



**ALASKA  
OIL AND GAS WORKFORCE  
DEVELOPMENT PLAN  
2014-2018**



# CONTRIBUTORS

## ► INDUSTRY STEERING COMMITTEE

Christina Anderson	Buccaneer Energy
Jack Beattie	TransCanada Alaska
Laurie Becwar	Shell Exploration and Production Company
Phil Cochrane	BP Alaska
Craig Hansen	Tesoro Alaska
Rick Harwell	Doyon Universal Services
Dave Haugen	Alaska Gasline Development Corporation
Sam Hill	ASRC Energy Services
Bill Hurley	ConocoPhillips Alaska
Krishna Loescher*	Carlisle Transportation Systems

## ► TECHNICAL, EDUCATION, AND AGENCY COMMITTEE

Mike Andrews	Alaska Works Partnership
Ben Glover	Ilisagvik College
John Hakala	U.S. Department of Labor, Office of Apprenticeship
Helen Mehrkens*	Department of Education and Early Development
Daniel Patrick O'Tierney	Department of Commerce, Community and Economic Development
Fred Villa*	University of Alaska

## ► STAFF - ALASKA DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

Wanetta Ayers	Division of Business Partnerships
Fred Esposito	AVTEC
Brad Gillespie	Division of Employment Security
Rob Krieger	Research and Analysis Section
Dan Robinson	Research and Analysis Section
Jeff Selvey	Staff to the Alaska Workforce Investment Board
Mike Shiffer	Division of Business Partnerships
Terry Weight	Division of Employment Security

\*Members of the Alaska Workforce Investment Board.

Dear Alaskan,

Developing Alaska's greatest economic opportunities requires strong partnerships. The Alaska Oil and Gas Workforce Development Plan embodies that spirit through cooperation and collaboration of industry, education and training providers, and state and federal agencies. By forging a deeper understanding of industry needs and worker availability and preparedness, all sectors can work together to fine-tune Alaska's workforce development system.

Alaska's oil and gas industry is undergoing a renaissance. Favorable market conditions, well-timed and properly structured incentives, and a fair tax structure focused on new production have all contributed to a business climate that encourages new investment.

Everyone loves a comeback story and Alaska's is just beginning. As the case for investing in Alaska has improved, industry has responded. Across the state we see increased exploration, reinvestment in legacy assets, and development of new fields like Point Thompson, the Colville Delta, and the Greater Moose's Tooth Unit. These investments mean opportunity and jobs for Alaskans.

Alaska also has an unprecedented portfolio of opportunity with projects like the Alaska LNG Project, the Alaska Stand Alone Pipeline, the Donlin Gold Project, and a host of others. Thousands of new jobs are in the making with any one of these projects. Combined, these projects are building the foundation for Alaska's economic future.

As we move forward, much can be done to train Alaskans for long-term, well-paying careers in Alaska's revitalized oil and gas industry, as well as other natural resources sectors. We urge all stakeholders to continue working together to ensure that Alaska's workforce is ready for today's jobs and tomorrow's opportunities.



Dianne Blumer  
Commissioner  
Alaska Department of Labor and Workforce Development





# INTRODUCTION

In 2008, the Alaska Oil and Gas Strategic Training Plan (AOGSTP) was published through the collaborative efforts of a steering committee comprised of representatives from industry, training and education providers, and government agencies. The purpose of this document is to update and refine that plan by:

- Expanding the definition of the industry to encompass the oil and gas industry from exploration through primary distribution;
- Focusing on needs and trends identified by an analysis of existing workforce composition and industry knowledge;
- Documenting actions taken to implement the AOGSTP; and
- Updating the action agenda to increase alignment of education, training, and incentives to produce a highly-qualified, skilled Alaskan workforce.

In May 2013, the Alaska Workforce Investment Board (AWIB) invited representatives of oil and gas producers and allied businesses to serve as an Industry Steering Committee (ISC) to update the plan. The ISC convened four times to review an industry occupational analysis, trends and developments in the industry, the labor supply, and to mark-up the draft plan. Table 1 (page two as *Contributors*) provides a roster of the ISC as well as members of the Technical, Education, and Agency Committee (TEAC) and staff support.

The draft plan was reviewed by the AWIB at its October 2013 meeting. Additional one-on-one meetings were held with ISC members throughout November for further input and refinement of the plan.

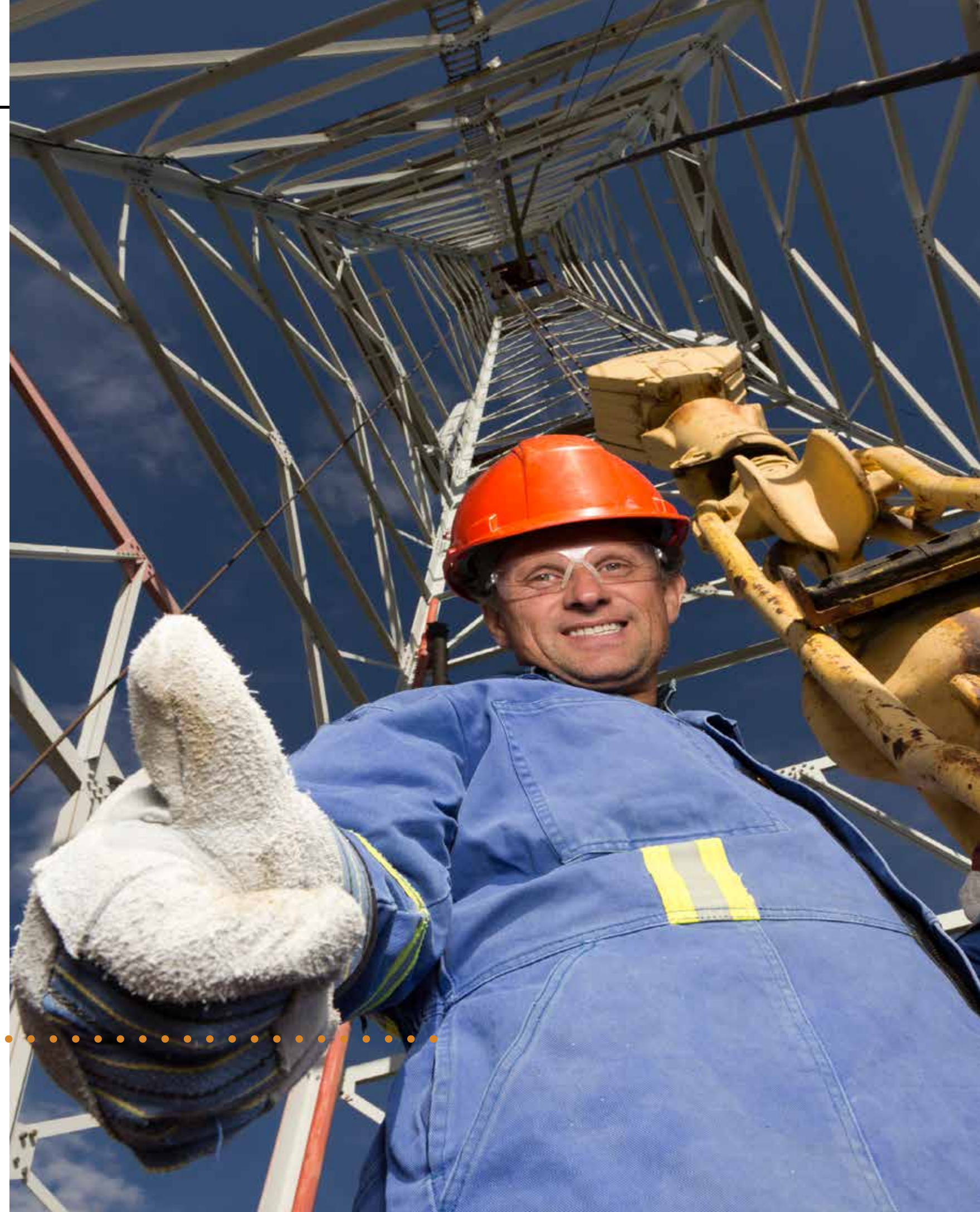
A second draft of the plan was previewed with key oil and gas industry groups, labor unions, and allied organizations in November and early December 2013.

The revised plan was presented to the AWIB at its January 2014 meeting in Juneau. Additional input was gathered throughout February 2014.

The AWIB recognized the plan as a sector strategy for the development of the oil and gas workforce at its May 2014 meeting in Anchorage. Recommendations and actions from the plan will be incorporated into its findings in the statewide integrated plan and advisories to the Governor and the Alaska State Legislature.

As indicated in the Action Agenda (Appendix A), the successful implementation of the Alaska Oil and Gas Workforce Development Plan will require the ongoing collaboration of the industry, education and training providers, and other stakeholders.

The timeframe for the plan is the period from 2014 through 2018. With a number of pending projects and future development opportunities, the implementation of this plan will include ongoing monitoring of industry trends. Significant advances in green lighting any major project will require a re-calibration of workforce development and training efforts.





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**THE ALASKA  
OIL AND GAS  
INDUSTRY  
IMPACTS MORE THAN  
45,000  
WORKERS  
WITH EARNINGS OF  
\$2.65 BILLION**

**THAT'S MEGA.**



# IMPLEMENTATION OF THE 2008 PLAN

Between January 2008 and February 2011, the AOGSTP Steering Committee met regularly to further develop and implement the strategies contained in the 2008 plan. The key strategies were to:

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

Significant progress was made in implementing the plan. Development of the Alaska Career and Technical Education Plan further identified actions needed to develop secondary and postsecondary options in career and technical education (CTE). Apprenticeship was promoted as a key pathway to oil and gas occupations. The Oil and Gas Occupations Training Fund was established to provide targeted occupational training based on priority occupations identified in the plan. A summary of activities and outcomes from the 2008 plan is provided in Appendix B and provides a detailed listing of plan implementation and outcomes.

Concurrently, the Alaska Department of Labor and Workforce Development (DLWD) received a \$7.5 million federal grant from the U.S. Department of Labor to implement a pipeline worker training program. A number of workforce development and training investments were made with this funding. Training opportunities were provided to 1,646 individuals. Based on a review of wage records three years after exiting these training programs, 80 percent of these individuals were represented on Alaska payrolls. Wages for these individuals increased by slightly more than 30 percent or more than \$13 million since receiving training.



# ALASKA'S OIL AND GAS INDUSTRY

In 2008, the initial plan defined the oil and gas industry as those companies engaged in oil and gas extraction, drilling oil and gas wells, and support activities for oil and gas operations. This definition conformed to standard definitions and practices used elsewhere in state government.

However, for the purposes of this update, the ISC determined that the needs of the industry and future opportunities for oil and gas development in Alaska require an expanded definition that includes other downstream sectors, including oil and gas pipeline transportation companies, refineries, and related construction and manufacturing. Table 2 lists the North America Industrial Classification System (NAICS) codes used to define the oil and gas industry for the purposes of this report.

TABLE 2: ALASKA OIL AND GAS SECTOR BY NAICS CODE AND FIRM COUNT

NAICS	TITLE	# OF FIRMS
211111	Crude petroleum and natural gas extraction	30
213111	Drilling oil and gas wells	11
213112	Support activities for oil and gas operations	77
221210	Natural gas distribution	5
237120	Oil and gas pipeline construction	38
336611	Ship building and repairing	10
486110	Pipeline transportation of crude oil	9
486210	Pipeline transportation of natural gas	1
486910	Refined petroleum product pipeline transport	2

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

The reader is cautioned to not make comparisons between data presented in this plan and data presented in other reports or exhibits based on a narrower definition of the oil and gas industry.

This definition of the industry compels a more expansive examination of the industry's workforce composition, future workforce demand, and the supply of potential workers to fulfill those needs. A closer look at these factors forms the foundation of this plan.

**30%**  
**INCREASE IN WAGES FOR ALASKANS TRAINED FOR PIPELINE JOBS.**



# ALASKA'S OIL AND GAS INDUSTRY

## ► EMPLOYMENT AND EARNINGS

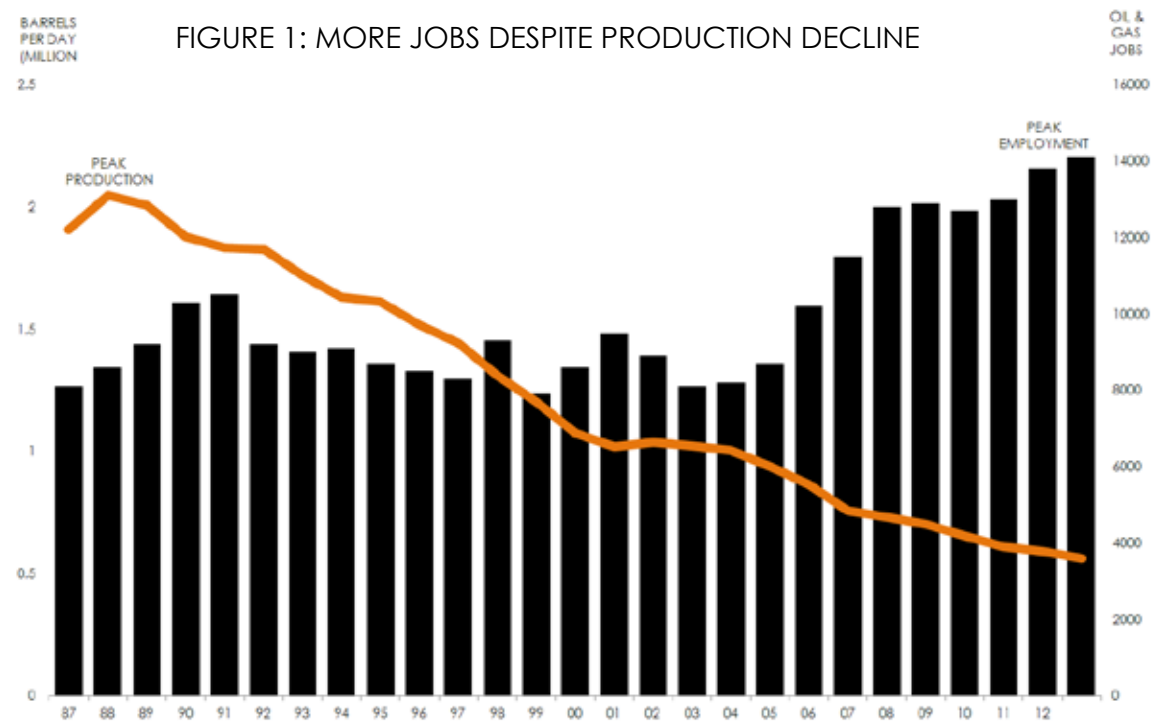
In 2011, the Alaska oil and gas industry employed 20,249 workers with earnings of more than \$1.9 billion.<sup>1</sup> This represents 4.9 percent of the total Alaska workforce and 13.2 percent of total earnings. The oil and gas workforce in Alaska grew by 3,059 workers between 2006 and 2011, representing a growth rate of 17.8 percent (based on a comparable industry definition).

In comparison to the 2006 workforce, the industry added 68 different occupations to its workforce composition. This difference may be accounted for by emerging occupations, changes in industry staffing patterns, improvements or alterations in occupational classification by employers during tax reporting, and changes in federal occupational classifications. Most of these occupations (84 percent) have ten or fewer workers reported.

In its 2010 assessment of the economic impact of the oil and gas industry, the Alaska Oil and Gas Association (AOGA) further accounts for direct, indirect, and induced employment at 44,800 jobs with an annual payroll of \$2.65 billion to Alaska residents.<sup>2</sup> Based on these estimates, AOGA calculates that for each job with a primary producer, nine jobs are generated in the Alaska economy. For each payroll dollar paid by primary producers, a total of three and a half payroll dollars are generated in Alaska.<sup>3</sup>

Since the AOGSTP was published, oil and gas employment has varied from year to year, but the overall trend is upward. Economic factors, aging oil fields and infrastructure, development of smaller satellite fields, and more challenging exploration characteristics have contributed to this trend of increasing employment, despite declining oil production in the state. Figure 1 depicts oil and gas employment trends between 1987 and 2012.

During this time, increased oil and gas development in the contiguous Lower 48 states increased competition for trained oil and gas workers. Between 2007 and 2012, private sector employment in oil and gas in the United States increased by 162,000 jobs, which equates to a 40 percent growth rate.<sup>4</sup>



Sources: Alaska Department of Revenue; Alaska Department of Labor and Workforce Development, Research and Analysis Section

## ► WORKFORCE ANALYSIS

Appendix C provides the occupational composition, available demographic characteristics, and other factors that may impact future oil and gas workforce demand. A closer look at high job count occupations, the average age of workers, high-wage occupations, and worker residency provide additional insight into factors that will impact workforce composition and future demand.

### ■ HIGH WORKER COUNT OCCUPATIONS

Based on the total worker count in 2011, the top 25 occupations represented 65 percent of the total oil and gas workforce. Oil and gas roustabouts topped the list at 1,504 workers. Operating engineers, service unit operators, production workers, electricians, and construction laborers were also in-demand occupations. Table 3 lists the top 25 oil and gas occupations by total worker count.

TABLE 3: TOP 25 OIL AND GAS OCCUPATIONS BY TOTAL WORKER COUNT ALASKA STATEWIDE - 2011

RANK	OCCUPATION TITLE	TOTAL WORKERS
1	Roustabouts, Oil and Gas	1,504
2	Operating Engineers and Other Construction Equipment Operators	1,252
3	Service Unit Operators, Oil, Gas, and Mining	1,009
4	Production Workers, All Other	855
5	Electricians	794
6	Construction Laborers	668
7	Engineers, All Other	609
8	Plumbers, Pipefitters, and Steamfitters	545
9	Managers, All Other	501
10	Welders, Cutters, Solderers, and Brazers	465
11	Petroleum Engineers	432
12	Petroleum Pump System Operators, Refinery Operators, and Gaugers	422
13	General and Operations Managers	421
14	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	409
15	Truck Drivers, Heavy and Tractor-Trailer	387
16	Construction Managers	359
17	Geological and Petroleum Technicians	358
18	Installation, Maintenance, and Repair Workers, All Other	324
19	Carpenters	319
20	Mobile Heavy Equipment Mechanics, Except Engines	316
21	Rotary Drill Operators, Oil and Gas	296
22	Office and Administrative Support Workers, All Other	284
23	First-Line Supervisors/Managers of Production and Operating Workers	241
24	Electrical and Electronic Engineering Technicians	211
25	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	208



# ALASKA'S OIL AND GAS INDUSTRY

## AGE OF ALASKA OIL AND GAS WORKERS

As reported by the National Research Council, a major factor impacting all energy and mining industries is that about a third of the U.S. workforce is comprised of baby boomers poised to retire by the end of this decade. Compounding the impact of these impending retirements is that there are too few younger workers to replace the exiting baby boomers. The need for knowledge transfer from older to younger workers is another challenge brought on by this generational imbalance in the workforce.<sup>5</sup>

The age composition Alaska's oil and gas workforce mirrors these findings. The impact of the aging workforce is clearly illustrated by comparing the age distribution of the workforce between 2006 (the data set for the 2008 plan) and 2011 (the data set for the 2013 plan). Figure 2 shows the distribution of the former, with significant weighting toward older workers. By comparison, Figure 3 shows a stronger bi-modal distribution with a notable paucity of workers in the 30 to 45 year age range by 2011.

FIGURE 2: 2006 AGE DISTRIBUTION OF OIL AND GAS WORKERS

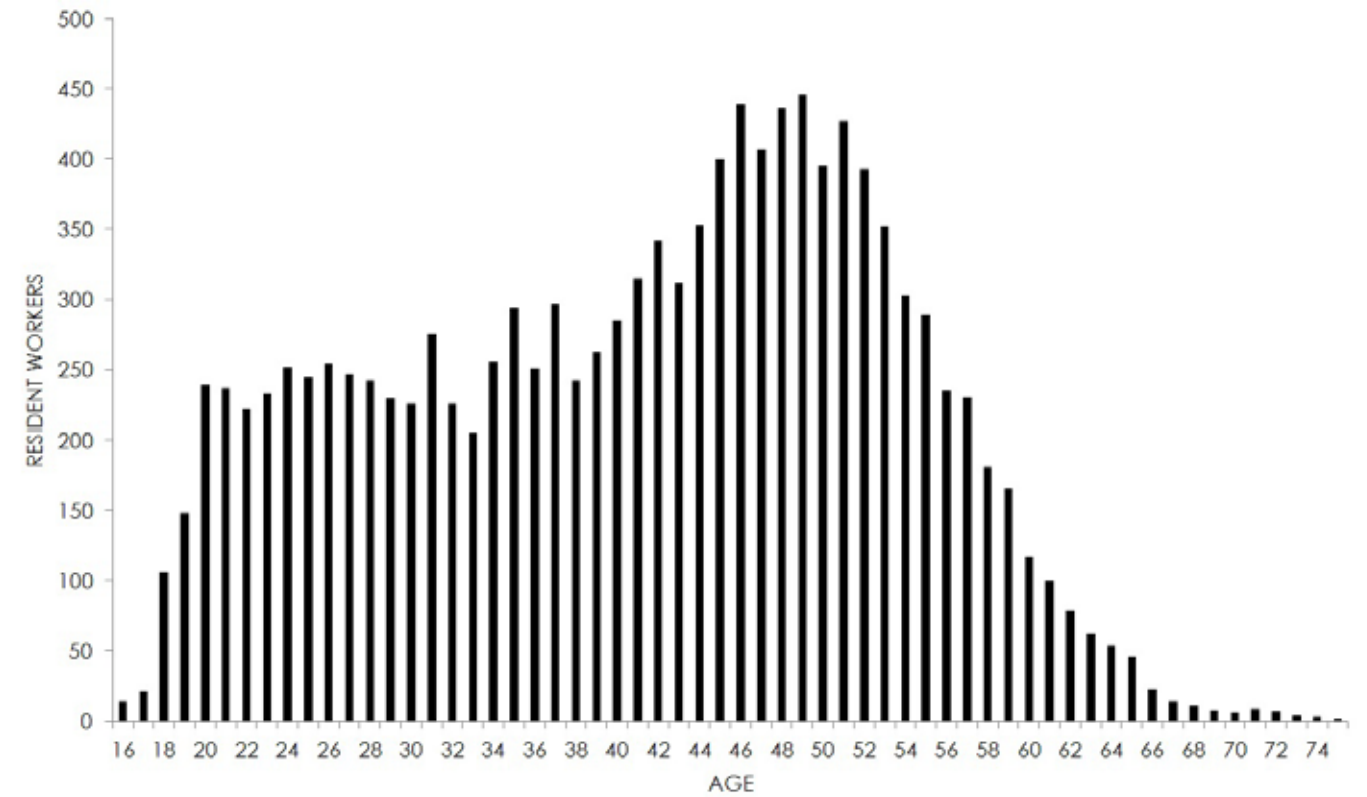
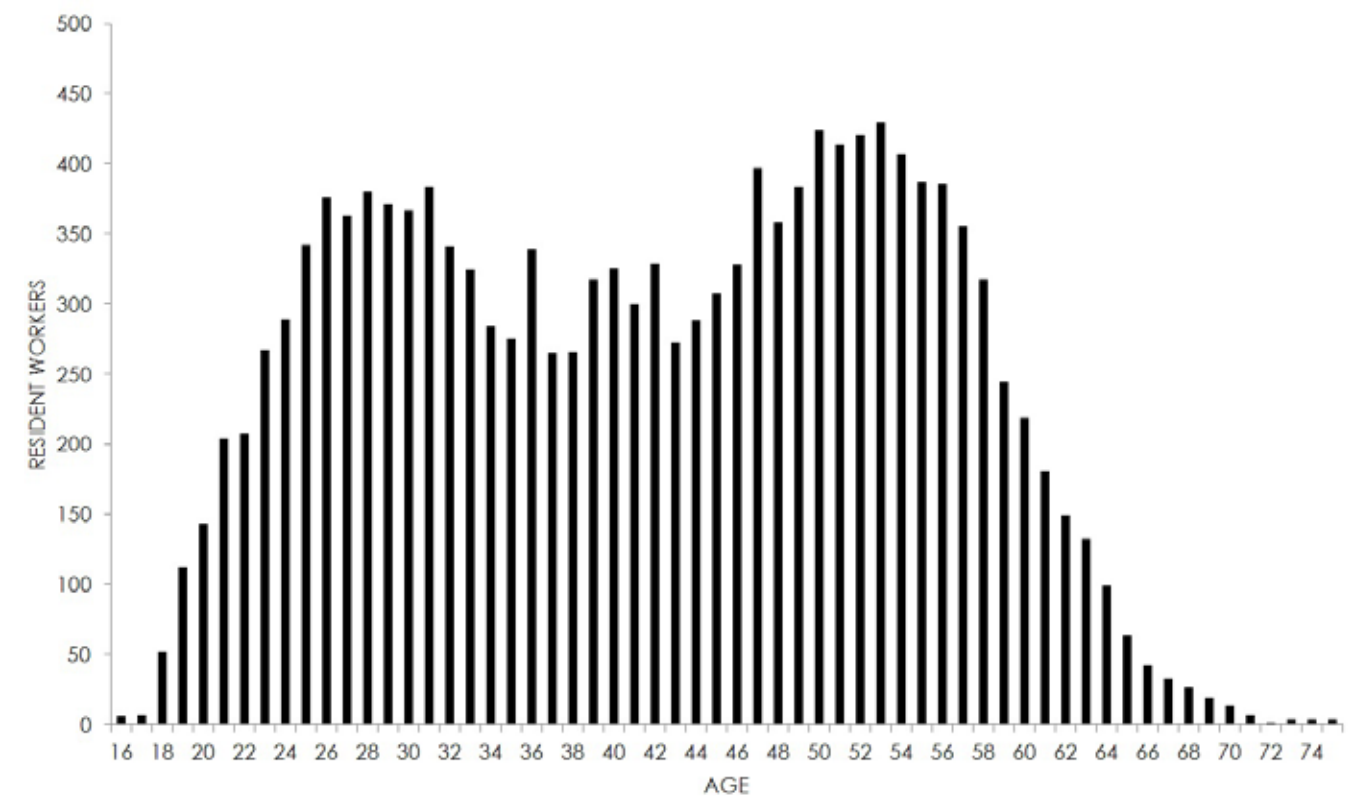


FIGURE 3: 2011 AGE DISTRIBUTION OF OIL AND GAS WORKERS



**7,500  
WORKERS  
ARE NEEDED BETWEEN  
2010-2020  
TO FILL ALASKA'S  
OIL AND GAS  
INDUSTRY  
EMPLOYMENT GAP**



# ALASKA'S OIL AND GAS INDUSTRY

Age information is not available for all Alaska oil and gas workers. However, comparisons between employment data and the Permanent Fund Dividend database makes it possible to determine age characteristics for the resident workforce. In 2011, 46 occupations had workers with an average age of 50 or older. Another 71 occupations had workers with an average age of 45 to 50. In total, 6,566 resident workers (32.4 percent) are likely to reach retirement age within the next five to ten years. Taking into consideration the high level of earnings, physical demands, and operating environment common to the industry, the average retirement age is estimated at 58 years.

Based on the 2011 workforce, the top 25 occupations with 50 or more workers and the highest average age for resident workers are listed in Table 4. Inspectors, testers, sorters, samplers, and weighers had the highest average age at 53. Nearly nine in ten (88 percent) of the workers in this occupation were 50 years or older.

Other occupations with a high average age and high proportion of older resident workers include cost estimators, first-line supervisors, managerial variants, several occupational health and safety occupations, and some engineering and geoscience occupations.

The Georgetown Public Policy Institute recently reported in "Failure to Launch," that new economic realities are impacting the lifecycle of work across the generations. In part, the Great Recession has amplified intergenerational differences, with younger generations experiencing lower earnings, delayed entry into the workplace, longer time in the workplace to achieve the median wage, and slowed career progression. There is also evidence older workers are delaying retirement decisions due to loss of retirement savings and concern about maintaining their standard of living during retirement. However, these new realities do not mitigate the imbalance in numbers between baby boomers and following generations. This imbalance compels employers to deploy new strategies to develop and retain workers, including school-to-work partnerships, mentorship, job shadowing, gradual exits, and similar tactics.

TABLE 4: TOP 25 OCCUPATIONS BY HIGHEST AVERAGE RESIDENT AGE - ALASKA STATEWIDE 2011

RANK	OCCUPATIONAL TITLE	AVERAGE AGE OF WORKERS*	TOTAL WORKERS	RESIDENT WORKERS	WORKERS BY AGE 45+*		WORKERS BY AGE 50+*	
					Number	Percent	Number	Percent
1	Inspectors, Testers, Sorters, Samplers, and Weighers	53	67	43	43	100%	38	88%
2	Cost Estimators	51	55	45	36	80%	30	67%
3	First-Line Supervisors/Managers of Production and Operating Workers	50	241	172	156	91%	129	75%
4	General and Operations Managers	50	421	347	279	80%	230	66%
5	Maintenance and Repair Workers, General	50	96	77	61	79%	48	62%
6	Managers, All Other	49	501	313	305	97%	242	77%
7	Installation, Maintenance, and Repair Workers, All Other	49	324	282	219	78%	171	61%
8	First-Line Supervisors/Managers of Office and Administrative Support Workers	49	63	45	40	89%	30	67%
9	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	48	409	259	204	79%	155	60%
10	Business Operations Specialists, All Other	48	183	160	114	71%	87	54%
11	Construction Managers	48	359	226	175	77%	133	59%
12	Production Workers, All Other	48	855	556	479	86%	375	67%
13	Purchasing Agents, Except Wholesale, Retail, and Farm Products	47	151	120	90	75%	65	54%
14	Bus and Truck Mechanics and Diesel Engine Specialists	47	91	53	39	74%	26	49%
15	Occupational Health and Safety Specialists	47	96	67	48	72%	43	64%
16	Computer Systems Analysts	47	93	71	55	77%	37	52%
17	Engineering Managers	47	178	147	99	67%	73	50%
18	Executive Secretaries and Administrative Assistants	47	115	110	71	65%	57	52%
19	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	46	208	139	91	65%	69	50%
20	Truck Drivers, Heavy and Tractor-Trailer	46	387	263	175	67%	120	46%
21	Geoscientists, Except Hydrologists and Geographers	45	177	124	78	63%	66	53%
22	Designers, All Other	45	60	51	31	61%	25	49%
23	Control and Valve Installers and Repairers, Except Mechanical Door	45	131	68	44	65%	31	46%
24	Accountants and Auditors	45	68	63	34	54%	26	41%
25	Operating Engineers and Other Construction Equipment Operators	45	1,252	856	537	63%	377	44%

Occupations with 50 or more workers

\*Totals represent only those workers for which age data is available. In most cases, age data is only available for resident workers, but some nonresidents may be included.

# 2011:



**INSPECTORS, TESTERS, SORTERS, SAMPLERS, AND WEIGHERS HAD HIGHEST AVG. AGE AT 53 YEARS.**



**46 OCCUPATIONS IN OIL AND GAS HAD WORKERS WITH AN AVERAGE AGE OF 50 OR OLDER.**



**ANOTHER 71 OCCUPATIONS HAD WORKERS WITH AN AVERAGE AGE OF 45 TO 50.**



**IN TOTAL, NEARLY 32.4% OF RESIDENT OIL AND GAS WORKERS WILL RETIRE IN THE NEXT FIVE TO 10 YEARS.**



**THE AVERAGE ANNUAL  
EARNING FOR WORKERS IN  
OIL AND GAS  
IN 2011 WAS OVER  
\$120,000**

**THAT'S NEARLY  
2.5  
TIMES HIGHER THAN  
STATE AVERAGE**

## ALASKA'S OIL AND GAS INDUSTRY

### ■ OCCUPATIONS BY EARNINGS

Alaska oil and gas occupations offer some of the highest wages in the state. Average annual earnings for the industry were over \$120,000 in 2011, nearly two and a half times higher than average for the state.<sup>6</sup>

Of the 216 occupations for which the Alaska mean wage is available, chief executive officers, engineering managers, commercial pilots, chemical engineers, lawyers, geoscientists, and other construction and engineering managers earn the highest wages in the Alaska oil and gas industry.

Based on the resident workforce, the top 25 occupations with 50 workers or more and based on average earnings are listed in Table 5. Engineers, geoscientists, managers, and first-line supervisors dominate the list.

TABLE 5: TOP 25 OCCUPATIONS BY AVERAGE RESIDENT EARNINGS  
ALASKA STATEWIDE 2011

RANK	OCCUPATION TITLE	TOTAL WORKERS	RESIDENT WORKERS	% RESIDENT WORKERS	RESIDENT AVG. QUARTERLY WAGES
1	Engineering Managers	178	147	82.6	61,381
2	Geoscientists, Except Hydrologists and Geographers	177	124	70.1	53,586
3	Managers, All Other	501	313	62.5	49,276
4	Petroleum Engineers	432	327	75.7	48,360
5	First-Line Supervisors/Managers of Production and Operating Workers	241	172	71.4	45,008
6	General and Operations Managers	421	347	82.4	44,684
7	Engineers, All Other	609	428	70.3	38,109
8	Production Workers, All Other	855	556	65.0	36,262
9	First-Line Supervisors/Managers of Office and Administrative Support Workers	63	45	71.4	35,429
10	Installation, Maintenance, and Repair Workers, All Other	324	282	87.0	33,606
11	Financial Analysts	118	110	93.2	32,957
12	Petroleum Pump System Operators, Refinery Operators, and Gaugers	422	336	79.6	32,580
13	Electrical and Electronic Engineering Technicians	211	79	37.4	31,897
14	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	409	259	63.3	31,743
15	Business Operations Specialists, All Other	183	160	87.4	31,597
16	Environmental Scientists and Specialists, Including Health	82	69	84.1	31,497
17	Inspectors, Testers, Sorters, Samplers, and Weighers	67	43	64.2	31,334
18	Computer Systems Analysts	93	71	76.3	31,057
19	Mechanical Engineers	71	60	84.5	30,165
20	Occupational Health and Safety Specialists	96	67	69.8	30,030
21	Electrical Engineers	69	56	81.2	29,609
22	Maintenance and Repair Workers, General	96	77	80.2	29,572
23	Cost Estimators	55	45	81.8	29,316
24	Construction Managers	359	226	63.0	29,020
25	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	208	139	66.8	28,833

Occupations with 50 or more workers



# ALASKA'S OIL AND GAS INDUSTRY

## RESIDENCY OF OIL AND GAS WORKERS

Seven out of ten workers (71 percent) in the Alaska oil and gas industry were Alaska residents in 2011. See Figure 4.

Seventy-three occupations with a worker count of 50 or more are listed in Table 6 and ranked by the rate of resident hire. Electrical Power-Line Installers and Repairer workers had the highest rate of resident hire at 96.4 percent. Boilermakers had the lowest rate of resident hire at 17.1 percent.

Of all the occupations in the industry (Appendix C), 79 occupations with relatively low demand (25 workers or less), had 100 percent resident hire. Conversely, 11 occupations, with a worker count of less than ten, had 100 percent nonresident hire.

The process for determining the residency of workers involves comparing employment data with Alaska Permanent Fund Dividend (PFD) recipients. Eligibility for the PFD requires physical presence in the state for one full calendar year, the intention to stay indefinitely, and other actions such as proof of employment, home ownership, and severing residency in previous states or countries prior to the qualifying year.<sup>7</sup> The State of Alaska uses a number of other standards to establish residency. For example, voter registration requires physical presence in the state and voting district for 30 days in addition to other requirements.<sup>8</sup>

It is important to note, while nonresident hire rates for specific occupations may be high for the oil and gas industry as a whole, the nonresident hire rate has consistently hovered just under 30 percent. For all industries in the state, the nonresident hire rate averages approximately 20 percent.

Nonresident hire can be considered an indication of a labor shortage, a skill gap within the existing workforce, or both. Employers are motivated to hire residents to reduce recruitment and retention costs and increase the likelihood of successful long-term employment. Committee members provided insight into the nature of some occupations that have a more seasonal demand where hiring patterns are akin to itinerant workers that relocate to where demand is occurring.

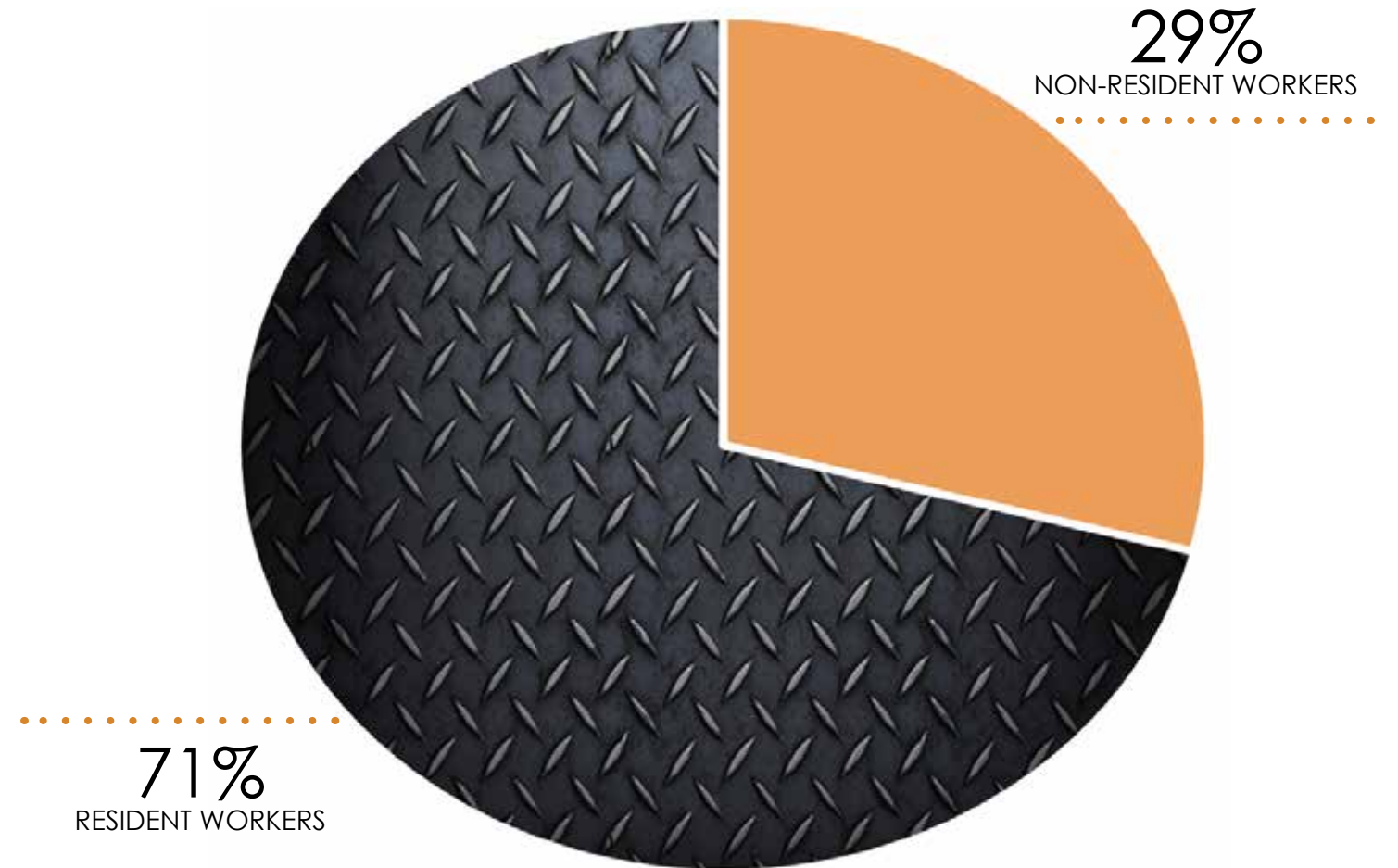


**79 OCCUPATIONS WITH RELATIVELY LOW DEMAND HAD 100 PERCENT RESIDENT HIRE.**



**ELECTRICAL POWER-LINE INSTALLERS AND REPAIR WORKERS HAD THE HIGHEST RATE OF RESIDENT HIRE.**

FIGURE 4: OIL AND GAS RESIDENT WORKERS VS. NON-RESIDENT WORKERS



**71% OF WORKERS IN THE OIL AND GAS INDUSTRY WERE ALASKA RESIDENTS IN 2011.**



TABLE 6: RESIDENCY OF ALASKA OIL AND GAS WORKERS  
ALASKA STATEWIDE - 2011

SOC CODE	OCCUPATIONAL TITLE	RESIDENCY STATUS					TOTAL RESIDENT WAGES (\$)
		TOTAL WORKERS	RESIDENT WORKERS	NON-RESIDENT WORKERS	PERCENT RESIDENT WORKERS	PERCENT NON-RESIDENT WORKERS	
499051	Electrical Power-Line Installers and Repairers	55	53	2	96.4	3.6	N/D
436011	Executive Secretaries and Administrative Assistants	115	110	5	95.7	4.3	N/D
537121	Tank Car, Truck, and Ship Loaders	66	62	4	93.9	6.1	N/D
433031	Bookkeeping, Accounting, and Auditing Clerks	82	77	5	93.9	6.1	N/D
132051	Financial Analysts	118	110	8	93.2	6.8	13,742,930
132011	Accountants and Auditors	68	63	5	92.6	7.4	N/D
412011	Cashiers	74	68	6	91.9	8.1	1,101,441
194031	Chemical Technicians	64	57	7	89.1	10.9	4,032,880
131199	Business Operations Specialists, All Other	183	160	23	87.4	12.6	19,495,655
499099	Installation, Maintenance, and Repair Workers, All Other	324	282	42	87.0	13.0	35,723,032
518092	Gas Plant Operators	150	130	20	86.7	13.3	11,211,435
439199	Office and Administrative Support Workers, All Other	284	242	42	85.2	14.8	14,404,026
271029	Designers, All Other	60	51	9	85.0	15.0	5,298,666
172141	Mechanical Engineers	71	60	11	84.5	15.5	7,088,806
192041	Environmental Scientists and Specialists, Including Health	82	69	13	84.1	15.9	8,409,651
472061	Construction Laborers	668	559	109	83.7	16.3	27,933,849
173029	Engineering Technicians, Except Drafters, All Other	119	99	20	83.2	16.8	7,298,315
474041	Hazardous Materials Removal Workers	59	49	10	83.1	16.9	2,617,585
119041	Engineering Managers	178	147	31	82.6	17.4	35,171,352
111021	General and Operations Managers	421	347	74	82.4	17.6	59,384,855
131051	Cost Estimators	55	45	10	81.8	18.2	5,159,673
439061	Office Clerks, General	197	160	37	81.2	18.8	10,845,238
172071	Electrical Engineers	69	56	13	81.2	18.8	6,010,586
436014	Secretaries, Except Legal, Medical, and Executive	68	55	13	80.9	19.1	2,760,835
499071	Maintenance and Repair Workers, General	96	77	19	80.2	19.8	8,694,159
475081	Helpers—Extraction Workers	193	154	39	79.8	20.2	11,182,429
518093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	422	336	86	79.6	20.4	43,038,405
131023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	151	120	31	79.5	20.5	12,810,086
537199	Material Moving Workers, All Other	84	66	18	78.6	21.4	4,752,205
299012	Occupational Health and Safety Technicians	55	42	13	76.4	23.6	2,754,862
151121	Computer Systems Analysts	93	71	22	76.3	23.7	8,571,754
475071	Roustabouts, Oil and Gas	1,504	1,142	362	75.9	24.1	62,655,368
172171	Petroleum Engineers	432	327	105	75.7	24.3	60,933,628
499041	Industrial Machinery Mechanics	151	112	39	74.2	25.8	11,170,680
431011	First-Line Supervisors/Managers of Office and Administrative Support Workers	63	45	18	71.4	28.6	6,093,842
511011	First-Line Supervisors/Managers of Production and Operating Workers	241	172	69	71.4	28.6	30,380,371
172199	Engineers, All Other	609	428	181	70.3	29.7	61,736,848
475012	Rotary Drill Operators, Oil and Gas	296	208	88	70.3	29.7	16,443,238
192042	Geoscientists, Except Hydrologists and Geographers	177	124	53	70.1	29.9	25,775,041
472031	Carpenters	319	223	96	69.9	30.1	13,965,810
475011	Derrick Operators, Oil and Gas	126	88	38	69.8	30.2	7,233,969
194041	Geological and Petroleum Technicians	358	250	108	69.8	30.2	21,014,218
299011	Occupational Health and Safety Specialists	96	67	29	69.8	30.2	7,927,837
472221	Structural Iron and Steel Workers	182	127	55	69.8	30.2	9,814,566
472073	Operating Engineers and Other Construction Equipment Operators	1,252	856	396	68.4	31.6	61,130,294
533032	Truck Drivers, Heavy and Tractor-Trailer	387	263	124	68.0	32.0	17,195,953
172111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	208	139	69	66.8	33.2	15,339,094
472141	Painters, Construction and Maintenance	52	34	18	65.4	34.6	1,503,745

(CHART CONTINUED ON NEXT PAGE)

TABLE 6 CONTINUED: RESIDENCY OF ALASKA OIL AND GAS WORKERS  
ALASKA STATEWIDE - 2011

SOC CODE	OCCUPATIONAL TITLE	RESIDENCY STATUS					TOTAL RESIDENT WAGES (\$)
		TOTAL WORKERS	RESIDENT WORKERS	NON-RESIDENT WORKERS	PERCENT RESIDENT WORKERS	PERCENT NON-RESIDENT WORKERS	
537072	Pump Operators, Except Wellhead Pumpers	66	43	23	65.2	34.8	3,650,650
519199	Production Workers, All Other	855	556	299	65.0	35.0	80,210,847
514121	Welders, Cutters, Solderers, and Brazers	465	299	166	64.3	35.7	20,806,444
519061	Inspectors, Testers, Sorters, Samplers, and Weighers	67	43	24	64.2	35.8	5,076,045
472152	Plumbers, Pipefitters, and Steamfitters	545	349	196	64.0	36.0	25,401,471
471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	409	259	150	63.3	36.7	31,457,623
119021	Construction Managers	359	226	133	63.0	37.0	25,538,016
499096	Riggers	62	39	23	62.9	37.1	2,870,011
119199	Managers, All Other	501	313	188	62.5	37.5	54,006,726
475013	Service Unit Operators, Oil, Gas, and Mining	1,009	630	379	62.4	37.6	52,129,056
493042	Mobile Heavy Equipment Mechanics, Except Engines	316	191	125	60.4	39.6	13,992,909
113011	Administrative Services Managers	82	49	33	59.8	40.2	4,662,641
493031	Bus and Truck Mechanics and Diesel Engine Specialists	91	53	38	58.2	41.8	4,599,217
474011	Construction and Building Inspectors	64	37	27	57.8	42.2	3,396,298
472111	Electricians	794	454	340	57.2	42.8	37,041,444
472131	Insulation Workers, Floor, Ceiling, and Wall	65	37	28	56.9	43.1	2,201,814
492094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	55	31	24	56.4	43.6	3,038,022
473019	Helpers, Construction Trades, All Other	139	78	61	56.1	43.9	4,954,521
499012	Control and Valve Installers and Repairers, Except Mechanical Door	131	68	63	51.9	48.1	6,446,435
473013	Helpers—Electricians	53	26	27	49.1	50.9	2,095,591
472132	Insulation Workers, Mechanical	52	24	28	46.2	53.8	1,368,021
537021	Crane and Tower Operators	69	30	39	43.5	56.5	2,996,036
499098	Helpers—Installation, Maintenance, and Repair Workers	53	23	30	43.4	56.6	1,924,979
492098	Security and Fire Alarm Systems Installers	50	20	30	40.0	60.0	1,841,263
173023	Electrical and Electronic Engineering Technicians	211	79	132	37.4	62.6	9,537,122
472011	Boilermakers	199	34	165	17.1	82.9	2,206,125

"N/D" - Not Disclosable  
Residency is calculated by matching workers reported by Alaska employers.

Totals represent only those workers for which age and sex data is available. In most cases, this data is only available for resident workers, but some nonresidents may be included

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



# ALASKA'S OIL AND GAS INDUSTRY

## ■ GROWTH, REPLACEMENT AND CHURN

The U.S. Department of Labor Bureau of Labor Statistics and the Alaska Department of Labor and Workforce Development, Research and Analysis Section assess occupational growth and replacement rates for the state for all industries. Appendix C provides estimates for growth openings and replacement openings for each occupation between 2010 and 2020. While these estimates are not confined to the oil and gas industry, the numbers do provide a glimpse into broader workforce demand for each occupation.

Throughout the decade (2010 – 2020), demand for workers trained in occupations that are currently in use by the oil and gas industry will be strong throughout the state. More than 56,705 workers will be needed to fill replacement openings for all industries. Growth across all industries will generate demand for an additional 21,048 workers.

Churn rate is a measure of employee turnover. It is also often referred to as the attrition rate. Seven occupations in Appendix C are more specific to the oil and gas industry. Table 7 provides an extract of these occupations and the churn rate associated with each. This sample of occupations provides some insight into the churn rate specific to the oil and gas industry.

TABLE 7: CHURN RATES FOR OIL AND GAS OCCUPATIONS

	OCCUPATION TITLE	TOTAL WORKERS	REPLACEMENT OPENINGS 2010-2020	CHURN RATE
475012	Rotary Drill Operators, Oil and Gas	296	60	0.2
172171	Petroleum Engineers	432	112	0.3
475071	Roustabouts, Oil and Gas	1,504	315	0.2
518093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	422	121	0.3
475013	Service Unit Operators, Oil, Gas, and Mining	1,009	177	0.2
475011	Derrick Operators, Oil and Gas	126	12	0.1
194041	Geological and Petroleum Technicians	358	253	0.7

The Department of Labor and Workforce Development, Research and Analysis Section conducted additional analysis on the growth and replacement rates in the Alaska oil and gas industry. Based on this review, an estimated 2,000 new workers will be needed by the Alaska oil and gas industry between 2010 and 2020 as a result of growth. An estimated 5,500 will be needed to replace workers who retire or otherwise leave the industry. The churn rate varies by occupation, but in most cases 20 to 30 percent of the workers in an occupation will need to be replaced over the decade from 2010 to 2020.<sup>9</sup>





# PRIORITY OCCUPATIONS

After reviewing the foregoing characteristics and the occupational composition of the Alaska oil and gas workforce, the ISC looked at several approaches to prioritizing occupations.

By combining the top 25 occupations based on worker count, nonresident hire, average age, and earnings, a merged list of 68 unique occupations resulted. The ISC reviewed the combined list and discussed the relevance of the occupations, concluding that additional considerations such as changing occupational demand since 2011, changing regulatory and business planning requirements, and the likelihood of long-term career versus short-term employment should be used to prioritize the list.

The committee determined this plan should focus on occupations needed for exploration and production that will result in long-term or lifelong careers in the oil and gas industry. Occupations common to the development or construction needs of the industry remain important. However, the scale of most of the development projects likely to occur during the planning period will most likely be accommodated by the existing workforce. Large-scale projects, not yet fully sanctioned, are likely to occur outside of the current plan, yet the committee took these longer-term, large-scale projects into consideration throughout its deliberations (see Trends in the Oil and Gas Industry for further discussion).

It is important to note that the committee views all 270 occupations (Appendix C) currently in demand by the industry as critical to the ongoing operation of a viable and productive industry.

Based on the analysis of the industry's occupational composition, industry assessments, and changing operating and production circumstances, the ISC determined the following occupational groups will be in high-demand over the next five years:

- **Engineering** is a discipline that drives project development, construction, and operations in the oil and gas industry and cuts across each of the other priority occupational groups;
- New exploration incentives and business opportunities have increased the need for workers with education and experience in the **geosciences**;
- Increasing regulatory and business planning requirements have changed industry demand for **health, safety, security, and environmental (HSSE)** workers;
- Development of offshore opportunities in the Cook Inlet and the Chukchi and Beaufort seas are increasing industry demand for **onshore and offshore maritime** workers with a focus on marine transportation and logistics; and
- New technologies, aging oil fields and infrastructure, and new modes of production and operation are increasing industry demand for skilled workers in **remote sensing and inspection** occupations.

Each of these occupational groups are seen as pivotal in the development and progression of the industry's growth opportunities over the next five years.

Table 8 provides a detailed list of common occupations based on the committee's assessment of priority occupation groups. Some occupations are represented in more than one of the priority occupational groups. After accounting for these duplicate listings and emerging occupations not currently represented in the industry, 61 priority occupations remained.

TABLE 8: PRIORITY OCCUPATIONS

## ENGINEERING OCCUPATIONS

- Operating Engineers and Other Construction Equipment Operators
- Engineers, All Other
- Environmental Scientists and Specialists, Including Health
- Civil Engineers
- Petroleum Engineers
- Electrical and Electronic Engineering Technicians
- Engineering Technicians, Except Drafters, All Other
- Engineering Managers
- Ship Engineers
- Mechanical Engineers
- Environmental Engineers
- Electrical Engineers
- Environmental Engineering Technicians
- Health and Safety Engineers, Except Mining Safety Engineers and Inspectors
- Mining and Geological Engineers, Including Mining Safety Engineers
- Stationary Engineers and Boiler Operators
- Electronics Engineers, Except Computer
- Computer Hardware Engineers
- Materials Engineers
- Mechanical Engineering Technicians
- Sales Engineers
- Industrial Engineering Technicians
- Chemical Engineers
- Industrial Engineers

## GEOSCIENCE OCCUPATIONS

- Environmental Scientists and Specialists, Including Health
- Geoscientists, Except Hydrologists and Geographers
- Environmental Science and Protection Technicians, Including Health
- Geological and Petroleum Technicians
- Atmospheric and Space Scientists
- Physicists
- Chemists
- Mining and Geological Engineers, Including Mining Safety Engineers
- Petroleum Engineers
- Cartographers and Photogrammetrists
- Hydrologists

## REMOTE CONTROL AND REMOTE SENSING OCCUPATIONS

- Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic
- Electro-Mechanical Technicians
- Engineering Technicians, Except Drafters, All Other
- Industrial Engineering Technicians
- Geological and Petroleum Technicians
- Machinists
- Industrial Engineers
- Computer-Controlled Machine Tool Operators, Metal and Plastic
- Robotics Engineers
- Robotics Technicians
- Mechatronics Engineers
- Remote Sensing Scientists and Technologists
- Remote Sensing Technicians

## HSSE OCCUPATIONS

- Compliance Officers, Except Agriculture, Construction, Health and Safety, and Transportation
- Water and Liquid Waste Treatment Plant and System Operators
- Occupational Health and Safety Technicians
- Environmental Science and Protection Technicians, Including Health
- Security and Fire Alarm Systems Installers
- Construction and Building Inspectors
- Meter Readers, Utilities
- Hazardous Materials Removal Workers
- Inspectors, Testers, Sorters, Samplers, and Weighers
- Environmental Engineering Technicians
- Occupational Health and Safety Specialists
- Electrical and Electronic Engineering Technicians
- Health and Safety Engineers, Except Mining Safety Engineers and Inspectors
- Environmental Engineers
- Environmental Scientists and Specialists, Including Health
- Atmospheric and Space Scientists
- Environmental Compliance Inspectors
- Regulatory Affairs Specialists

## MARITIME OCCUPATIONS

- Marine Engineers and Naval Architects
- Captains, Mates, and Pilots of Water Vessels
- Ship Engineers
- Dispatchers, Except Police, Fire, and Ambulance
- Transportation, Storage, and Distribution Managers
- Crane and Tower Operators
- Sailors and Marine Oilers
- Water Transportation Workers, All Other
- Commercial Divers
- First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand
- Shipping, Receiving, and Traffic Clerks
- Laborers and Freight, Stock, and Material Movers, Hand
- Tank Car, Truck, and Ship Loaders
- Mates, Ship, Boat, and Barge

THERE ARE MORE THAN  
**270**  
OCCUPATIONS IN THE  
OIL AND GAS INDUSTRY.



# PRIORITY OCCUPATIONS

## ➤ OIL AND GAS CAREER CLUSTERS AND PATHWAYS

The National Career Clusters® Framework is comprised of 16 Career Clusters® and 79 related Career Pathways to help students of all ages explore different career options and better prepare for careers and college.<sup>10</sup> As a workforce development strategy, career pathways provide a means to bridge career and technical education, post-secondary training and education, and industry expectations for knowledge, skills and abilities to develop well-aligned curriculum, programs of study, and credentials.

The 61 priority occupations can be further summarized by the career clusters and pathways associated with those occupations. Table 9 summarizes the five career clusters and ten pathways for these occupations.

Based on the 2011 occupational composition of the Alaska oil and gas industry, Table 10 outlines the occupation and worker counts for each career cluster and career pathway.

Business, management and administration; architecture and construction; manufacturing; science, technology, engineering, math (STEM); and transportation, distribution, and logistics career clusters account for more than two-thirds (67 percent) of Alaska oil and gas occupations.

Career pathways organize related occupations into secondary and postsecondary programs of study. Relating priority occupations and other occupational demand to career pathways provides a strategic direction for the development of educational and job training programs, as well as guidance for career planning.

TABLE 9: CAREER CLUSTERS AND PATHWAYS FOR OIL AND GAS OCCUPATIONS

Agriculture, Food, and Natural Resources	Environmental Service Systems
	Natural Resources
Architecture and Construction	Construction
	Design/Pre-Construction
Manufacturing	Production
	Quality Assurance
Science, Technology, Engineering, Math (STEM)	Engineering & Technology
	Science & Math
Transportation	Transportation Operations
	Warehousing & Distribution Center Operations

TABLE 10:  
OCCUPATION AND  
WORKER COUNTS FOR  
OIL AND GAS CAREER  
CLUSTERS AND PATHWAYS

CLUSTERS/PATHWAYS	NUMBER OF OCCUPATIONS	SUM OF TOTAL WORKERS
<b>Agriculture, Food, and Natural Resources</b>		<b>4,264</b>
Environmental Service Systems	5	112
Natural Resources	19	4,150
Plant Systems	1	2
<b>Architecture and Construction</b>		<b>5,548</b>
Construction	31	5,362
Design/Pre-Construction	5	27
Maintenance/Operations	3	159
<b>Arts, Audio/Video Technology, and Construction</b>		<b>76</b>
A/V Technology & Film	1	6
Telecommunications	2	4
Visual Arts	4	66
<b>Business Management and Administration</b>		<b>2,588</b>
Administrative and Information Support	14	897
Business Analysis	3	43
Business Financial Management and Accounting	11	403
Human Resources Management	8	90
Management	10	1,117
Marketing	2	38
<b>Government and Public Administration</b>		<b>4</b>
Planning	1	3
Regulation	1	1
<b>Health Science</b>		<b>59</b>
Diagnostic Services	2	29
Health Informatics	1	9
Therapeutic Services	4	21
<b>Hospitality and Tourism</b>		<b>120</b>
Lodging	3	20
Restaurants & Food/ Beverage Services	8	59
Travel & Tourism	3	41
<b>Human Services</b>		<b>4</b>
Consumer Services	1	3
Family & Community Services	1	1
<b>Information Technology</b>		<b>137</b>
Information Support & Services	4	23
Network Systems	2	13
Programming & Software Development	3	101
<b>Law, Public Safety, Corrections, and Security</b>		<b>56</b>
Correction Services	1	6
Emergency & Fire Management Services	2	11
Legal Services	5	32
Security & Protective Services	2	7
<b>Manufacturing</b>		<b>3,428</b>
Maintenance, Installation & Repair	16	1,371
Production	17	1,951
Quality Assurance	2	106
<b>Marketing</b>		<b>343</b>
Buying and Merchandising	6	301
Professional Sales & Marketing	7	42
<b>Science, Technology, Engineering, and Mathematics</b>		<b>2,453</b>
Engineering & Technology	21	2,110
Science & Math	9	339
<b>Transportation, Distribution, and Logistics</b>		<b>1,165</b>
Facility & Mobile Equipment Maintenance	7	304
Logistics Planning & Management Services	1	16
Transportation Operations	17	640
Warehousing & Distribution Center Operations	6	199
Unclassified	4	4
<b>Grand Total</b>		<b>20,249</b>



TABLE 11: POSTSECONDARY EDUCATION  
ALASKA HIGH SCHOOL GRADUATES AND GED RECIPIENTS, 2005-2011

ACADEMIC YEAR	HIGH SCHOOL OUTCOME	STUDENTS	COLLEGE GRADUATE	SOME COLLEGE OR STILL ENROLLED	JOB TRAINING ONLY	NO POST-SECONDARY
2004-2005	GED	784	12	230	191	351
2004-2005	Graduate	6,233	1,685	2,755	591	1,202
2005-2006	GED	814	14	256	198	346
2005-2006	Graduate	6,745	1,508	3,244	633	1,360
2006-2007	GED	640	6	183	194	257
2006-2007	Graduate	7,058	1,080	3,632	1,317	1,029
2007-2008	GED	528	4	134	131	259
2007-2008	Graduate	7,182	258	4,448	609	1,867
2008-2009	GED	456	0	104	130	222
2008-2009	Graduate	7,250	113	4,464	650	2,023
2009-2010	GED	399	0	75	101	223
2009-2010	Graduate	7,529	23	4,317	657	2,532
2010-2011	GED	277	1	34	50	192
2010-2011	Graduate	7,322	1	3,529	282	3,510

## ALASKA'S TALENT PIPELINE

In anticipation of industry workforce needs, the ISC reviewed production in the talent pipeline, looking specifically at alignment between priority occupation career pathways and secondary and postsecondary education and training outcomes.

The National Student Clearinghouse (NSC) tracks secondary and postsecondary outcomes for high school students. Table 11 presents these outcomes for cohorts from 2005 – 2011. Nearly 7,600 Alaska students received a high school diploma or GED in 2011. As the NSC data reveals, nearly a quarter (22 percent) of Alaska students have obtained no postsecondary job training or education within seven years of graduation. After completing a high school diploma or GED, additional training or education is an increasing requirement of the oil and gas industry.

Secondary and postsecondary education and training programs, facilities, and allied programs are discussed below.



**60%**  
OF JOBS IN ALASKA REQUIRE  
MORE THAN A HIGH SCHOOL  
DIPLOMA.



**1 IN 5**  
JOBS IN ALASKA REQUIRES  
A BACHELOR OR ADVANCED  
DEGREE.



# ALASKA'S TALENT PIPELINE

## CAREER AND TECHNICAL EDUCATION IN ALASKA HIGH SCHOOLS

According to the Alaska Department of Education and Early Development (DEED), there were 39,354 high school students in grades nine through 12 during the 2012-2013 school year. Forty-one of the 54 school districts in Alaska receive federal funds to implement career and technical education (CTE). Approximately \$3 million was distributed to the participating districts for the 2012-2013 school year.<sup>11</sup>

More than 14,000 students took at least one CTE class during the 2012-2013 school year. Nearly 3,000 students, who graduated or otherwise left through transfers or withdrawals, were identified as CTE concentrators. These students received two or more credits in one of the 14 career pathway programs of study. Tables 12 and 13 depict CTE classes and credits earned by Alaska high school students during the 2012-2013 school year.<sup>12</sup>

TABLE 12:  
NUMBER OF STUDENTS  
WHO EARNED A CTE  
CREDIT DURING 2012-  
2013

	Total Student Count	Agriculture and Natural Resources	Construction	Communications	Business	Education and Training	Health Sciences	Hospitality and Tourism	Human Services	Information Technology	Public Safety	Manufacturing	Marketing	Science, Technology, Engineering, Math	Transportation
Anchorage School District	6,780	149	1,241	574	1,421	142	1,499	163	407	46	57	164	91	554	355
Matanuska-Susitna Borough	2,421	71	601	10	800	1	134	121	108	101	6	243	37	11	214
Kenai Peninsula Borough	1,627	17	253	185	282	12	36	241	166	11	5	321	11	15	99
Fairbanks North Star Borough	1,577	0	275	362	317	9	222	2	129	15	0	133	0	11	117
City Borough of Juneau	936	113	34	158	46	0	97	255	41	12	3	119	0	20	45
Kodiak Island Borough	404	0	65	25	62	0	1	114	1	22	0	76	0	1	40
Ketchikan Gateway Borough	349	0	26	18	50	50	10	53	59	1	0	47	0	1	42
Total	14,094														

TABLE 13:  
CTE CONCENTRATORS WHO  
GRADUATED OR OTHERWISE  
LEFT SCHOOL IN 2012-2013

	Total Student Count	Agriculture and Natural Resources	Construction	Communications	Business	Education and Training	Health Sciences	Hospitality and Tourism	Human Services	Information Technology	Public Safety	Manufacturing	Marketing	Science, Technology, Engineering, Math	Transportation
Matanuska-Susitna Borough	957	11	245	2	296	1	97	54	18	43	5	88	4	6	93
Anchorage School District	580	47	88	47	72	20	79	23	20	5	14	33	6	17	120
Kenai Peninsula Borough	427	2	74	20	61	4	14	48	35	1	0	127	0	7	42
Fairbanks North Star Borough	371	0	82	66	25	0	66	1	11	14	0	27	0	4	79
Kodiak Island Borough	246	0	47	12	20	0	1	81	0	11	0	59	0	0	16
City Borough of Juneau	166	13	13	23	9	0	49	11	4	0	0	32	0	7	10
Ketchikan Gateway Borough	116	0	12	9	3	17	1	29	5	1	0	20	0	0	21
Valdez City School District	89	0	29	7	2	0	0	19	0	3	0	25	0	0	4



**14,000+**  
STUDENTS TOOK AT LEAST ONE CTE  
CLASS IN 2012-2013.

While more students in the Anchorage School District take a single CTE class, the Matanuska-Susitna Borough school district produces the greatest number of CTE concentrators. Concentrators are those students who earn two or more CTE credits in a given career cluster.

On a statewide basis, the greatest numbers of single CTE classes are taken in the business, construction, and health sciences pathways. CTE concentrators also focused on the construction and business pathways as well as manufacturing.

Additional development of construction; manufacturing; natural resources; science, technology, engineering, and math (STEM); and transportation curricula are needed to better align secondary CTE with industry needs and occupational priorities. Promotion of enhanced CTE curricula is needed to increase CTE concentrators in the five career clusters that represent the industry's priority occupations.



# ALASKA'S TALENT PIPELINE

## ➤ POSTSECONDARY EDUCATION AND TRAINING

Alaskans seeking postsecondary education and training to work in the oil and gas industry may choose from private and public four-year colleges and universities; two-year and community colleges; career, technical, and continuing education programs and schools; and apprenticeship programs. The Alaska Commission on Postsecondary Education has statutory responsibility to authorize postsecondary institutions operating in the state. Appendix D provides a listing of the postsecondary institutions with relevant programs for the oil and gas industry. Several key postsecondary programs are highlighted below.

## ➤ UNIVERSITY OF ALASKA

The University of Alaska (UA) is the state's largest degree-granting and workforce training institution. Consisting of three accredited universities and one accredited community college in addition to 12 additional community campuses located throughout the state, UA offers over 500 programs of which half are considered workforce development including workforce credentials, occupational endorsements, certificates and associate degrees that can be completed in two years or less.<sup>13</sup>

UA has established strong partnerships with the oil and gas industry to meet its workforce and training needs. Programs in emergency services; marine technology, port, and coastal engineering; and Arctic and petroleum engineering have been developed to respond to industry trends and needs. An industry led effort is currently underway to establish a baccalaureate degree in occupational health and safety at the UA Anchorage campus.<sup>14</sup>

Students may apply for credit for prior learning through work experience, military service, or other documented academic achievement to expedite their training and degree attainment.

Three UA campuses offer an associate of applied science degree in apprenticeship technology. This program integrates general coursework and career and technical training with the students' applied learning in a registered apprenticeship.

A number of research centers and institutes located throughout the UA system also serve as valuable resources to the oil and gas industry. Research projects not only address industry needs and challenges, but also provide applied learning for students, faculty, and contractors. Through these partnerships, new innovations and skilled workers emerge.

Table 14 provides a breakdown of UA students that completed their program of study based on based on modified career clusters schema adopted by UA. Table 15 indicates how many of these graduates were working in Alaska one year after exit.<sup>15</sup>

TABLE 14: NUMBER OF STUDENTS GRADUATED 2007- 2011 BY OIL AND GAS CLUSTERS

	2007	2008	2009	2010	2011
Architecture and Construction	111	113	102	156	143
Energy, Environmental Science, and Green Jobs	20	26	19	17	24
Fisheries, Agriculture, and Natural Resources	65	71	74	73	68
Health Sciences	409	436	400	485	476
Law, Public Safety, and Security	19	23	15	12	29
Mining, Manufacturing, and Process Technology	99	106	112	118	132
Science, Technology, Engineering, and Research	325	332	371	411	421
Transportation, Distribution, and Logistics	168	161	171	144	187
Total	1,216	1,268	1,264	1,416	1,480

TABLE 15: NUMBER OF STUDENTS GRADUATED 2007- 2011 WHO WERE EMPLOYED IN ALASKA ONE YEAR AFTER EXIT

	2007	2008	2009	2010	2011
Architecture and Construction	86	93	4	111	106
Energy, Environmental Science, and Green Jobs	16	23	14	12	17
Fisheries, Agriculture, and Natural Resources	46	45	47	42	54
Health Sciences	350	371	346	412	384
Law, Public Safety, and Security	16	21	14	10	27
Mining, Manufacturing, and Process Technology	85	81	93	105	99
Science, Technology, Engineering, and Research	225	229	266	311	278
Transportation, Distribution, and Logistics	110	113	120	105	136
Total	934	976	964	1,108	1,101

**THE UNIVERSITY OF ALASKA OFFERS  
SPECIALIZED PROGRAMS DESIGNED  
TO ADDRESS THE NEEDS OF THE  
OIL AND GAS  
INDUSTRY.**

# ALASKA'S TALENT PIPELINE

## ■ PROCESS TECHNOLOGY

The Process Technology program offers two options for an Associate of Applied Science degree in process technology or process industry instrumentation. It is coordinated by Kenai Peninsula College and delivered collaboratively through UAA and UAF. The program focuses on industries that use and control mechanical, physical, or chemical processes to produce a final product, especially for the oil and gas industry.

## ■ ALASKA NATIVE SCIENCE AND ENGINEERING PROGRAM

The Alaska Native Science and Engineering Program (ANSEP) is "a comprehensive suite of pre-college and university success programs aimed at creating empowerment and excitement around careers in engineering and science, including organized study groups, peer and professional mentoring, and organized group social activities."<sup>16</sup>

There are currently 500 Alaska Native students enrolled in science and engineering bachelor of science (BS) degree programs at University of Alaska campuses. Thirty-two Alaska Natives earned BS degrees in science and engineering in May 2012. The University of Alaska has graduated 267 Indigenous engineers and scientists for the period from 2002 through 2012. Of these graduates 100 percent have transitioned into a professional position or graduate studies. While initially designed to enhance Alaska Native student success, non-Native students are also enrolled in ANSEP.

ANSEP is internationally recognized as a model program for indigenous student success. A dozen other colleges have emulated the ANSEP program. These colleges also offer viable programs for Alaska student success.

## ■ UA MINING AND PETROLEUM TRAINING SERVICE

The UA Mining and Petroleum Training Service (MAPTS) was established more than 30 years ago to provide a variety of occupational health and safety, process industry, and worksite management courses. MAPTS offers on-demand courses for both state and federal agencies involved in oil and gas management as well as the industry's producers and service providers. It operates as a state-wide program under the auspices of the UA Workforce Programs. (MAPTS 2013)

Between 2010 and 2012, MAPTS training resulted in nearly 1,900 credentialed trainings. Table 16 provides a breakdown of credential attainment by training type.

TABLE 16: CREDENTIAL ATTAINMENT BY TRAINING

CLASS	FY2011	FY2012	FY2013	FY2014	TOTALS
IADC Well Control	205	204	280	231	739
Hazwoper	71	102	121	161	329
DEC Septic Tank	114	102	143	72	359
Drilling Roustabout	40	19	38	36	97
Mechanical Boiler	24	10	51	31	96
Rigging	68	42	0	24	110
OSHA Construction NSTC & CITS	56	30	27	38	113
Company Compliance	23	25	0	16	48
Accumulative Total	601	534	660	609	1,891

## ➤ ALASKA VOCATIONAL TECHNICAL EDUCATION CENTER (AVTEC)

AVTEC offers career and technical education at two campuses – the main campus in Seward and a satellite campus in Anchorage. It provides skills training in a wide variety of industrial and technological fields, including some of the fastest growing industries in the state, such as maritime, mining, pipeline construction, and healthcare.

AVTEC offers nearly 20 programs of study, each with industry approved certifications or licenses. Applied technologies such as combination welding, diesel and heavy equipment, and pipe welding; energy and building technologies such as facility maintenance, industrial electricity, power plant operation, and correspondence courses for apprenticeship related studies; and a host of programs available through AVTEC's Alaska Maritime Training Center are especially relevant to the oil and gas industry and its priority occupations.

AVTEC has industry advisory panels for each of its core programs. The oil and gas industry and its suppliers are well represented on these bodies. Continuous industry engagement has proven valuable to grooming AVTEC's programs and curricula to align with current and emerging industry standards.

Table 17 summarizes 2011-2013 enrollment and completers for key AVTEC programs of particular relevance to the oil and gas industry.

TABLE 17:  
ALASKA VOCATIONAL  
TECHNICAL CENTER  
ENROLLMENT AND  
PROGRAM COMPLETERS  
FY11 - FY13

		Automotive Technology	Business and Office Technology	Business and Office Technology (ANC)	Combination Welding	Culinary Arts	Diesel/Heavy Equipment	FM/Construction	Plumbing and Heating	Industrial Electricity	Information Technology	Masters/Mates	Pipe Welding	Powerplant Operator	Structural Welding	Facilities Management and Maintenance	Totals
FY11	Cumulative Enrollment	13	35	18	30	28	10	15	28	16	7	1	19	15			235
	Total Completers	12	28	13	15	19	8	15	26	14	7	1	15	13			186
FY12	Cumulative Enrollment		32	39	31	38	38	10	11	26	16	8	0	12			261
	Total Completers		16	11	24	20	14	9	11	23	13	7	0	12			160
FY13	Cumulative Enrollment		30	40	32	31	48	16	16	22	19	7	0	15		4	280
	Total Completers		19	22	24	21	24	14	14	21	14	7	0	10		4	194



# ALASKA'S TALENT PIPELINE

## ➤ APPRENTICESHIP TRAINING

The U.S. Department of Labor Office of Apprenticeship administers 321 registered apprenticeships in Alaska. Table 18 provides a summary of apprenticeship enrollment in Alaska between 2010 and 2012.

More than 20 Joint Administered Training Committees (JATCs) provide apprenticeship training for construction crafts in Alaska. JATC apprenticeship programs are included in the Postsecondary Education and Training Providers list in Appendix C.

Apprenticeship is an important model for accelerating skill development and career advancement. While the apprenticeship model has long been used for skilled trades, it is equally relevant for other occupations.

An example of apprenticeships for occupations outside of the skilled trades include eight environmental consultancy contractors have partnered with the Alaska Forum to develop an environmental technician apprenticeship. These non-joint multiple employer apprenticeships serve as an example to extend the apprenticeship model to a variety of additional occupations.

Additional use of the apprenticeship model should be considered for those priority occupations that do not require a four-year college degree, but do require additional postsecondary education and related work experience.

TABLE 18: APPRENTICESHIP ENROLLMENT BETWEEN 2010 AND 2012

	2010		2011		2012	
	# OF PROGRAMS	# OF APPRENTICES	# OF PROGRAMS	# OF APPRENTICES	# OF PROGRAMS	# OF APPRENTICES
Union, group and individual programs	26	1,176	25	1,087	23	1,109
Non-union, group and individual programs	288	996	303	980	298	930
Total	314	2,172	328	2,067	321	2,039



## ➤ FAIRBANKS PIPELINE TRAINING CENTER

The Fairbanks Pipeline Training Center (FPTC) opened in October 2009. Designed to train pipeline workers in Arctic conditions, the center has shops, classrooms, state-of-the-art safety labs, and a pipeline training yard. Operated by the Fairbanks Pipeline Training Trust, the center is designed to be a full-service training facility for all of the trades necessary to construct and maintain a large diameter pipeline.

## ➤ ALASKA PROCESS INDUSTRY CAREERS CONSORTIUM

The Alaska Process Industry Careers Consortium (APICC) is a coalition of process industry employers, support contractors, and educational institutions. APICC serves as an advocate to promote career development, training, and educational programs to prepare Alaskans for careers in process industries.

APICC established the North Slope Training Consortium to develop and maintain high quality, standardized health, safety, and environmental training programs for operator and contractor employees at industrial sites on the North Slope and throughout Alaska. An NSTC card is a prerequisite for working on the North Slope.

## ➤ OTHER POSTSECONDARY CAREER AND TECHNICAL EDUCATION AND TRAINING

Appendix D lists educational institutions, regional training centers, and private training providers that offer programs relevant to occupations in the oil and gas industry.



# EDUCATION AND TRAINING INCENTIVES

In addition to direct support of K-12 education, the University of Alaska, and AVTEC, the State of Alaska offers education and training incentives to individuals, corporations and other businesses, and other training providers in the form of scholarships, tax credits, and grants.

## ➤ INDIVIDUAL INCENTIVES

### ■ Alaska Scholars

The UA Scholars Award is an \$11,000 scholarship that covers eligible expenses such as undergraduate tuition, fees, room, board, books, supplies, and other educational costs incurred for attendance at the University of Alaska. Students eligible for the award are designated by their high school based on their academic standing at the end of their junior year.

The award is disbursed to eligible scholars in the amount of \$1,375 per semester for a total of eight semesters over a five year period. Scholars are required to maintain full-time enrollment status (minimum of 12 credits) and maintain a minimum cumulative GPA of 2.5.

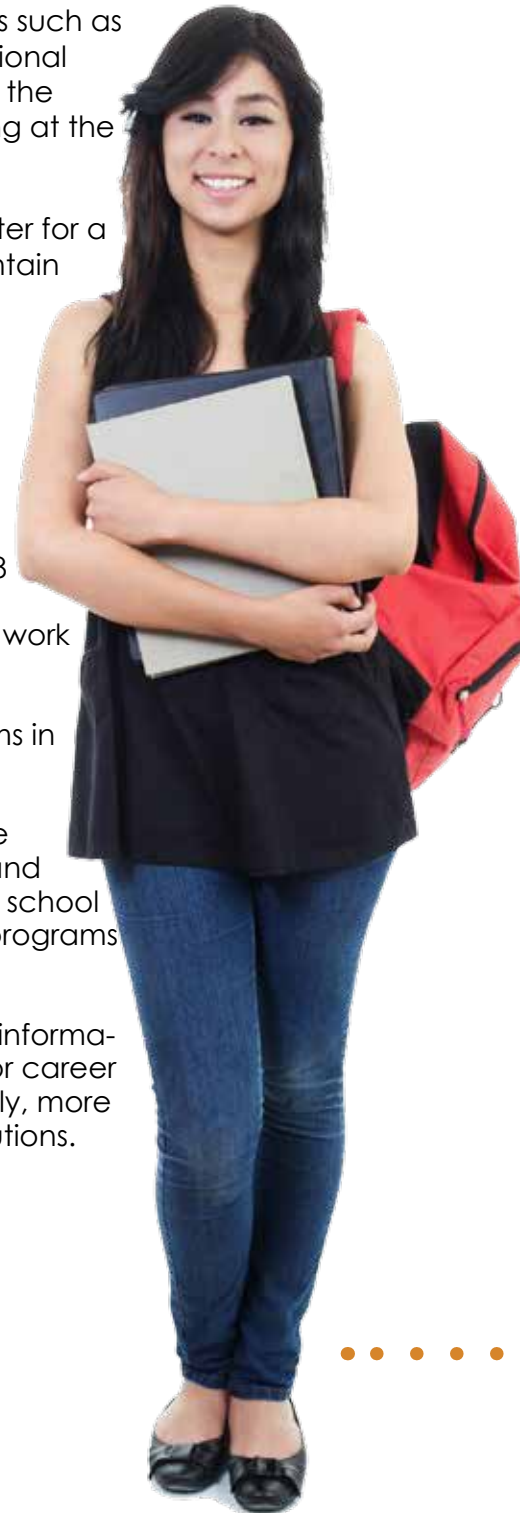
### ■ Alaska Performance Scholarship

The Alaska Performance Scholarship (APS) was established in 2011. It is a merit-based scholarship that provides eligible Alaska students with between \$2,378 and \$4,755 annually toward full-time postsecondary studies at qualifying Alaska institutions. Since its inception, the APS has been awarded to 1,888 individuals with total awards of \$8.7 million. Eligibility is based on a combination of high school coursework, grades, and scores on college placement or work ready exams.

The APS can be used for approved career and technical education programs in the state or at any participating college or university in Alaska.

In FY12, slightly more than 27 percent of Alaska public school graduates were eligible to receive an APS. However, just over one-third actually applied for and received a scholarship, totaling approximately ten percent of all Alaska high school graduates. Most APS recipients (88 percent) are enrolled in baccalaureate programs on a full-time basis.<sup>17</sup>

Efforts to promote oil and gas occupations and career paths should include information about qualifying for and using the APS. Increased utilization of the APS for career and technical education would also be beneficial to the industry. Additionally, more postsecondary training providers need to become certified as APS CTE institutions.



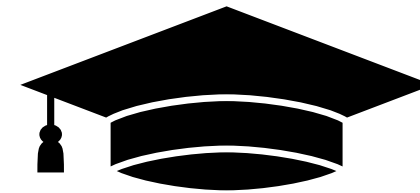
### ■ AlaskAdvantage Education Grant

The AlaskAdvantage Education Grant Program (AEG) provides need-based financial assistance to eligible Alaska students attending qualifying postsecondary educational institutions in Alaska. AEG awards typically range from \$500 to \$2,000 per academic year for students who have qualifying unmet financial need. The maximum award may be increased to a total of \$3,000 for eligible applicants that score in the top quartile on the SAT or ACT exams, or those enrolled in workforce shortage programs, which includes the process technology and resource extraction industry.<sup>18</sup>

### ■ Military Training Credit

In 2013, the Alaska State Legislature passed House Bill 84, which directs the University of Alaska, the Department of Commerce, Community and Economic Development, and the Alaska Workforce Investment Board to develop policies to accept military education, training, and service for some or all of the qualifications for certain occupational licensing and postsecondary education and employment training. The intent of the military training credit is to recognize commensurate military training and service, remove unintended barriers to veteran employment, and to accelerate veteran entry into the civilian workforce.

The military training credit became effective on January 1, 2014. Promotion of the military training credit will help transitioning military personnel gain industry recognized credentials and move into the Alaska workforce.



**\$8.7 MILLION**  
**AWARDED THROUGH ALASKA PERFORMANCE**  
**SCHOLARSHIP PROGRAM SINCE 2011.**



# EDUCATION AND TRAINING INCENTIVES

## ➤ EDUCATION AND TRAINING INCENTIVES: CORPORATE INCENTIVES

### ■ Alaska Education Tax Credit

The Alaska Education Tax Credit (AETC) was established in 1987. In 2011, the Alaska State Legislature expanded the uses of the credit to include additional career and technical education programs and other options. It provides a tax credit to businesses that make contributions to Alaska universities, and accredited nonprofit Alaska two- and four-year colleges for direct instruction, research, and educational support. Donations to school districts and state-operated vocational and technical education and training schools for career and technical education, programs, and facilities are also eligible.

The credit can be applied to corporate and business obligations for seven different taxes. For the oil and gas industry, the Alaska corporate income tax (AS 43.20.011), the oil and gas production and transportation tax (AS 43.56.010), and the oil and gas property tax (AS 43.55.11) are obligations that are eligible for the AETC. The credit is 50 percent of the first \$100,000, 100 percent of the contribution over \$100,000 and up to \$300,000 and 50 percent of the remaining amount over \$300,000. The total allowable credit may not exceed \$5 million.

Donations to eligible institutions can be targeted to programs aligned with the donors' workforce development needs.

The oil and gas industry's use of the AETC is reported by the Alaska Department of Revenue, Division of Tax in its annual report of operations. Table 18 details the credits taken by the industry between 2010 and 2012.

Businesses balance the use of the AETC with other tax credit opportunities and their total tax obligations. Increased use and targeting of the AETC could provide additional funding for oil and gas workforce training initiatives and priority occupations.

TABLE 19: CREDITS TAKEN BY OIL AND GAS INDUSTRY: 2010-2011

	2010	2011	2012	2013
Oil and Gas Corporate Income Tax	\$451,500	\$455,000	\$563,000	\$2,529,361
Oil and Gas Production and Transportation Tax	\$0	\$0	\$0	\$0
Oil and Gas Property Tax	\$0	\$0	\$0	\$0

Source: Annual Report, Department of Revenue, Division of Tax.

### ■ Work Opportunity Tax Credit

The Work Opportunity Tax Credit (WOTC) is a federal tax credit program that incentivizes employers to hire individuals facing significant barriers to employment. These federal tax credits encourage employers to hire from nine targeted groups of job seekers by reducing the employers' federal income tax liability by as much as \$9,600.

New hires eligible for the federal employer tax credit are: qualified Temporary Assistance for Needy Families (TANF) recipients; qualified veterans; ex-felons; designated community residents; vocational rehabilitation referrals; qualified summer youth hires; qualified food stamp recipients; qualified Supplemental Security Income (SSI) recipients, and qualified long-term TANF recipients. Various eligibility criteria such as age, timing of service, and other circumstances also dictate eligibility.

Based on partial year data, in 2012 approximately 250 Alaska employers hired more than 1,100 WOTC eligible workers resulting in tax credits of over \$3.9 million.<sup>19</sup>

## ■ CTE and Training Grants

The Alaska Department of Labor and Workforce Development administers a suite of federal and state training funds. These funds have a range of purposes including targeting individuals experiencing difficulty in gaining or maintaining employment; expanding the capacity of schools, universities, and training providers to conduct career and technical education and other postsecondary training; school-based and out of school youth; and targeted industry training programs.

Training grants and awards issued under these programs may take the form of grants to training providers, grants to registered apprenticeships or other industry-specific training, occupational training through on the job training or attainment of industry-recognized licenses and credentials, or individual training allowances issued through the Alaska Job Center Network.

Table 19 summarizes CTE capacity building and training grant volumes from 2011 to 2013. Funding for the Alaska Construction Academies, Pipeline Worker Training, and the Alaska Oil and Gas Occupations Training Fund specifically target in-demand occupations for the oil and gas industry.

TABLE 20: CTE CAPACITY BUILDING AND TRAINING GRANT VOLUMES: 2011-2013

	SFY2011	SFY2012	SFY2013
<b>CTE Capacity Building</b>			
Alaska Technical Education Vocational Program (TVEP)	\$3,991,614	\$4,118,693	\$4,218,126
Career and Technical Education (CTE)	\$0	\$589,813	\$607,002
<b>Targeted Adult and Incumbent Worker Grant Programs</b>			
State Training and Employment Program (STEP)	\$6,027,099	\$6,412,634	\$5,247,285
WIA Adult	\$1,621,498	\$2,180,792	\$1,378,495
WIA Dislocated Worker	\$1,135,106	\$1,706,733	\$1,467,785
<b>Youth Grant Programs</b>			
Alaska Youth First (AYF)	\$1,843,133	\$1,864,077	\$1,840,542
WIA Youth	\$1,943,913	\$1,595,026	\$1,027,575
<b>Targeted Industry Training</b>			
Alaska Construction Academies	\$3,170,585	\$3,180,000	\$3,180,000
Pipeline Worker Training	\$1,858,662	\$1,045,704	\$0
Alaska Oil and Gas Occupations Training Fund	\$472,970	\$346,819	\$364,870

Source: Alaska Department of Labor and Workforce Development, Division of Business Partnerships

### ■ Alaska Pipeline Construction Training Program

The Alaska Natural Gas Pipeline Act of 2004 (P.L. 108-324, Division C) provides for the establishment of the Alaska Pipeline Construction Training Program given certain conditions and certifications. Once all project conditions have been met and certifications by the Governor of the State of Alaska and the U.S. Secretaries of Labor and Energy have been made, the act authorizes the appropriation of \$20 million to carry out a training program for the skills required to construct and operate an Alaska gas pipeline system. The program must be consistent with the State of Alaska's Unified Plan as required by the Workforce Investment Act of 1998.

# TRENDS IN THE ALASKA OIL AND GAS INDUSTRY

The ISC heard from state, federal and industry experts and project proponents regarding the outlook for exploration and production, pipeline development, and other major projects. A full documentation of the projects is beyond the scope of this plan. However, brief summaries of the information provided to the committee are outlined below.

## ➤ EXPLORATION AND PRODUCTION OUTLOOK

Paul Decker, Resource Evaluation Manager with the Alaska Division of Oil and Gas (DOG), provided the ISC with a briefing on the general outlook for exploration and production for state acreage in Cook Inlet, the North Slope, and other basins. Exploration and production activity on federal lands was presented by Darla Pindell with the U.S. Department of Interior, Bureau of Land Management. Sharon Warren with the Bureau of Ocean Energy Management addressed the ISC on offshore activity in federal waters.

## ➤ RESOURCES

Despite nearly 120 years of oil and gas production in Alaska, the state's vast onshore and offshore sedimentary basins remain relatively unexplored. Figure 5 depicts these basins.

In 1957, the discovery of the Swanson River field on the Kenai Peninsula marked the beginning of the modern era of oil and gas development in the state. Less than a decade later, Atlantic Richfield struck oil on the North Slope at Prudhoe Bay, the largest field yet discovered on the North American continent. Additional discoveries soon followed including the Kuparuk River field, the second largest North American field.

As of 2011, Alaska ranked second among the 50 states for crude oil production and 11<sup>th</sup> for natural gas production, and 12<sup>th</sup> for overall energy production. With escalating shale oil and gas production occurring in the Lower 48 states and declining Alaska production, Alaska recently slipped to fourth in crude oil production, falling behind North Dakota and California.<sup>20</sup>

Production of oil and natural gas liquids in Alaska peaked in 1992. Peak average daily production occurred in 1988 at more than 2 million barrels. Figure 6 illustrates the average daily production of oil and natural gas liquids from 1960 through 2012.

Despite this declining rate of production, Alaska still has a substantial oil and gas endowment. Table 20 outlines oil and gas resource assessments by basin. In total, an estimated 43 billion barrels of oil and 255 trillion cubic feet of natural gas are technically recoverable from Alaska oil and gas basins. These estimates do not include shale oil, shale gas, methane hydrates, and most coal bed methane.<sup>21</sup>

## ➤ INCENTIVES

Since the development of the 2008 oil and gas training plan, the state has developed additional incentives to stimulate new production in smaller nonproducing basins,<sup>22</sup> revitalize exploration and development in the Cook Inlet basin,<sup>23</sup> and target increased production on the North Slope.<sup>24</sup> The More Alaska Production (MAP) Act was passed by the Alaska State Legislature in April 2013. The MAP Act provides a suite of incentives to spur new production while simplifying the state's tax regime.

FIGURE 5: OIL AND GAS SEDIMENTARY BASINS AND LEASING AREAS

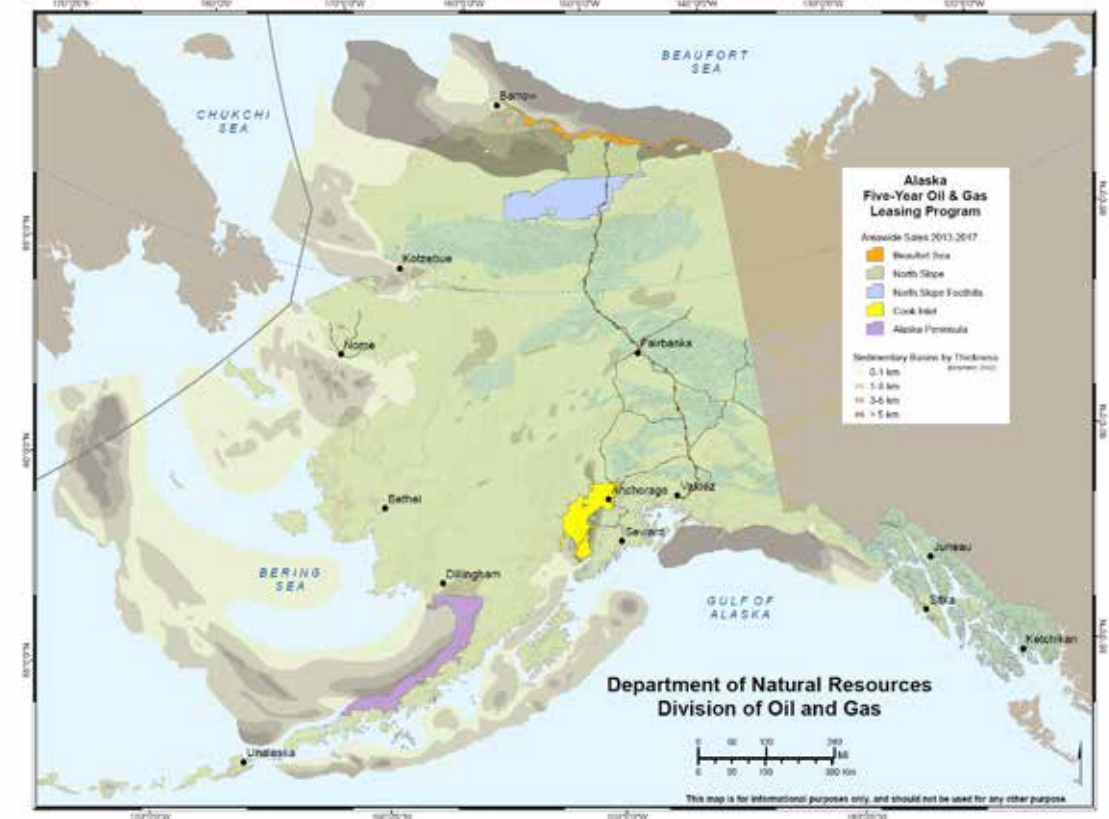
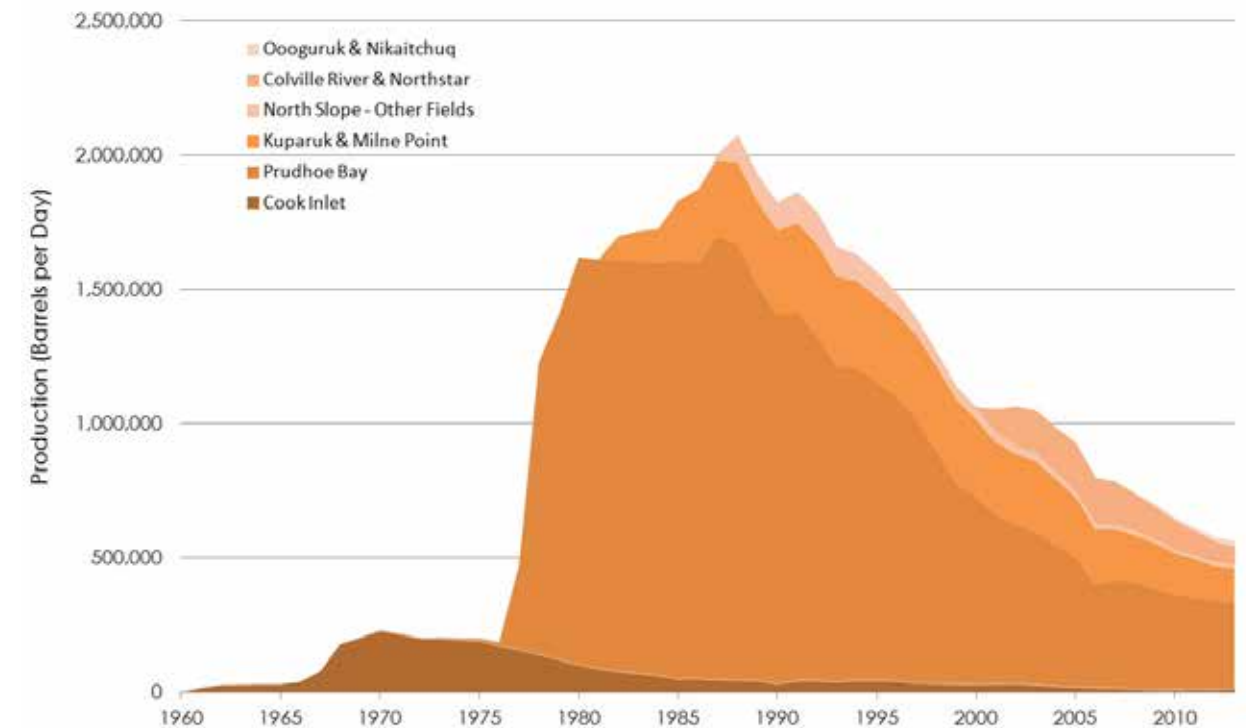


FIGURE 6: ALASKA'S AVERAGE DAILY OIL & NGL PRODUCTION RATE 1960-2012





# TRENDS IN ALASKA'S OIL AND GAS INDUSTRY

## LEASES AND EXPLORATION LICENSING

The state offers five areawide oil and gas lease sales each year during the fall and spring. Table 21 summarizes oil and gas lease activity since 2009.

TABLE 21: OIL AND GAS LEASE ACTIVITY 2009-2013

LEASE AREA	2009		2010		2011		2012		2013	
	TRACTS LEASED	ACRES	TRACTS LEASED	ACRES	TRACTS LEASED	ACRES	TRACTS LEASED	ACRES	TRACTS LEASED	ACRES
Cook Inlet	4	5,733	35	104,629	104	449,164	44	128,230	24	100,322
North Slope	80	303,346	123	558,683	161	289,434	88	152,067	89	162,163
Beaufort	No Lease Sale		39	104,544	78	281,095	25	80,699	2	2,560
North Slope Foothills	1	5,760	No Bids Received	0	0	8	45,476	0	0	0
Totals	85	314,839	197	767,856	343	1,019,693	165	406,472	115	265,045

## NORTH SLOPE BASIN

Alaska's North Slope contains 14 of the 100 largest oil fields in the United States, and five of the 100 largest natural gas fields in the U.S.<sup>25</sup> The Prudhoe Bay field is the largest oil field in the country, currently producing an average of 445,000 barrels per day.<sup>26</sup> Figure 7 provides a map of North Slope oil and gas activity between 2011 and 2013. Between nine and ten operators are currently active on the North Slope. Since 2008, a number of new operators have begun or assumed exploration projects on the North Slope. These operators range from smaller independents to large-scale multi-nationals.

In addition, major North Slope operators have made recent announcements regarding increased E&P investments. ConocoPhillips (CP) has indicated it will undertake new investment in fields where it is the primary operator, including the Kuparuk River field and its leases in the National Petroleum Reserve – Alaska (NPR-A). In 2013, the company increased its capital expenditures in Alaska by \$600 million. CP is in the process of deploying two new drilling rigs on the North Slope and expects to increase its production by 55,000 barrels per day by 2017.

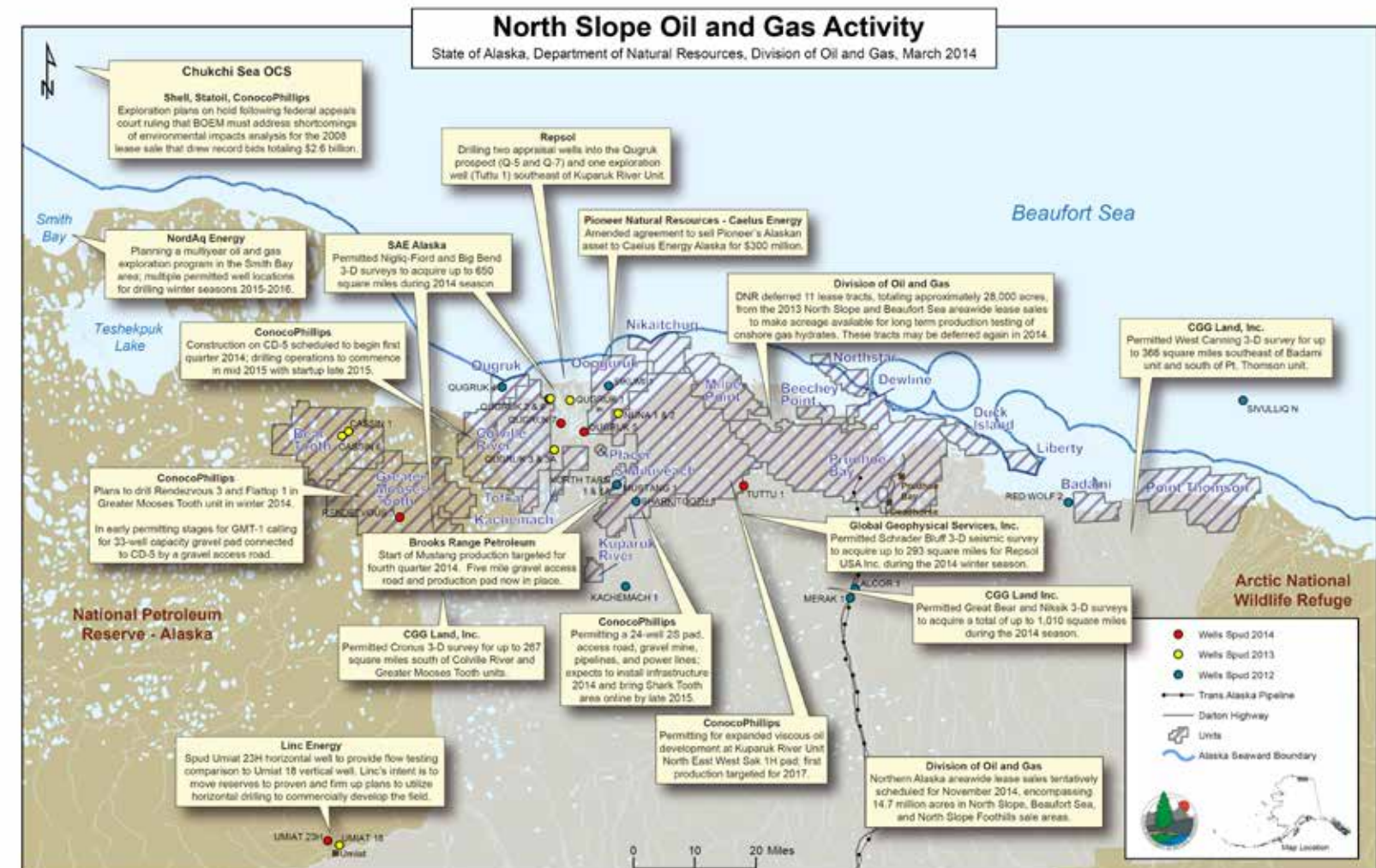
BP also announced its intention to invest up to \$1 billion in fields where it is the primary operator, specifically Prudhoe Bay and Milne Point. This investment will roll out over the course of five years once initiated and result in an additional 200 jobs in Alaska.<sup>27</sup>

Workovers or rate-enhancing well work also increased in 2013. Additional work on these legacy assets will continue in 2014.

Additional investment under consideration includes up to \$3 billion to fund new development in the westernmost area of the Prudhoe Bay field. Another \$1 to \$2 billion is slated for new development in the Milne Point field.<sup>28</sup>

The foregoing plans were announced in the spring of 2013 following the passage of the More Alaska Production Act (MAP), which offered new exploration incentives and a revised tax structure to incent new production.

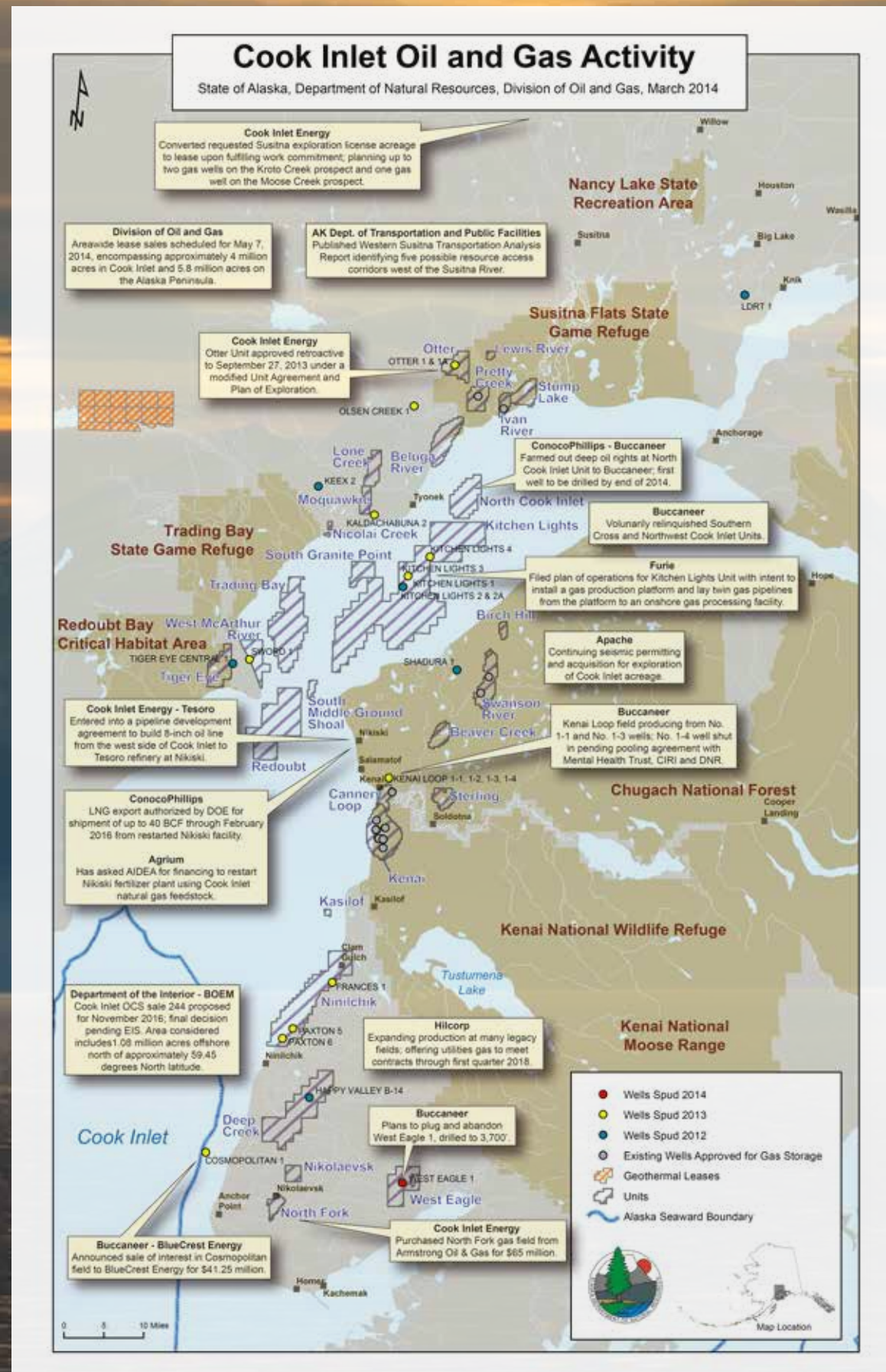
FIGURE 7: MAP OF NORTH SLOPE OIL AND GAS ACTIVITY





# TRENDS IN ALASKA'S OIL AND GAS INDUSTRY

FIGURE 8: COOK INLET BASIN ACTIVITY 2012-2014



## COOK INLET BASIN

The Cook Inlet region is a partially explored petroleum province from which more than 1.3 billion barrels of oil, 7.8 trillion cubic feet of gas, and 12,000 barrels of natural gas liquids have been produced since commercial development of the region's hydrocarbons began in 1958.<sup>29</sup> According to the Alaska Oil and Gas Conservation Commission, current daily production of oil and natural gas liquids in the Cook Inlet basin totals 16,247 barrels per day. There are 28 producing oil and gas fields in the Cook Inlet basin.

Since 2008, the expiration of long-term natural gas contracts to serve the Southcentral market and a variety of new incentives have brought about a number of changes to exploration and production (E&P) activity in the Cook Inlet. Figure 8 summarizes operators, project developments, and related activity in the Cook Inlet basin from 2012 to 2014.

A significant focus in the Cook Inlet basin has been the acquisition and reworking of legacy assets by companies such as Hilcorp, Cook Inlet Energy LLC, Apache, and others. All of the operators in the basin are independents.

Exploration efforts have also expanded with the introduction of 3-D seismic surveys both onshore and offshore, increased drilling activity including two jack-up rigs, and expanded efforts in the little explored west forelands. In 2012, a dozen new wells were drilled in the Cook Inlet basin.

Three downstream facilities are also located in the Cook Inlet basin. Tesoro Alaska's Kenai refinery can process up to 72,000 barrels per day (bpd). The refinery produces low sulfur gasoline, jet fuel, ultra-low sulfur diesel (USLD), heavy fuel oils, propane and asphalt. Crude oil is delivered by double-hulled tankers through Cook Inlet and by pipeline from the Kenai Peninsula and Cook Inlet. A 68-mile, 42,000 bpd common-carrier products pipeline transports jet fuel, gasoline, and diesel to the Port of Anchorage and the Anchorage International Airport. The refinery employs 210 full-time employees.<sup>30</sup>

ConocoPhillips (CP) owns the Kenai Liquefied Natural Gas Plant in Nikiski, which began operations in 1969. The plant operated for more than 40 years as the only LNG export plant of domestic production in the United States. At full production of 240 million cubic feet per day (MMCFD), the plant employed 60 workers.<sup>31</sup> Citing insufficient supply of natural gas, CP announced plans to discontinue operations in 2011. In 2012, CP made four deliveries to customers in Japan, the last shipments from the facility before its export license was allowed to lapse in March 2013. The plant has been maintained to resume operations when natural gas supplies become sufficient for ongoing operations.<sup>32</sup> In February 2014, the Federal Energy Regulatory Commission (FERC) approved the LNG Export License for the plant to resume operations and export up to 40 BCF through February 2016.<sup>33</sup>

The major North Slope producers and TransCanada Corporation recently announced Nikiski is the preferred site for the proposed terminus for the Alaska LNG to Tidewater project. After evaluating 20 possible locations, the project proponents narrowed down the general location to Nikiski while continuing to evaluate options. The terminus will include an LNG plant and terminal 17 to 18 times larger than the Kenai LNG Plant.<sup>34</sup> See additional discussion of the Alaska LNG to Tidewater project on page 58.

The third facility in the Cook Inlet basin is the Agrium fertilizer plant. Although not a natural gas production facility per se, the plant does rely on natural gas feedstock for its production processes. Prior to its closing in 2007, the plant employed 200 workers and the facility was the largest property taxpayer in the Kenai Peninsula Borough. Increased supply of natural gas, either from the Cook Inlet basin or via a pipeline from the North Slope, could once again make plant operations feasible. Agrium is looking at financing options for re-opening the facility.



# TRENDS IN ALASKA'S OIL AND GAS INDUSTRY

## FRONTIER BASINS

Figure 9 depicts the sedimentary basins referred to as the Frontier Basins in the state. As an incentive to explore these smaller, undeveloped basins, the state operates the Exploration Licensing Program.<sup>35</sup> Proposals are accepted each April and are subject to a best interest finding by the Commissioner of the Department of Natural Resources.

FIGURE 9: ALASKA FRONTIER BASINS



As outlined in Table 22, five companies hold active exploration licenses in four basins — Susitna, Nenana, Healy, and Holitna. Additional exploration licensing in these and other Frontier Basins are under consideration.

TABLE 22: CURRENT EXPLORATION LICENSES AND PENDING APPLICATIONS  
THE STATE HAS ISSUED FIVE EXPLORATION LICENSES COVERING 1.25 MILLION ACRES AND HAS RECEIVED APPLICATIONS FOR THREE OTHER AREAS.

LOCATION	ADL FILE NUMBER	LICENSEE	ACRES	COMMITMENT	EFFECTIVE DATE	TERM
Susitna Basin II	390078	Cook Inlet Energy LLC	471,474	\$3,000,000	1-Nov-03	7 Years - 3 year extension
Nenana Basin	390079	Doyon Limited; Usibelli Energy LLC; Arctic Slope Regional Corp.	482,942	\$2,525,000	October 1, 2002 - Extended October 21, 2008	7 Years - 3 year extension
Susitna Basin IV	391628	Cook Inlet Energy LLC	62,909	\$2,250,000	1-Apr-11	10 years
Susitna Basin V	391794	Cook Inlet Energy LLC	45,764	\$250,000	1-Apr-12	5 years
Healy Basin	390606	Usibelli Coal Mine Inc.	208,630	\$500,000	Jan. 1, 2011	10 years
Houston-Willow Basin	391282 Application	LAPP Resources Inc.	21,080	\$500,000	proposed	10 years

## FEDERAL LANDS<sup>36</sup>

The U.S. Department of the Interior, Bureau of Land Management administers oil and gas leasing activity on federal lands in Alaska. Since the 2008 AOGSTP was produced, two new units have been formed on federal lands, both by ConocoPhillips and its partner Anadarko Petroleum. The Greater Moose's Tooth (GMT) and Bear Tooth units were established in 2008 and 2009, respectively. In 2013, ConocoPhillips filed permit applications to develop infrastructure to facilitate the development of its GMT-1 site.

Since 2011, the BLM has conducted annual oil and gas lease sales in the 22.1-million acre NPR-A, resulting in leases for more than 280,000 acres. Currently, ten lessees hold over 1.5 million acres in 191 leases. The U.S. Geological Survey estimates the NPR-A contains 896 million barrels of technically recoverable oil.

Table 23 summarizes federal oil and gas lease units managed by the BLM.

TABLE 23: FEDERAL OIL AND GAS LEASE UNITS MANAGED BY THE BLM

	UNIT/AGREEMENT NAME	ALIS/CASE #	OPERATOR	EFFECTIVE DATE	ADMINISTRATION
1	Bear Tooth Unit (NPR-A)	AA081738	ConocoPhillips	8/25/2009	BLM
2	Beaver Creek (Kenai Peninsula)	AA050859	Marathon	6/28/1967	BLM
3	Beluga River (Kenai Peninsula)	AA050861	ConocoPhillips	7/6/1962	BLM
4	Birch Hill (Kenai Peninsula)	AA050862	Hilcorp	6/9/1965	BLM
5	Greater Mooses Tooth (NPR-A)	AA087852	ConocoPhillips	1/28/2008	BLM
6	Kenai (Kenai Peninsula)	AA050886	Marathon	7/30/1959	BLM
7	Sterling (Kenai Peninsula)	AA050887	Marathon	7/7/1961	BLM
8	Swanson River Field Pooling Agreement (Kenai Peninsula)	AA050860	Hilcorp	7/31/1956	BLM

The BLM also recently announced a five-year strategy to clean up solid wastes and plug legacy wells in the NPR-A. During the summer of 2014, the agency will initiate clean-up of solid wastes on the Simpson Peninsula. Wells will be plugged in the Barrow, Umiat, and Simpson peninsula areas over the course of the 5-year plan at a cost of \$50 million. It is anticipated that this activity will result in additional demand for contracted services.

### Colville Delta Five

The Colville Delta Five project (CD-5) will be the first permanent oil development site in the National Petroleum Reserve-A (NPR-A). It will serve as a satellite field west of the Alpine field, which is operated by ConocoPhillips. Project components consist of a drill pad, six-mile gravel road, bridge, and suspended oil pipeline to link CD-5 with the Alpine field. Construction is slated for 2015.

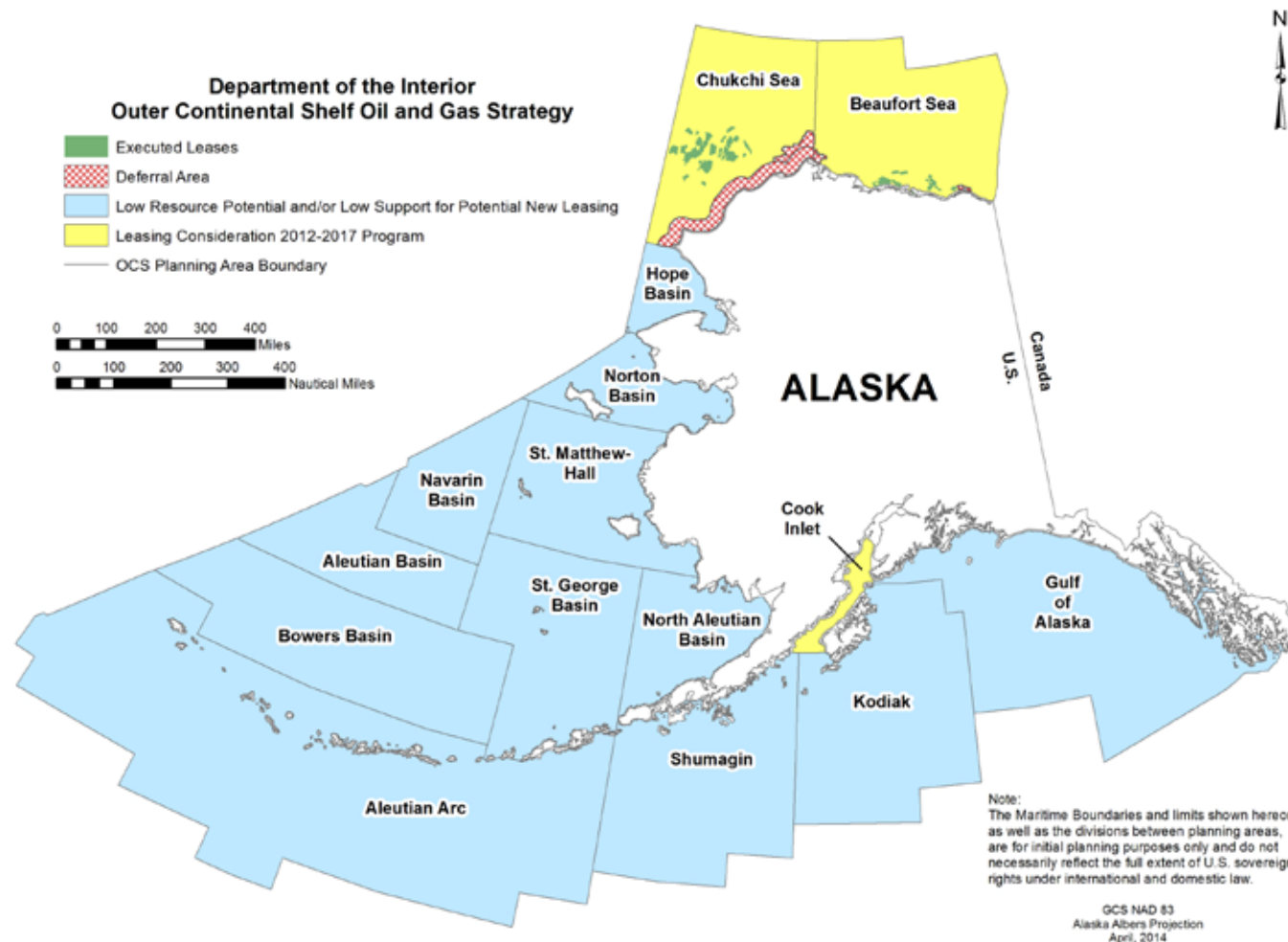
# TRENDS IN ALASKA'S OIL AND GAS INDUSTRY

## ALASKA OUTER CONTINENTAL SHELF

Oil and gas leasing on the Outer Continental Shelf (OCS) off of Alaska occurs beyond state waters, which begin from the mean high tide line to three miles offshore. Federal waters extend from three miles to 200 miles offshore. The Bureau of Ocean Energy Management (BOEM) manages OCS oil and gas leasing activity. Figure 10 depicts the Alaska OCS planning units.

Development of new oil and gas fields in the Beaufort and Chukchi seas could create significant economic effects nationwide. Estimated production, based on existing lease holdings, could total nearly ten billion barrels of oil and 15 trillion cubic feet of natural gas over the next 50 years. Average annual employment to support this new production is estimated at 54,700 new jobs, but peak employment is estimated to exceed 90,000 new jobs. These jobs would be based in Alaska and across the U.S.<sup>37</sup>

FIGURE 10: ALASKA OCS PLANNING UNITS



Three areas – the Beaufort Sea, the Chukchi Sea, and the Cook Inlet are the only planning units with planned or active leasing activity. Table 24 summarizes historical exploration and drilling activity in the Alaska OCS since 1975.

Over the course of the next five years, lease sales will be held in the Beaufort Sea, Chukchi Sea, and Cook Inlet leasing units. Sales in the Beaufort Sea and Chukchi Sea units will be conducted in 2016 and 2017. Cook Inlet sales will be conducted on a special interest basis depending on expressed industry interest. Table 21 on page 46 references these lease sales.

TABLE 24: PLANNED OIL AND GAS LEASE SALES IN ALASKA 2014-2018

	2014				2015				2016				2017				2018			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>STATE LANDS</b>																				
Alaska Peninsula		X			X				X				X				X			
Beaufort				X			X			X		X			X					X
Cook Inlet		X				X				X			X						X	
Exploration Licenses																				
Frontier Basins		X			X				X			X			X				X	
North Slope				X			X				X				X					X
North Slope Foothills				X			X				X				X					X
<b>OCS</b>																				
Beaufort																			64.72 million acres	
Chukchi																			55.11 million acres	
Cook Inlet																			5.36 million acres	
<b>FEDERAL LANDS</b>																				
Cook Inlet																				
NPR-A				X			X				X				X					X

TABLE 25: EXISTING PIPELINES (OPERATED PURSUANT TO RIGHT-OF-WAY LEASING ACT)

PIPELINE	MILES
Alpine Diesel	34
Alpine Oil	34
Alpine Utility	34
Badami Sales Oil	25
Badami Utility	31
Endicott	26
Kenai Kachemak	50
Kuparuk	28
Kuparuk Extension	9
Milne Point	10
Milne Point Products	10
Nikiski Alaska	70
North Fork	7.4
Northstar Gas	17
Northstar Oil	16
Nuiqsut Natural Gas Pipeline	14
Oliktok	28
Trans-Alaska Pipeline	800

Source: Alaska Department of Natural Resources State Pipeline Coordinator's Office

1243.4

## PIPELINES

The ISC was briefed by Jason Walsh of the State Pipeline Coordinator's Office (SPCO) on existing pipelines, projects in development, and pre-application projects.

Eighteen pipelines are operating in State of Alaska right-of-ways. The SPCO regulates these pipelines, serves as a single point of contact for the industry, and coordinates with other state agencies on pipeline oversight. Table 25 details these pipelines and mileage estimates. These lines total 1,243.4 miles. This total does not include gathering lines or lines that may have a specific unit exemption.



# TRENDS IN ALASKA'S OIL AND GAS INDUSTRY

## TRANS-ALASKA PIPELINE SYSTEM

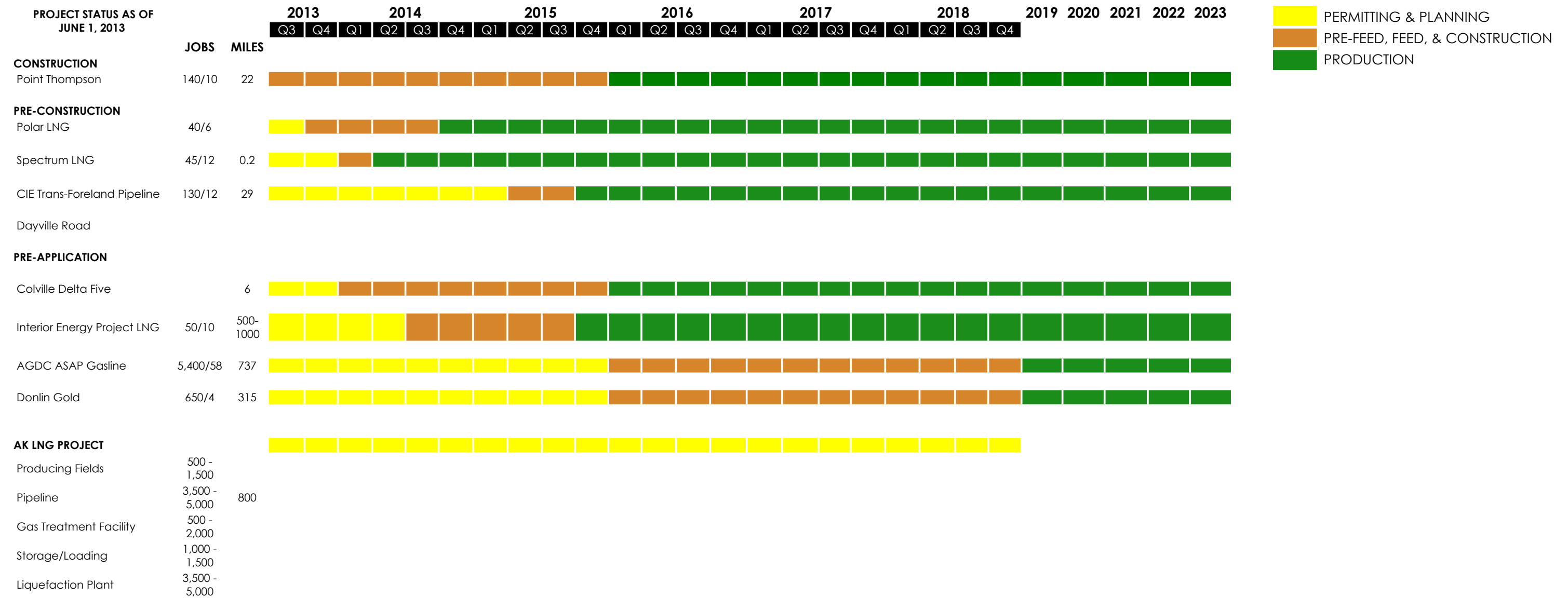
The Trans-Alaska Pipeline System (TAPS) accounts for 64 percent of all common carrier pipelines in the state. Construction of TAPS was completed in 1977, marking the start of major oil production on the North Slope. TAPS is composed of an 800-mile, 48-inch diameter pipeline, the Valdez Marine Terminal, 11 pump stations, and various support facilities.

In 2012, throughput in TAPS averaged 548,000 barrels per day. This volume totals eight percent of U.S. domestic oil production and more than 20 percent of West Coast refinery feedstock.<sup>38</sup> After 36 years of operation, TAPS faces significant operational challenges, many brought about by declining throughput, changing operating conditions, and aging infrastructure.

Maintenance, renewal, and monitoring activities are a priority for sustaining TAPS operations. More than 140 maintenance and renewal projects were conducted in 2013 at a total expense of more than \$300 million. Similar levels of maintenance and renewal are anticipated in coming years.<sup>39</sup>

Seven additional pipeline projects are at various stages of development. Table 26 details these projects including estimated construction and operating workforce needs as well as anticipated timing. Workforce estimates are those provided by the project applicant and may not reflect indirect employment via contractors.

TABLE 26: PIPELINE PROJECT STATUS



# TRENDS IN ALASKA'S OIL AND GAS INDUSTRY

## ➤ CONSTRUCTION PROJECTS

A 22-mile pipeline is under construction to support the development of the Point Thomson Project by ExxonMobil. The construction workforce for the Point Thomson Project totals 500 to 1,100 workers, depending upon the season. Once completed, the pipeline will require ten to 12 workers for ongoing operations. Two classes of operators began training in 2013.<sup>40</sup>

In addition to pipeline construction, the Point Thomson Project involves the development of primary infrastructure such as roads, an air strip, gravel pads, and camp facilities in the eastern reaches of the North Slope basin.<sup>41</sup>

## ➤ PRE-CONSTRUCTION PROJECTS

Four projects in pre-construction status include the Trans-Foreland pipeline, Polar LNG, Spectrum LNG, and the Alaska Stand Alone Gas Pipeline (ASAP) project. With the exception of the Trans-Foreland and ASAP projects, each of these projects is relatively small, requiring a workforce of less than 50 workers during the construction phase. The operating work force for each will range from six to 12 workers.

### ■ Trans-Forelands Pipeline

The Trans-Forelands project involves a 29-mile, submarine pipeline across Cook Inlet, connecting west side oil production with east side processing facilities. Construction on the 8.625-inch line is slated to begin in the spring of 2015 and conclude by August of 2015 with a workforce of 130. A staff of 12 workers is anticipated once the line moves into operating status.

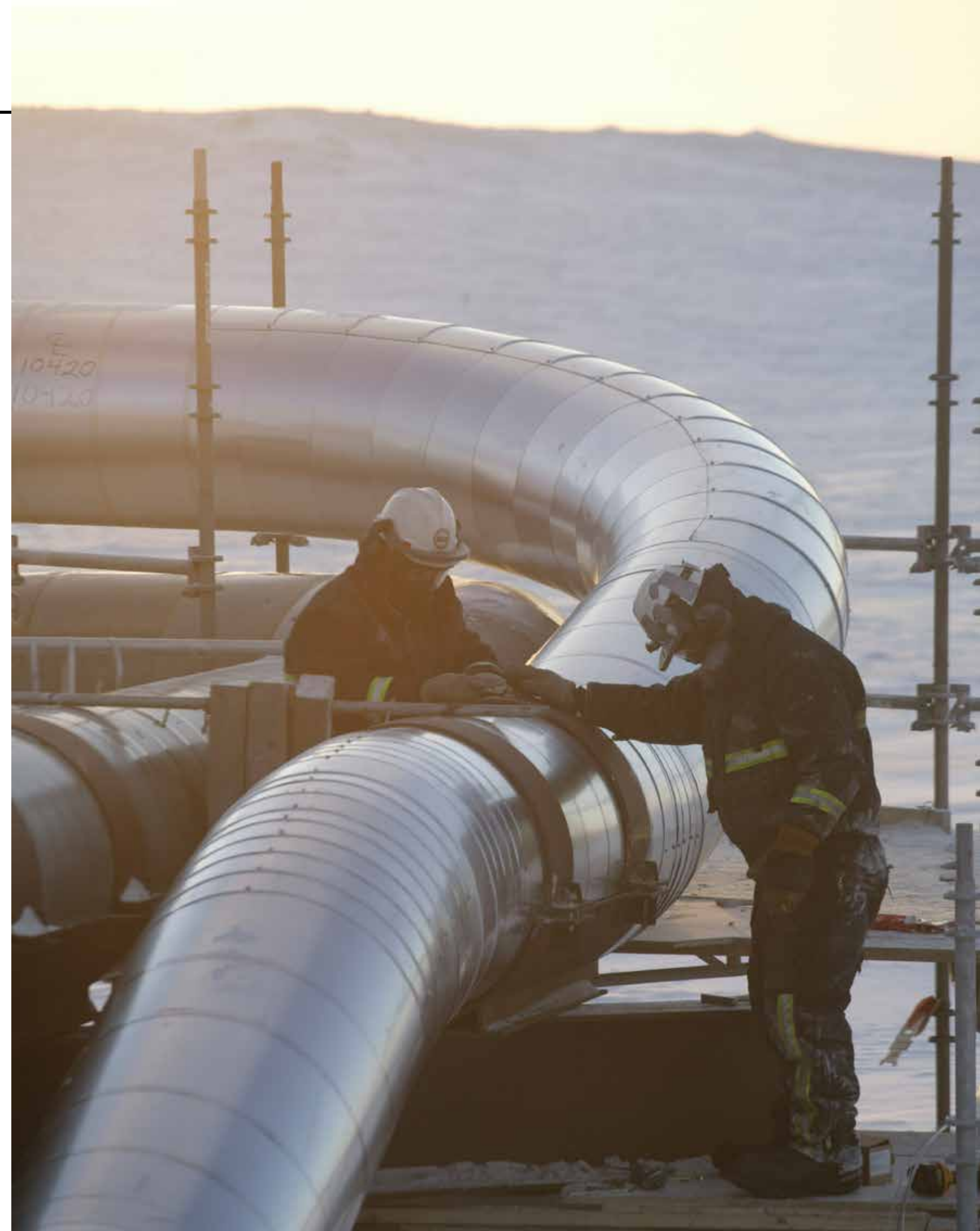
### ■ Alaska Gasline Development Corporation – Alaska Stand Alone Pipeline

The Alaska Gasline Development Corporation (AGDC) is an enterprise corporation established by the State of Alaska. Escalating energy costs in rural and Interior Alaska, heavy reliance on diesel fuel, and uncertain long-term supply of natural gas for Southcentral Alaska have intensified demand for access to natural gas for home heating and power generation. AGDC's mandate is to provide energy to 75 percent of the state's population.

AGDC is advancing the Alaska Stand Alone Pipeline (ASAP) as a means to meet this goal. The project includes a North Slope gas conditioning facility, a 737-mile 36-inch diameter mainline, and a 35-mile lateral 12-inch pipeline at Fairbanks. Additional off-take points are also possible, depending on final project configuration.<sup>42</sup>

Total project costs are estimated at \$7.7 billion. The construction phase workforce is anticipated to require more than 8,000 direct jobs and more than 15,000 indirect jobs.<sup>43</sup>

AGDC continues to develop the project concept and work toward project sanction.





# TRENDS IN ALASKA'S OIL AND GAS INDUSTRY

## ➤ PRE-APPLICATION PROJECTS

Three pipeline projects are in pre-application status, but have provided the State Pipeline Coordinator's Office with preliminary project information. These projects include the Alaska LNG project, the Donlin Gold gasline, and the AIDEA Interior Energy Project.

Brief summaries of these projects, including preliminary project configuration and estimated workforce demand are summarized below.

### ■ Alaska LNG Project

The Alaska LNG project is the largest of the pre-application projects. A consortium, comprised of ExxonMobil, BP, ConocoPhillips, and TransCanada Company, is collaborating on the project. Export markets around the Pacific Rim will be the primary market, but off-take for the local market use is also envisioned.

The project concept includes a liquefaction plant to be located in Southcentral Alaska, storage and loading terminal, a gas treatment plant, and an 800-mile large diameter pipeline. These project components will require a construction workforce of between 9,000 and 15,000 and an operations workforce of approximately 1,000. Current estimates to develop the project are \$45 to \$65 billion.<sup>44</sup>

The project consortium recently announced it has narrowed down the site for the liquefaction plant and export terminal to Nikiski as well as three or four other sites on the Kenai Peninsula.<sup>45</sup>

### ■ AIDEA Interior Energy Project

Sharply escalating heating costs in Fairbanks and North Pole spurred the Parnell Administration and the Alaska State Legislature to authorize the Alaska Industrial Development and Export Authority (AIDEA) to pursue project and financing alternatives to bring natural gas to these Interior communities. The mandate for the Interior Energy Project is to bring affordable energy to Interior Alaska customers as soon as possible. After addressing these near-term needs, the project will further provide long-term access to natural gas and propane for all Alaskans.

The project configuration calls for a North Slope natural gas liquefaction plant, transportation by LNG tanker truck down the Dalton Highway to the Fairbanks area, development of seasonal storage facilities, a regasification plant, and mainline distribution system to medium- to high-density population areas in the Fairbanks North Star Borough.<sup>46</sup>

Cost estimates for the project total \$309 million. The cost for build-out of the distribution system ranges from \$170 to \$404 million. A series of appropriations and financial incentives were established under the Sustainable Energy Transmission and Supply Development Program (SETS) to accelerate project development and achieve desirable rates of return for private partners as well as affordable consumer pricing.<sup>47</sup>

The project has an aggressive timeline. Development of business structures and financing options is well underway. Solicitation of private sector partners is moving forward. A short-time frame for build-out anticipates initial commercial operation by the end of 2015.

### ■ Donlin Gold Project

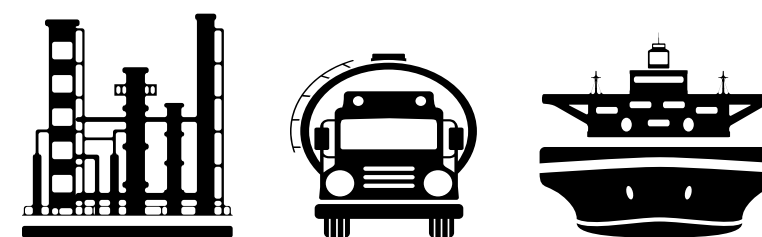
The Donlin Gold Project is a proposed open-pit gold mine located ten miles from the village of Crooked Creek. A joint venture of NovaGold Resources and Barrack Gold Corporation located on land owned by the Calista Corporation, the project is one of the largest known undeveloped gold mines in the world.

A buried 14-inch natural gas pipeline is proposed to provide energy to the mine site. The line would originate at a terminal on the west forelands of Cook Inlet and extend westward 312 miles to the mine site near Crooked Creek.

The entire project, including the mine and the pipeline, is in the initial stages of permitting. This phase is anticipated to last three years or more.

When the project is sanctioned, up to 3,000 jobs will be created during its three-year construction phase. The pipeline is a major infrastructure component that is factored into these workforce projections.

The ISC reviewed these projects and the possible impact on workforce demand. At this writing, the Alaska LNG project, AGDC Alaska Stand Alone Pipeline, and the Donlin Gold gasline are the only projects that have the potential to generate significant new workforce demand. Given the early stage status of these projects, it was determined that these impacts fall outside of the planning period. However, the projects should continue to be monitored and reassessed as planning, pre-development, and permitting move forward.



**THOUSANDS OF JOBS  
IN ALASKA'S OIL AND GAS INDUSTRY  
ARE ON THE HORIZON.**



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➤ **APPENDIX A: ACTION AGENDA**

ALASKA OIL AND GAS WORKFORCE DEVELOPMENT PLAN: ACTION AGENDA	ASSIGNED TO
<b>Goal 1. Engage Alaskans in oil and gas workforce development</b>	
<b>Strategy 1.1 - Encourage and strengthen employer engagement; identify best practices and introduce into this and other workforce development plans.</b>	
1.1.1 - Establish an ongoing industry steering committee	AWIB, Industry, Education, Training Providers, DLWD, DEED
1.1.2 - Provide staffing to facilitate plan implementation and industry oversight	AWIB
1.1.3 - Meet semi-annually to review progress, provide direction, and take corrective action	AWIB, Industry
<b>Strategy 1.2 - Increase awareness of and access to career opportunities in the oil and gas industry</b>	
1.2.1 Develop a mobile compliant microsite to feature priority occupations and provide additional information on all oil and gas occupations and labor market information.	AWIB, DBP
1.2.2 - Identify oil and gas occupations across all Department of Labor services through consistent branding	DBP, ESD
<b>Strategy 1.3 - Develop a comprehensive, one-stop information system on oil and gas industry job openings and training opportunities in Alaska</b>	DBP
1.3.1 - Create an online calendar of all industry training funded through DLWD grant programs	DBP
<b>Goal 2. Train Alaskans for oil and gas industry employment</b>	
<b>Strategy 2.1 - Increase utilization of the Alaska Oil and Gas Occupations Training Fund and STEP for priority occupation training</b>	DBP, Industry
2.1.1 - Revise the request for grant applications (RGA) to give additional consideration to training proposals for priority occupations	DBP
2.1.2 - Broaden promotion of the fund	DBP
<b>Strategy 2.2 - Convene subject matter experts to develop KSAs/STTs/POs for the five priority occupational groups</b>	Industry, AWIB, DBP, CTE Committee
2.2.1 Engineering Occupations	
2.2.2 Geoscience Occupations	
2.2.3 HSSE Occupations	
2.2.4 Maritime Occupations	
2.2.5 Remote Sensing and Inspection Occupations	
<b>Strategy 2.3 - Target and optimize the use of incentives to increase qualified Alaskans for oil and gas employment</b>	Industry
2.3.1 Education Tax Credit	Industry, UA, DBP, DOR liaison
2.3.2 Alaska Performance Scholarship	ACPE, Industry
2.3.3 Work Opportunity Tax Credit	Industry, ESD, DOR liaison

ALASKA OIL AND GAS WORKFORCE DEVELOPMENT PLAN: ACTION AGENDA	ASSIGNED TO
<b>(...CONTINUED) Goal 2. Train Alaskans for oil and gas industry employment</b>	
<b>Strategy 2.4 - Strengthen CTE offerings at the secondary and postsecondary level</b>	
2.4.1 - Work with Alaska School Districts to improve CTE curriculum in five targeted pathways	CTE Committee, Industry, School Boards, CTE Educators
2.4.2 - Promote student participation in strengthened CTE curriculum	Industry, CTE Committee, AWIB
2.4.3 - Work with Regional Training Centers, other facilities, and training providers to strengthen offerings for oil and gas and increase industry recognized credential attainment.	CTE Committee, Industry, School Boards, CTE Educators, TVEP recipients
<b>Strategy 2.5 - Strengthen degree and credential programs aligned with priority occupations</b>	AWIB, UA, Industry
2.5.1 - Support industry efforts to establish a baccalaureate degree for HSSE occupations	AWIB, UA, Industry
2.5.2 - Assess degree and credential offerings for other priority occupations	AWIB, UA, Industry
<b>Goal 3. Recruit qualified candidates for oil and gas career pathways</b>	
<b>Strategy 3.1 - Develop outreach efforts to recruit targeted and underrepresented populations into oil and gas career pathways</b>	
3.1.1 Rural and Alaska Native Outreach	Industry, DBP, ESD
3.1.2 Women	Industry, DBP, ESD
3.1.3 Transitioning Military	Industry, ESD, DMVA liaison
3.1.4 Former industry workers	Industry, DLWD
<b>Strategy 3.2 - Promote oil and gas careers in conjunction with other efforts to promote the Alaska oil and gas industry</b>	DBP, DNR liaison
3.2.1 Develop career and occupational prospectii for distribution at industry meetings and trade shows in digital formats	DBP, Industry
<b>Goal 4. Retain a skilled oil and gas workforce</b>	
<b>Strategy 4.1 Develop best practices to retain oil and gas workers</b>	
<b>Goal 5. Prepare the Alaska Workforce Development System for future oil and gas workforce demand</b>	
<b>Strategy 5.1 - Monitor proposed oil and gas projects</b>	
5.1.1 Maintain an inventory of the workforce needs for each project	DWLD, ISC
5.1.2 Assess training capacity to meet future demand	
5.1.3 Develop long-term strategy to fund training needs	

## ➤ APPENDIX B: ACCOMPLISHMENTS

### OIL AND GAS WORKFORCE DEVELOPMENT - ACCOMPLISHMENTS 2008 THROUGH 2013

In 2007, the Alaska Legislature passed the Alaska Gasline Inducement Act (AGIA), which stipulated that the Commissioner of the Alaska Department of Labor and Workforce Development (DOLWD) develop a training program for gas line workers. AGIA provided limited funding to deliver an Alaska workforce prepared 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 Oil and Gas Training Plan (aka AGIA Training Plan) in May of 2007. On July 1, 2007, the United States Department of Labor, Employment and Training Administration (U.S. DOLETA) funded the department's Alaska Pipeline Worker Training Project (APWTP), a \$7.5 million discretionary award. The federal training grant funded the implementation of the four strategies contained in the Oil and Gas Training Plan and resulted in the majority of the outcomes outlined below.

Of the 1,748 APWTP participants in the division's Management Information System (MIS) who exited through December 31, 2011:

- Total earnings in the two quarters following exit was \$40,922,700;
- 1,515 (86.6 percent) of participants exited were employed in the first quarter following exit;
- 1,468 (83.9 percent) of participants exited were employed in the second quarter following exit;
- 1,391 (79.6 percent) of participants exited were employed in first and second quarter following exit; and,
- 644 of 1,515 (42.5 percent) of participants employed in the first quarter following exit had an increase in earnings in excess of \$5,000 when comparing the two quarters prior to entry with the two quarters following exit.

#### Strategy 1.0: Increase awareness of and access to career opportunities in natural resource development

- Hired a Pipeline Training Administrator in 2010 to lead the implementation of the strategies contained in the Oil and Gas Training Plan and guide investments in career awareness, Career and Technical Education, registered apprenticeship, and occupational training. This position developed strong partnerships with employers, trade unions, trade apprenticeship programs, secondary and post-secondary schools, Regional Training Centers, the state's one-stop system, and other workforce entities.
- Implemented outreach strategies, support services and training for persons living in rural and remote communities where access to such resources and services are limited and unemployment and poverty rates are high.
- The Alaska Youth First Program delivered awareness activities through career guides to 21,161 Alaskan youths.
- AVTEC significantly increased efforts to reach high school students across Alaska through visits to 200 schools and career fair attendance.
- To help facilitate effective career decision making, the Department of Labor and Workforce Development's Research and Analysis Section (R&A) created an electronic training program clearinghouse application, available on the department's website.
- Research and Analysis Section increased support for dissemination of regional employment data and recruited an additional economist in July of 2008. The data base is available at <http://labor.alaska.gov/regcom/>. Through the development and dissemination of regional labor market information, R&A significantly increased the understanding of Alaska's regional economies.

#### Strategy 2.0: Develop a comprehensive, integrated Career and Technical Education system for Alaska that aligns training institutions and coordinates program delivery

- Hired an Education Specialist in 2009 to assist with the implementation of strategies two and four of the Alaska Oil and Gas Training Plan.
- Development and implementation of the Alaska Career and Technical Education Plan (ACTE). The plan was developed by the Department of Labor and Workforce Development, Department of Education (EED) and Early Development and the University of Alaska. The plan was approved by the Alaska Workforce Investment Board, UA Board of Regents, and Board of Education. A number of schools and postsecondary institutions are using the ACTE Plan as a blueprint in their efforts to improve the career and technical education programs in their institutions.
- Attainment of \$625K in the general fund to provide grants to education and postsecondary programs to implement one or more of the six strategies identified in the Alaska Career Technical Education Plan.

- Promotion of Personal Learning Career Plans (PLCP) for both youth and adults – a number of institutions are now requiring their students to have a PLCP.
- Implementation by a number of Alaska school districts of the Career Clusters Framework to provide a quality structured for organizing and delivery of CTE programs. These districts develop comprehensive programs of study. The National Career Clusters Framework identifies 16 career clusters and the University of Alaska Statewide identifies 14.
- Increase support for ABE and ESL programs statewide. \$250K of ARRA funds allocated to ABE programs the first year and \$125K the second year.
- Alignment of CTE programs to national standards by many school districts.
- Created a network among existing regional training centers (RTCs) and strengthen statewide organization of training providers.
- AVTEC assisted twelve Regional Training Centers to establish outreach, recruitment, and enrollment standards and basic skills assessments to increase the number of rural residents enrolling in gasline construction related technical training programs and/or apprenticeships.
- Increased individual electronic access to AJCN and AKCIS. AKCIS change implemented enabling direct access from any Alaska zip code.
- Inventories were conducted of UA, public schools, and RTC's CTE programs and facilities.
- Revitalization of Career and Technical Student Organizations (CTSOs) are underway and include a recent grant to train teachers and youth in leadership and employability skills, and career pathways.
- Promoted KeyTrain/Career Ready 101 – WorkKeys. The Departments of Education and Early Childhood and of Labor and Workforce Development worked as a team in implementing KeyTrain/Career Ready 101 – WorkKeys. Eleventh graders in public schools take the WorkKeys assessment and adults/out-of school youth are able to take the assessment at the Job Centers.
- Publication of the Alaska Workforce Investment Board's bimonthly newsletter highlighting the activities of AWIB, gasline, Registered Apprenticeship, and Career and Technical Education.
- Recognized training programs that meet or exceed standards. Award programs to recognize secondary and post-secondary instructor and administrators of the year annually were implemented by the AWIB.
- Updated the Division of Business Partnerships' website to provide visitors with information on workforce investment strategies for employers and training providers as well as highlights of the division's current efforts to prepare Alaskans to work in Alaska's high wage, high demand occupations.
- Participation of more than 960 Alaska youth in summer work experience with a focus on developing basic work skills. Pre and post tests were applied via KeyTrain's Career Ready 101, which includes an on-line assessment of work skills. 190 of the youth were retained in permanent positions. Funding for this activity was provided under the American Recovery and Reinvestment Act from the U.S. Department of Labor, Employment and Training Administration.

#### Strategy 3.0: Increase opportunities for registered apprenticeship in skilled occupations and expand other structured training opportunities

- The Alaska Pipeline Worker Training Project (APWTP) has done much to raise awareness about registered apprenticeship as a viable post-secondary vocational education training strategy.
- The DOLWD is reaching out to other high-demand industries in Alaska – ranging from healthcare to manufacturing, retail to mining, and transportation to forestry – that encompass high-skilled and high-tech jobs particularly suited to apprenticeships. Additional resources are being used to promote and support registered apprenticeship through Construction Academies, Career Guides, and Teacher Externships.
- The APWTP encouraged the development of cooperative agreements, Memoranda of Understanding (MOUs) and Memoranda of Agreement (MOAs), to provide customized job-linked or industry-specific training.
- The ESD supported participants in on-the-job training and registered apprenticeships ranging from purchasing work clothing and tools, to tuition and books for training programs.
- ESD also used APWTP funds to encourage employers to train and hire participants by offering a hiring incentive in the form of On-the-Job Training (OJT) wage reimbursements, supervision for the participants.
- Ten ESD staff members were trained as Apprenticeship Specialists to work in partnership with industry and education providers to develop the best technical instruction models.



## ➤ APPENDIX B: ACCOMPLISHMENTS

- The ESD and the DOLWD's Office of Apprenticeship hosted forums for industries that have high-demand, high-skilled apprenticeship opportunities.
- Apprenticeship Specialists helped develop School-to-Apprenticeship programs statewide, and aided school districts to develop MOAs with union and non-union sponsors.
- The ESD supported pre-apprenticeship training for the mining industry. Fifteen trainees completed an entry-level program for underground miners, and 13 of them were employed by mining companies or contractors.
- AVTEC worked with federal and state Apprenticeship Training Coordinator offices to identify training requirements and related studies for a customized Bus, Truck Mechanic and Diesel Engine Specialist registered apprenticeship training program following Multistate Academic and Vocational Curriculum Consortium and Automotive Service Excellence (ASE) standards.
- AVTEC provided training in topics where industry certifications are either required or desired, such as Fall Protection, Energy Isolation, Confined Space, and Hazardous Waste Operations and Emergency Response (HAZWOPER) General Site. The NSTC, OSHA, and the Mine Safety and Health Administration (MSHA) certifications were provided to 360 participants completed certification during the lifespan of the APWTP.
- The Tanana Chiefs Conference developed curriculum and delivered related technical instruction for a Surveyor Technician registered apprenticeship program. As the apprenticeship sponsor, TCC partnered with Conoco Phillips, BP, and other Alaska oil field service companies to train 12 Surveyor Technicians for potential employment on a gas pipeline project.
- The Galena City School District provided a structured OJT for six participants in a 212-hour Aircraft Dispatcher program. All students successfully completed the course, passed FAA exams, and received Aircraft Dispatcher Certificates. Five of the six participants received job offers or upgraded employment opportunities in this industry.
- The University of Alaska Fairbanks Tanana Valley Campus provided a Diesel Heavy Equipment training program to 21 individuals. All 15 who graduated obtained employment, with 13 beginning work in the diesel repair industry and two in related fields.
- The Matanuska-Susitna Borough School District designed a high school program to increase awareness of apprenticeship occupations recognized in the AOGTP. APWTP funds were used to: hire a project coordinator to deploy the apprenticeship marketing plan, strategies, and activities; obtain six new sponsors of registered apprenticeships; register ten new apprentices through the School to Apprenticeship program; and market the Think Apprenticeship / Earn While You Learn campaign via radio, TV, print, career fairs, and apprenticeship conferences.
- The two-week intensive pipeline construction upgrade course, held annually at the 52-acre Fairbanks Pipeline Training Center (FPTC), consisted of hands-on training that replicated pipeline construction and maintenance activities on Alaska's North Slope. The training focused on pipeline construction orientation and skills demonstration, produced by the four unions that are members of the Alaska Petroleum Joint Crafts Council – Teamsters, Operators, Plumbers and Pipefitters, and Laborers. Trainees learned each pipeline trade's activities and how to safely and efficiently coordinate efforts in a rolling assembly-line process. The North Slope Contractors Association provided the supplies and yard space to conduct the training.
- The APWTP Rural Apprenticeship Outreach (RAO) program provided information to persons living outside of Anchorage, Juneau, or Fairbanks about pipeline construction trade apprenticeships and construction careers.
- In April of 2008 R & A and USDOL/ETA signed a MOU for data sharing to conduct a research project to analyze benefits of registered apprenticeship in Alaska over a 10 year period, from 1996 through 2007. February 2009 Trends article focused on registered apprenticeship.
- The U.S. DOL/OA provided the DOLWD with characteristic data for people participating in registered apprenticeship programs in Alaska. That information was matched with Alaska unemployment insurance wage records and other administrative data. The numbers indicated that workers who complete an apprentice program earn nearly twice as much as those who canceled out of an apprenticeship – on average \$65,342 compared to \$33,435. The study also found that 90 percent of those who completed an apprenticeship are still working in Alaska.
- The department received \$435K in GF in the annual budget to provide grants for oil and gas training plan structured training opportunities.
- The department held Annual Apprenticeship conferences in 2008, 2009, and 2010 promoting the benefits of registered apprenticeship to employers and recognizing successful apprenticeship programs sponsored by employers statewide.
- Conducted outreach efforts with the Alaska Pipeline Project in rural communities along the pipeline corridor to promote the benefits of registered apprenticeship in skilled occupations in 2010.

- The University of Alaska Mining and Petroleum Training Service (UA MAPTS) in collaboration with the U.S. DOL OA, the mining industry, and the DOLWD developed a new miner training program. This first-of-its-kind apprenticeship program for geophysical core drilling set the standard for the nation. The geophysical core driller training was conducted in Kotzebue and Bethel, and produced 37 graduates who became first-year apprentices.
- A new millwright apprenticeship is under development with Prince William Sound Community College that enrolled five new millwright apprentices in FY2010.
- The DOLWD implemented a new apprenticeable occupation during FY10, Environmental Technician. The USDOL Office of Apprenticeship, several stakeholder/employers, and the AWIB prepared the occupational analysis in order to register this new occupation. The DBP has awarded a grant to the Alaska Environmental Forum to complete curriculum development, establish registered apprenticeship sponsors and increase the employers using the new registered apprenticeship.
- A new, one-year apprenticeable occupation, Building Energy Retrofit Technician, was approved. The apprentice determination request was submitted by the DOLWD's Office of Apprenticeship, on behalf of the Alaska Housing Finance Corporation, University of Alaska Southeast (UAS), and the Housing Authority in Southeast Alaska.
- Maritime Helicopters developed curricula and delivered related technical instruction for four registered apprentices in the occupations of Airframe and Powerplant Mechanic and Maritime Able Bodied Seaman.

### **Strategy 4.0: Increase opportunities for development of appropriate training programs for operations, technical, and management workers**

- Developed and implemented Tech Prep and secondary/postsecondary articulation agreements at most campuses and school districts – worked with the Alaska Tech Prep Consortium.
- Usage and implementation of simulator in a variety of CTE programs with industry input.
- Expansion of summer programs for in-school and out-of-school youth. Alaska Construction Academies were expanded to rural communities. University of Alaska Statewide implemented six different summer programs focusing on engineering, mining, science, technology, and math.
- Created by the legislature more tax credit opportunities for secondary and postsecondary CTE programs.
- Increased certificated programs for high school students.
- Implemented short term instruction and industry certificates by postsecondary programs and RTCs.
- Worked with RTCs to transition rural high school students to postsecondary education.
- Participation approval of training programs for students who are interested in CTE training through the Alaska Performance Scholarship in program.
- University of Alaska Southeast, to begin the first phase of a multi-phase project to develop a curriculum and deliver related technical instruction for first and second year registered apprentices in the occupations of Bus, Truck Mechanic and Diesel Engine Specialist.
- The University of Alaska, Tanana Community College, received STEP funds to continue their Surveyor Apprenticeship Program training for 11 second year apprentices who have employer commitment letters to work on the Denali Pipeline project.
- The state apprenticeship office has been working with the University of Alaska on several projects including Project Jump Start, a degree completion program for apprentices working toward a degree in project management, safety or supervision.

ALASKA'S OIL AND GAS INDUSTRY WORKFORCE COMPOSITION

SOC Code	Occupational Title	Total Workers	Residency Status				Earnings by Residency						Gender					New Hires					Growth and Replacement					Alaska Mean Hourly Wages (\$)			
			Resident Workers	Nonresident Workers	Percent Resident Workers	Percent Nonresident Workers	Total Resident Wages (\$)	Total Nonresident Wages (\$)	Percent Resident Wages	Percent Nonresident Wages	Resident Average Quarterly Wages (\$)	Nonresident Average Quarterly Wages (\$)	Average Age of Workers*	Workers Age 45+*	Workers Age 50+*	Workers Age 14 to 21*	Number of Female Workers*	Number of Male Workers*	Total New Hires	Total Resident New Hires	Total Nonresident New Hires	% Resident New Hires	% Nonresident New Hires	Employment Estimate - 2010	Employment Estimate 2020	% Change 2010 - 2020	Growth Openings		Replacement Openings	Total Openings	
<b>MANAGEMENT OCCUPATIONS</b>																															
111011	Chief Executives	40	32	8	80.0	20.0	11,536,877	1,593,653	87.9	12.1	96,949	63,746	53.3	34	28	N/A	4	33	9	7	2	77.8	22.2	1,331	1,451	9.0	120	197	317	77.34	
111021	General and Operations Managers	421	347	74	82.4	17.6	59,384,855	10,261,128	85.3	14.7	44,684	46,221	49.6	279	230	1	42	337	27	12	15	44.4	55.6	3,519	3,735	6.1	216	649	865	44.73	
112011	Advertising and Promotions Managers	2	2	0	100.0	0.0	N/D	N/D	100.0	0.0	N/D	0	59.5	2	2	N/A	N/A	2	0	0	0	0.0	100.0	0	0	0.0	0	0	0	34.14	
112021	Marketing Managers	26	22	4	84.6	15.4	N/D	N/D	N/D	N/D	33,065	N/D	48.1	15	13	N/A	3	21	1	1	0	100.0	0.0	295	331	12.2	36	82	118	39.75	
112022	Sales Managers	12	8	4	66.7	33.3	N/D	N/D	N/D	N/D	22,804	N/D	50.6	7	6	N/A	5	5	3	2	1	66.7	33.3	670	757	13.0	87	197	284	40.53	
112031	Public Relations Managers	6	6	0	100.0	0.0	943,666	0	100.0	0.0	39,319	0	41.8	1	1	N/A	4	2	2	2	0	100.0	0.0	202	231	14.4	29	56	85	43.77	
113011	Administrative Services Managers	82	49	33	59.8	40.2	4,662,641	3,250,688	58.9	41.1	24,540	25,799	43.2	28	22	N/A	21	37	7	5	2	71.4	28.6	1,968	2,252	14.4	284	501	785	38.79	
113021	Computer and Information Systems Managers	20	17	3	85.0	15.0	N/D	N/D	N/D	N/D	36,028	N/D	46.5	10	7	N/A	5	13	8	6	2	75.0	25.0	580	644	11.0	64	140	204	48.83	
113031	Financial Managers	45	39	6	86.7	13.3	7,248,111	1,963,979	78.7	21.3	48,321	103,367	49.5	32	23	N/A	17	25	4	2	2	50.0	50.0	1,280	1,421	11.0	141	234	375	48.77	
113051	Industrial Production Managers	3	2	1	66.7	33.3	N/D	N/D	75.0	25.0	N/D	N/D	56.0	2	2	N/A	N/A	2	1	0	1	0.0	100.0	0	60	65	8.3	5	12	17	49.96
113061	Purchasing Managers	32	26	6	81.3	18.8	3,750,596	851,364	81.5	18.5	37,506	44,809	46.4	18	13	N/A	8	20	9	6	3	66.7	33.3	226	253	11.9	27	63	90	48.44	
113071	Transportation, Storage, and Distribution Managers	17	15	2	88.2	11.8	N/D	N/D	N/D	N/D	24,527	N/D	50.4	13	8	N/A	1	15	6	4	2	66.7	33.3	229	246	7.4	17	48	65	41.83	
113111	Compensation and Benefits Managers	1	1	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	58.0	1	1	N/A	1	N/A	0	0	0	0.0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
113121	Human Resources Managers	10	10	0	100.0	0.0	1,493,955	0	100.0	0.0	40,377	0	48.3	7	4	N/A	5	5	2	2	0	100.0	0.0	362	400	10.5	38	85	123	47.26	
113131	Training and Development Managers	5	4	1	80.0	20.0	N/D	N/D	97.5	2.5	N/D	N/D	57.2	5	4	N/A	N/A	5	0	0	0	0.0	0.0	145	169	16.6	24	37	61	37.72	
119021	Construction Managers	359	226	133	63.0	37.0	25,538,016	14,438,121	63.9	36.1	29,020	28,934	47.7	175	133	N/A	5	269	36	24	12	66.7	33.3	1,010	1,120	10.9	110	254	364	53.53	
119041	Engineering Managers	178	147	31	82.6	17.4	35,171,352	9,433,711	78.9	21.1	61,381	85,761	46.9	99	73	N/A	13	144	15	5	10	33.3	66.7	446	474	6.3	28	87	115	77.23	
119051	Food Service Managers	1	1	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	47.0	1	N/A	N/A	1	0	0	0	0	0.0	0.0	404	442	9.4	38	75	113	24.19	
119081	Lodging Managers	1	1	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	59.0	1	1	N/A	N/A	1	0	0	0	0.0	0.0	241	270	12.0	29	66	95	35.12	
119111	Medical and Health Services Managers	1	1	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	64.0	1	1	N/A	N/A	1	0	0	0	0.0	0.0	940	1,183	25.9	243	250	493	50.03	
119121	Natural Sciences Managers	1	1	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	53.0	1	1	N/A	N/A	1	0	0	0	0.0	0.0	258	271	5.0	13	74	87	44.75	
119141	Property, Real Estate, and Community Association Managers	3	3	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	53.0	3	3	N/A	N/A	3	0	0	0	0.0	0.0	492	547	11.2	55	103	158	28.94	
119161	Emergency Management Directors	1	1	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	42.7	2	1	N/A	2	1	1	1	0	100.0	0.0	92	97	5.4	5	16	21	N/A	
119199	Managers, All Other	501	313	188	62.5	37.5	54,006,726	42,343,619	56.1	43.9	49,276	81,903	49.3	305	242	3	94	322	91	50	41	54.9	45.1	2,179	2,409	10.6	230	486	716	43.26	
<b>BUSINESS AND FINANCIAL OCCUPATIONS</b>																															
131011	Agents and Business Managers of Artists, Performers, and Athletes	1	0	1	0.0	100.0	N/D	N/D	0.0	100.0	0	N/D	56.0	1	1	N/A	1	N/A	2	1	1	50.0	50.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
131021	Purchasing Agents and Buyers, Farm Products	9	6	3	66.7	33.3	N/D	N/D	N/D	N/D	16,497	N/D	28.8	N/A	N/A	5	1	7	5	2	71.4	28.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
131022	Wholesale and Retail Buyers, Except Farm Products	16	13	3	81.3	18.8	N/D	N/D	N/D	N/D	17,729	N/D	43.1	7	4	N/A	3	12	1	0	1	0.0	100.0	0	78	87	11.5	9	15	24	26.31
131023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	151	120	31	79.5	20.5	12,810,086	2,721,023	82.5	17.5	28,092	26,418	47.4	90	65	N/A	40	95	17	5	12	29.4	70.6	373	418	12.1	45	100	145	32.69	
131041	Compliance Officers, Except Agriculture, Construction, Health and Safety, and Transportation	17	15	2	88.2	11.8	N/D	N/D	N/D	N/D	24,365	N/D	49.1	12	8	N/A	12	5	3	3	0	100.0	0.0	714	774	8.4	60	143	203	32.29	
131051	Cost Estimators	55	45	10	81.8	18.2	5,159,673	1,364,385	79.1	20.9	29,316	37,900	51.3	36	30	N/A	16	33	11	8	3	72.7	27.3	184	205	11.4	21	34	55	38.80	
131071	Employment, Recruitment, and Placement Specialists	19	17	2	89.5	10.5	N/D	N/D	N/D	N/D	26,990	N/D	44.2	7	6	N/A	12	6	3	2	1	66.7	33.3	689	749	8.7	60	130	190	38.80	
131075	Labor Relations Specialists	8	6	2	75.0	25.0	N/D	N/D	N/D	N/D	23,228	N/D	39.0	N/A	N/A	4	2	0	0	0	0	0.0	0.0	107	120	12.1	13	20	33	N/A	
131081	Logisticians	16	13	3	81.3	18.8	N/D	N/D	N/D	N/D	26,813	N/D	50.3	12	9	N/A	5	10	1	1	0	100.0	0.0	103	121	17.5	18	22	40	37.72	
131111	Management Analysts	3	3	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	50.0	2	2	N/A	1	2	0	0	0	0.0	0.0	275	318	15.6	43	42	85	38.68	
131121	Meeting and Convention Planners	10	9	1	90.0	10.0	N/D	N/D	N/D	N/D	33,889	N/D	46.3	5	4	N/A	8	2	0	0	0	0.0	0.0	60	69	15.0	9	12	21	20.74	
131141	Compensation, Benefits, and Job Analysis Specialists	3	3	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	41.0	1	1	N/A	2	1	0	0	0	0.0	0.0	178	188	5.6	10	29	39	30.69	
131151	Training and Development Specialists	28	22	6	78.6	21.4	2,168,455	448,926	82.8	17.2	27,106	24,940	45.5	14	9	N/A	6	17	4	2	2	50.0	50.0	332	369	11.1	37	56	93	29.11	
131199	Business Operations Specialists, All Other	183	160	23	87.4	12.6	19,495,655	2,177,671	90.0	10.0	31,597	31,560	47.9	114	87	N/A	54	118	20	14	6	70.0	30.0	1,211	1,320	9.0	109	234	343	35.05	
132011	Accountants and Auditors	168	63	5	92.6	7.4	N/D	N/D	N/D	N/D	26,515	N/D	44.9	34	26	N/A	44	20	11	8	3	72.7	27.3	1,945	2,195	12.9	250	428	678	33.99	
132031	Budget Analysts	36	27	9	75.0	25.0	3,271,777	1,215,722	72.9	27.1	31,765	36,840	45.9	13	9	N/A	14	16	5	0	5	0.0	100.0	228	243	6.6	15	46	61	37.05	
132051	Financial Analysts	118	110	8	93.2	6.8	13,742,930	1,683,749	89.1	10.9	32,957	76,534	42.9	51	39	N/A	55	57	21	15	6	71.4	28.6	423	465	9.9	42	89	131	45	
132082	Tax Preparers	1	1	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	57.0	1	1	N/A	N/A	1	6	6	0	100.0	0.0	177	201	13.6	24				



ALASKA'S OIL AND GAS INDUSTRY WORKFORCE COMPOSITION

SOC Code	Occupational Title	Residency Status					Earnings by Residency					Gender					New Hires					Growth and Replacement					Alaska Mean Hourly Wages (\$)				
		Total Workers	Resident Workers	Nonresident Workers	Percent Resident Workers	Percent Nonresident Workers	Total Resident Wages (\$)	Nonresident Wages (\$)	Percent Resident Wages	Percent Nonresident Wages	Resident Average Quarterly Wages (\$)	Nonresident Average Quarterly Wages (\$)	Average Age of Workers*	Workers Age 45+*	Workers Age 50+*	Workers Age 14 to 21*	Number of Female Workers*	Number of Male Workers*	Total New Hires	Total Resident New Hires	Total Nonresident New Hires	%Resident New Hires	%Nonresident New Hires	Employment Estimate - 2010	Employment Estimate 2020	% Change 2010 - 2020		Growth Openings	Replacement Openings	Total Openings	
<b>COMMUNITY AND SOCIAL SERVICE OCCUPATIONS</b>																															
211093	Social and Human Service Assistants	1	1	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	28.0	N/A	N/A	N/A	1	N/A	0	0	0	0.0	0.0	1,137	1,352	18.9	215	262	477	18.42	
<b>LEGAL OCCUPATIONS</b>																															
231011	Lawyers	25	23	2	92.0	8.0	N/D	N/D	N/D	N/D	83,714	N/D	50.9	18	14	N/A	8	17	2	2	0	100.0	0.0	993	1,048	5.5	55	185	240	56.08	
232011	Paralegals and Legal Assistants	2	2	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	55.0	2	1	N/A	1	1	0	0	0	0.0	0.0	562	600	6.8	38	111	149	25.16	
232093	Title Examiners, Abstractors, and Searchers	1	1	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	57.0	1	1	N/A	N/A	1	1	0	0	0.0	0.0	53	55	3.8	2	11	13	32.22	
232099	Legal Support Workers, All Other	2	2	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	44.5	1	N/A	N/A	2	N/A	1	1	0	100.0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
<b>ARTS, DESIGN, ENTERTAINMENT, SPORTS, AND MEDIA OCCUPATIONS</b>																															
271012	Craft Artists	1	1	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	54.0	1	1	N/A	N/A	1	1	0	0	0.0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
271021	Commercial and Industrial Designers	4	4	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	47.5	3	2	N/A	N/A	4	4	0	0	0.0	0.0	29	31	6.9	2	6	8	N/A	
271024	Graphic Designers	1	1	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	63.0	1	1	N/A	1	N/A	0	0	0	0.0	0.0	169	174	3.0	5	47	52	25.36	
271029	Designers, All Other	60	51	9	85.0	15.0	5,298,666	704,705	88.3	11.7	27,742	26,100	45.2	31	25	N/A	7	49	15	8	7	53.3	27.5	70	77	10.0	7	20	27	N/A	
273031	Public Relations Specialists	12	11	1	91.7	8.3	N/D	N/D	N/D	N/D	35,829	N/D	48.6	6	6	N/A	7	4	2	1	1	50.0	50.0	328	358	9.1	30	87	117	29.09	
273042	Technical Writers	8	8	0	100.0	0.0	574,057	0	100.0	0.0	17,939	0	48.8	5	4	N/A	8	N/A	4	4	0	100.0	0.0	119	132	10.9	13	23	36	30.16	
273099	Media and Communication Workers, All Other	6	6	0	100.0	0.0	125,017	0	100.0	0.0	7,814	0	52.2	3	3	N/A	3	3	3	3	0	100.0	0.0	263	281	6.8	18	67	85	23.89	
<b>HEALTH PRACTITIONERS AND TECHNICAL OCCUPATIONS</b>																															
291071	Physician Assistants	18	15	3	83.3	16.7	N/D	N/D	N/D	N/D	29,536	N/D	54.3	16	11	N/A	6	10	5	3	2	60.0	40.0	338	441	30.5	103	70	173	45.52	
292041	Emergency Medical Technicians and Paramedics	27	25	2	92.6	7.4	N/D	N/D	N/D	N/D	16,695	N/D	38.1	9	7	N/A	9	16	23	20	3	87.0	13.0	440	543	23.4	103	94	197	34.66	
292071	Medical Records and Health Information Technicians	9	9	0	100.0	0.0	1,000,880	0	100.0	0.0	33,363	0	51.7	8	5	N/A	4	5	0	0	0	0.0	0.0	491	626	27.5	135	108	243	19.66	
292099	Health Technologists and Technicians, All Other	2	2	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	44.5	1	1	N/A	2	N/A	0	0	0	0.0	0.0	360	471	30.8	111	77	188	N/A	
299011	Occupational Health and Safety Specialists	96	67	29	69.8	30.2	7,927,837	3,261,392	70.9	29.1	30,030	31,061	47.1	48	43	N/A	14	65	19	10	9	52.6	47.4	214	232	8.4	18	64	82	35.08	
299012	Occupational Health and Safety Technicians	55	42	13	76.4	23.6	2,754,862	1,036,233	72.7	27.3	18,006	21,148	40.6	15	15	N/A	7	38	19	16	3	84.2	15.8	104	114	9.6	10	36	46	33.95	
<b>HEALTH SUPPORT OCCUPATIONS</b>																															
319093	Medical Equipment Preparers	1	0	1	0.0	100.0	N/D	N/D	0.0	100.0	0	N/D	N/A	N/A	N/A	N/A	N/A	1	0	1	0.0	100.0	0.0	72	90	25.0	18	19	37	16.98	
319099	Healthcare Support Workers, All Other	1	1	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	53.0	1	1	N/A	N/A	1	1	0	100.0	0.0	1,050	1,381	31.5	331	225	556	N/A		
331011	First-Line Supervisors/Managers of Correctional Officers	6	2	4	33.3	66.7	N/D	N/D	N/D	N/D	N/D	N/D	49.8	5	2	N/A	1	4	0	0	0	0.0	0.0	62	67	8.1	5	21	26	38.07	
<b>PROTECTIVE SERVICE OCCUPATIONS</b>																															
331099	First-Line Supervisors/Managers, Protective Service Workers, All Other	1	1	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	65.0	1	1	N/A	N/A	1	0	0	0.0	0.0	0.0	0.0	76	87	14.5	11	24	35	30.31
332011	Fire Fighters	8	6	2	75.0	25.0	N/D	N/D	N/D	N/D	35,597	N/D	57.6	6	6	N/A	N/A	6	1	1	0	100.0	0.0	872	948	8.7	76	243	319	24.48	
339099	Protective Service Workers, All Other	6	5	1	83.3	16.7	N/D	N/D	N/D	N/D	N/D	N/D	43.0	2	2	N/A	N/A	5	3	2	1	66.7	33.3	376	424	12.8	48	246	294	20.15	
<b>FOOD PREPARATION AND SERVING RELATED OCCUPATIONS</b>																															
351011	Chefs and Head Cooks	10	10	0	100.0	0.0	461,501	0	100.0	0.0	11,833	0	47.3	7	3	N/A	1	9	2	2	0	100.0	0.0	372	416	11.8	44	67	111	20.32	
351012	First-Line Supervisors/Managers of Food Preparation and Serving Workers	4	3	1	75.0	25.0	N/D	N/D	87.8	12.2	N/D	N/D	38.3	1	N/A	N/A	N/A	3	2	2	0	100.0	0.0	708	786	11.0	78	153	231	15.97	
352012	Cooks, Institution and Cafeteria	7	4	3	57.1	42.9	N/D	N/D	N/D	N/D	57.1	N/D	42.8	1	1	N/A	1	3	8	4	4	50.0	50.0	807	919	13.9	112	247	359	17.01	
352019	Cooks, All Other	15	14	1	93.3	6.7	N/D	N/D	N/D	N/D	7,361	N/D	42.9	8	5	N/A	8	6	14	13	1	92.9	7.1	807	938	16.2	131	180	311	15.11	
353022	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	16	13	3	81.3	18.8	N/D	N/D	N/D	N/D	4,013	N/D	23.6	N/A	N/A	10	12	3	13	11	2	84.6	15.4	1,227	1,321	7.7	94	896	990	10.15	
353031	Waiters and Waitresses	3	3	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	48.0	2	1	N/A	3	N/A	0	0	0	0.0	0.0	4,040	4,500	11.4	460	2,062	2,522	10.19	
359021	Dishwashers	3	3	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	42.3	2	2	1	2	1	1	1	0	100.0	0.0	1,258	1,409	12.0	151	773	924	10.13	
<b>BUILDING AND GROUNDS CLEANING AND MAINTENANCE OCCUPATIONS</b>																															
372011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	2	1	1	50.0	50.0	N/D	N/D	66.9	33.1	N/D	N/D	48.0	1	N/A	N/A	1	N/A	1	0	1	0.0	100.0	5,655	6,213	9.9	558	1,435	1,993	14.82	
372012	Maids and Housekeeping Cleaners	17	15	2	88.2	11.8	N/D	N/D	N/D	N/D	8,205	N/D	39.6	7	4	1	14	2	10	8	2	80.0	20.0	3,390	3,812	12.4	422	868	1,290	11.29	
372019	Building Cleaning Workers, All Other	2	2	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	41.5	1	1	N/A	2	N/A	2	2	0	100.0	0.0	447	503	12.5	56	81	137	16.25	
372021	Pest Control Workers	3	3	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	34.7	N/A	N/A	N/A	3	N/A	1	1	0	100.0	0.0	25	29	16.0	4	10	14	N/A	
373019	Grounds Maintenance Workers, All Other	2	2	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	39.5	1	1	1	N/A	2	0	0	0	0.0	0.0	746	840	12.6	94	133	227	16.44	
<b>PERSONAL CARE AND SERVICE OCCUPATIONS</b>																															
397011	Tour Guides and Escorts	16	12	4	75.0	25.0	N/D	N/D	N/D	N/D	30,325	N/D	45.2	7	6	N/A	4	9	0	0	0	0.0	0.0	696	798	14.7	102	433	535	15.80	
<b>SALES AND RELATED OCCUPATIONS</b>																															
411011	First-Line Supervisors/Managers of Retail Sales Workers	8	8	0	100.0	0.0	346,537	0	100.0	0.0	11,950	0	45.6	4	2	N/A	5	3	0	0	0	0.0	0.0	2,080	2,314	11.3	234	490	724	20.13	
412011	Cashiers	74	68	6	91.9	8.1	1,101,441	68,288	94.2	5.8	4,895	4,017	37.7	22	14	4	55	16	34	29	5	85.3	14.7	8,629	9,246	7.2	617	5,625	6,242	11.73	
412021	Counter and Rental Clerks	15	10	5	66.7	33.3	N/D	N/D	N/D	N/D	10,867	N/D	44.2	8	5	1	5	9	1	1	0	100.0	0.0	1,323	1,391	5.1	68	456	524	13.35	
412022	Parts Salespersons	6	6	0	100.0	0.0	330,464	0	100.0	0.0	15,021	0	39.8	4	1	1	N/A	6	1	1	0	100.0	0.0	750	861	14.8	111	348	459	18.5	
412031	Retail Salespersons	3	3	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	30.0	N/A	N/A	1	3	N/A	0	0	0	0.0	0.0	10,751	11,990	11.5	1,239	4,187	5,426		

ALASKA'S OIL AND GAS INDUSTRY WORKFORCE COMPOSITION

SOC Code	Occupational Title	Total Workers	Residency Status				Earnings by Residency						Gender					New Hires					Growth and Replacement					Alaska Mean Hourly Wages (\$)		
			Resident Workers	Nonresident Workers	Percent Resident Workers	Percent Nonresident Workers	Total Resident Wages (\$)	Total Nonresident Wages (\$)	Percent Resident Wages	Percent Nonresident Wages	Resident Average Quarterly Wages (\$)	Nonresident Average Quarterly Wages (\$)	Average Age of Workers*	Workers Age 45+*	Workers Age 50+*	Workers Age 14 to 21*	Number of Female Workers*	Number of Male Workers*	Total New Hires	Total Resident New Hires	Total Nonresident New Hires	% Resident New Hires	% Nonresident New Hires	Employment Estimate - 2010	Employment Estimate 2020	% Change 2010 - 2020	Growth Openings		Replacement Openings	Total Openings
<b>CONSTRUCTION AND EXTRACTION OCCUPATIONS</b>																														
451011	First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	3	1	2	33.3	66.7	N/D	N/D	39.5	60.5	N/D	N/D	56.0	1	1	N/A	N/A	1	0	0	0.0	0.0	125	126	0.8	1	32	33	N/A	
471011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	409	259	150	63.3	36.7	31,457,623	18,616,041	62.8	37.2	31,743	33,725	48.2	204	155	N/A	6	309	100	64	36	64.0	36.0	970	1,071	10.4	101	225	326	41.27
472011	Boilermakers	199	34	165	17.1	82.9	2,206,125	4,599,291	32.4	67.6	18,539	16,544	36.9	11	10	5	1	39	189	59	130	31.2	68.8	110	114	3.6	4	37	41	33.1
472031	Carpenters	319	223	96	69.9	30.1	13,965,810	5,770,481	70.8	29.2	17,242	18,033	35.4	59	35	10	3	251	150	108	42	72.0	28.0	2,770	3,089	11.5	319	599	918	29.98
472051	Cement Masons and Concrete Finishers	2	2	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	33.0	N/A	N/A	N/A	2	0	0	0	0.0	0.0	190	209	10.0	19	30	49	31.93	
472061	Construction Laborers	668	559	109	83.7	16.3	27,933,849	4,824,733	85.3	14.7	14,671	15,077	35.9	166	115	82	40	556	406	334	72	82.3	17.7	3,564	3,973	11.5	409	1,093	1,502	22.26
472071	Paving, Surfacing, and Tamping Equipment Operators	3	3	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	24.7	N/A	N/A	1	N/A	3	1	1	0	100.0	0.0	108	119	10.2	11	21	32	23.28
472072	Pile-Driver Operators	1	1	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	44.0	N/A	N/A	1	N/A	1	3	2	1	66.7	33.3	69	75	8.7	6	14	20	32.59
472073	Operating Engineers and Other Construction Equipment Operators	1,252	856	396	68.4	31.6	61,130,294	26,766,909	69.5	30.5	18,943	19,538	40.8	537	377	9	22	950	421	320	101	76.0	24.0	3,233	3,514	8.7	281	979	1,260	29.88
472111	Electricians	794	454	340	57.2	42.8	37,041,444	28,276,197	56.7	43.3	22,194	25,202	40.4	206	140	15	10	505	394	250	144	63.5	36.5	2,163	2,348	8.6	185	586	771	34.63
472131	Insulation Workers, Floor, Ceiling, and Wall	65	37	28	56.9	43.1	2,201,814	1,800,038	55.0	45.0	15,616	16,667	39.9	15	12	N/A	4	38	21	12	9	57.1	42.9	168	179	6.5	11	66	77	25.88
472132	Insulation Workers, Mechanical	52	24	28	46.2	53.8	1,368,021	1,402,318	49.4	50.6	16,286	17,529	39.1	11	8	1	N/A	28	26	12	14	46.2	53.8	103	112	8.7	9	40	49	28.93
472141	Painters, Construction and Maintenance	52	34	18	65.4	34.6	1,503,745	581,016	72.1	27.9	12,637	11,857	39.1	15	9	3	N/A	37	43	24	19	55.8	44.2	427	471	10.3	44	92	136	23.00
472151	Pipelayers	1	0	1	0.0	100.0	N/D	N/D	0.0	100.0	0.0	N/D	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0.0	0.0	31	34	9.7	3	8	11	N/A
472152	Plumbers, Pipefitters, and Steamfitters	545	349	196	64.0	36.0	25,401,471	12,808,014	66.5	33.5	20,096	22,669	38.6	134	93	20	10	380	354	251	103	70.9	29.1	1,595	1,741	9.2	146	463	609	34.64
472171	Reinforcing Iron and Rebar Workers	6	5	1	83.3	16.7	N/D	N/D	N/D	N/D	N/D	N/D	32.2	N/A	N/A	N/A	5	9	8	1	88.9	11.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
472211	Sheet Metal Workers	15	9	6	60.0	40.0	623,747	347,958	64.2	35.8	18,345	19,331	42.9	5	5	N/A	N/A	11	3	0	3	0.0	100.0	325	344	5.8	19	53	72	28.10
472221	Structural Iron and Steel Workers	182	127	55	69.8	30.2	9,814,566	4,123,074	70.4	29.6	19,748	20,719	35.7	29	14	N/A	2	139	4	3	1	75.0	25.0	296	320	8.1	24	62	86	30.08
473012	Helpers--Carpenters	3	2	1	66.7	33.3	N/D	N/D	95.1	4.9	N/D	N/D	27.0	N/A	N/A	N/A	2	2	1	1	50.0	50.0	366	423	15.6	57	133	190	19.98	
473013	Helpers--Electricians	53	26	27	49.1	50.9	2,095,591	3,141,933	40.0	60.0	23,028	33,073	36.0	8	7	1	2	27	21	15	6	71.4	28.6	172	186	8.1	14	60	74	20.22
473015	Helpers--Pipefitters, Plumbers, Pipefitters, and Steamfitters	33	25	8	75.8	24.2	1,266,471	237,995	84.2	15.8	14,900	14,875	32.2	3	2	4	1	24	46	42	4	91.3	8.7	127	141	11.0	14	44	58	21.95
473019	Helpers, Construction Trades, All Other	139	78	61	56.1	43.9	4,954,521	3,237,042	60.5	39.5	17,569	16,772	42.0	49	34	11	3	94	61	43	18	70.5	29.5	468	518	10.7	50	124	174	16.98
474011	Construction and Building Inspectors	64	37	27	57.8	42.2	3,396,298	1,729,925	66.3	33.7	24,434	20,352	44.4	20	14	N/A	1	43	19	8	11	42.1	57.9	321	351	9.3	30	94	124	32.00
474041	Hazardous Materials Removal Workers	59	49	10	83.1	16.9	2,617,585	571,204	82.1	17.9	15,044	17,309	38.8	20	15	2	53	38	35	3	92.1	7.9	262	300	14.5	38	95	133	27.87	
474099	Construction and Related Workers, All Other	24	24	0	100.0	0.0	1,098,386	0	100.0	0.0	13,560	0	37.7	7	4	3	N/A	24	6	6	0	100.0	0.0	594	662	11.4	68	92	160	N/A
475011	Derrick Operators, Oil and Gas	126	88	38	69.8	30.2	7,233,969	2,490,023	74.4	25.6	22,327	21,102	37.8	32	23	N/A	110	28	14	14	50.0	50.0	62	66	6.5	4	12	16	32.15	
475012	Rotary Drill Operators, Oil and Gas	296	208	88	70.3	29.7	16,443,238	6,316,020	72.2	27.8	21,607	22,719	37.8	72	41	9	237	88	57	31	64.8	35.2	285	307	7.7	22	60	82	34.62	
475013	Service Unit Operators, Oil, Gas, and Mining	1,009	630	379	62.4	37.6	52,129,056	23,442,897	69.0	31.0	22,192	22,221	36.8	186	140	24	41	655	325	172	153	52.9	47.1	842	899	6.8	57	177	234	27.44
475021	Earth Drillers, Except Oil and Gas	48	19	29	39.6	60.4	733,549	1,501,401	32.8	67.2	13,099	18,310	36.4	5	5	N/A	1	20	41	19	22	46.3	53.7	115	126	9.6	11	25	36	24.79
475031	Explosives Workers, Ordnance Handling Experts, and Blasters	6	4	2	66.7	33.3	N/D	N/D	N/D	N/D	N/D	N/D	47.0	2	1	N/A	N/A	4	2	2	0	100.0	0.0	40	47	17.5	7	8	15	28.86
475041	Continuous Mining Machine Operators	2	2	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	37.0	1	1	N/A	N/A	2	2	2	0	100.0	0.0	72	88	22.2	16	16	32	N/A
475049	Mining Machine Operators, All Other	6	4	2	66.7	33.3	N/D	N/D	N/D	N/D	N/D	N/D	51.8	4	3	N/A	N/A	5	6	4	2	66.7	33.3	243	279	14.8	36	54	90	29.21
475051	Rock Splitters, Quarry	2	2	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	22.5	N/A	N/A	N/A	2	0	0	0	0.0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
475071	Roustabouts, Oil and Gas	1,504	1,142	362	75.9	24.1	62,655,368	18,171,520	77.5	22.5	15,304	15,982	33.3	255	162	170	44	1,236	735	567	168	77.1	22.9	1,498	1,600	6.8	102	315	417	23.25
475081	Helpers--Extraction Workers	193	154	39	79.8	20.2	11,182,429	1,971,056	85.0	15.0	19,115	17,757	34.3	28	13	3	N/A	172	64	44	20	68.8	31.3	299	325	8.7	26	120	146	20.39
475099	Extraction Workers, All Other	24	16	8	66.7	33.3	1,154,325	446,655	72.1	27.9	18,618	18,611	39.8	8	4	N/A	N/A	18	6	4	2	66.7	33.3	207	243	17.4	36	46	82	27.26
<b>INSTALLATION, MAINTENANCE AND REPAIR OCCUPATIONS</b>																														
491011	First-Line Supervisors/Managers of Mechanics, Installers, and Repairers	31	24	7	77.4	22.6	3,023,024	915,102	76.8	23.2	33,589	35,196	51.6	21	19	N/A	1	26	7	5	2	71.4	28.6	722	789	9.3	67	190	257	36.75
492022	Telecommunications Equipment Installers and Repairers, Except Line Installers	1	0	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	30.0	N/A	N/A	N/A	1	0	0	0	0.0	0.0	726	782	7.7	56	114	170	29.81	
492092	Electric Motor, Power Tool, and Related Repairers	2	0	2	0.0	100.0	N/D	N/D	0.0	100.0	0.0	N/D	N/A	N/A	N/A	N/A	0	0	0	0	0.0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
492094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	55	31	24	56.4	43.6	3,038,022	2,256,605	57.4	42.6	24,699	23,506	42.1	17	12	N/A	1	35	3	3	0	100.0	0.0	217	225	3.7	8	50	58	34.09
492095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	2	2																											



➤ APPENDIX C: WORKFORCE COMPOSITION

ALASKA'S OIL AND GAS INDUSTRY WORKFORCE COMPOSITION

SOC Code	Occupational Title	Residency Status					Earnings by Residency					Gender					New Hires					Growth and Replacement					Alaska Mean Hourly Wages (\$)			
		Total Workers	Resident Workers	Nonresident Workers	Percent Resident Workers	Percent Nonresident Workers	Total Resident Wages (\$)	Total Nonresident Wages (\$)	Percent Resident Wages	Percent Nonresident Wages	Resident Average Quarterly Wages (\$)	Nonresident Average Quarterly Wages (\$)	Average Age of Workers*	Workers Age 45+*	Workers Age 50+*	Workers Age 14 to 21*	Number of Female Workers*	Number of Male Workers*	Total New Hires	Total Resident New Hires	Total Nonresident New Hires	%Resident New Hires	%Nonresident New Hires	Employment Estimate - 2010	Employment Estimate 2020	% Change 2010 - 2020		Growth Openings	Replacement Openings	Total Openings
<b>TRANSPORTATION AND MATERIAL MOVING OCCUPATIONS</b>																														
531021	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand	19	10	9	52.6	47.4	865,183	764,215	53.1	46.9	24,720	21,228	47.3	8	6	N/A	N/A	13	6	5	1	83.3	16.7	286	320	11.9	34	57	91	26.51
531031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle Operators	24	11	13	45.8	54.2	1,269,547	1,439,402	46.9	53.1	28,853	28,224	47.7	10	5	N/A	N/A	16	12	3	9	25.0	75.0	356	381	7.0	25	70	95	32.01
532011	Airline Pilots, Copilots, and Flight Engineers	8	8	0	100.0	0.0	1,050,076	0	100.0	0.0	32,815	0	48.0	4	3	N/A	N/A	8	0	0	0	0.0	0.0	1,625	1,812	11.5	187	500	687	N/A
532012	Commercial Pilots	24	24	0	100.0	0.0	4,062,236	0	100.0	0.0	42,315	0	53.4	21	16	N/A	N/A	2	3	3	0	100.0	0.0	876	987	12.7	111	314	425	76180
532031	Flight Attendants	25	25	0	100.0	0.0	1,400,877	0	100.0	0.0	14,746	0	44.3	15	5	N/A	N/A	24	5	5	0	100.0	0.0	358	408	14.0	50	71	121	38.40
533031	Driver/Sales Workers	4	4	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	52.5	3	3	N/A	N/A	1	3	0	0	0.0	0.0	981	1,088	10.9	107	397	504	15.01
533032	Truck Drivers, Heavy and Tractor-Trailer	387	263	124	68.0	32.0	17,195,953	5,773,608	74.9	25.1	18,570	17,710	46.0	175	120	8	19	271	354	240	114	67.8	32.2	2,740	3,011	9.9	271	554	825	24.06
533033	Truck Drivers, Light or Delivery Services	37	28	9	75.7	24.3	2,111,931	745,095	73.9	26.1	19,738	23,284	45.1	18	15	N/A	N/A	2	29	17	14	82.4	17.6	1,477	1,619	9.6	142	296	438	20.68
535011	Sailors and Marine Oilers	5	5	0	100.0	0.0	N/D	0	100.0	0.0	N/D	0	38.4	2	2	N/A	N/A	1	4	3	1	75.0	25.0	538	587	9.1	49	235	284	21.49
535021	Captains, Mates, and Pilots of Water Vessels	14	8	6	57.1	42.9	568,415	157,336	78.3	21.7	18,336	11,238	47.0	7	3	N/A	N/A	9	4	1	3	25.0	75.0	612	678	10.8	66	232	298	31.08
535031	Ship Engineers	1	0	1	0.0	100.0	N/D	N/D	0.0	100.0	0	N/D	N/A	N/A	N/A	N/A	N/A	1	0	1	0	0.0	100.0	294	318	8.2	24	90	114	33.25
536099.05	Water Transportation Workers, All Other	1	0	1	0.0	100.0	N/D	N/D	0.0	100.0	0	N/D	31.0	N/A	N/A	N/A	1	N/A	0	0	0	0.0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
537021	Crane and Tower Operators	69	30	39	43.5	56.5	2,996,036	2,650,204	53.1	46.9	25,828	21,546	43.6	18	17	N/A	N/A	37	50	29	21	58.0	42.0	110	118	7.3	8	28	36	37.40
537032	Excavating and Loading Machine and Dragline Operators	13	13	0	100.0	0.0	989,159	0	100.0	0.0	19,395	0	44.8	7	5	N/A	N/A	1	12	2	2	100.0	0.0	206	228	10.7	22	62	84	30.63
537051	Industrial Truck and Tractor Operators	8	6	2	75.0	25.0	N/D	N/D	N/D	N/D	21,249	N/D	45.0	5	3	N/A	N/A	6	7	6	1	85.7	14.3	521	591	13.4	70	153	223	18.52
537062	Laborers and Freight, Stock, and Material Movers, Hand	48	44	4	91.7	8.3	N/D	N/D	N/D	N/D	12,531	N/D	34.5	13	10	7	4	43	39	33	6	84.6	15.4	4,431	4,853	9.5	422	2,242	2,664	16.45
537071	Gas Compressor and Gas Pumping Station Operators	30	28	2	93.3	6.7	N/D	N/D	N/D	N/D	25,811	N/D	42.6	17	9	N/A	N/A	1	29	6	5	83.3	16.7	117	127	8.5	10	33	43	N/A
537072	Pump Operators, Except Wellhead Pumpers	66	43	23	65.2	34.8	3,650,650	1,987,127	64.8	35.2	22,125	22,079	40.9	20	13	N/A	N/A	52	2	2	0	100.0	0.0	71	77	8.5	6	21	27	N/A
537081	Refuse and Recyclable Material Collectors	5	4	1	80.0	20.0	N/D	N/D	80.0	20.0	N/D	N/D	57.8	5	5	N/A	N/A	5	0	0	0	0.0	0.0	381	423	11.0	42	114	156	20.01
537121	Tank Car, Truck, and Ship Loaders	66	62	4	93.9	6.1	N/D	N/D	N/D	N/D	20,826	N/D	39.4	20	13	N/A	N/A	2	62	10	9	90.0	10.0	393	420	6.9	27	116	143	N/A
537199	Material Moving Workers, All Other	84	66	18	78.6	21.4	4,752,205	1,173,291	80.2	19.8	18,783	19,555	43.3	36	25	3	7	67	23	18	5	78.3	21.7	777	850	9.4	73	115	188	26.46
999999		4	2	2	50.0	50.0	N/D	N/D	48.3	51.7	N/D	N/D	33.7	1	1	1	N/A	3	1	1	0	100.0	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

"N/A" - Not Availa Not Available

"N/D" - Not Disclosable

<sup>1</sup>The occupational information provided represents only those occupations that appear within a select list of NAICS codes. The select list of NAICS codes used to define the Oil and Gas Industry above differs from that used by the AKDOL/WD on standard reports

<sup>2</sup>Unduplicated count of total workers employed at any time during the year. Workers are assigned to the industry in which they earned the most money.

Fund Dividend files.

Residency is calculated by matching workers reported by Alaska employers with the two most recent Permanent

\*Totals represent only those workers for which age and sex data is available. In most cases, this data is only available for resident workers, but some nonresidents may be included

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

➤ APPENDIX D: TRAINING

### Oil and Gas Occupations Training

Training Provider	Location	Training Programs
ABC of Alaska	Anchorage	Carpentry; Construction Craft Laborer; Electrician
Alaska Building Science Network	Anchorage	AK Warm - an Introduction for Builders; AK Warm Basics 101; AKWarm for Building Energy Design and Analysis; Anatomy of a Cold Weather Window: 2-Hour; Anatomy of a Cold Weather Window: 8-Hour; Appropriate Sustainable Design of Buildings and Constructions; BEES -Alaska Building Energy Efficiency Standard; BEES Certification 2008; Blower Door Introduction; Blower Door Testing Certification Workshop; Caulking the Weathertight Building Envelope; Cold Climate Homebuilding: Roofs; Exterior Ventilated Cladding; Flashing/Indoor Air Quality; Flashing: the Naked Truth; Hand and Power Tool Safety; Ice Dams and Icicles = Heat Loss; Rating a Log Home; Structural Insulated Panel Systems: Preventing Failures; Successful Building Envelopes: 1-Hour; Successful Building Envelopes: 2-Hour; Vinyl Windows in the Arctic; Water, Buildings, and Architects; Weatherization Technician 1 Training; Weatherization Technician 2 Training; Windows/Insulation
Alaska Career College	Anchorage	Aircraft Dispatcher Specialist
Alaska Computer Business Solutions LLC	Anchorage	AutoCAD 2013 Essentials; AutoCAD 2014 Advanced; AutoCAD 2014 Beyond the Basics; AutoCAD 2014 Essentials; AutoCAD 2014 Update from 2012/2013; AutoCAD Civil 3D 2014 Fundamentals; AutoCAD Civil 3D Surveyors; CompTIA A+ Part 1; CompTIA A+ Part 2; Computer Installation and Repair Technician; Drafting and Design Technology Program; Revit Architecture 2014 Fundamentals; Revit MEP 2014 Fundamentals; Revit Structure 2014 Fundamentals
Alaska Computer Essentials	Anchorage	CompTIA Foundation
Alaska Craftsman Home Program	Anchorage	Advanced Cold Climate Home Building Techniques; BEES
Alaska Ironworkers	Anchorage	Ironworkers
Alaska Job Corps	Palmer	Behavioral Health Aide; Carpentry; Facilities Maintenance; Pre-Apprentice Electrician; Wastewater Treatment
Alaska Joint Electrical Apprenticeship and Training Trust	Anchorage	Residential, Anchorage; Residential, Fairbanks; Wireman, Anchorage; Wireman, Fairbanks
Alaska Laborers Training Trust	Anchorage	Construction Craft Laborers, Anchorage; Construction Craft Laborers, Fairbanks; Construction Craft Laborers, Juneau

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section, February 2014.

### Oil and Gas Occupations Training

Training Provider	Location	Training Programs
Alaska Marine Safety Education Association	Sitka	Fishing Vessel Stability and Damage Control; Marine Survival Equipment, Procedures and Onboard Drills, 10 Hour; Marine Survival Equipment, Procedures and Onboard Drills, 18 Hour; Strains, Sprains, and Pains
Alaska Nautical School	Wasilla	Master up to 100 GT Near Coastal Water; OUPV Near Coastal; OUPV Restricted to Freshwaters and Rivers of Western Alaska; Upgrade 100 GT Master to 200 GT Master
Alaska Operating Engineers/Employers Training Trust	Palmer	Heavy Duty Equipment Mechanic; Heavy Duty Service Oiler; Heavy Equipment Operator
Alaska Pacific University	Anchorage	Accelerated Business Administration & Management/Master of Business Administration, BAM/MBA; Alaska Native Executive Leadership Program Certificate; Business Administration; Business Administration and Management; Earth Sciences; Entrepreneurship Certificate; Environmental Policy; Environmental Science; Environmental Science; Executive MBA in Strategic Leadership; Investments Certificate; Master of Business Administration; Sustainability Studies
Alaska Teamster-Employer Service Training Trust	Anchorage	Construction Truck Driver; Freight Over-the-Road Driver (Heavy Truck Driver); Surveyor Assistant, Instruments
Alaska Technical	Soldotna	AWS CWI Preparation; Basic Corrosion; Magnetic Particle I/II; Magnetic Particle III; Penetrant Testing Level I/II; Penetrant Testing Level III; Radiation Safety; Radiographic Film Interpretation; Radiographic Testing I; Radiographic Testing II; Ultrasonic Testing Level I; Ultrasonic Testing Level II; Visual Testing Level I/II; Visual Testing Level III
Alaska Technical Center	Kotzebue	Advanced Commercial Construction; Building/Property Maintenance and Management; Construction Site Development; Construction Trades; Construction Trades/Plumbing Systems/Electrical Systems; Electrical Installation; Electrical Orientation; Electrical Systems; Electrical Systems/Heating Systems/Plumbing Systems; Marine Science/Merchant Marine Officer USCG 6-pak; Millwright Maintenance; Millwright Operations; NCCER Carpentry L 1; NCCER Carpentry L 2; NCCER, Core Curriculum; Plumbing Drain, Waste & Dev; Plumbing Orientation; Plumbing Supply Systems/pipe; Plumbing Systems; Truck and Bus Driver/Commercial Vehicle Operation
Alaska Trowel Trades	Anchorage	Plasterers & Cement Masons

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section, February 2014.



➤ APPENDIX D: TRAINING

### Oil and Gas Occupations Training

Training Provider	Location	Training Programs
Alaska Waters Consulting	Anchorage	Alaska Waterwise; Masters License - 25/50/100 Ton; Masters upgrade - 100 Ton; Masters upgrade - 200 Ton; OUPV License ("Six Pack License")
Alaska West Training Center	Fairbanks	Contingency Planning - ER08; Federal Motor Carriers Safety Regulations - HMT09; Forklift Operator Performance Training - S09; Hazardous Materials Technician Annual Refresher - ER03; Hazardous Materials Transportation Basic - HMT02; Hazardous Materials Transportation General Awareness - HMT01; Hazardous Materials Transportation Infectious Substance - HMT10; Hazardous Materials Transportation Recurring - HMT03; Hazardous Materials Transportation Waste - HMT08; Hazardous Waste Operations & Emergency Response Annual Refresher - HW04; Hazardous Waste Operations & Hazardous Materials Technician - ER02; Hazardous Waste Operations and Emergency Response - HW02; Hazardous Waste Operations Occasional Site Worker - HW01; Hazardous Waste Operations Supervisor - HW03; Highway Specialist - ER04; Hydrogen Sulfide - H2S; Petroleum Technician - ER06; Petroleum Workers Safety and Health - S05; Railroad Specialist - ER05; Transportation Specialist - ER10; Unescorted Module - NSTC01
Alaska Works	Anchorage	Building Maintenance/Repairer; Construction Academies; Pipeline Training; Women in the Trades
Amundsen Education Center	Soldotna	Advanced Residential Construction; Residential Construction
Anchorage Area Plumbers & Pipefitters Joint Apprenticeship Training Committee	Anchorage	Pipefitting; Plumbing; Welding
Arctic Safety Training and Consulting	Kenai	Confined Space Entry & SCBA; Confined Space Rescue; Cook Inlet Training Standards (CITS); Cook Inlet Training Standards (CITS) Refresher; Hazardous: Routine/General Site Worker (40 Hour Bridge Class); Hazardous: Routine/General Site Worker Refresher (40 Hour Bridge Class Refresher); Hazwoper Industrial Safety (Marathon Oil); Hazwoper: Routine Site Workers (24 hour); Hazwoper: Routine/General Site Worker (Hazardous Material 40 hr); Hazwoper: Routine/General Site Worker (Refresher); Petrochemical Health and Safety; Petrochemical Health and Safety Refresher; Scaffolding Level 1; Scaffolding Level 2; Scaffolding Level 3; Trenching & Shoring Competent Person
Associated General Contractors of Alaska	Anchorage	Alaska Certified Erosion and Sediment Control Lead Storm Water Training Program; Alaska Certified Erosion and Sediment Control Lead Storm Water Training Program; Construction

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section, February 2014.

### Oil and Gas Occupations Training

Training Provider	Location	Training Programs
		Quality Management for Contractors; Construction Quality Management for Contractors; Writing a Storm Water Pollution Prevention Plan (SWPPP)
AVTEC	Seward	Able Seaman; Advanced Fire Fighting; Alaska Marine Highway Orientation; Automatic Radar Plotting Aid Operation; Basic Refrigeration; Bridge Resource Management; Diesel/Heavy Equipment Technology; Facility Maintenance Construction Trades; Global Maritime Distress & Safety Systems; Industrial Electricity; Master/Mate, Limited; Pipe Welding; Qualified Member of the Engine Department; Radar Observer, Recertification; Radar Refresher; Rating Forming Part of Navigational Watch; Structural Welding; Tankship-Dangerous Liquids
Beacon OHSS	Anchorage	Confined Space Entry (OSHA and NSTC Offered); Confined Space Rescue (OSHA); Cook Inlet Training Standards (CITS); Cook Inlet Training Standards (CITS); Energy Isolation (NSTC and OSHA Offered); Fall Protection (NSTC and OSHA Offered); Forklift Safety; Hazard Communication; Hazwoper-Site Worker (24 Hour); Hazwoper-Site Worker (24 Hour); Hazwoper-Site Worker (40 Hour); Hazwoper-Site Worker (40 Hour); Hazwoper-Site Worker (8 Hour); North Slope Training Cooperative; North Slope Training Cooperative, Anchorage; Respiratory Protection (NSTC and OSHA Offered); Thinking Driver
Center for Employment Education	Anchorage	Basic Driver Training CDL; Boom Truck; CDL A - 20 Hour; CDL B - 20 Hour; CDL Permit and Endorsement Preparatory Course 3 days; Construction Technology Training; Construction Technology Training with CDL; Defensive Driving Course for the Professional Truck Driver; Entry Level Driver Course; Fast Track-CDL A (Anchorage); Fast Track-CDL A (Fairbanks); Forklift Training; Hazardous Materials Response Specialist I; Hazardous Materials Response Specialist II; Hazardous Materials Transportation Specialist; Hazardous Waste Operations and Emergency Response First Responder; Hazardous Waste Operations and Emergency Response General Site Worker-40 hour; Hazardous Waste Operations and Emergency Response Refresher; Long Commercial Vehicle Training; Mining Safety and Health Administration; OSHA 10 hour; OSHA 30 hour; Qualified Rigger/Signalperson; Qualified Rigger/Signalperson and Boom Truck Combined; Road Skills Assessment, CDL A/B - 10 Hour; Road Skills Assessment, CDL A/B - 5 Hour; Road Skills Assessment, CDL B Passenger Bus; Road Skills Refresher-CDL A/B- 4 hour; Transportation Awareness, 49 CFR 172.704

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section, February 2014.

➤ **APPENDIX D: TRAINING**

**Oil and Gas Occupations Training**

Training Provider	Location	Training Programs
Charter College, Anchorage	Anchorage	Business Management Practice; Heating, Ventilation, Air Conditioning and Refrigeration (HVAC); Welding
Delta Mine Training Center	Delta Junction	Alaska Prospector Workshop Series; Health, Safety, and Environmental; Surface Mining; Underground Mine Training
Embry-Riddle Aeronautical University	JBER, Elmendorf AFB	Aeronautical Science; Aviation Business Administration; Business Administration in Aviation; Engineering Management; Leadership; Logistics and Supply Chain Management; Management; Occupational Safety Management; Project Management; Systems Engineering; Technical Management; Transportation
Environmental Management Inc	Anchorage	AHERA Management Planner; AHERA Management Planner Refresher; Asbestos Abatement for Contractors and Supervisors; Asbestos Abatement for Contractors and Supervisors Refresher; Asbestos Air Monitoring; Confined Space Entry; EPA Health and Safety; EPA/AHERA Building Inspector; EPA/AHERA Project Design; EPA/AHERA Project Design Refresher; Hazardous Materials Transportation 12 Hours; Hazardous Materials Transportation 24 Hours; Hazardous Materials Transportation Refresher; Hazardous Paint; Hazardous Paint Refresher; Hazardous Waste Operations & Emergency Response; Hazardous Waste Operations & Emergency Response Refresher; Lead Abatement for Supervisors and Contractors; Lead Renovation, Repair, and Painting; NSTC 6 PACK & H2S Module; OSHA 10/30 Construction Outreach; OSHA 10/30 hour Construction Outreach; Powered Industrial Truck Forklift; Scaffold Safety and Fall Protection; Supervision of Hazardous Waste Operations; Thinking Driver; Trenching, Excavating & Shoring
Fairbanks Area Carpenter Training Center	Fairbanks	Boilermakers Apprenticeship; Bricklayers & Allied Craftworkers Apprenticeship; Carpentry Apprenticeship; Carpentry Journeyman Skills Enhancement; Insulators Apprenticeship; Millwright Apprenticeship; Millwright Qualification
Fairbanks Area Painting and Allied Trades	Fairbanks	Drywall Finishers; Floor Coverers; Glazier; Painter
Fairbanks Area Plumber and Pipefitters	Fairbanks	Plumbing and Pipefitting

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section, February 2014.

**Oil and Gas Occupations Training**

Training Provider	Location	Training Programs
Galena Interior Learning Academy	Galena	Construction Technology
Heat and Frost Insulators and Allied Workers Local 97	Anchorage	Insulators/Asbestos Apprenticeship
Iisagvik College	Barrow	Business and Management; Business Specialist I; Business Specialist II; Carpentry I; Carpentry II; CDL/Heavy Truck Operations; COMP TIA A+ Certification; Construction/Heavy Equipment Operations; Electrical I Advanced; Electrical I Basic; Electrical II Advanced; Electrical II Basic; Electrical III; Electrical IV; Industrial Safety, Level 1; Pipefitting; Pipeline Insulation; Plumbing I; Plumbing II; Plumbing III; Plumbing IV; Scaffolding
IUBAC Lc 1 Bricklayers and Craftsman	Anchorage	Mason/Masonry
Laborers Local 942	Fairbanks	Laborers Apprenticeship Program
Northern Industrial Training	Palmer	Aerial Platform - Manlift; Aerial Platform - Manlift; Artic Survival: Wilderness & Outdoor Awareness Preparedness; Artic Survival: Wilderness & Outdoor Awareness Preparedness; Carpentry; Carpentry; CDL Written Exam Prep; Cold Water Survival; Cold Water Survival; Cold Water Survival & Egress; Cold Water Survival & Egress; DOT 49 CFR Hazardous Material training; Ground/Air; DOT 49 CFR Hazardous Material training; Ground/Air; Hazwoper 24 Hour; Hazwoper 40 Hour; Hazwoper 40 Hour; Hazwoper Refresher 8 Hour; Health, Safety & Environmental Technician (HSET); Health, Safety & Environmental Technician (HSET); Heavy Equipment Training - 4 Week; Heavy Equipment Training - 6 Week; Heavy Equipment Training - 8 Week; Helicopter Underwater Egress Training - HUET; Helicopter Underwater Egress Training - HUET; Long Combination Vehicle; Long Combination Vehicle; MSHA: Inexperienced Surface Miner; NSTC - North Slope Training Cooperative w/H2S; NSTC - North Slope Training Cooperative w/H2S; NSTC 2010 ASH Update; NSTC 2010 ASH Update; NSTC Confined Space Entry; NSTC Confined Space Entry; NSTC Energy Isolation; NSTC Energy Isolation; NSTC Fall Protection; NSTC Fall Protection; NSTC Respiratory Protection; NSTC Respiratory Protection; NSTC Unescorted; NSTC Unescorted; OSHA 10 Hour Construction; OSHA 10 Hour Construction; OSHA 30 Hour Construction; OSHA 30 Hour Construction; OSHA Fall Protection; OSHA Fall Protection; OSHA Forklift; OSHA Forklift; PEC Basic Orientation; PEC Basic Orientation; PEC Core Compliance; PEC Core Compliance; Pro Truck Driver - 1 Day; Pro Truck Driver - 1 Week; Pro Truck Driver - 1/2 Day; Pro Truck Driver - 2 Day; Pro Truck Driver - 3 Week; Professional Truck Driver Institute (PTDI) Certified Program; Project Management; Project Management; Roustabout; Roustabout; Structural Welding - 16 Week; Structural Welding - 8 Week; Ultimate Driver (Pro Truck Driver); Ultimate Welding

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section, February 2014.



➤ **APPENDIX D: TRAINING**

**Oil and Gas Occupations Training**

Training Provider	Location	Training Programs
NTL Alaska, Inc.	Fairbanks	Alaskan Water Treatment Systems - Intermediate; Alaskan Water Treatment Systems - Intermediate; Introduction to Alaska Small Wastewater Systems; Introduction to Alaska Small Wastewater Systems
Satori Group Inc	Anchorage	AHERA Building Inspector Initial; AHERA Building Inspector Refresher; Asbestos Awareness; Asbestos Contractor/Supervisor Initial; Asbestos Contractor/Supervisor Refresher; Asbestos Operations and Maintenance; Confined Space Entry; Fall Protection; Hazard Communication; HAZWOPER (Hazardous Waste Operations and Emergency Response) Initial; HAZWOPER (Hazardous Waste Operations and Emergency Response) Refresher; Lead Awareness; Lead-based Paint Renovation Repair Painting; NIOSH 582; OSHA Outreach Training; OSHA Outreach Training; Trenching and Excavation
Southern Alaska Carpenters Union Training Center	Anchorage	Carpentry/Carpenter Apprenticeship
Southwest Alaska Vocational and Education Center	King Salmon	Building Construction & Repair; Carpentry & Plumbing; Construction Trades; General Maintenance Tech; Hazwoper, 40 Hour; Hazwoper, 8 Hour Refresher; Heavy Equipment Operator Training; NCCER Carpentry Core and Level I; Off System CDL (Commercial Driver's License); Process Technology; Tank Farm Welding Certification; Welding
University of Alaska Anchorage	Anchorage	Appl Environ Science & Techno; Appl Environ Science & Techno; Apprenticeship Technology; Archit & Engr Technology; Arctic Engineering; Aviation Administration; Aviation Technology; CAD for Building Construction; Chemistry; Civil Drafting; Civil Engineering; Civil Engineering; Civil Engineering; Earthquake Engineering; Engineering; Engineering Management; Environment & Society; Environment & Society; Environmental Quality Engr; Environmental Quality Science; Geographic Information Sys; Geological Science; Geomatics; Geomatics; Global Log Supply Chain Mg; Global Supply Chain Mgmt.; Heavy Duty Trans & Equip; Heavy Duty Trans & Equip; Logistics; Logistics; Logistics & Supply Chain Ops; Logistics & Supply Chain Ops; Logistics & Supply Chain Ops; Management; Mech/Elect Engr Consortium; NonDestruct Testing; Port & Coastal Engineering; Project Management; Public Administration; Science Management; Structural Drafting; Technical Support; Technology; Telecomm Elect & Computer Tech; Weld & NonDestruct Test Tech; Welding Technology
University of Alaska Anchorage, Kenai	Soldotna	Computer Electronics; Industrial Proc Instrumentation; Mechanical Technology; Occupational Safety & Health; Petroleum Technology; Process Technology; Technical

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section, February 2014.

**Oil and Gas Occupations Training**

Training Provider	Location	Training Programs
		Support; Welding Technology
University of Alaska Anchorage, Kodiak	Kodiak	Computer Systems Technology; Construction Technology; Indust Safety Program Support; Technical Support; Technology; Welding
University of Alaska Anchorage, Mat-Su	Palmer	Apprenticeship Technology; Archit & Engr Technology; CAD for Building Construction; Civil Drafting; Commercial HVAC Syst; Computer Systems Technology; Residential Air Cond & Ref; Residential Heat/Vent; Structural Drafting; Technical Support; Telecomm Elect & Computer Tech
University of Alaska Anchorage, Prince William Sound	Valdez	Industrial Technology; Industrial Technology
University of Alaska Fairbanks	Fairbanks	Applied Physics; Arctic Engineering; Atmospheric Sciences; Atmospheric Sciences; Business Administration; Business Administration; Chemistry; Chemistry; Chemistry; Chemistry; Civil Engineering; Civil Engineering; Civil Engineering; Computer Engineering; Earth Science; Electrical Engineering; Electrical Engineering; Electrical Engineering; Emergency Management; Engineering; Engineering Management; Environmental Chemistry; Environmental Chemistry; Environmental Engineering; Environmental Quality Science; Geological Engineering; Geological Engineering; Geology; Geology; Geology; Geophysics; Geophysics; Information Technology Special; Information Technology Special; Mechanical Engineering; Mechanical Engineering; Mineral Preparation Engineer; Mining Engineering; Mining Engineering; Oceanography; Oceanography; Petroleum Engineering; Petroleum Engineering; Physics; Physics; Physics; Physics; Science Management; Software Engineering; Space Physics; Space Physics
University of Alaska Fairbanks, Bristol Bay	Dillingham	Applied Business; Applied Business Mgmt.; Apprenticeship Technology; Environmental Studies; Information Technology Special; Information Technology Special; Sustainable Energy
University of Alaska Fairbanks, Chukchi	Kotzebue	Applied Business; Applied Business Mgmt.; Apprenticeship Technology; Information Technology Special; Information Technology Special
University of Alaska Fairbanks, CTC	Fairbanks	Applied Business; Applied Business Mgmt.; Apprenticeship Technology; Drafting

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section, February 2014.

➤ **APPENDIX D: TRAINING**

**Oil and Gas Occupations Training**

Training Provider	Location	Training Programs
		Technology; Drafting Technology; Entry Level Welder; Information Technology Special; Information Technology Special; Instrumentation Technology; Mining Applications & Tech; Process Technology; Safety Hlth & Envn Aware Tech
University of Alaska Fairbanks, Interior-Aleutians	Fairbanks	Applied Business; Applied Business Mgmt.; Apprenticeship Technology; Associate of Science; Construction Trades Technology; Construction Trades Technology; CTT; Facilities Maintenance; Information Technology Special; Information Technology Special; Rural Utilities Business Mgmt.
University of Alaska Fairbanks, Kuskokwim	Bethel	Applied Business; Applied Business Mgmt.; Apprenticeship Technology; Information Technology Special; Information Technology Special
University of Alaska Fairbanks, Northwest	Nome	Applied Business; Applied Business Mgmt.; Apprenticeship Technology; Information Technology Special; Information Technology Special
University of Alaska Southeast, Juneau	Juneau	Apprenticeship Technology; Bldg. Enrg Rtrft Tech OE; Business Administration; Business Administration; Business Administration; Business Administration; Construction Technology; Construction Technology; Construction Technology; Drafting Technology; Environmental Science; Environmental Studies; Geography & Environ Studies; Pre-major Engineering; Public Administration; Residential Bldg. Science; Service Management
University of Alaska Southeast, Ketchikan	Ketchikan	Apprenticeship Technology; Business Administration; Welding Technology
University of Alaska Southeast, Sitka	Sitka	Apprenticeship Technology; Business Administration; Construction Technology; Environmental Technology; Welding; Welding Technology
Vocational Training and Resource Center	Juneau	Basic Electronics; Carpenter; Commercial Driver's License (CDL) Class A Driver Training; Drafting with AutoCAD; Electronics Technician; Gunsmith; Hazwoper Refresher; Hazwoper, 40 Hour; Landscaping Technology; PC Maintenance and Repair; Telecommunications Technician
Wayland Baptist University	Anchorage	Business Administration (BBA); Business Administration (MBA); Management (MAM); Public Administration (M.P.A)

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section, February 2014.

**Oil and Gas Occupations Training**

Training Provider	Location	Training Programs
WinCertification	Anchorage	A+ Computer Repair Technician with Labs; CompTIA: Computer Repair Technician (internet); Computer Repair and Network Internship
Wisdom & Associates, Inc.	Kenai	AEE - Certified Energy Auditor Class; Basic Building Science - AHFC Sponsored; Construction - 2009 International Mechanical Code; Construction - 2009 International Residential Code, Part 1; Construction - 2012 International Mechanical Code; Construction - 2012 International Residential Code; Domestic Water Heating & Consumption; ICF Wall Requirements - AHFC Sponsored; Lead Safety for Repairs, Renovations & Painting - Alaska; Lighting Retrofit Fundamentals; Lighting Retrofit Fundamentals - AHFC Sponsored; Plumbing - 2012 Uniform Plumbing Code; Plumbing - 2012 Uniform Plumbing Code, Water Heaters; Remote Wall Systems; Residential Endorsement Test Prep Course; Residential Lighting & Efficiency; Roofs - AHFC Sponsored
Yuut Elitnaurviat	Bethel	Carpentry; Crane Operator Training 10 Day; Electrical; Energy Efficiency and Alternative Energy Retrofit Training; Plumbing
Zender Environmental Health & Research Group	Anchorage	Rural Alaska Community Environmental Job Training (RACEJT) Program

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section, February 2014.





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FOR MORE INFORMATION:

(907) 465-2700