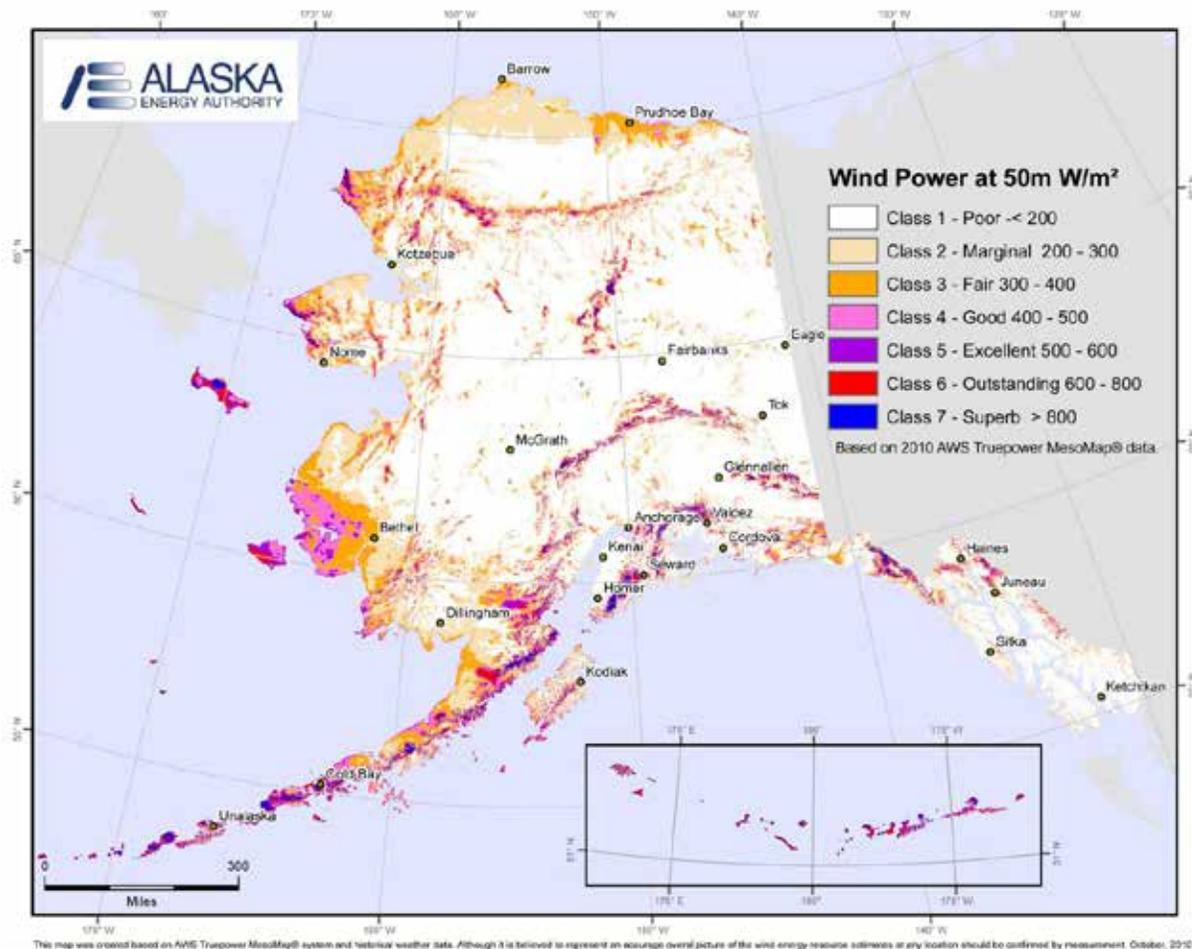


Figure 23: Map of Alaska wind power class by region

Source: Alaska Energy Authority

## Wind Energy

The oil shortages of the 1970s spurred interest in wind power within the U.S. as a whole.<sup>79</sup> Turbine technology capable of withstanding harsh Arctic temperatures was not available until the 1990s. As of fall 2015, there were 31 rural communities in the state utilizing some form of wind energy. In total, there are approximately 149 wind turbines that produce over 66.76 MW of electricity. The majority of these wind turbines are integrated with pre-existing diesel engines to create wind-diesel hybrid microgrid systems. Wind and hydro contributed 25 percent of Alaska's electricity generation in 2016.<sup>80</sup>

79 Wind Energy Foundation. (n.d.). History of Wind Energy. Retrieved November 18, 2016, from <http://windenergyfoundation.org/about-wind-energy/history/>

80 Resz, H. A. (2016, April). Renewable Energy in Alaska. *Alaska Business Monthly*, 58-61.

## Hydroelectric and Hydrokinetic

Due to the size of Alaska's coastlines and the number of rivers, Alaska hosts about 40 percent of the total U.S. river energy potential, 90 percent of the total U.S. tidal energy potential, and 40 percent of the U.S. continental shelf wave energy resource.<sup>81</sup> Tidal power technologies are still being developed and are behind wind turbines as an economically viable source of potential energy.<sup>82</sup>

There are relatively few tidal power plants in the world and the feasibility of power generation and cost are based on specific geographies. Also, with a high capital cost of about twice that of offshore wind,<sup>83</sup> and long plant life, sometimes 100 years, funding tidal plants can be difficult.

There are over 30 traditional hydroelectric projects in Alaska currently in operation and 11 more being developed.<sup>84</sup> Current large-scale projects include:

- **120 MW** Bradley Lake near Homer.
- **78 MW** Snettisham near Juneau and Douglas.
- **30 MW** Eklutna Lake facility near Anchorage.
- **22.4 MW** Swan Lake, which transmits power 30 miles to Ketchikan.
- **20 MW** Terror Lake near the City of Kodiak.
- **18.6 MW** Green Lake facility in Sitka.
- **16.7 MW** Cooper Lake Facility by Coopers Landing.
- **14.4 MW** Lake Dorothy near Juneau.<sup>85</sup>

There are additional regulatory barriers to deploying hydroelectric power when compared to terrestrial power. The Federal Energy Regulatory Commission has a regulatory role and other federal and state agencies provide regulation depending on a project's location. For projects located in ocean waters beyond the three-mile limit that defines state coastal waters, a project may require approvals from several federal agencies (such as the Bureau of Ocean Energy Management, Regulation and Enforcement, U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the U.S. Army Corps of Engineers).<sup>86</sup>

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## Other Renewable Energy Sources: Solar and Geothermal

Alaska's long, dark winters and constantly changing weather may make the state seem like a poor location for solar energy. However, parts of Alaska have amounts of sunlight penetration comparable to Germany, the world leader in solar power generation.<sup>87</sup> The solar modules used to generate energy also benefit from the low winter temperatures in Alaska, which improve their efficiency, and winter snow cover, which reflects more sunlight to the modules.<sup>88</sup> The state's broad geographic range means that different regions can have abundant solar resources at different times of the year. The Northern and Interior regions of Alaska have high solar production potential that averages approximately 15 percent and 13 percent respectively between the months of March and August.<sup>89</sup> This presents an opportunity for rural Interior Alaska communities to tap into this resource and reduce their fossil fuel dependence.

Alaska has four major areas with high geothermal potential: the Interior, the Wrangell Mountains, the "Ring of Fire" in the Aleutian Islands, and Southeast Alaska. Ground source heat pump (GSHP) systems are a use of geothermal energy. These electrically powered systems tap the relatively constant temperature of surrounding earth or water bodies to provide heating and cooling. More than 50,000 of these systems are installed in the U.S. each year. In Alaska, heat pump systems are used for space heating homes, commercial buildings, and public facilities. The Juneau Airport has had a GSHP in operation since 2011, and it has displaced significant quantities of traditional heating methods.<sup>90</sup>



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# VIII. Cost of Living

The high cost of living in Alaska—which spans essential categories like healthcare, housing, energy, and consumer goods—is often cited by businesses as a factor inhibiting economic development. Alaska has costs of living that are higher than the national average but are comparable to or lower than Pacific Northwest cities such as Portland and Seattle.

## A. Housing

Housing deserves special attention, as it constrains or enables the mobility of the workforce and affects overall quality of life. As measured by the COLI, Alaska's housing costs are high compared to national figures. Anchorage ranks among the 25 most expensive cities in the country for housing, closely followed by Juneau and Kodiak.<sup>91</sup>

The statewide average price for a new home is over \$375,000, or nearly 20 percent higher than the national average of \$313,200.<sup>92</sup> However, parts of the state have even higher housing costs, with Anchorage and Juneau both reporting newly constructed homes costing over \$500,000 on average. Among existing homes, the median price exceeds \$350,000 in Bethel, Anchorage, and Juneau. Prices are lower in Fairbanks, Mat-Su, and the Kenai Peninsula areas, where the median home costs roughly \$100,000 less than homes in Anchorage and Juneau.<sup>93</sup> AHFC reports that almost one-third of households in Alaska are cost-burdened, meaning they spend more than 30 percent of their total income on housing costs.<sup>94</sup>

<sup>91</sup> Council for Community and Economic Research. (2017, July). [2017 Cost of Living Index]. Proprietary data.

<sup>92</sup> United States, Department of Commerce, Census Bureau. (n.d.). *Median and Average Sales Prices of New Homes Sold in United States*. Retrieved from <https://www.census.gov/construction/nrs/pdf/uspriceann.pdf>

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<sup>94</sup> Alaska Housing Finance Corporation. (n.d.). *2014 Alaska Housing Assessment* (Rep.). Retrieved from <https://www.ahfc.us/efficiency/research-information-center/housing-assessment/>

## Average Single-Family Home Price, 3rd Quarter 2016

	Existing construction	New construction
Fairbanks	\$250,606	\$309,083
Mat-Su	\$264,263	\$291,807
Kenai Peninsula	\$275,720	\$315,412
Statewide	\$315,887	\$375,843
Kodiak Island	\$323,786	\$392,523
Ketchikan Gateway	\$338,600	N/A
Juneau	\$367,820	\$503,835
Anchorage Municipality	\$370,354	\$573,474
Bethel Census Area	\$395,000	N/A

Table 8: Average single-family home sale price, 3rd quarter 2016

Source: Alaska Department of Labor & Workforce Development

What the above figures do not reflect is that many Alaskan communities face problems of overcrowded housing. According to the 2014 Alaska Housing Assessment, published by AHFC the rate of overcrowding is twice as high as the national average partly driven by small housing unit sizes. The greatest amount of overcrowding occurs in these rural areas: the Northwest Arctic Borough in the Northern region (39 percent of homes are overcrowded), and the Yukon-Kuskokwim Delta in the Southwest region (40 percent overcrowding).<sup>95</sup>

## B. Healthcare

Alaska has high and increasing healthcare costs relative to the rest of the United States due in part to the state's vast geography, limited competition among providers, low participation of specialists in provider networks, and higher cost of living. The distance between communities can make it difficult to provide adequate care, and often requires that patients travel from rural areas to larger healthcare facilities. Individual market insurance premiums confirm what other measures show — that health care costs in Alaska are especially high. Alaska's average monthly premium for health insurance purchased on the individual market in 2017 is more than \$300 higher than that of the next-highest state.<sup>96</sup> However, these premiums are before any federal tax credits, which can be significant. Medical costs have gone up an average of 4.1 percent a year for the past decade, far outpacing inflation.<sup>97</sup>

<sup>95</sup> Ibid.

<sup>96</sup> Fried, N. (2017, July). The Cost of Living. *Alaska Economic Trends*, 37(7), 4-13. Retrieved from <http://labor.alaska.gov/trends/jul17.pdf>

<sup>97</sup> Ibid.

## Individual Market Average Premiums in 2017

Rank	State	Average Monthly Premium
1	Alaska	\$1,041
2	West Virginia	\$702
3	North Carolina	\$662
4	Oklahoma	\$620
5	Wyoming	\$614
6	Arizona	\$611
7	Nebraska	\$595
8	Tennessee	\$587
9	Montana	\$581
10	Alabama	\$575
<b>U.S.</b>		<b>\$476</b>

Table 9: Individual Market Average Premiums in 2017

Source: U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation

## C. Cost of living in Alaska vs. other U.S. cities

The Council for Community and Economic Research is the most widely cited source for comparing the cost of living in different cities. The Council conducts detailed surveys of more than 250 U.S. cities, including four in Alaska: Anchorage, Juneau, Fairbanks, and Kodiak. The survey's consumption pattern represents a professional or executive household in the top income quartile and includes 57 specific items in categories such as groceries, housing, utilities, transportation, and health care.

The survey's shortcomings are that it does not take into account how consumption varies around the country, and it does not factor in taxation, where Alaska has a clear advantage over most states.

The survey reports that the costs of living in Anchorage, Juneau, Fairbanks, and Kodiak remain well above the national average. All four were in the top 20 most expensive communities in the country in the first quarter of 2017. Anchorage came in at 127.6 percent (ranked 20/265), Kodiak's index was 131.8 percent (ranked 19/265), Juneau at 132.1 percent (ranked 18/265), and Fairbanks had the highest cost of living of Alaska communities surveyed at 134.3 percent (ranked 17/265). Alaska's index values have not changed much in the past 30 years. In the 1960's, Anchorage's index was typically in the 160's and as high as 174.7, meaning Anchorage costs were 74.7 percent higher than the average U.S. city.

Prices in Alaska tend to be higher than most other states. First quarter 2017 COLI data show that only Hawaii, the District of Columbia, and California had higher average prices than Alaska. It is important to note that this is based on data from only four Alaska communities - Anchorage, Fairbanks, Juneau and Kodiak. Prices in rural Alaska can be significantly higher which, if included, could increase Alaska's rank even more.

## 2017 Cost of Living Index (National Average = 100%)

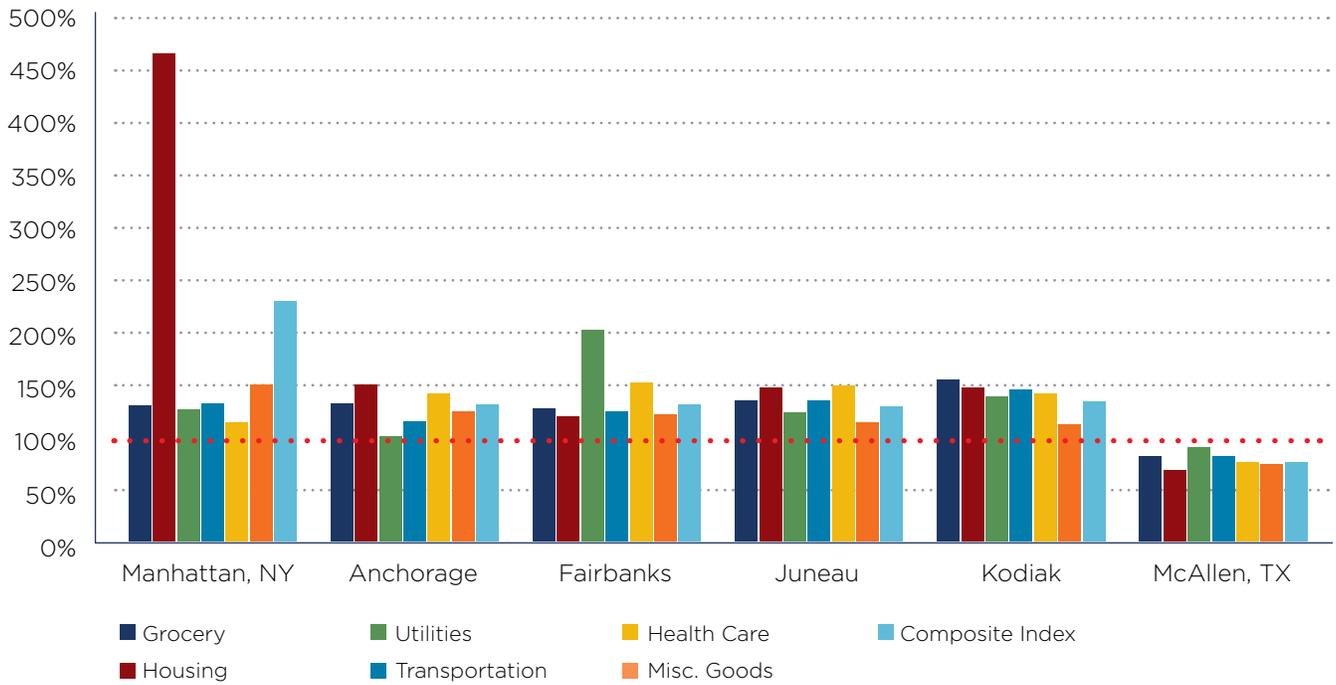


Figure 24: 2017 First Quarter Cost of Living Index  
 Source: Council for Community & Economic Research

# IX. Innovation Assets

Alaska hosts a variety of programs and institutions that enable the growth of innovation and entrepreneurship, and position the state to compete in the global economy. These assets include university research institutes and other public and private structures designed to support a thriving entrepreneurial sector. These are summarized below. (See Table 9.)

Type	Asset	Role in Innovation
<p><b>University of Alaska Research Centers</b></p>	<ul style="list-style-type: none"> <li>• Alaska Center for Unmanned Aerial Systems Integration</li> <li>• Alaska Basic Neuroscience Program</li> <li>• Alaska Center for Energy and Power</li> <li>• Alaska Satellite Facility</li> <li>• Arctic Region Super Computing Center</li> <li>• Coastal Marine Institute</li> <li>• Cooperative Extension Service</li> <li>• Geographic Information Network of Alaska</li> <li>• Geophysical Institute</li> <li>• Office of Intellectual Property and Commercialization</li> <li>• Mineral Industry Research Lab</li> </ul>	<p>Development and commercialization of intellectual property, research and development, ability to conduct sponsored research and contracted activities</p>
<p><b>Technical Assistance</b></p>	<ul style="list-style-type: none"> <li>• UAA Business Enterprise Institute</li> <li>• Alaska Regional Development Organizations</li> <li>• Launch:Alaska Accelerator</li> <li>• U.S. Small Business Administration</li> </ul>	<p>Hands-on assistance to businesses, training resources</p>
<p><b>Financing</b></p>	<ul style="list-style-type: none"> <li>• 49th State Angel Fund and affiliated funds</li> <li>• Alaska Investor Network</li> <li>• DCCED loan programs</li> <li>• Community Financial Development Institutions</li> <li>• AIDEA</li> <li>• Alaska Growth Capital</li> <li>• U.S. Small Business Administration</li> </ul>	<p>Equity finance and loans</p>
<p><b>Startup Support</b></p>	<ul style="list-style-type: none"> <li>• Launch: Alaska startup accelerator</li> <li>• UA Center for Economic Development Business Plan Competition</li> <li>• Startup Weekend, Startup Week</li> <li>• Path to Prosperity</li> <li>• Spruce Root</li> <li>• The Boardroom coworking space</li> </ul>	<p>Supporting startups in business plan creation, mentorship, networking, and finding financing</p>
<p><b>Co-working and Networking</b></p>	<ul style="list-style-type: none"> <li>• Startup Digest</li> <li>• 1 Million Cups entrepreneur networking program</li> <li>• Juneau Innovation Summit</li> </ul>	<p>Entrepreneurial events, hub for investors, catalyst for founders</p>

Table 10: Alaska's innovation assets summarized

# X Resilience Framework

A critical consideration for a statewide CEDS is planning for the mitigation of unforeseen negative events. These could potentially include natural disasters, climate change-related events, or downturns affecting particular sectors or the whole economy. Like any state or region, Alaska has its own set of potentially negative events that could occur in the future. The goals of Northern Opportunity: Alaska's Economic Strategy have been developed with these in mind.

Historically, Alaska has faced the fallout from a number of the types of negative events listed below. The Good Friday Earthquake of 1964, Exxon-Valdez oil spill of 1989, and the current downturn in the oil and gas sector stand out as highly visible, negative events. Recent years have seen disaster declarations by the Federal Emergency Management Agency in Alaska for storms, floods, ice jams, and landslide.<sup>100</sup> The National Oceanic and Atmospheric Administration has declared disasters for Yukon River salmon and Bering Sea snow crab in response to unusually poor harvests.<sup>101</sup>

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<sup>100</sup> FEMA disaster declarations listed here: <https://www.fema.gov/disasters/grid/state-tribal-government/%2086>

<sup>101</sup> NOAA fisheries disasters listed here: <http://www.nmfs.noaa.gov/sfa/management/disaster/determinations/akro.html>

Type of Event	Likely Economic Effects
<p><b>Natural disasters:</b> Earthquakes, tsunamis, floods, storms, wildfires</p>	<ul style="list-style-type: none"> <li>• Damage or inoperability of critical infrastructure</li> <li>• Inadequate local funds to rebuild</li> <li>• Dislocation of workforce</li> <li>• Temporary or permanent closure of businesses</li> <li>• Inability to deliver critical supplies to affected areas</li> </ul>
<p><b>Commodity price collapses:</b> Fisheries, oil and gas, minerals, timber</p>	<ul style="list-style-type: none"> <li>• Loss of jobs and income in affected industry</li> <li>• Ripple effects to other businesses</li> <li>• Decline in local or state revenue, resulting in difficulty sustaining core services</li> <li>• Loss of population (statewide or local areas)</li> </ul>
<p><b>Environmental contamination:</b> Oil production or transport accidents, sites contaminated by military or industrial use</p>	<ul style="list-style-type: none"> <li>• Displacement of fisheries employment</li> <li>• Shortage of cleanup funds</li> </ul>
<p><b>Climate change:</b> Changing sea ice, extreme weather events, melting permafrost, coastal erosion ocean acidification</p>	<ul style="list-style-type: none"> <li>• Sea ice changes affecting shipping and freight</li> <li>• Damage to infrastructure and property caused by coastal erosion</li> <li>• Subsistence gathering, general food security, storage, and cultural, sense of purpose</li> <li>• Ocean acidification could have negative effects on Alaska's vibrant fishing industry and emerging mariculture sector.</li> <li>• Community relocations, costing far more than communities can afford</li> </ul>
<p><b>Subsistence threats:</b> Declines in fish or game populations, migratory changes, regulatory changes</p>	<ul style="list-style-type: none"> <li>• Loss of food source</li> <li>• Loss of culturally relevant livelihood</li> </ul>

Table 11: Negative scenarios, with economic consequences

# XI. SWOT Analysis for Alaska

## A strengths, weaknesses, opportunities, and threats

(SWOT) analysis is used to critically examine the position of a state economy, to assist in the formation of goals and strategies. Strengths and weaknesses are internal to the state, while opportunities and threats are external elements that exert influence. This SWOT takes into account background research, community and industry forum input, strategy committee discussion, and other information.

		Beneficial	Harmful
Internal	<b>Strengths</b>	<ul style="list-style-type: none"> <li>Rich in natural resources: oil, gas, minerals, timber, seafood</li> <li>Availability of renewable resources</li> <li>Geographic location on Pacific Rim and Arctic</li> <li>Base industries: seafood, resources, visitors, federal government</li> <li>High-wage jobs in urban areas</li> <li>Alaska Native Corporations as leading businesses</li> <li>Burgeoning entrepreneurial ecosystem</li> <li>Natural beauty attracts visitors and new residents</li> </ul>	<ul style="list-style-type: none"> <li>Rural unemployment</li> <li>Weak high school to college pipeline</li> <li>Lack of key workforce skills</li> <li>State revenue dependent on one source</li> <li>Limited manufacturing or heavy industry outside resources</li> <li>High cost of living: housing, energy, healthcare, transportation</li> <li>Lack of broadband penetration over much of the state</li> <li>Small population limits business scalability</li> <li>Distance from markets for surface transportation</li> <li>Limited infrastructure (energy, transportation)</li> </ul>
	<b>Opportunities</b>	<ul style="list-style-type: none"> <li>Opening of Arctic shipping routes</li> <li>Military importance of Alaska</li> <li>Global demand for Alaskan commodities</li> <li>Global importance of Alaska-specific knowledge: energy, unmanned aircraft, Arctic science, remote sensing</li> <li>New fiber linkages for high-speed broadband</li> <li>Opportunities for circumpolar collaboration</li> </ul>	<b>Threats</b>
External			<ul style="list-style-type: none"> <li>Changing commodity markets</li> <li>Increased global competition in oil and gas</li> <li>Consequences of climate change</li> <li>Changing patterns of federal spending in the state</li> <li>Federal regulatory environment can inhibit resource development</li> <li>Majority of lands under federal control</li> </ul>

Table 12: SWOT summary of Alaska's economic position

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