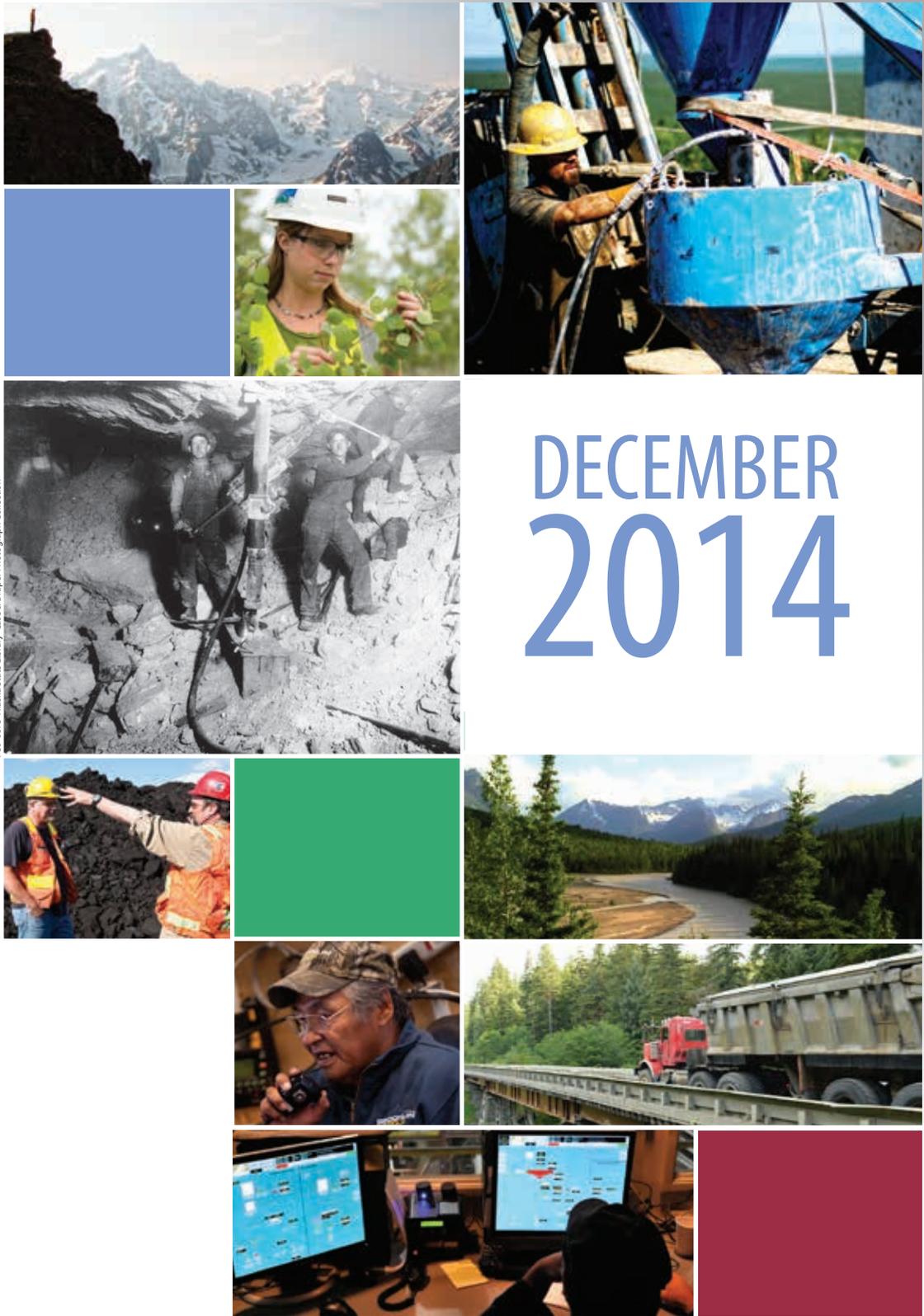


# Alaska Mining Workforce Development Plan

Alaska Miners Association  
Human Resources Committee

DECEMBER  
2014



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# executive summary

Mining permeates the history and popular image of Alaska in a way that no other industry matches. Placer gold exploration and mining began with the Russians in the early 1800s. After acquisition by the United States, exploration and mining continued and gradually increased for both hard rock and placer minerals. Employment in the mining industry peaked in 1916 at almost 8,600 workers, after which the industry began to decline as a result of mine disasters, fixed gold prices and global wars.

At statehood in 1959, the mining workforce had shrunk to one-fifth its peak level—to 1,700—and hovered near that number until a series of discoveries over the last several decades led to new mining operations in the Southeast, Interior and Arctic regions of the state. Today's industry is dominated by six major producing mines with an annual direct employment of 4,600 in 2013.

Jobs in the mining industry more than doubled between 2001 and 2013, with increases in gold mining responsible for most of the growth. Wages have also shown significant

growth, up 22 percent between 2002 and 2011 compared to an eight percent growth during the same period for all private sector wages. The average annual wage for a mine worker in 2012 was around \$100,000, second only to oil and gas workers and twice the state average.

Mining is poised to play an even more major role in the state's economy than it does today. At present, there is considerable exploration and development activity occurring in many areas of the state, led by eight major advanced exploration projects. Exploration and development expenditures in 2012 amounted to \$335.1 million and \$343.4 million respectively.

The long timeline from exploration to production coupled with the industry's vulnerability to changes in world commodity prices, financing, global economic conditions and environmental



regulations make it difficult to predict with pin-point accuracy what the future holds in terms of employment. However, a survey of operating and proposed projects conducted by the Alaska Miners Association in 2013 suggests that over the next decade the industry could add 2,000 jobs. Alaska Department of Labor and Workforce Development projections—which are based on a variety of factors including historical trends, population projections and expected economic changes—are lower, but even these projections indicate a 24.8 percent increase in employment from 2012 to 2022.

Within the current workforce, there is considerable aging of higher skilled employees; for example, 47.1 percent of mechanics, 51.1 percent of mining materials engineers and 65.4 percent of mining machine operators are 45 years of age or older. Although attrition across the industry is fairly low, some of the more remotely-located mines can experience an annual turnover of up to 20 percent.

Faced with the challenges of attrition and aging within the current workforce, competition from the global mining industry as well as other resource development industries in Alaska and the increased demand from new mining projects across the state, the mining industry embarked on a workforce development planning process in 2011. Headed up by the Human Resources Committee of the Alaska Miners Association (AMA HR), the process has resulted in this Alaska Mining Workforce Development Plan. The goal of the plan is to assure that a well-trained workforce is available to staff current and planned mining operations in the state.



As an integral part the planning process, AMA HR completed a workforce assessment in 2013 to obtain data on the current mining workforce for six large mining operations and the projected workforce for eight major projects. The survey results identified high priority occupations based on workers needed in large numbers and those with special skills and short supply. The bulk of these priority positions fall into four career clusters.

### Heavy Equipment Operations

Underground Miner

Drillers and Blasters

Haul Truck Drivers

Equipment Operators

### Maintenance Technicians

Millwright

Diesel Mechanic

Electrical and Instrumentation

### Process Technology

Mill Operator

### STEM/Engineering

Mining Engineer

Mechanical Engineer

Geologist

Metallurgist

Metallurgy, Chemical, Geological and Environmental Lab Tech

Two other priority occupations were identified in the needs assessment that require industry attention: *Health and Safety Specialist* and *Permitting Specialist*.

The assessment process identified and contacted training providers to obtain information on current and planned programs. Alaskan training and education institutions have a number of programs that can prepare Alaskans for most of the entry level positions in the various mining occupations. There are some gaps, both in programs—such as metallurgists—and in terms of numbers of “graduates” from the program—such as machinists, mechanics, and geo-technologists.

With these few exceptions, the larger issue with the current training picture in the state is not availability but access. For many of the priority occupations, training may be offered but at a site that requires relocation by a potential employee. Such relocation can be expensive not only in terms of financial outlay but also in time away from family and often results in the student dropping out of the training before completion. Providing training at multiple locations throughout the state is a more efficient way of meeting workforce needs.

Many of the priority occupations in mining are similar to those in construction and other resource development industries. This commonality has significant implications for workforce development strategies in that a variety of existing training programs can be utilized with limited additional content or on-the-job training needed to develop a productive mine worker.

Based on the needs assessment, input from industry and a review of workforce development plans from other industries, the AMA HR Committee selected six major workforce development strategies for emphasis. Action steps, resources and evaluation measures have been identified for each strategy.

### Career Awareness

*Strategy 1.0: Increase awareness of career opportunities in the mining industry.* Mining offers a wide range of long-term careers in almost all regions of the state. Young people in particular need a clear picture of the careers available and the skills needed to access these careers. Mining can provide opportunities for returning veterans and other adults with prior training and experience in other industries to secure employment in or near their communities.



### Engagement

*Strategy 2.0: Engage Alaskans in mining workforce development.* Timely and accurate information about the labor demands of mining projects—both proposed and operating—is needed throughout the state but especially in regions that host the projects. Such information is important not only to encourage employment in the industry but also to develop and support the policy and fiscal initiatives necessary to address critical workforce shortages.

### Career Pathways

*Strategy 3.0 Establish and support Career Pathways in Mining.* Accessing a career in today's mining industry can be complex. Students need a clear road map to navigate their route from school to the workplace, a roadmap that begins as early as middle school. Career pathways are designed to provide this roadmap and to allow a student to transition easily from one academic level to another and eventually to employment in a selected career.



### Training

*Strategy 4.0: Train Alaskans for mining industry employment.* Developing a skilled mining workforce rests on a strong system of training in the state. Such a system is characterized by coordination of training resources among the various providers; alignment of training with industry standards; collaboration among industries with similar workforce needs; and development of robust career ladders within the individual projects.

### Retention and Employee Development

*Strategy 5.0: Retain and develop the incumbent mining workforce.* Securing an adequate workforce is only part of the equation. Equally important is keeping the workforce in place. A positive work environment that respects the culture of the region and training that allows upward movement on a career ladder provide incentives for employees to make a long-term commitment to a company or project.

### Collaboration for Sustainability

*Strategy 6.0: Promote the involvement and collaboration of industry, training providers and funding agencies in implementing and sustaining the Alaska Mining Workforce Development Plan.* Implementing the action steps outlined in this plan is beyond the scope, authority or resources of any one industry player, government agency or educational institution. Building an effective, predominantly Alaskan mining workforce requires the energy and coordinated effort of many actors from both the private and public sectors of the state.

The plan concludes with action steps identified for each of the priority occupations. These action steps stress the need for program alignment across training institutions, collaboration among training partners and industry sectors and regionalization of program delivery.



## Advanced Exploration Projects

### Bokan-Dotson Ridge Rare Earth - Rare earth elements

- Exploration from 1971 to 1981; renewed drilling program started in 2007
- Preliminary economic analysis and economic impact study released in 2013
- 190 potential production jobs

### Chuitna - Coal

- Currently in the permitting process; anticipate draft permit decisions in 2014-2015
- 300-350 potential production jobs

### Donlin Gold - Gold

- Discovered in 1988, continued exploration since 1995
- Permitting process began in 2012
- Up to 90% Calista shareholder hire at its camp
- Up to 1,400 potential production jobs, depending on the production timeline
- Livengood
- Gold
- Placer mining began in 1914, lode exploration in 2003
- Approximately \$210 million invested to date
- Completed feasibility study in 2013
- 450 potential production jobs

### Niblack - Copper, gold, silver, and zinc

- Ongoing exploration for more than 30 years
- \$37 million invested since 2009
- Now focused on engineering, environmental, and other studies to support prefeasibility study
- 200 potential production jobs

### Pebble Project - Copper, gold, and molybdenum

- Discovered in 1987 on State of Alaska land, ongoing exploration, engineering, and environmental studies since 2002
- Over \$150 million spent on environmental baseline studies
- Approximately 1,000 potential production jobs

### Upper Kobuk Mineral Projects - Gold, silver, copper, and zinc

- Intermittent exploration from 1965 to 1998 and renewed efforts starting in 2004
- Preliminary Economic Assessments (Arctic) completed for underground & surface operations
- Exploration at Bornite continued in 2013 with updated resource statements expected in 2014
- Peak of 80 employees in 2013

### Wishbone Hill - Coal

- First mined in 1916
- Project feasibility study completed in 2011
- 75-125 potential production jobs

## Producing Mines

### Fort Knox Mine - Gold

- Alaska's largest producing gold mine
- Largest single property taxpayer in the Fairbanks North Star Borough
- Discovered in 1984, producing since 1996
- 630 employees in 2013

### Greens Creek Mine - Silver, zinc, gold, and lead

- Among the top 10 silver producers in the world
- Largest Southeast Alaska for-profit employer, in terms of payroll
- Discovered in 1975, producing from 1989 to 1993, and continuously since 1996
- 400 employees in 2013

### Kensington - Gold

- Surpassed 100,000 ounces of gold in 2013
- Second largest private employer in Southeast Alaska in terms of payroll; over \$38 million in 2013
- Largest payer of property tax in the City & Borough of Juneau
- 306 full-time, year-round employees in 2013

### Pogo Mine - Gold

- Discovered in 1994, producing since 2006
- 320 full-time employees in 2013
- Paid \$56 million in wages and benefits in 2013
- Capital spending exceeded \$57 million in 2013

### Red Dog - Zinc, lead, and silver

- One of the world's largest zinc concentrate producers
- Only taxpayer in the Northwest Arctic Borough
- Discovered in 1968, producing since 1989
- 639 employees (including 131 contractors) in 2013

### Usibelli Coal Mine - Coal

- In continuous production since 1943
- 140 full-time year-round employees in 2013
- Alaska's only operating coal mine, exporting about half of its production in 2013
- Fuels 30% of Interior Alaska's electricity



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# introduction/ goals

## General description of industry

**M**ining permeates the history and popular image of Alaska in a way that no other industry matches. Placer gold exploration and mining began with the Russians in the early 1800s. After acquisition by the United States, exploration and mining continued and gradually increased for both hard rock and placer minerals. The discovery and development of the A-J and Treadwell gold deposits eventually led to the location of the State Capitol in Juneau. The Juneau-area finds were followed by the discovery of the Fortymile, Central, Nome, Fairbanks, Iditarod, and many other significant placer gold districts.

Employment in the mining industry peaked in 1916 at almost 8,600 workers, after which the industry began to decline as a result of mine disasters, fixed gold prices and global wars. At statehood in 1959, the mining workforce had shrunk to one-fifth its peak level—to 1,700—and hovered near that number until a series of discoveries over the last several decades led to new mining operations in the Southeast, Interior and Arctic regions of the state.

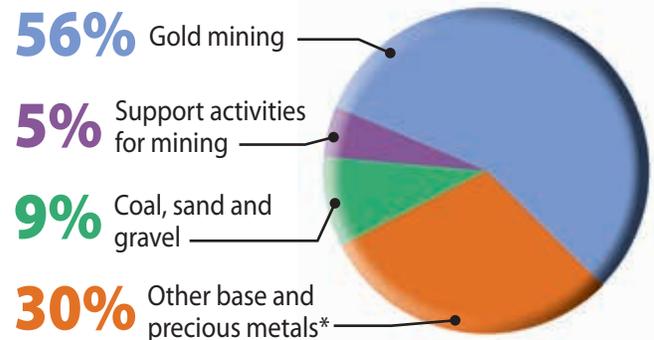
Today's industry is dominated by six major producing mines (Figure 1) with an annual direct employment of 4,600 in 2013<sup>1</sup>. Large-scale mining operations are found throughout the state, from Greens Creek near Juneau to Red Dog, near Kotzebue. Around 300 small placer mining operations also operate in various locations.

Gold is the mineral most associated with Alaska and it still holds pride of place, accounting for 45 percent of production value from operating mines and more than half the mining jobs and wages.

<sup>1</sup> Based on McDowell Group, Inc. estimates reported in *The Economic Benefits of Alaska's Mining Industry*, Alaska Miners Association, Inc., January 2014. Data obtained by survey of operators and planned projects. Includes exploration and development employment.

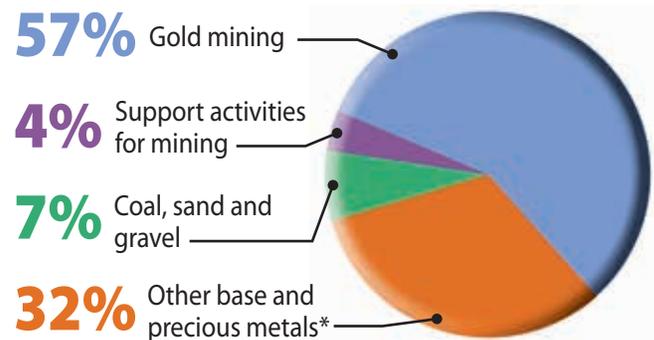
## Mining Employment and Wages by Industry Alaska, 2013

### Employment



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

### Wages

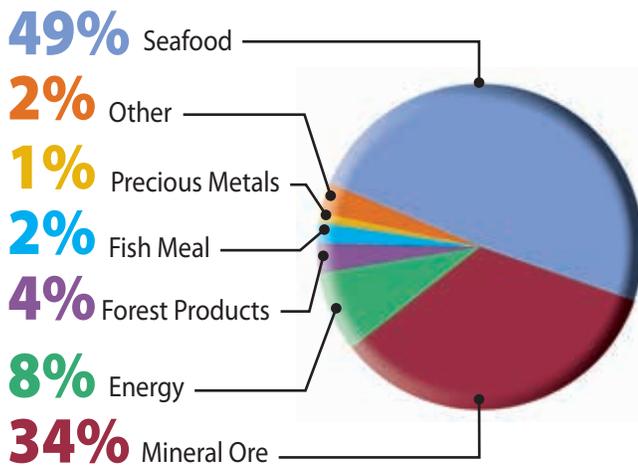


Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section

Five of the eight advanced exploration projects are based on gold. Spurred by a record-setting pace at Fort Knox Mine, Alaska gold production topped 1 million ounces during 2013, a milestone last achieved in 1906.

But gold is only one of the minerals mined in the state. The Red Dog Mine is one of the world's largest zinc concentrate producers, accounting for around one-third of Alaska's annual total mining production value. Silver, lead, coal, peat and industrial minerals also add to the production value. Mining output in 2013 of \$3.4 billion<sup>2</sup> represented around six percent of total Gross Domestic Product (GDP) for the state in that year. Exports of mineral ore and precious metals reached \$1.6 billion in 2013, accounting for 36 percent of total Alaskan exports. Zinc, which has led in export value in this decade, retained its top role in 2013, making up about one-fifth of the total state exports.

### Exports Alaska, 2013



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

While mining is important to the state as a whole, it has an even greater presence in some regions of the state. For example, Red Dog Mine in Kotzebue employed 639 persons in 2013 representing 35 percent of total private sector employment for the Northwest Arctic Borough. Greens Creek and Kensington Mines in Southeast are the first and second largest for-profit private employers in the region. Usibelli Coal mine fuels 30 percent of Interior Alaska's electricity. Mining operations are the most significant taxpayers for the Northwest Arctic, Fairbanks North Star, Denali and Juneau Boroughs and the City of Nome. Mining development, exploration and operations are becoming an increasing part of Alaska Native Land Claims Settlement Act (ANCSA) corporations' portfolios.

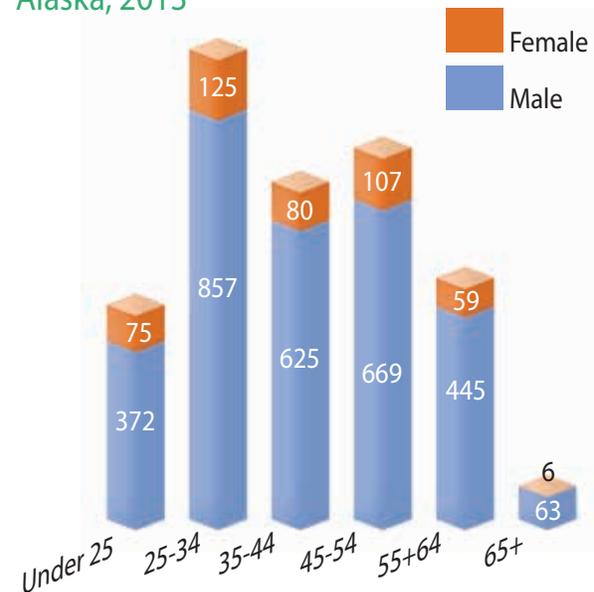
<sup>2</sup> Ibid

## Employment

Jobs in the mining industry more than doubled between 2001 and 2013, with increases in gold mining responsible for most of the growth<sup>3</sup>. Wages have also shown considerable growth, up 22 percent between 2002 and 2011 compared to an eight percent growth during the same period for all private sector wages. The average annual wage for a mine worker in 2012 was around \$100,000, second only to oil and gas workers and twice the state average. The mining payroll accounts for 2.1 percent of the state's total private sector wage bill.

The current resident mining workforce is mostly male, with women workers making up only 14.9 percent of the total. Age distribution of resident workers is fairly evenly distributed, with around 60 percent under the age of 45.

### Resident Mining Workers by Age, Sex Alaska, 2013



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

However, there is considerable aging of the higher skilled workforce; for example 47.1 percent of mechanics, 51.1 percent of mining materials engineers and 65.4 percent of mining machine operators are 45 years of age or older. The mining workforce is made up largely of technicians (about 85 percent), with the remainder in professional and managerial positions.

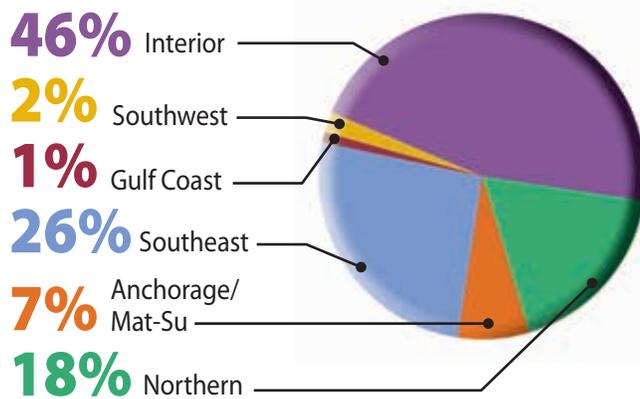
Over one-third of the current workforce (38 percent) is from out of state, partly due to the fact that there is a lack of workers in the state who are trained to fill vacancies and partly because mining companies are often based in other states and countries and benefit from using their existing workers rather than rehiring locally.<sup>4</sup>

<sup>3</sup> Wage and employment data in this section are taken from AWOLWD sources.

<sup>4</sup> Alaska Department of Labor and Workforce Development, *Alaska Economic Trends*, May 2013, p. 8

Most mining jobs are in remote regions of the state, requiring workers to commute. Currently, in-state mine workers reside in 120 communities, half of which are in rural Alaska. Rotation schedules which allow for blocks of off-time in home communities make mining positions compatible with subsistence activities. The remote locations, however, can also lead to a high turnover rate. Attrition in on-going mining operations averages about 5 percent per year but may reach as high as 20 percent in some more remotely-located sites.

### Mining Employment Alaska, 2013



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

Mining utilizes many of the same skills as construction and other resource development projects. This commonality has several consequences. While mining companies face competition for employees from these other industries, trained workers can move fairly easily from one industry to another, with limited on-the-job training in the equipment or processes particular to a specific project. This latter consequence can be important in rural areas of Alaska, where much of the new mine development is taking place. Many village residents have had some training for local construction and/or facility maintenance and waste water treatment positions, creating a pool of labor that could transition into mining jobs.

The mining Industry workforce has several defining characteristics:

- Mining occupations range from low-skill entry-level jobs such as haul truck driver to high-skill, complex jobs such as mining engineer or jumbo drill operator.
- Many types of disciplines are employed, some very mining specific such as blaster or metallurgist and some with little difference from other industry, such as accountant or administrative assistant
- Mining positions have varying training requirements, from short-term training in basic safety and mining orientation to multi-year degree programs, including the doctoral level

- The different phases of a mining operation from early exploration to design and permitting to construction to operation to reclamation have different staffing requirements, although some jobs are needed across all phases
- Staffing for production varies from very short or seasonal operations to long-term operations lasting decades or even centuries.
- Careers vary from itinerant work at many sites to life-long stable jobs at one mine.
- Operations range from historical “find it, dig it, crush it, refine it” to modern technologies involving new exploration, separation and reclamation methods with state of the art instrumentation and science.

### Future



Mining is poised to play an even more major role in the state's economy than it does today. At present, there is considerable exploration and development activity occurring in many areas of the state (see Figure 1, map), with reported expenditures in 2012 of \$335.1 million and \$343.4 million respectively for exploration and development. As of fall, 2014, the Donlin Gold project is in the draft environmental impact statement stage of permitting while the Pebble Project is engaged in environmental baseline studies. Bokan-Dotson Ridge and Niblack projects have both been authorized to receive financial assistance from the Alaska Industrial Development and Export Authority. In addition to new projects coming on-line, several currently operating mines are engaged in exploration and development and/or have extended the projected life span of their operations. Fort Knox has submitted a request to the Bureau of Land Management to expand its mine into surrounding federal lands. Kensington gold mine is undergoing additional surface exploration. Usibelli plans to open the Jumbo Dome mine in 2014. Pogo is expected to continue operating past its

## Mining Exploration Timeline



## Mining Production Timeline



originally projected 2019 life span and Red Dog is expected to produce from current deposits until 2031.

The mining exploration timeline from the identification of mining potential to mine operation is considerable, making it difficult to predict with pin-point accuracy what the future holds in terms of employment. As noted in a recent (October 2014) publication by the Alaska Department of Labor and Workforce Development (ADOLWD):

Because [mining] projects have such a volatile relationship with their respective commodity prices, financing, global economic fluctuations and environmental regulations, it's impossible to predict which projects will proceed. The outlook for the industry is positive but a significant decline in mineral prices would change that picture.<sup>5</sup>

However, a survey of operating and proposed projects conducted by the Alaska Miners Association in 2013 suggests that over the next decade the industry could add 2,000 jobs.

ADOLWD projections—which are based on a variety of factors including historical trends, expected economic changes, Alaska and U.S. population projections and other industry-specific variables such as knowledge of planned projects—are lower, but even these projections indicate a 24.8 percent increase in employment from 2012 to 2022.

## AMA WFD Planning Process

Faced with the challenges of attrition and aging within the current workforce, competition from the global mining industry as well as other resource development

industries in Alaska and the increased demand from new mining projects across the state, the mining industry, through the Alaska Miners Association (AMA), embarked on a workforce development planning process. A Mining Industry Workforce Development Symposium in November 2011 kicked off planning by bringing together industry, education providers and government agencies to identify



workforce development issues and share information about resources that could contribute to the planning effort. In 2012, the Human Resources (HR) Committee of AMA recommended that the association undertake an industry workforce development strategy and prepare a plan with collaboration from all stakeholders: operating mines, projects and independents along with training providers and state agencies.

The AMA HR Committee, which was given responsibility for overseeing the process, unveiled the Mining Workforce Development Initiative at the Spring 2013 AMA meeting. The committee has met regularly since early 2013 and has accomplished the following:

Figure 7: Growth for Next Decade

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total Jobs	2102	2237	2400	2595	2595	2615	3115	3395	4395	5395
New		135	166	195	10-20	500	300	1000	300	1000
Attrition		116	121	133	135	130	131	156	170	219
Total Hire		251	287	328	155	630	421	1156	470	1219

<sup>5</sup> ADOLWD, Alaska Industry Forecast, 2012 – 2022, Alaska Economic Trends, October 2014, p. 6

- Conducted a basic needs assessment for operating mines and proposed projects that resulted in information about current attrition rates, proposed hiring timelines and numbers of employees anticipated, by occupation
- Identified priority occupations from those comprising the largest part of the workforce and the most difficult to fill
- Assessed current capabilities in the state for training for priority occupations
- Conducted a survey for best practices in recruitment and retention
- Prepared this workforce development plan for distribution to the industry, training partners and state agencies.

## Workforce Development Goal and Vision

The goal of the *Alaska Mining Workforce Development Plan* is to assure that a well-trained workforce is available to staff current and planned mining operations in the state.

In preparing the plan, the AMA HR Committee was guided by the following vision.

- The mining workforce will be composed largely of Alaskans at all levels of employment within the industry, with an emphasis on regional and local hire
- The mining workforce will be diversified, reflecting the population of the state
- Mining workforce training programs will stress soft skills (work readiness) and safety as well as technical skill development
- Mining workforce development will be a cooperative effort among industry, public and private training providers, state and local governments and Alaskan Native partners
- Mining workforce development will be coordinated with other process industry/resource development workforce efforts

## Needs Assessment

The AMA workforce assessment completed in 2013 focused on mining operations jobs although some skills for operations jobs are similar to those needed in other phases of a mining project. Mining-specific jobs in exploration



were included in the assessment but not construction jobs as several assessments for that industry have been made by other entities. The needs assessment was based on the current mining workforce for six large mining operations and on the projected workforce for eight major projects. Coal was included but sand and gravel operations were not, although there are a number of jobs in these operations that are the same as the mineral mining operations.

The operations workforce differs for underground and surface mines for many jobs but most have some common skill needs. Major categories include process operators, equipment operators and maintainers, mine engineers and geologists, and mine-site support functions from catering to security and safety personnel. For gathering data on both current and future workforce needs, 49 occupations common to the mining industry were selected from a list of several hundred.

## Findings

Workforce data was provided by all of the currently operating underground and surface mines, including coal. Data for the current operations showed a high level of local resident hire for low-skill or transferrable skill jobs from other industries, such as equipment operations, drilling and maintenance. Projects often need to import skilled workers for the high-skill and mining-focused jobs, such as metallurgists, experienced underground miners and mining engineers. Attrition for the current operations averaged 5 percent per year although the range was from one to 20 percent over the last three years.

From the data, a list of high priority occupations was developed based on workers needed in large numbers and those with special skills and short supply (Figure 8). Taking

into account attrition in operating mines and projections for new mine start-up there is an estimated need for over 200 new workers from all categories by 2015. In the following seven years (2015-2022), planned new major project start-ups are estimated to require almost 2,000 new workers for operations.

**Figure 8. Priority Occupations**

**Based on numbers in the current and projected workforce**

Underground Miners

Mill Operators

Drillers and Blasters

Mechanical Maintenance

- Millwrights
- Diesel Mechanics

Haul Truck Drivers

Equipment Operators

**Based on difficulty to recruit**

Electrical and Instrumentation Maintenance Technicians

Mining Engineers

Mechanical Engineers

Geologists

Metallurgists/Metallurgy Technicians

Geological, Chemical and Environmental Lab Technicians

Health and Safety Specialists

Permitting Specialists



The two classes of identified priority occupations have several distinct characteristics which have implications for workforce development strategies. For example, while mining experience is always looked for in the occupations most utilized in the workforce (Column 1 in Figure 8), these jobs all have entry-level positions. Many of these positions are also similar to those found in construction and other resource-related industries. These large-number occupations account for around 80 percent of the workforce. On the other hand, most of the occupations that are difficult to fill (Column 2, Figure 8) have degree and experience requirements and several have a heavy mining focus. Development of this workforce will require a much longer-term effort.

## Resourcing

All of the operating mines have strategies to utilize as much local /regional hire as possible. Currently, mining entities have around 62 percent Alaskan hire according to 2012 ADOLWD data. The intent of all of the mines surveyed is to have an Alaskan workforce dominate the direct workforce and to utilize suppliers and other in-directs with Alaskan employees. Since the state does not have a large workforce trained for the direct jobs with mining-specific skills, training for local, regional and state residents will be a needed step in staffing.

For large projects with major construction efforts, a resource for the operations workforce will be to utilize a number of the personnel from construction who have the same skills set as workers in operations. A key for the mining companies will be to influence recruitment and training of local residents for both construction and operations (legacy) jobs.

## Training Assessment

Training providers were identified and contacted to provide information on current and planned programs. The University of Alaska (UA) has a number of programs that are key to building a workforce, including the UAF College of Engineering and Mines which prepares professional-level career employees and the Mining and Petroleum Training Service (MAPTS) unit which focuses on safety and entry-level training. The University is working to align its current mining-related programming and to expand into new areas of needed training. To spearhead this effort, UA President Gamble established the system-wide Consolidated Alaska Mining Initiative (CAMI), aimed at meeting the skilled workforce needs of the mining industry. Two recent events have greatly increased the University's ability in this area:

- In early 2014, UA and Yukon College signed a memorandum of agreement for MAPTS training at the Delta Mine Training Center in Interior Alaska. The Center features an underground mine, rock and gravel quarries, one hundred acres of training area, and equipment and machinery necessary for modern mining and construction training. The partnership with Yukon College provides MAPTS the ability to jointly develop and test the curriculum, establish a lease of the Delta facility and build capacity to provide long-term Alaska-based training. In addition, Yukon College has agreed to allow MAPTS the continued use of their two large capacity simulators that will remain located at the Delta facility. The use of an actual underground mine facility allows students the necessary hands-on skills training combined with the camp life experience.
- Through CAMI member efforts, a major new training resource became available in Fall 2014 with a grant to UA under the U.S. Department of Labor Trade Adjustment Assistance Community College and Career Training (TAACCCT) program. With grant funding, an in-state consortium comprised of UAF College of Engineering and Mines, UAA, UAS and MAPTS will develop or expand programs for the positions of Mill Process Operator, Underground and Surface New Miner and Mine Mechanic. UAF will also use the funding to create a mill process simulator, a training tool that does not exist anywhere in the world.



Other training providers in Alaska offer preparation for some of the occupations. A list of current training programs that match the occupations identified as high priority is found in the Priority Occupations section of this plan. Since some of the identified programs are generic, they may not fit a particular company. An example

would be the process technology program at UA sites which provides many skills relevant to mill operators but is not sufficiently oriented to mining operations. A more specific mill operator program is being created under the TAACCCT grant referenced above. An important role for mine operators is to work with the providers to assure that industry standards are met and the training is relevant for Alaskan operations.

For some jobs, degrees or certifications from training programs are prerequisite of mining companies. However, for operations and maintenance workers, the federal government requires the addition of MSHA certification of worker competence assessed by the mining operator. For example, a prerequisite for a “hauler” is training on haul-truck operation but the company is responsible for certifying the hauler on the specific trucks used by that mine (task training).

While Alaskan training and education institutions have a number of programs that can prepare Alaskans for most of the entry level positions in the various mining occupations, there are some gaps, in terms of both programs—such as metallurgists—and in numbers of “graduates” from the program—such as machinists, mechanics, and geotechnologists.



With these few exceptions, the larger issue with the current training picture in the state is not availability but access. For many of the priority occupations, training may be offered but at a site that requires relocation by a potential employee. Such relocation can be expensive not only in terms of financial outlay but also in time away from family and often results in the student dropping out of the training before completion. Providing training at multiple locations throughout the state is a more efficient way of meeting workforce needs. Because most of the priority occupations identified for the mining industry have strong skill commonalities with those of construction and other resource development industries, providing a generic training program regionally could serve the needs of many employers.

The initial phases of any project will need to have readily available, skilled workers to fill the jobs but short-term training on or near-site for local workers may be appropriate with plans to bring on trainees early to fill in the gaps as attrition occurs. Most local regions have a number of workers with appropriate skills who live in many villages and towns across the region, although few have mining experience. Training providers such as MAPTS can be utilized for short, “just-in-time” pre-employment programs to move these experienced workers quickly into mining jobs.



# development strategies

Based on the needs assessment, input from industry gathered at the workforce symposium and other industry events and a review of workforce development plans from other industries, the AMA HR Committee selected six major workforce development strategies for emphasis.

## Career Awareness

### *Strategy 1.0: Increase awareness of career opportunities in the mining industry*

**Rationale:** Many Alaskans have a “pick and shovel” view of the mining industry shaped by its role in the history of the state. Not all recognize that today’s mining industry is highly technological and committed to environmentally-responsible resource development. Mining offers a wide range of long-term careers in almost all regions of the state. Young people especially need a clear picture of the careers available in mining and the skills needed to access these careers. Because mining projects utilize a cross-section of skills such as construction, heavy machine operation and mechanics, it can provide opportunities for returning veterans and other adults with prior training and experience in other industries to secure employment in or near their communities.

### *Strategy 1.1: Increase K-12 student awareness of and preparation for employment in the mining industry.*

#### Action Steps

- Develop/disseminate informational materials on careers in mining with attention to women, rural students and other under-represented groups
- Identify and share with school districts industry

standards and appropriate outcomes for secondary training programs, including academic preparation and work-readiness skills

- Work with ADOLWD to gather and align workforce data to leverage existing career exploration tools such as the Alaska Career Information System (AKCIS)
- Support exploratory programs such as mine tours and job shadowing
- Provide student intern and teacher extern opportunities
- Support efforts of other groups that provide career awareness in related fields, such as the Construction Education Foundation, Alaska Process Industry Careers Consortium (APICC), Alaska Resource Education (ARE) and the Alaska Native Science and Engineering Program (ANSEP)

### *Strategy 1.2: Increase awareness of jobs in the mining industry among adults and out-of-school youth*

- Develop communications strategies directed at target adult audiences
- Provide regional outreach to identify and recruit adults, including returning and retiring veterans, into jobs or training programs
- Cooperate with workforce efforts of other industries to develop and provide training in safety, work ethics and basic workforce readiness locally and on-line
- Participate in efforts to increase awareness about choices that may impede employment, such as drug use and criminal records
- Encourage prevention programs and support services to overcome barriers

**Resources:**

- Career awareness materials
  - Alaska Resource Education (ARE) career cards
  - Pebble and Donlin Mining Careers materials
  - APICC website and materials
  - AKCIS/ALEXsys
- Career Awareness models
  - Construction academies
  - Summer career academies
  - Pathways to Mining Careers (Mining 101) at UAS
  - APICC Teacher Externship program
  - King Career Center Natural Resources Management course
  - Alaska Technical Center magnet program in mining for NANA region secondary students
  - YUUT/MAPTS intensive course
  - EXCEL Alaska Academic and Trades Decathlon
- Agencies/Organizations
  - ADOLWD
  - Alaska Department of Education and Early Development (ADEED)
  - Alaska Department of Commerce, Community and Economic Development (ADCCED)
  - AMA
  - Council of Alaska Producers (CAP)
  - University of Alaska
  - ARE
  - Construction Education Foundation
  - ANSEP
  - APICC
  - MAPTS
  - Business Education Compact
  - Regional training centers
  - School districts

**Responsible parties:** Industry, ADEED and ADOLWD, local school districts

**Evaluation:** Evidence that awareness materials have been developed and are being used; outreach programs in communities affected by proposed and operating mining projects have been established.

**Engagement***Strategy 2.0: Engage Alaskans in mining workforce development*

**Rationale:** Timely and accurate information about the labor demands of mining projects—both proposed and operating—is needed throughout the state but especially in regions that host the projects. Such information is important not only to encourage employment in the industry but also to develop and support the policy and fiscal initiatives necessary to address critical workforce shortages. Because mining shares with several other industries demand for a host of skills, collaboration rather than competition is essential.

**Action steps**

- Conduct an effective public awareness campaign
- Identify local and regional stakeholders, including government, businesses, Alaska Native regional and village corporations and educational institutions
- Develop awareness materials targeted to stakeholders and shareholders
- Continue to enhance the industry's presence with the Alaska Legislature
- Engage industry representatives in state and regional economic development and workforce planning through the Alaska Workforce Investment Board (AWIB), borough planning committees and other state and local efforts

**Resources**

- AWIB
- ADOLWD
- ADCCD
- APICC
- ARE
- Industry informational materials
- Other process industry/resource development advocacy groups

**Responsible parties:** Industry, state labor and economic development agencies, natural resource development advocacy groups

**Evaluation:** Evidence that awareness materials have been developed and are being used; stakeholder/shareholder outreach programs have been established in regions affected by proposed/operating mining projects; industry is engaged on local, regional and state workforce planning efforts.

## Career Pathways

### Strategy 3.0 Establish and support Career Pathways in Mining

Rationale: Accessing a career in today's mining industry can be complex. Choices made early on in a student's education may limit future options; for example, training for higher-skilled jobs in the industry requires a strong background at the secondary level in math and science. Securing employment at any level requires good work-readiness skills. Students need a clear road map to navigate their route from school to the workplace, a roadmap that begins as early as middle school. Career pathways are designed to provide this roadmap and to allow a student to transition easily from one academic level to another and eventually to employment in a selected career. Research indicates that adding career and technical coursework can increase high school completion rates and that students who have a mix of academic and career education in high school are more likely to continue to postsecondary education/training than those who take the general course of study.<sup>6</sup>

There are four major components to a career pathway:

- Career exploration activities, such as summer camps, field trips, guest speakers, Intro to Mining 101 and other career awareness courses
- Access to career development and goal setting activities, such as creating a personal learning and career plan and industry mentors
- Aligned secondary and postsecondary programs of study with work based learning opportunities such as summer internships and practicums and college preparedness activities.
- Professional development through partnerships with teachers and faculty, getting teachers and faculty into the field, curriculum development for learning outcomes that align with industry expectations.

Work on developing career pathways has already begun. In April 2014, a statewide cross sector steering group was established to oversee the development and sustainability of a Career Pathways resource repository. The group met in September 2014 to discuss the mining occupations in highest demand for Career Pathway development. The group considered the priority occupation list created from the industry Needs Assessment (see Figure 8) and determined that the best approach would be to develop career pathways for four broad career clusters that incorporated most of the priority occupations. The four clusters and related occupations are seen in Figure 9.

<sup>6</sup> Plank, Stephen, Stephanie DeLuca, and Angela Estacion, *Dropping Out of High School and the Place of Career and Technical Education* (St. Paul: National Research Center for Career and Technical Education, University of Minnesota, 2005).

Figure 9. Career Clusters

#### Heavy Equipment Operations

Underground Miner

Drillers and Blasters

Haul Truck Drivers

Equipment Operators

#### Maintenance Technicians

Millwright

Diesel Mechanic

Electrical and Instrumentation

#### Process Technology

Mill Operator

#### STEM Engineering

Mining Engineer

Mechanical Engineer

Geologist

Metallurgist

Metallurgy, Chemical, Geological and Environmental Lab Tech

As can be seen, the clusters include occupations that are needed across many industries. Thus, the career pathways provide multiple career opportunities to students. This flexibility is particularly important for the mining industry where the uncertainties occasioned by volatile world commodity prices and the long exploration and permitting process make precise employment projections difficult. A pool of workers who have the skill set to move from job to job with minimal on-the-job training not only serves the industry but also helps to alleviate down time for individual employees.

Action steps needed to complete the career pathways

- Provide industry/employer advice to educators on the technical and employability knowledge, skills, abilities and competencies required at the high school level for entry level jobs in the identified career clusters
- Provide industry/employer advice to educators on the technical and employability knowledge, skills, abilities and competencies required at the postsecondary program of study completion level
- Convene a cross sector stakeholder planning meeting for developing a network, identifying a backbone organization and assigning work groups to build various components of the Career Pathway
- Identify a pilot region for implementing the Career Pathway that best suits the needs of the region's economy, employers and communities

- Disseminate completed career pathways
- Encourage state funding for secondary CTE programs that focus on career pathways
- Support local school districts and post-secondary training providers in implementing career pathways by providing informational materials, awareness activities, student internships and teacher externships

#### Resources

- UA system
- ADEED
- Local school district career pathway models
- Other process industry/resource development career pathways

**Responsible parties:** University of Alaska, ADEED, industry, local school districts, regional training centers

**Evaluation:** Career pathways for career clusters are in place and being used in secondary and postsecondary career preparation and training programs

## Training

### *Strategy 4.0: Train Alaskans for mining industry employment*

**Rationale:** The scope and duration of modern mining projects require the creation of an effective pipeline that allows Alaskans interested in careers in the industry to acquire the necessary skills, transition easily from training to work and move from entry-level to higher-skilled positions. Creating this pipeline requires collaboration with other industries; coordination of training resources among the various training providers; alignment of training with industry standards; and developing robust career ladders within the individual projects. The projects themselves provide valuable training sites through internships, apprenticeships, mentorships and career ladders, all of which require adequate internal resourcing of staff time and money.

#### Action steps

- Focus on priority occupations identified in the needs assessment
- Assist UA with the development and implementation of programs/activities under the TAACCCT grant
- Identify and share with UA campuses and other training providers industry standards and appropriate outcomes for training programs
- Identify and share promising practices in industry for training
- Advocate support for the regional training center network in the state
- Assure that health and safety issues are adequately covered in all training programs



- Encourage trainers to offer training at local sites, where feasible
- Collaborate with other groups (oil and gas, construction) to strengthen programs in cross-over occupations
- Expand postgraduate opportunities in research and externships
- Encourage projects to include support for in-house apprenticeships, mentorships and career ladders in annual operating budgets
- Require construction contractors to provide trainee slots
- Utilize support companies as a training ground for local employees (camp support, security, safety, logistics)
- Help establish local suppliers
- Target and optimize the use of tax incentives to increase qualified Alaskans in mining occupations
- Provide a centralized site for scholarships, program support, intern/externship opportunities
- Advocate for sufficient funding and adequate resourcing of programs for priority occupations

#### Resources (examples)

- Training Providers
  - University system
  - Regional Training Centers
  - Private training and education providers
  - Industry
  - Labor Unions
  - Equipment manufacturers and suppliers
- Models
  - North Slope Training Cooperative (NSTC)
  - ATC
  - UA and Yukon Territories joint program at Delta Mine Training Center
  - Canadian Models such as the British Columbia Aboriginal Mine Training Association( BC AMTA)
- Funding
- Individuals
  - Alaska Performance Scholarships
  - Tribal grants and scholarships
  - Individual Training Accounts through the Workforce Investment Act (WIA)
  - Company-funded scholarships

- Industry
  - Education Tax Credits
  - Work Opportunity Tax Credit
  - Federal and State veterans-hire tax credits

**Responsible parties:** University of Alaska, regional training centers and other providers; ADOLWD, mining and other resource development industries

**Evaluation:** Training programs that meet industry standards are in place and are readily accessible; processes are established to track student enrollment, success, persistence, completion and placement; methods are in place to assess student and employer satisfaction with training



## Retention and Employee Development

### *Strategy 5.0: Retain and develop the incumbent mining workforce*

**Rationale:** Securing an adequate workforce is only part of the equation. Equally important is keeping the workforce in place. Employee turnover at any level is costly, but especially so in higher-skilled positions. Industry estimates of direct and indirect costs of turnover for an hourly employee are equal to 57 percent of annual compensation<sup>7</sup>. Costs for highly skilled positions can be even greater. The emphasis of most mining projects on local hire necessitates creation of a positive work environment that respects the culture of the region. Work-based training that allows upward movement on a career ladder provides an incentive for employees to make a long-term commitment to a company or project.

<sup>7</sup> Alaska Miners Association Workforce Development Committee survey of employers, 2012

### Action steps

- Support and disseminate effective orientation programs for new employees
- “Grow your own” by offering internships and career ladders for hard-to-fill positions
- Provide career advancement opportunities and training
- Promote positive work environments
  - Culturally sensitive
  - Flexible work schedules/rotations
  - Create a sense of belonging
  - Community investment
- Improve coordination among industry players to foster cooperation rather than competition
- Identify and disseminate promising practices for engaging and developing local businesses for support functions

### Resources

- Models
  - Hourly Tech Progression
  - Red Dog Millwright training in conjunction with Alaska Technical Center
  - Industry best practices

**Responsible parties:** Industry

**Evaluation:** Turnover rates especially in hard-to-fill positions are reduced to an acceptable level; effective orientation programs are in place; internal career ladders are developed and implemented.



## Collaboration for Sustainability

*Strategy 6.0: Promote the involvement and collaboration of industry, training providers and funding agencies in implementing and sustaining the Alaska Mining Workforce Development Plan.*

**Rationale:** Implementing the action steps outlined in this plan is beyond the scope, authority or resources of any one industry player, government agency or educational institution. Building an effective, predominantly Alaskan mining workforce requires the energy and coordinated effort of many actors from both the private and public sectors of the state. Private employers not only in mining but in other natural resource development industries need to provide accurate workforce demand data as well as clear standards, expertise, equipment and material resources for training programs. Government agencies need to contribute fiscal resources and policy direction to support training. Finally, educational agencies at all levels need to offer programs that provide articulated pathways from school to work in the variety of careers available in the industry.

### Action steps

- Submit the plan to industry for review and approval
- Present the plan to AWIB
- Continue industry support for the AMA HR committee
- Engage the state education, labor and economic development agencies to coordinate government action needed to implement and sustain workforce development efforts
- Work with UA and other training providers to implement areas within their expertise
- Continue industry liaison with the Alaska Legislature to help secure necessary state funding and policy commitments to workforce development
- Work with the ADOLWD to align employment data on a regional level to more closely meet industry needs

### Resources

- AWIB
- State labor, education and resource development agencies
- University of Alaska
- Regional training providers
- Business industry group
- State and federal training program funds

**Responsible parties:** Industry, UA and other training providers, AWIB, ADOLWD, ADEED, ADCCED, school districts

**Evaluation:** Evidence that industry, government and educational agencies are involved in plan implementation.



# priority occupations: specific strategies

As mentioned above, the Career Pathways steering Group analyzed the 14 priority occupations identified in the needs assessment and decided that grouping the occupations into career clusters was the more viable option for developing pathways. This decision was based in part on the similarity of many of the occupations to those in other industries. This commonality has significant implications for workforce development strategies in that a variety of existing training programs can be utilized with limited additional content or on-the-job training needed to develop a productive mine worker. The following strategies by occupation stress the need for coordination of and cooperation among industries and training partners to best utilize the scarce training resources of the state.

## Heavy Equipment Operation

This job cluster includes positions held in both underground and surface mining operations. A typical progression system for an underground miner would be entry level, haul truck driver, mucker operator, bolter operator, to jumbo drill operator. The similar progression system for surface miners would be entry level, haul truck driver, load operator, blaster and shovel operator. Employees can advance in their pay scale and position based on skill, on-the-job training, competency/proficiency and performance.

Training opportunities for heavy equipment operations occupations are available through a variety of in-state training providers, including the University of Alaska campuses and regional training centers.

### Heavy Equipment Operations

#### Underground Miners

Training	UA	Other
Certification	MAPTS, MSHA Simulators, Delta Mine Training Center, UAS	Company OJT

#### Drillers & Blasters

Training	UA	Other
Certification	MAPTS Coal Blasting	

#### Haul Truck Drivers

Training	UA	Other
Qualified on Equipment by Company	MAPTS simulators	NIT, Center for Employment Education Driving Courses

#### Equipment Operators

Training	UA	Other
Qualified on Equipment by Company	MAPTS simulators	Equipment Manufacturers NIT, KCC simulators Operating Engineers

### Underground Miner

**Job Description:** Underground miners oversee the safe operation of underground mining equipment including haul trucks, muckers, mechanized bolters, jackleg drill, forklifts,

shotcrete equipment and tractors. Underground mine service and support workers perform a range of duties related to the operation of ore-passes, chutes and conveyor systems, the construction and support of underground structures, passages and roadways, and the provision of materials and supplies to support underground mining. Underground miners may also serve as drillers and blasters.

**Education and training needed:** High school diploma or GED; secondary CTE coursework preferred

Occupation-specific action steps

- Encourage career awareness, such as the Mining 101 course offered at UAS and the Natural Resource Development class at King Career Center
- Provide industry standards and support for the training programs delivered by MAPTS, Delta Mine Training Center and UAS, particularly the new and expanded programs under TAACCCT funding
- Encourage delivery of at least a portion of training regionally/locally



## Drillers and Blasters

**Job Description:** Drillers safely operate a variety of both horizontal and vertical drilling equipment for boring holes to extract core samples during mining exploration and to facilitate the use of explosives in mine operations. Blasters place and detonate explosives to loosen, remove or displace earth, rock or other material in the mining process. Blasters may also be responsible for the specialized handling, storage and accounting procedures needed to assure that all safety and national security measures relating to explosives are met.

**Education and training needed:** High school diploma or GED; apprenticeship preferred; certification of fitness for explosive handlers.

Occupation-specific action steps

- Encourage career awareness, such as the Mining 101 course offered at UAS and the Natural Resource Development class at King Career Center
- Increase apprenticeship opportunities
- Include financial support for apprenticeships in operations budget

## Haul Truck Drivers

**Job Description:** Haul truck drivers operate haulage equipment to transport and dump ore and waste. Haul truck drivers must have the ability to monitor truck operations, recognize, report and avoid hazards, and carry out assignments to achieve safety and production goals.

**Education and training needed:** High school diploma or GED; Haul Truck Driver Certification preferred.

Occupation-specific action steps

- Support generic curriculum delivered regionally that can be tailored to local circumstances in partnership with the local mine

## Equipment Operators

**Job Description:** Equipment operators drive a wide range of heavy equipment used in the mining process such as tractor-trailer combinations, loaders, graders, excavators, dozers, forklifts, mobile cranes, large capacity shovels and trucks.

**Education and training needed:** High school diploma or GED; vocational training preferred

Industry-specific action steps

- Support generic curriculum delivered regionally that can be tailored to local circumstances in partnership with the local mine

## Maintenance Technicians

This job cluster is responsible for the maintenance of all types of equipment used in the mining process. Millwrights deal with stationary equipment used in the processing plant. Diesel mechanics care for the mobile equipment used at the site. Electrical and instrumentation maintenance technicians maintain the electrical and other equipment associated with the mining process.

Training opportunities for maintenance technicians are available from a variety of in-state training providers, including the University of Alaska campuses and regional training centers.

### Maintenance Technicians

Millwright (stationary equipment/ mechanical maintenance)		
Training	UA	Other
Certification AAS	PWSCC NCCER UAS Mechanical Maintenance OE	ATC (Red Dog)
Diesel Mechanic (mobile equipment)		
Training	UA	Other
Certification	UAF/UAA/ UAS	AVTEC, Equipment Vendors
Electrical (and Instrumentation) maintenance techs		
Training	UA	Other
Certification or AAS	UAA(KPC), UAF	AVTEC, Job Corps

### Millwright

**Job Description:** Millwright mechanics maintain and repair stationary equipment located in a mine processing plant. Duties include trouble shooting, diagnosing, modifying, fabricating and repairing crusher equipment such as cone crushers, gyratory crushers, conveyors, feeders, ball mills, pumps and piping systems.

**Education and training needed:** High school diploma or GED; apprenticeship or technical training

Industry-specific action steps

- Increase internship opportunities and internal career ladders
- Include financial support for apprenticeships in operations budget
- Align millwright training programs across UA campuses and regional training centers
- Support an Occupational Endorsement in mechanical maintenance that can be delivered regionally, tailored to the local mining operations equipment and processes

## Diesel Mechanic

**Job Description:** Heavy-duty equipment mechanics repair, troubleshoot, adjust, overhaul and maintain mobile heavy-duty equipment used in either underground or surface mining. Equipment includes electric shovels, haul trucks, drills, bolters, graders, dozers, tractors and light vehicles.

**Education and training needed:** High school diploma or GED; technical college or trade school diploma

Industry-specific action steps

- Align diesel mechanic training programs across the state
- Encourage delivery of training regionally
- Address the capital-intensive nature of the training by providing equipment for training locally
- Provide apprenticeships for specific equipment
- Include financial support for apprenticeships in operations budget

## Electrical and Instrumentation

**Job description:** Electrical and instrumentation technicians troubleshoot, maintain and repair electrical and associated equipment in a safe, environmentally responsible and timely manner. These technicians install or service lights, communications systems or a variety of electrical control systems within a mine.

**Education and training needed:** High school diploma or GED; apprenticeship and/or vocational certification

Industry-specific action steps

- Assist training providers to develop a generic program utilizing the national curriculum based on industry standards for electrical maintenance, followed by apprenticeship within the industry
- Include financial support for apprenticeships in operations budget



## Process Technology

Process technology refers to the use and control of mechanical, physical, or chemical processes to produce a final product. In Alaska, this includes the process industries of oil and gas production; mining; power generation and utilities; water and wastewater treatment; and seafood and other food processing

The primary training program for process technology workers is the process technology certificate and associate degree offered by the UA system. However, with the new funding from TAACCCT, UAF will develop a mill operator certificate specific to mining.

### Process Technology

Mill operators		
Training	UA	Other
Certification AAS	MAPTS UAA/ program UAF, UAA, KPC (Process Tech)	ATC, Yukon & BC Programs  Company OJT

### Mill Operator

**Job description:** Mill operators are responsible for operating all areas of the mill with minimum supervision to ensure maximum throughput and recovery while maintaining the lowest practical level of consumable material usage. Mill Operators work with gyratory, standard and short-head crushers, feeders, pumps, screening plants and conveyors as well as dust control systems. They also operate dozers and related heavy equipment.

**Education and training needed:** High school diploma or GED; experience or training in flotation and mineral processing



Occupation-specific action steps

- Align Mill Operator programs across campuses and training centers
- Assist the University of Alaska in developing and delivering the new Mill Process Operator Occupational Endorsement
- Support regional delivery of training tailored to the needs of local mining operations

## STEM/Engineering

STEM occupations require a strong background in science, technology, engineer or math. Engineering refers to those occupations that apply scientific and mathematical principles to practical ends such as the design, manufacture, and operation of efficient and economical structures, machines, processes, and systems. Several types of engineers are involved in mining operations: mining, mechanical, geological, electrical, metallurgical, chemical, environmental and civil.

### STEM/Engineering

Mining Engineers	
Training	UA
BS	UAF
Mechanical Engineers	
Training	UA
BS	UAF, UAA (ANSEP)
Geologists / Geomatics	
Training	UA
BS / MS / PHD	UAF, UAA
Metallurgists	
Training	UA
MS	UAF Mineral Preparation Engineering degree
Laboratory Technologists: Metallurgy, Chemical, Geo, Environmental	
Training	UA
AAS, BS	UAF, UAA, UAS science courses

### Mining Engineer

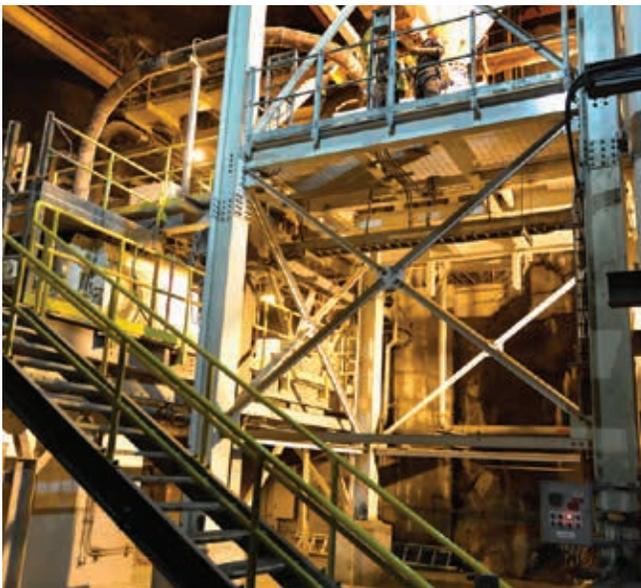
**Job Description:** Mining engineers help plan, design and build new mines. They also manage and control the activities of existing mines. Engineers are responsible for designing, implementing and coordinating all aspects of mine development and safety.

**Education and training needed:** High school diploma or GED; bachelor degree in mining engineering

Industry-specific action steps

- Work with UAA to add a mining track to ANSEP and Rural Alaska Honors Institute (RAHI) summer institutes
- Continue to support the mining engineering program at UAF by assisting with program review and revision and developing internships
- Assist regional mining engineering students with scholarships
- Include support for internships in annual operating budgets

## Mechanical Engineer



**Job Description:** Mechanical engineering is the branch of engineering that involves the design, production, and operation of machinery and tools. Mechanical engineers design, develop, build, and test mechanical and thermal devices, including tools, engines, and machines. Mechanical engineers apply the principles of engineering, physics and materials science for the design, analysis, manufacturing, and maintenance of mechanical systems.

**Education and training needed:** High school diploma or GED; bachelor degree in mechanical engineering

Industry-specific action steps

- Support mechanical engineering and other specialized degree programs offered by the UA system
- Assist regional engineering students with scholarships and internships
- Include support for internships in annual operating budgets
- Add mining content to curriculum where appropriate

Alaska Miners Association Human Resources Committee

## Geologist

**Job Description:** Geologists/geological engineers play a part in all aspects of mining exploration, discovery, evaluation and production cycles. During exploration, geologists are responsible for finding new material sources that will become the mines of the future. On the mine site, the geologist is responsible for daily control over the mining activities, assuring that the miners are in the right places, that good sampling is carried out and that the mine is on the right track.

**Education and training needed:** High school diploma or GED; bachelor degree in geologic engineering or geology

Occupation-specific action steps

- Support geology/geologist engineering degree programs offered by the UA system
- Assist regional geology students with scholarships and internships
- Include support for internships in annual operating budgets

## Metallurgist

**Job Description:** Metallurgists extract and refine valuable materials from raw ore using sophisticated processes and new technologies. They also work to protect and restore the environment and monitor processing in the mill to maintain or increase production. They are responsible for mill metallurgical accounting practices and the review of daily, monthly and annual metallurgical reports.



**Education and training needed:** High school diploma or GED; bachelor degree in metallurgy

Occupation-specific action steps

- Support graduate level Mineral Preparation Engineering degree program offered by the UA system
- Assist regional mineral preparation/metallurgy students with scholarships and internships
- Include support for internships in annual operating budgets

## Metallurgy, Chemical, Geological and Environmental Laboratory Technicians

**Job Description:** Lab technicians are needed for assessment of samples in several areas of a mining operation: geological, environmental and chemical. Preparation of samples for assays or for determination of compliance involves use of chemical processes, laboratory equipment and analyzers and data information systems. Report writing, data tracking and laboratory safety are key to this job. Lab assistants work under the supervision of a trained metallurgist, chemist or geologist

**Education and training needed:** High school diploma or GED; secondary CTE coursework preferred

Occupation-specific action steps

- Encourage career awareness of technician-level positions based on the career pathway developed for STEM/Engineering careers in mining
- Develop in-house on-the-job training for lab technicians, with opportunities for progression in responsibility and wages

## Other Occupations

Two other priority occupation were identified in the needs assessment that may require industry attention: Health and Safety Specialist and Permitting Specialist. Training for both occupations is available in-state through the University of Alaska system.

### Other Occupations

Health & Safety Specialists (Mine safety & emergency response)		
Training	UA	Other
Certification, AAS	UAA, Kodiak, KPC UAF CTC	None that are MSHA based
Permitting specialists		
Training	UA	Other
AAS, BS Environmental Science programs	UA, UAF, UAS	

### Health and Safety Specialist

**Job Description:** Health and Safety specialists are responsible for developing, implementing and monitoring health and safety guidelines. They work to ensure that all employees know, understand and follow all safety and health procedures. They provide emergency response training including mine rescue, first aid, and firefighting. They provide training on such topics as fall arrest,

space entry, industrial hygiene, and safety monitoring equipment. Specialist also perform inspections and audits and provide documentation for compliance.

**Education and training needed:** High school diploma or GED; bachelor degree preferred

Occupation-specific action steps

- Provide career awareness of jobs in the health and safety area as part of regional outreach during development and operational phases of a mine
- Assist UA to incorporate MSHA training into Health and Safety certificates and degrees

### Permitting Specialist

**Job Description:** A Permitting Specialist is responsible for the successful and timely attainment of permits from state and federal land management agencies for various phases of mining projects.

**Education and training needed:** High school diploma or GED; bachelor degree in Environmental Science or a related field

Occupation-specific action steps

- Provide career awareness of jobs in permitting as part of regional outreach during exploration and development phases of a mine
- Support regional environmental science students with scholarships and internships
- Encourage UA environmental science programs to include information about mining career opportunities into certificates and degrees



# Appendices

## Appendix A: Acronyms

AKCIS	Alaska Career Information System	KCC	King Career Center
ADCCED	Alaska Department of Commerce, Community and Economic Development	KPC	Kenai Peninsula College
ADEED	Alaska Department of Education and Early Development	MAPTS	Mining and Petroleum Training Service
ADOLWD	Alaska Department of Labor and Workforce Development	MSHA	Mine Safety and health Administration
ALEXsys	Alaska Labor Exchange System	NCCER	National Center for Construction Education and Research
AMA	Alaska Miners Association	NIT	Northern Industrial Training
AMA-HR	Alaska Miners Association Human Resources Committee	NSTC	North Slope Training Cooperative
ANCSA	Alaska Native Claims Settlement Act	RAHI	Rural Alaska Honors Institute
ANSEP	Alaska Native Science and Engineering Program (ANSEP)	STEM	Science, Technology, Engineering and Math
APICC	Alaska Process Industry Careers Consortium	STEP	State Training and Employment Program
ARE	Alaska Resource Education	TAACCCT	Trade Adjustment Assistance Community College and Career Training
ATC	Alaska Technical Center	TVEP	Technical Vocational Education Program (state funds)
AVTEC	Alaska Vocational Technical Center	UA	University of Alaska
AWIB	Alaska Workforce Investment Board	UAA	University of Alaska Anchorage
BC AMTA	British Columbia Aboriginal Mine Training Association	UAF	University of Alaska Fairbanks
CAMI	Consolidated Alaska Mining Initiative	UAS	University of Alaska Southeast
CAP	Council of Alaska Producers	WIA	Workforce Investment Act
		YUUT	Yuut eliitnaurviat



# Appendices

## Appendix B: Training Providers

### Alaska Career College

1415 East Tudor Road  
Anchorage, AK 99507-1033  
Telephone: 907-563-7575 (main) or 800-770-7575  
Fax: 907-563-8330  
Email: [careers@alaskacareercollege.edu](mailto:careers@alaskacareercollege.edu)  
[www.alaskacareercollege.edu](http://www.alaskacareercollege.edu)

### Alaska Construction Academies

8005 Schoon Street  
Anchorage, AK 99518  
Telephone: 907-770-1826  
Fax: 907-562-6118  
Email: [info@alaksaca.org](mailto:info@alaksaca.org)  
[www.alaskaca.org](http://www.alaskaca.org)  
Academies are located throughout the state. Check website for more information.

### Alaska Job Corps Center – Palmer

Admissions Office  
4300 B Street, Suite 100  
Anchorage, AK 99503  
Telephone: 907-861-8800 or 800-733-5627  
Email: [admissions@alaskajobcorps.com](mailto:admissions@alaskajobcorps.com)  
[www.alaskajobcorps.com](http://www.alaskajobcorps.com)

### Alaska Process Industry Careers Consortium (APICC)

2600 Cordova, Suite 105  
Anchorage AK 99503  
Telephone: 907-770-5250  
Fax: 907-770-5251  
<http://www.apicc.org>

### Alaska Technical Center

Box 51  
Kotzebue, AK 99752  
Telephone: 907-442-3733 (main) or 800-478-3733  
Fax: 907-442-2764  
[www.nwarctic.org/atc](http://www.nwarctic.org/atc)

### Alaska Vocational Technical Center (AVTEC)

PO Box 889  
Seward, AK 99664  
Telephone: 907-224-3322 (admissions) or 800-478-5389  
Fax: 907-224-4400  
Email: [admissions@avtec.edu](mailto:admissions@avtec.edu)  
<http://avtec.labor.state.ak.us>

### Alaska Works Partnership Inc.

#### Anchorage Office

1413 Hyder Street  
Anchorage, AK 99501  
Telephone: 907-569-4711 or 1-866-297-9566  
Fax: 907-569-4716  
[www.akwp.org](http://www.akwp.org)

#### Fairbanks Office

P.O. Box 74313  
3600 Cartwright Court  
Fairbanks, AK 99707  
Telephone: 907-457-2597  
Fax: 907-457-2591

## Other Programs Offered Under AKWP

### Helmets to Hardhats Program

Telephone: 907-790-8883 or 866-993-8181

Pipeline Training Program

Telephone: 907-457-2597

### Center for Employment Education

520 East 34th Avenue, Suite 201

Anchorage, AK 99503

Telephone: 907-279-8451

Fax: 907-279-6088

Email: [cee@acsalaska.net](mailto:cee@acsalaska.net)

[www.cee-ak.com](http://www.cee-ak.com)

### Delta Career Advancement Center Partners for Progress in Delta, Inc.

PO Box 956

Delta Junction, AK 99737

Telephone: 907-895-4605

Fax: 907-895-4629

Email: [sce@wildak.net](mailto:sce@wildak.net)

[www.partnersforprogressindelta.org](http://www.partnersforprogressindelta.org)

### Environmental Management Incorporated

206 East Fireweed Lane, Suite 201

Anchorage, AK 99503

Telephone: 907-272-8852 or 800-458-2580

Fax: 907-272-0319

Email: [training@emi-alaska.com](mailto:training@emi-alaska.com)

[www.emi-alaska.com](http://www.emi-alaska.com)

### New Frontier Vocational Technical Center

43335 K-Beach Road, Suite 14

Soldotna, AK 99669

Telephone: 907-262-9055

Fax: 907-262-7144

Email: [nfvtc@aecak.org](mailto:nfvtc@aecak.org)

[www.nfvtc.org](http://www.nfvtc.org)

### Northern Industrial Training

1740 North Terrilou Court

Palmer, AK 99645

Telephone: 907-357-6400 or 888-367-6482

Fax: 907-357-6430

Email: [info@nitalaska.com](mailto:info@nitalaska.com)

[www.nitalaska.com/nit](http://www.nitalaska.com/nit)

### Northwest Technical Services

4401 Business Park, Building N, Suite 26

Anchorage, AK 99503

Telephone: 907-562-1633

Fax: 907-562-5875

Email: [nwtstraining@ak.net](mailto:nwtstraining@ak.net)

[www.nwts-ak.com](http://www.nwts-ak.com)

### Southeast Alaska Regional Resource Center and The Learning Connection

210 Ferry Way

Juneau, AK 99801

Telephone: 907-586-6806

Fax: 907-463-3811

Email: [info@serrc.org](mailto:info@serrc.org)

[www.serrc.org](http://www.serrc.org)

### Yuut Elitnaurviat – People’s Learning Center

610 Akiachak Street

PO Box 869

Bethel, AK 99559

Telephone: 907-543-0999

Fax: 907-543-0998

Email: [josborne@yuut.org](mailto:josborne@yuut.org)

[www.yuut.org](http://www.yuut.org)

## Colleges and Universities

### Alaska Pacific University

4101 University Drive  
Anchorage, AK 99508  
Telephone: 907-564-8248 or 800-252-7528  
Fax: 907-564-8317  
Email: [admissions@alaskapacific.edu](mailto:admissions@alaskapacific.edu)  
[www.alaskapacific.edu](http://www.alaskapacific.edu)

### Charter College

2221 E. Northern Lights Boulevard, Suite 120  
Anchorage, AK 99508  
Telephone: 907-277-1000  
Fax: 855-399-0330  
Email: [contact@chartercollege.edu](mailto:contact@chartercollege.edu)  
[www.chartercollege.edu](http://www.chartercollege.edu)

### University of Alaska

#### University of Alaska, Anchorage

3211 Providence Drive  
Anchorage, AK 99508  
Telephone: 907-786-1800  
Fax: 907-786-4888  
Email: [enroll@uaa.alaska.edu](mailto:enroll@uaa.alaska.edu)  
[www.uaa.alaska.edu](http://www.uaa.alaska.edu)

#### University of Alaska Fairbanks

PO Box 757500  
505 South Chandalar Drive  
Fairbanks, AK 99775  
Telephone: 907-474-7211  
Fax: 907-474-5379  
Email: [admissions@uaf.edu](mailto:admissions@uaf.edu)  
[www.uaf.edu](http://www.uaf.edu)

### University of Alaska Southeast - Juneau

11120 Glacier Highway  
Juneau, AK 99801  
Telephone: 907-796-6000 or 877-465-4827  
Telephone: 907-796-6000  
Fax: 907-796-6365  
Email: [uas.info@uas.alaska.edu](mailto:uas.info@uas.alaska.edu)  
[www.uas.alaska.edu](http://www.uas.alaska.edu)

### Wayland Baptist University

Anchorage Campus  
7801 East 32nd Avenue  
Anchorage, AK 99504  
Telephone: 907-333-2277  
Fax: 907-337-8122  
Email: [alaska@wbu.edu](mailto:alaska@wbu.edu)  
[www.wbu.edu/colleges-in-anchorage](http://www.wbu.edu/colleges-in-anchorage)

### Wayland Baptist University - Fairbanks Campus

2623 Wabash Avenue., Suite 109  
Eielson AFB, AK 99702-1715  
Telephone: 800-588-1928  
806-291-1000 – Wayland  
806-291-3500 – Admissions  
Email: [admyou@wbu.edu](mailto:admyou@wbu.edu)

## Two-Year Colleges and University Programs

### University of Alaska

#### Bristol Bay Campus/UAF

Main Dillingham Campus  
527 Seward Street  
P. O. Box 1070  
Dillingham, AK 99576  
907-842-5109  
907-842-5692 fax  
Email: [bbcinfo@uaf.edu](mailto:bbcinfo@uaf.edu)  
[www.uaf.edu/bbc](http://www.uaf.edu/bbc)

**Chukchi Campus/UAF**

604 3rd Avenue  
 PO Box 297  
 Kotzebue, AK 99752  
 Telephone: 1-800-478-3402  
 Fax: 907-442-2322  
 Email: [admissions@uaf.edu](mailto:admissions@uaf.edu)  
[www.uaf.edu/chukchi](http://www.uaf.edu/chukchi)

**Interior-Aleutians Campus/UAF**

4280 Geist Road  
 PO Box 756720  
 Fairbanks, AK 99775-6720  
 Telephone: 907-474-5439 (main) or 888-474-5207  
 Fax: 907-474-5208  
 Email: [uaf-iacinfo@alaska.edu](mailto:uaf-iacinfo@alaska.edu)  
[www.uaf.edu/iac](http://www.uaf.edu/iac)

**Kachemak Bay Campus, Kenai Peninsula College/UAA**

533 East Pioneer Avenue  
 Homer, AK 99603  
 Telephone: 907-235-7743 or 877-262-0330  
 Email: [iykb1@kpc.alaska.edu](mailto:iykb1@kpc.alaska.edu)  
[www.kpc.alaska.edu](http://www.kpc.alaska.edu)

**Ketchikan Campus/UAS**

2600 7th Avenue  
 Ketchikan, AK 99901-5798  
 Telephone: 907-228-4508 (main) or 888-550-6177  
 Fax: 907-225-3624  
 Email: [ketch.info@uas.alaska.edu](mailto:ketch.info@uas.alaska.edu)  
[www.ketch.alaska.edu](http://www.ketch.alaska.edu)

**Kodiak College/UAA**

117 Benny Benson Drive  
 Kodiak, AK 99615  
 Telephone: 907-486-4161 (main) or 800-486-7660  
 Fax: 907-486-1264  
[www.koc.alaska.edu](http://www.koc.alaska.edu)

**Kuskokwim Campus/UAF**

201 Akiak Drive  
 PO Box 368  
 Bethel, AK 99559  
 Telephone: 907-543-4500 (main) or 800-478-5822  
 Fax: 907-543-4527  
[www.bethel.uaf.edu](http://www.bethel.uaf.edu)

**Matanuska-Susitna College/UAA**

8295 East College Drive  
 PO Box 2889  
 Palmer, AK 99645  
 Telephone: 907-745-9774 (main) or 907-745-9746 (admissions)  
 Fax: 907-745-9711  
 Email: [info@matsu.alaska.edu](mailto:info@matsu.alaska.edu)  
[www.matsu.alaska.edu](http://www.matsu.alaska.edu)

**Mining and Petroleum Training Service (MAPTS – UAA)**

162 College Road, MAPTS Bldg  
 Soldotna, AK 99669  
 Telephone: 907-262-2788 Soldotna  
 Fax: 907-262-2812 - Soldotna  
 Telephone: 907-786-6413 Anchorage  
 Fax: 907-786-6414 – Anchorage  
 Email: [mapts@alaska.net](mailto:mapts@alaska.net)  
[www.alaska.net/~mapts](http://www.alaska.net/~mapts)

**MAPTS Classes are given at the following locations:****Kenai/Soldotna**

Kenai River Campus - 162 College Road

**Anchorage**

University Center - 3901 Old Seward Highway

**Juneau**

UAS Tech Center - 1415 Harbor Highway

**Nome**

110 Front Street - Old Federal Building, Suite 112

**Fairbanks**

DEC Classes at Pioneer Park, Blue Room

**MSHA Classes at UAF CTC Building:**

604 Barnette - Room 303  
 Northwest Campus/UAF  
 400 East Front Street  
 PO Box 400  
 Nome, AK 99762  
 Telephone: 907-443-2201 (main) or 800-478-2202  
 Fax: 907-443-5602  
 Email: [nwc.info@alaska.edu](mailto:nwc.info@alaska.edu)  
[www.nwc.uaf.edu](http://www.nwc.uaf.edu)

**Sitka Campus/UAS**

1332 Seward Avenue  
 Sitka, AK 99835  
 Telephone: 907-747-7700 (main) or 800-478-6653  
 Fax: 907-747-7768  
 Email: [student.info@uas.alaska.edu](mailto:student.info@uas.alaska.edu)  
[www.uas.alaska.edu/sitka](http://www.uas.alaska.edu/sitka)

**UAF Community and Technical College**

604 Barnette Street  
 Fairbanks, AK 99701  
 Telephone: 907-455-2800  
 Fax: 907-455-2828  
[www.tvc.uaf.edu](http://www.tvc.uaf.edu)

**Ilisagvik College**

100 Stevenson Street  
 PO Box 749  
 Barrow, AK 99723  
 Telephone: 907-852-3333 or 800-478-7337  
 Fax: 907.852.2729  
[www.ilisagvik.cc](http://www.ilisagvik.cc)

**Prince William Sound Community College**

303 Lowe Street  
 PO Box 97  
 Valdez, AK 99686  
 Telephone: 907-834-1600 (main) or 800-478-8800  
 Fax: 907-834-1691  
 Email: [StudentServices@pwsc.edu](mailto:StudentServices@pwsc.edu)  
[www.pwsc.edu](http://www.pwsc.edu)

**Apprenticeship Programs in Alaska****Alaska Joint Electrical Apprenticeship & Training Trust**

5800 B. Street  
 Anchorage, AK 99518  
 Telephone: 907-337-9508  
 Fax: 907-337-9500  
 Email: [office@ajeatt.org](mailto:office@ajeatt.org)  
[www.ajeatt.org](http://www.ajeatt.org)

**Kornfeind Training Center**

4782 Dale Road  
 PO Box 60134  
 Fairbanks, AK 99709  
 Telephone: 907-479-4449 or 800-479-4495  
 Fax: 907-479-0425

**Alaska Operating Engineers Apprenticeship Training**

5400 Cunningham Road  
 PO Box 0989  
 Palmer, AK 99645  
 Telephone: 907-746-3117  
 Fax: 907-745-6136  
 Email: [training@aoeett.org](mailto:training@aoeett.org)  
[www.aoeett.org](http://www.aoeett.org)

**Fairbanks Office**

3002 Lathrop Street  
 Fairbanks, AK 99701  
 Telephone - 907-456-5421  
 Fax: 907-451-6098

**Juneau Office**

9309 Glacier Hwy, Building A, Suite 102B  
 Juneau, AK 99801  
 Telephone: 800-478-9551 (toll free)  
 Fax 907-463-5464

### **Alaska Teamster Employer Service Training Trust**

520 East 34th Avenue, Suite 201  
Anchorage, AK 99503  
Telephone: 907-278-3674 (Apprenticeship Info)  
Email: [atestt@acsalaska.net](mailto:atestt@acsalaska.net)  
[www.akteamsterstraining.com](http://www.akteamsterstraining.com)

### **Anchorage Plumbers and Steamfitters Local 367**

Joint Apprenticeship Training Committee  
610 West 54th Avenue  
Anchorage, AK 99518-1197  
Telephone: 907-562-2810  
Fax: 907-562-2587  
Email: [billings@ualocal367.org](mailto:billings@ualocal367.org)  
[www.ualocal367.org](http://www.ualocal367.org)

### **Associated Builders and Contractors, Inc.**

1900 West Benson Boulevard, Suite 201  
Anchorage, AK 99517  
Telephone: 907-565-5600  
Fax: 907-565-5645  
Email: [info@abcalaska.org](mailto:info@abcalaska.org)  
[www.abcalaska.org](http://www.abcalaska.org)

### **Carpenters Local 2247**

Joint Apprenticeship Training Committee  
1721 Anka Street  
Juneau, AK 99801  
Telephone: 907-586-3675  
Fax: 907-586-3675  
[www.ubcalaska.org/2247\\_Southeast\\_Ak.html](http://www.ubcalaska.org/2247_Southeast_Ak.html)

### **Fairbanks Plumbers & Steamfitters Local 375**

Apprenticeship Training Committee  
1978 Burgess Avenue  
Fairbanks, AK 99709  
Telephone: 907-456-5989  
Fax: 907-456-5905  
Email: [jatc@ualocal375.org](mailto:jatc@ualocal375.org)  
[www.ualocal375.org](http://www.ualocal375.org)

Alaska Miners Association Human Resources Committee

### **Fairbanks Sheet Metal Workers**

International Association, Local 23  
1260 Aurora Drive  
Fairbanks, AK 99709  
Contact: Apprenticeship Coordinator  
Telephone: 907-452-3864  
Fax: 907-456-3413  
<http://local23jatc.org>

### **International Association of Heat & Frost Insulators, Asbestos Workers**

Union Local 97  
407 Denali Street, Room 303  
Anchorage, AK 99501  
Telephone: 272-8224  
Fax: 277-8860

### **International Brotherhood of Electrical Workers (IBEW)**

Local 1547 - Juneau  
Apprenticeship Training Committee  
813 West 12th Street  
Juneau, AK 99801  
Telephone: 907-586-3050  
Fax: 907-586-9614  
Email: [vvanfleet@ibew1547.org](mailto:vvanfleet@ibew1547.org)  
[www.ibew1547.org](http://www.ibew1547.org)

### **International Brotherhood of Electrical Workers (IBEW)**

Local 1547 - Ketchikan  
317 Stedman Avenue  
Ketchikan, AK 99901  
Telephone: 907-225-4020  
Fax: 907-225-3924  
[www.ibew1547.org](http://www.ibew1547.org)

**Ironworkers Local 541**

8141 Schoon Street  
 Anchorage, AK 99518-3047  
 Contact: Apprenticeship Coordinator  
 Telephone: 907-563-4767  
 Fax: 907-563-2855

**Juneau Plumbers and Pipefitters Local 262**

1751 Anka Street  
 Juneau, AK 99801  
 Telephone: 907-586-2874  
 Fax: 907-463-5116  
[www.aatca.org/Plumbers\\_Juneau.html](http://www.aatca.org/Plumbers_Juneau.html)

**Laborers' International Union**

Alaska Laborers Apprenticeship Training School  
 13500 Old Seward Highway  
 Anchorage, AK 99515  
 Telephone: 907-345-3853  
 Fax: 907-345-4479

**Laborers' Local 942 -Fairbanks**

Alaska Laborers' Training School  
 2740 Davis Road  
 Fairbanks, AK 99709  
 Telephone: 907-452-3146  
 Fax: 907-452-6285

**Laborers' Local 942 -Juneau**

Alaska Laborers' Training School  
 722 West 9th Street  
 Juneau, AK 99801  
 Telephone: 907-586-2860  
 Fax: 907-586-5757

**Marine Exchange of Alaska Maritime**

Pride and Education Program  
 1000 Harbor Way Suite 204  
 Juneau, AK 99801  
 Telephone: 907-463 2607  
 Fax: 907-463-3654  
 Email: [training@mxak.org](mailto:training@mxak.org)  
[www.mxak.org](http://www.mxak.org)

**Northern Alaska Carpenters Local 1243**

Fairbanks Carpenters Training Center  
 6 Timberland Drive  
 Fairbanks, AK 99701  
 Telephone: 907-452-4626  
 Fax: 907-456-5542

**Painters and Allied Trades**

Alaska Apprenticeship Training Coordinators Association  
 501 Raspberry Road, Suite 2  
 Anchorage, AK 99518  
 Telephone: 907-562-8843  
 Fax: 907-563-8843  
 Email: [dhansen@local1959.org](mailto:dhansen@local1959.org)  
[www.aatca.org](http://www.aatca.org)

**Drivers Union Local 2520**

Apprenticeship Training Program  
 825 East 8th Avenue  
 Anchorage, AK 99501  
 Contact: Apprenticeship Coordinator  
 Telephone: 907-272-7576  
 Fax: 907-277-8967  
[www.local2520.org](http://www.local2520.org)

**Plasterers' and Cement Masons**

Apprenticeship Coordinator  
 7851 Spring Street Suite #1  
 Anchorage AK, 99518  
 Telephone: 907-223-0838  
 Fax: 907-272-4378

**Roofers and Waterproofers Local 190**

Joint Apprenticeship Training Committee  
Apprenticeship Coordinator  
825 East 8th Avenue, Suite 10  
Anchorage, AK 99501  
Telephone: 907-272-4311  
Fax: 907-277-4311  
Email: local190union@alaska.net  
[www.aatca.org/roofer.html](http://www.aatca.org/roofer.html)

**Seafarers International Union**

721 Sesame Street, Suite 1C  
Anchorage, AK 99503  
Telephone: 907-561-4988  
Fax: 907-563-0122

**Sheet Metal Workers International Association, Local 23**

Joint Apprenticeship Training Committee  
1307 East 75th Avenue #4  
Anchorage, AK 99518  
Contact: Apprenticeship Coordinator  
Telephone: 907-277-5367  
Fax: 907-274-8219  
<http://local23jatc.org>

**Southern Alaska Carpenters – Local's 1281, 2247, & 1501**

Joint Apprenticeship Training Committee  
8751 King Street  
Anchorage, AK 99502  
Contact: Apprenticeship Coordinator  
Telephone: 907-344-1541 or 1-888-825-1541  
Fax: 907-349-5823  
[www.sactcaprentice.org](http://www.sactcaprentice.org)

**Alaska Teamster-Employer Service Training Trust**

520 E. 34th Avenue, Suite 201  
Anchorage, AK 99503  
Telephone: 907-278-3674  
Fax: 907-279-6088  
Email: c.lipps@acsalaska.net  
[www.akteamsterstraining.com](http://www.akteamsterstraining.com)

**U.S. Department of Labor**

Bureau of Apprenticeship Training  
605 West 4th Avenue  
Room G-30  
Anchorage, AK 99501  
Telephone: 907-271-5035

To learn more about specific apprenticeship opportunities, please consult the U.S. Department of Labor State Apprenticeship Information website at:

<http://www.ajcn.state.ak.us/apprentice>

# Appendices

## Appendix C: Best Practices

In preparing this workforce development plan, the Alaska Miners Association Human Resources Committee solicited information from mine operators and others about best practices in the strategic areas identified in the plan. The following list describes models and practices that can assist stakeholders in implementing the plan at their own site or agency. Many of these materials and activities were identified through a survey of operating mines and projects conducted by AMA HR in 2013. Additional information on models was obtained from case studies from mining operations in Canada and other countries.

### Career Awareness

Career awareness includes both materials and activities.

#### Materials

- Alaska Resource Education Career Cards provide a good explanation of careers available in Alaska's natural resource industries. The minerals card set focuses in jobs in the mining industry.
- Both Donlin Gold and the Pebble Partnership have developed documents describing the careers available in their projects. While directed at the individual projects, the information contained is suitable for a broad audience, including adult workers.

#### Activities

In a survey of operators and projects, the following activities were identified as most effective in creating career awareness

- K-12 students:
  - Attendance at local and state job and college fairs
  - School classroom visits
  - Collaboration with Alaska Resource Education in-school activities
  - Youth camps at mine sites
  - Sponsoring a teacher in the Teacher Industry Externship (TIE) program operated by APICC
- Adults
  - Jobs brochures

- Posting jobs at local sites (grocery store, post office, etc.)
- Websites such as AMA and Infomine.com
- Posting jobs in ADOLWD ALEXsys system
- Recruitment tables at village presentations

Skills Canada Territorial Skills Competition focuses on trades and technology careers and provides an opportunity for students to showcase their skills. The competition includes a career exposition that includes employers and exhibitors.

### Engage

Many mining companies use the following activities to engage local and regional residents in workforce development.

- Direct discussion with village leaders
- Open houses at mines for residents of surrounding communities
- Village presentations
- Local hire coordinators

The committee also identified several other engagement activities that are used in Canada and Western Australia that may have applicability to Alaska projects.

- Socio-Economic Agreements, which seek to maximize the economic benefits related to the mining project for the local and regional residents while minimizing the negative social impacts. These agreements typically include attention to
  - employment and training
  - social impacts
  - business development
  - monitoring of the agreement
- Impact and Benefits Agreements
  - These private agreements are made between mining companies, governments and indigenous populations to enhance the socio-economic benefits of specific populations. They generally cover the same areas as the less-formal socio-economic agreements.

## Career Pathways

- Best practices for Career Pathways are being collected by the Career Pathways planning group. The models will be disseminated across the state and will be housed in a resource depository.

## Training

The following are some examples of best practices in training.

- The University of Alaska and Yukon College partnership which utilizes curriculum developed by UA's MAPTS program and Yukon College to train students at the Delta Mine Training Center. Yukon College has supplied several large simulators which will remain at the Center. The agreement assists UA in leasing the Center facilities, making them available for other training programs.
- The North Slope Training Cooperative was created in 1998 to develop and maintain high quality, standardized health, safety, and environmental training programs for operating company and contractor employees at industrial sites on the North Slope and throughout Alaska. The NSTC is a collaborative effort funded by industry and managed by APICCC.
- Alaska Technical Center in Kotzebue offers Millwright classes in conjunction with Teck Alaska/Red Dog Mine. The mine provides the faculty to deliver on-site training to ATC students.
- The British Columbia Aboriginal Mine Training Association (BC AMTA) is one of several Aboriginal Skills Employment Programs operating in various industries throughout Canada. BC AMTA comprises a number of partners—industry, mining associations, First Nations' Bands & Councils, government programs and educational institutions—who have all committed shared costs in the implementation of the program. Some partners have furthered their involvement by making employment commitments.
- Ready to Work North is a program delivered by Aurora College in Yellowknife, NWT. The program focuses on the basic skills needed to succeed in the workplace. The course is offered as part of more specific training courses, but can also be delivered as a stand-alone two-week course in local communities.

## Employee Development

Many mining companies utilize Technical Progression programs to advance employees. These programs award workers for the acquisition and application of skills learned on the job. Typically, such programs have various levels (for example, Technician 1 through 5), with the top level often tied to obtaining externally-awarded certificates or licenses. Progression programs include mandated evaluations at periodic intervals. Such systems encourage shared responsibility for training between the employer and the individual employee. They offer financial incentives to learn new skills and help promote cross-functionality.

In addition to offering competitive salary and benefit packages, some companies offer amenities such as fitness centers and wellness programs to enhance employee satisfaction and reduce attrition.

## Collaboration for Sustainability

APPIC has developed a proven model for implementing and sustaining workforce development in the process industries. The approach, which could also serve the mining industry, includes

- Organizing partners into a consortium
- Establishing a structure to carry out workforce development strategies
- Working Board with an Executive Committee
- Working committees
- Plan to incorporate integrated work of the committees
- Securing necessary human and financial resources to carry out the plan

APPIC outcomes include

- A strong and consistent curriculum for preparing operations workforce
- On-going partnership between industry and education
- Commitment to career education in K-12
- On-going assessment of industry needs



# Acknowledgments

The Alaska Mining Workforce Development Plan was guided by the Human Resources Committee of the Alaska Miners Association, with contributions from operating mines and projects. Funding for the planning process was provided by the Pebble Partnership.

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Photos for this publication were contributed by Alaska's operating mines and projects



