

# Status of the Oil and Gas Industry Labor Pool in Alaska and State Workforce Development Efforts

The state has established the oil and gas industry as a priority occupation and has worked in close cooperation with business and labor organizations to develop comprehensive training plans to enhance Alaska’s skilled workforce. These plans have increased workforce readiness in Alaska and have, through a variety of technical training programs, enhanced job opportunities for Alaska’s workforce. Research on Alaska training programs has demonstrated that the workforce development efforts by the state have enhanced the Alaska skilled labor pool and have contributed to workers’ high-wage, long-term, stable employment in Alaska. This chapter first addresses the status of the oil and gas industry labor pool and then assesses the effectiveness of workforce development efforts by the state.

## I. Status of the Alaska Oil and Gas Industry Labor Pool

### A. Oil and Gas Employment Forecast

According to the Alaska Department of Labor and Workforce Development’s Research and Analysis section, employment in oil and gas extraction is projected to increase by 15.3 percent through 2022, but few industries have such a wide range of possible long-term outcomes.

## 1 Alaska Employment Forecast by Industry 2012 to 2022

Industry <sup>1</sup>	2012 estimated jobs <sup>2</sup>	2022 projected jobs	Change from 2012 to 2022	Total % change <sup>3</sup>
<b>Total Employment, All Jobs<sup>4</sup></b>	<b>333,953</b>	<b>370,066</b>	<b>36,113</b>	<b>10.8%</b>
<b>Goods-Producing</b>	<b>48,501</b>	<b>54,132</b>	<b>5,631</b>	<b>11.6%</b>
Natural Resources and Mining	18,062	21,494	3,432	19.0%
Agriculture, Forestry, Fishing and Hunting	1033	1091	58	5.6%
Mining	17,029	20,403	3,374	19.8%
Oil and Gas Extraction	3,889	4,484	595	15.3%
Mining (except Oil and Gas)	2,758	3,441	683	24.8%
Support Activities for Mining	10,382	12,478	2,096	20.2%
Construction	16,545	17,632	1,087	6.6%
Construction of Buildings	4,909	5,630	721	14.7%
Heavy and Civil Engineering Construction	3,269	3,374	105	3.2%
Specialty Trade Contractors	8,367	8,628	261	3.1%
Manufacturing	13,894	15,006	1,112	8.0%
Food Manufacturing	10,616	11,319	703	6.6%
Seafood Product Preparation and Packaging	10,166	10,844	678	6.7%
Manufacturing, All Other	3,278	3,887	409	12.5%
<b>Services-Providing</b>	<b>285,150</b>	<b>315,799</b>	<b>30,649</b>	<b>10.7%</b>
Trade, Transportation, and Utilities	65,573	71,939	6,366	9.7%
Wholesale Trade	6,373	7,317	944	14.8%
Retail Trade	35,308	38,823	3,515	10.0%
Transportation and Warehousing <sup>5</sup>	21,717	23,464	1,747	8.0%
Air Transportation	5,903	6,288	385	6.5%
Water Transportation	924	1,106	182	19.7%
Truck Transportation	3,220	3,764	544	16.9%
Transportation and Warehousing, All Other	11,670	12,306	636	5.4%
Utilities	2,175	2,335	160	7.4%
Information	6,189	6,370	181	2.9%
Financial Activities	12,885	14,168	1,283	10.0%
Finance and Insurance	7,023	7,604	581	8.3%
Real Estate and Rental and Leasing	5,862	6,564	702	12.0%
Professional and Business Services	29,337	33,895	4,558	15.5%
Professional, Scientific, and Technical Services	15,120	17,578	2,458	16.3%
Management of Companies and Enterprises	2,559	3,069	510	19.9%
Administrative and Support and Waste Management and Remediation Services	11,658	13,248	1,590	13.6%
Education and Health Services	76,123	90,154	14,031	18.4%
Educational Services, Public and Private <sup>6</sup>	31,219	34,003	2,784	8.9%
Elementary and Secondary Schools, Public and Private	21,813	23,987	2,174	10.0%
Educational Services, Public and Private, All Other	9,406	10,016	610	6.5%

Table continues on next page

Industry <sup>1</sup>	2012 estimated jobs <sup>2</sup>	2022 projected jobs	Change from 2012 to 2022	Total % change <sup>3</sup>
Health Care and Social Assistance, Public and Private <sup>7</sup>	44,904	56,151	11,247	25.0%
Ambulatory Health Care Services	17,310	22,236	4,926	28.5%
Hospitals	13,225	15,877	2,652	20.1%
Health Care and Social Assistance, All Other	14,369	18,038	3,669	25.5%
Leisure and Hospitality	33,524	37,360	3,836	11.4%
Arts, Entertainment, and Recreation	4,703	5,259	556	11.8%
Accommodation and Food Services	28,821	32,101	3,280	11.4%
Accommodation	7,911	9,044	1,133	14.3%
Food Services and Drinking Places	20,910	23,057	2,147	10.3%
Other Services (Except Government)	12,196	12,904	708	5.8%
Total Government	49,323	49,009	-314	-0.6%
Total Federal Government <sup>8</sup>	14,368	13,071	-1,297	-9.0%
Total State Government <sup>9</sup>	17,832	18,774	942	5.3%
Total Local Government <sup>10</sup>	17,123	17,164	41	0.2%
Unreported	302	135	-	-

Notes:

<sup>1</sup>Several industry categories are not consistent with others we publish as detailed in the footnotes below.

<sup>2</sup>Industry sector numbers may not sum to total employment because of rounding.

<sup>3</sup>Percent change may be inconsistent with employment change due to rounding of the employment numbers.

<sup>4</sup>Excludes self-employed workers, fishermen, domestic workers, unpaid family workers, and nonprofit volunteers.

<sup>5</sup>Includes U.S. Postal Service employment.

<sup>6</sup>Includes local and state government educational service employment.

<sup>7</sup>Includes public sector hospital employment.

<sup>8</sup>Excludes uniformed military, postal, and hospital employment.

<sup>9</sup>Excludes university, railroad, and hospital employment.

<sup>10</sup>Excludes public school and hospital employment.

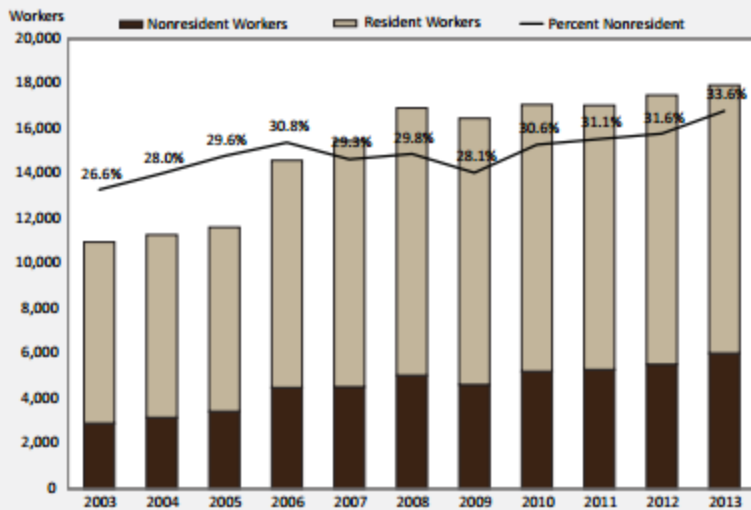
Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

The last decade has seen major price swings, declining production, and relatively strong overall job growth in the oil and gas industry. The impact of a major change to the state's oil and gas tax structure in 2014 and the new investment that oil companies announced in response will take a number of years to assess. Oil prices, both current and projected, will continue to drive investment decisions, but technological developments, national policies and politics, and stability in the world's oil-producing regions will all play a role in shaping investment decisions.

## B. Non-residents in the Oil and Gas Labor Pool

The exhibit below shows that the number of oil and gas workers in Alaska has risen between 2003 and 2013. Non-resident workers currently make up over a third of the oil and gas workforce, which constitutes the highest percentage of non-resident workers in the last ten years.

## 6 Oil Industry Workers Alaska, 2003 to 2013



Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

Source: <http://laborstats.alaska.gov/reshire/NONRES.pdf>

Although non-residents earn more per quarter, residents earn more annually — \$81,588 versus \$76,903 — primarily because residents work more quarters.

### C. Oil and Gas Industry Workforce Development Planning by the Alaska Department of Labor and Workforce Development between 2007-2015

In 2007, the Alaska Legislature passed the Alaska Gasline Inducement Act (AGIA), which directed the Commissioner of the Alaska Department of Labor and Workforce Development (ADOLWD) to develop a training program for gasline workers. AGIA provided limited funding to prepare an Alaska workforce for careers in construction, operations, management, and other occupations related to natural gas resource development, including a gas pipeline.

The department began working on the AGIA Training Strategic Plan in May of 2007, and the Plan was updated in 2009. The Plan included four strategies.

- Strategy 1.0: “Increase awareness of and access to career opportunities in natural resource development.”
- Strategy 2.0: “Develop a comprehensive, integrated Career and Technical Education system for Alaska that aligns training institutions and coordinates program delivery.”
- Strategy 3.0: “Increase opportunities for registered apprenticeship in skilled occupations and expand other structured training opportunities.”
- Strategy 4.0: “Increase opportunities for development of appropriate training programs for operations, technical, and management workers.”

In 2010 the Alaska Department of Labor and Workforce Development and the Department of Education and Early Development met with educators, employers, apprentice sponsors, and other workforce development advocates to create the Alaska Career and Technical Education (CTE) Plan. This Plan identified actions needed to develop secondary and postsecondary options in career and technical education programs, including those aimed at preparing students for oil and gas industry occupations.

In 2014 the ADOLWD developed the Alaska Oil and Gas Workforce Development Plan 2014-2018, which was adopted by the Alaska Workforce Investment Board. This plan expanded the definition of the AGIA Training Strategic Plan to encompass the oil and gas industry from exploration through primary distribution. This plan updated the action agenda to increase the alignment of education, training, and incentives to produce a skilled Alaska workforce. Planning accounted for potential development by Shell in the Arctic and Point Thomson natural gas development along with other projected industry investment.

#### **D. Future Natural Gas Workforce Planning**

Alaska's Stand Alone Pipeline (ASAP) and Alaska Liquid Natural Gas (AKLNG) pipeline and production facilities represent the largest natural gas pipeline projects in the United States (ASAP) and in the world (AKLNG). Currently ASAP is expected to produce over 8,000 jobs. Although the AKLNG workforce demand projections are not available yet, that project will require many more workers than the ASAP due to the gas treatment and transportation infrastructure associated with building a pipeline. Each project has an estimated three-year timeline for construction of the pipelines and associated components.

Point Thomson and these pipeline projects represent a large number of long-term operations jobs and careers (>1,000) that can have a long-lasting effect on the state and local economy well after construction jobs have been completed. Although some projects are a decade or more away, the ADOLWD has begun the initial work for a natural gas workforce plan, laying the groundwork for a more in-depth workforce plan as those projects move forward.

#### **E. Plans in Action: Publicly Funded Education and Training**

On July 1, 2007, the United States Department of Labor, Employment and Training Administration (U.S. DOLETA) funded the Alaska Pipeline Worker Training Project (APWTP) with a \$7.5 million discretionary award. The federal training grant funded the implementation of the AGIA Training Strategic Plan and contributed to the outcomes described below.

- Of the 1,748 participants who completed training through the Alaska Pipeline Worker Training Project by December 31, 2011, their total earnings in the two quarters following completion amounted to \$40,922,700.

- 1,515 (86.6 percent) of the 1,748 participants who completed training were employed in the first quarter following completion of the training.
- Finally, 644 of 1,515 participants, or 42.5 percent, who were employed in the first quarter following completion had an increase in earnings in excess of \$5,000 when comparing the two quarters prior to training with the two quarters following program completion.

Based on a review of wage records for three years after completing these programs, 80% of these individuals were represented on Alaska payrolls. Wages for these individuals increased by slightly more than 30% or more than \$13 million since receiving training.

From 2010-2015 the Alaska Legislature invested \$2.9 million for projects implementing the Oil & Gas Workforce Plans, which provided 39 grants over that period. Funded projects involved industry employers and associations, secondary and postsecondary career and technical education programs, and industry employees and apprentices. More than 3,200 high school students and adults were involved in these projects. Examples of these workforce projects include:

- The creation of career information and corresponding courses to increase the awareness of industry careers and increase science, technology and math skills to better prepare students for advancing in their career plan;
- The expansion of occupational health and safety certification training for new industry workers and incumbent workers; and
- The expansion of industry specific training for job seekers, apprentices, and safety personnel.

Additional oil and gas workforce development accomplishments in recent years include:

- Establishment of a four-year degree program in Environmental Safety and Health in partnership with the University system and industry;
- Development of Process Technology programs at several University of Alaska campuses;
- Development of high school CTE programs in pre-engineering, process technology and other career pathways related to natural resource careers;
- Alaska Vocational Technical Center programs in a variety of industrial electrical, welding, pipefitting, maritime, and technological fields;
- A renewed focus on expanding Registered Apprenticeships by ADOLWD; and
- Establishment of the Fairbanks Pipeline Training Center.

The Fairbanks Pipeline Training Center is located on a nine-acre campus in the Fairbanks Industrial Area. The Center is owned and operated by the Fairbanks Pipeline Training Center Trust, which is administered by labor and management trustees involved in oil and gas development projects. The Center opened in November 2009 and houses state-of-the-art

oil, gas, and construction industry training programs for trades necessary for building and maintenance of large-diameter oil and gas pipelines as well as civil construction, such as ice roads, and building trades construction. A 40-bed co-ed dormitory was constructed in 2014. The campus was developed through significant investment by the Fairbanks North Star Borough, the Alaska Legislature, Pipeline Trade Apprenticeship Trusts, the U.S. Department of Commerce's Economic Development Administration, and industry contributions.

The Fairbanks Pipeline Training Center Campus provides the following programs:

- The University of Alaska Fairbanks Community and Technology Process Technology Associates Degree program and the professional Occupational Safety and Health Certificate Program;
- Fairbanks Plumbers & Pipefitters Training Center, which provides training in pipeline welding and other skills;
- After-school, for-credit training in electricity for high school students;
- Fairbanks Construction Academy (FCA), providing basic skills training for adults;
- Alaska Works Partnership's Construction Academies, Alaska Helmets-to-Hardhats, Weatherization, Building Maintenance;
- Training in 48-inch diameter steel pipeline welding technology for oil and gas; and
- A 52-acre civil construction and pipeline construction training yard that serves the Alaska Operating Engineers and Alaska Teamsters Apprentice Training Centers.

Since the Alaska Process Industry Careers Consortium's (APICC) formation in 1995, the Consortium continues to promote career development in middle school through postsecondary education and has developed best practice internships and externships. These programs strengthen the public education career pathways leading to oil and gas jobs. APPIC manages the North Slope Training Consortium, which offers high-quality, standardized training in areas such as health, safety, and the environment for employees working on the North Slope. The Consortium has commissioned a study reviewing cross-industry priority occupations among oil, gas, mining, construction, health care, transportation, and maritime industries. Many of the skills necessary for oil and gas development involve several industry sectors. This study will help to determine the priority occupations among the industries and how they could collaborate to support outreach and training to meet common priority occupation needs.

#### **F. A Current Look at the Status of Alaska's Workforce: ExxonMobil's Point Thomson Natural Gas Development Project**

Exxon Alaska's Point Thomson Natural Gas Development Project provides a lens through which to assess further the readiness of the ability of Alaska businesses and employees to engage in a \$2 billion development that is the base for future natural gas pipelines from Alaska's North Slope. Point Thomson lies on the Beaufort Sea between Prudhoe Bay and

Kaktovik. The reservoir in Point Thomson contains around 8 trillion cubic feet of natural gas and an estimated 200 million barrels of natural gas condensate. The Point Thomson reservoir constitutes around one quarter of the known gas resources on the North Slope. Currently ExxonMobil is developing facilities to produce up to 10,000 barrels per day of natural gas condensate. The project includes a 22-mile pipeline to transport natural gas condensate from this facility to the Trans Alaska Pipeline System. Numerous pieces of critical infrastructure have been completed, including housing and facilities for over 200 people onsite, installation of the 22-mile pipeline, fuel tanks, an onsite airstrip, and initial production facilities.

Workforce readiness can be gauged broadly by the size of the workforce, which is over 1,000 workers, in temporary jobs supporting development of the project's infrastructure and initial delivery system to transport condensate gas to the Trans Alaska Pipeline. In addition to being on-time and under budget thus far, the project has a superlative safety record and a higher percentage of resident-hire than other sizeable oil industry projects completed over the past decade.

Doyon, Limited was the prime contractor responsible for on-site development and pipeline construction. This project included working with industry trainers at the Fairbanks Pipeline Training Center to test new welding processes and train welders in methods for building a 12-inch diameter pipeline for carrying natural gas condensates. This project exemplifies what industry sector workforce partners are capable of today as the search for Arctic energy expands and Alaska North Slope natural gas moves toward the market.

#### **G. Alaska Stand Alone Pipeline Project**

The Alaska Stand Alone Pipeline (ASAP) is Alaska's in-state natural gas pipeline project designed to provide a more affordable, long-term energy solution for Alaska communities including Fairbanks and South-central Alaska. The 727-mile, low-pressure pipeline will transport natural gas from Prudhoe Bay to Point MacKenzie, with a 30-mile pipeline connecting Fairbanks to the main pipeline. An in-state gasline could transport gas to Alaska communities by 2020 with construction beginning in 2016. With an estimated cost of \$9.97 billion, the Alaska Stand Alone Pipeline would be financed by a combination of debt and equity from the owners. The pipeline would have the capacity to carry up to 500 million cubic feet per day of consumer grade lean gas. The Stand Alone Pipeline has the potential to establish a reliable, affordable energy source for Alaskans. With a growing demand for natural gas, other rural communities could come on-line and create local utility cooperatives and companies specializing in natural gas delivery. Economic benefits for Alaskans of the Stand Alone Pipeline include providing 8,000 jobs during construction, boosting economic opportunities, and increasing public revenue from Alaska's energy basins.

#### **H. Alaska Liquid Natural Gas Project**

The Alaska LNG export project would be among the world's largest natural gas development projects. The project sponsors are North Slope producers ExxonMobil, ConocoPhillips and BP,

as well as pipeline company TransCanada and the state of Alaska. The companies estimate a cost of between \$45 to over \$65 billion (2012 dollars) for the project that includes a massive plant to cleanse produced gas of carbon dioxide and other impurities; an approximately 800-mile pipeline from Alaska's North Slope to the liquefaction plant; and an LNG plant, storage and shipping terminal at Nikiski, which is 60 air miles southwest of Anchorage along Cook Inlet. The 42-inch-diameter pipeline would be built to carry 3 to 3.5 billion cubic feet of natural gas per day. Alaskans would use some of this gas, and operating the pipeline and LNG plant would consume another portion of the gas. The plant would have the capacity to produce up to 20 million metric tons a year of LNG, processing 2.5 billion cubic feet a day of gas. The project is in the pre-front-end engineering and design (pre-FEED) phase, which is expected to be completed in late 2015 or 2016. The estimated number of jobs associated with the project is not available at this time but will be by 2016.

## **II. Effectiveness of State Workforce Development Efforts and Room for Growth**

The state's workforce development efforts, including the training centers and support for registered apprenticeships, have successfully increased workforce readiness and have enhanced job opportunities for Alaska workers. The Alaska Department of Labor and Workforce Development participated in a research demonstration project with the U.S. Department of Labor's Office of Apprenticeship to study the value of registered apprenticeship programs. In 2009, *Alaska Economic Trends* reported key findings of the study on the impacts of apprenticeship programs. For instance, the study found that since 1996, 90 percent of workers who completed an apprenticeship were still working in Alaska in 2007. In addition, current and former apprentices earn nearly 36 percent more than the average Alaska worker. Workers who completed an apprenticeship earn almost twice as much as those who dropped out of an apprenticeship. Overall, the research findings demonstrated that the completion of an apprenticeship program leads to high-wage, long-term, stable employment in Alaska, particularly when comparing the outcomes of individuals who completed the apprenticeships with individuals who dropped out of the program. There are three key areas with room for growth in the state's workforce development efforts. First, the linkage between secondary education and training programs as well as the linkage between postsecondary training and jobs could be improved. Second, the state should develop policy mechanisms to increase the use of training and registered apprenticeships in both state-funded projects and private projects. Finally, to reach out to Alaska's increasingly diverse labor pool, the state's workforce development programs should engage in multilingual community outreach programs.

The AGIA Training Strategic Plan already highlighted the linkage issue as a key area for improvement. The purpose of linking students to training programs and linking students in postsecondary training to job opportunities is to ensure that potential workers have access to technical training and are aware of their career options. Together, the Department of Labor and Workforce Development, the Department of Education and Early Development, and local school districts can improve these linkages to ensure that students have access to the training necessary for successful career planning.



The state should develop non-funding based policy mechanisms to increase the use of registered apprenticeships in both state-funded projects and private projects. The AGIA Training Strategic Plan similarly proposed increasing employment opportunities for apprenticeships on all construction and infrastructure projects. The AGIA plan suggested specific action steps to achieve this goal, including the requirement of apprenticeship employment on all state-funded construction projects and the identification and adoption of incentives to encourage utilization of apprenticeships and other on-the-job training. Additional steps should be taken to implement these action items to promote the use of registered apprentices in state-funded construction as well as private construction.

Finally, Alaska's population is more diverse than much of the United States, and with Alaska's increasing diversity, the workforce development programs should conduct additional community outreach to ensure that the training programs are available and accessible to Alaska's diverse population.

In sum, research has demonstrated that the state's workforce development programs have enhanced the skilled labor pool and have contributed to workers' high-wage, long-term, stable employment in Alaska. In addition, through continued cooperation with industry and labor, there are several growth opportunities for the state's workforce development efforts by improving the linkage between education and both subsequent training and career opportunities, by promoting the use of apprenticeships in state-funded construction and private construction projects, and by conducting community outreach to Alaska's increasing diverse labor pool.