

ALASKA
PROCESS INDUSTRY
CAREERS
CONSORTIUM



WHERE IS YOUR CAREER TAKING YOU?
APICC's *PRIORITY OCCUPATIONS REPORT*

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**A look at Priority Occupations for Alaskans over the next 10 years!
A compilation by APICC**

2004 - 2016

Putting Alaska's Resources to Work

INTRODUCTION

In 2008 the state of Alaska experienced its 21st consecutive year of job growth. In 2009 the process industries were flat for job numbers, yet remained focused on future growth expectations, and the industry's priority occupations for their needs. The oil, gas and mining industries are major contributors to job growth and economic prosperity in Alaska. The current and anticipated skilled worker shortages are threatening the stability, growth and development of these industries.

The work done to date by 'Putting Alaska's Resources to Work' (PARW) to identify priority occupations may be the first statewide, highly data based effort spanning the oil, gas and mining industries. It incorporates an extensive level of industry dictated statistical analysis combined with a broad base of industry input.

Why Is This Important?

- Once we understand Alaska's needs we can promote existing training programs and work to establish training programs where needed.
- We can more accurately communicate and guide students, parents, educators, counselors and the general public to those jobs and career paths of greatest opportunity.
- We can improve recruitment and the process whereby job seekers connect with industry and the desired jobs.
- We can more effectively target our limited public and private resources where they will produce the greatest return.
- We can keep Alaska's highest paying industries moving in the right direction, creating jobs for Alaska residents and infusing economic benefit into our communities.

2004 - 2016

Putting Alaska's Resources to Work

INTRODUCTION

Who Wants To Know & Who Benefits From Knowing?

Educators and trainers have been asking industry to clearly define their training needs so they can responsively target their resources.

Students, parents, teachers and counselors benefit from understanding the vast array of Alaskan careers, their training requirements and the high standard of living these careers provide.

Incumbent workers gain insights into additional work opportunities.

State legislators, administrators and policy makers benefit by understanding both the need and return on the education and training investment of public resources.

Industry benefits by pin pointing worker shortages, defining recruitment strategies and determining investment decisions.



A Career to the Future!

2004 - 2016

Putting Alaska's Resources to Work

OVERVIEW

A high demand for energy is driving resource development and increased competition in the United States, Canada and the rest of the global community. With an aging workforce in Alaska, our challenge is to develop a highly skilled, globally competitive workforce to meet the needs of the oil, gas and mining industries for the future.

PRIORITY OCCUPATIONS

A two step process was used to identify priority occupations for Alaska's oil, gas and mining industries.

- o First, the number of jobs, growth of the occupation, and age of workers in the job and number of nonresident workers for 2004-2016 was analyzed.
- o Second, industry groups provided first hand input regarding current and projected difficulty in hiring for each occupation and priority ranking.

For further details regarding the process used to determine Alaska's priority occupations for the oil, gas and mining industries see Exhibit I.



2004 - 2016

Putting Alaska's Resources to Work

PRIORITY OCCUPATIONS

The remainder of this report lists the priority occupations by category and then conveys the following information.

The **traffic light** system helps identify the priority level of each occupation as follows:

Red/Predicted Shortages – Difficulty to find qualified workers to hire is projected to exist in this occupation through 2016 and positions may remain vacant for periods of time.

Blue/Concern – Difficult to find qualified workers to hire in this occupation is increasing, however, most openings are filled in a timely manner.

Green/Availability - Not difficult to find qualified workers in this occupation, however, this occupation is essential to the oil, gas and mining industries.

INDICATOR OF ESSENTIAL OCCUPATIONS



SHORTAGE



CONCERN



AVAILABILITY

KEY

For each occupation the following information is provided:

1. Definition
2. Level of training required
3. Range of wage or salary compensation

ALASKA'S OIL, GAS AND MINING PRIORITY OCCUPATIONS

ADMINISTRATIVE & PROFESSIONAL

Administrative Managers & Supervisors

Accountants
Administrative Aides
Buyers/Procurement (Supply Chain Manager)
Clerks
Contract Specialists
Document Controllors
Human Resources
Information Technology Systems
Internal Auditors
Payroll
Secretaries

CAMPS & CATERING

Cooks / Prep Cooks Stewards

Maintenance – Light

ENVIRONMENTAL

Cleaners (Industrial) Water/Waste Water Operators

Archaeologists
Biologists
Geological Tech Engineers
Hydrologists
Water or Air Specialists

EQUIPMENT OPERATORS

Heavy Truck Drivers
Drill Operators
Mobile Equipment Operators
Crane Operators

FIELD INSPECTORS

Non-Destructive Examiner
Health/Safety/Environment Inspector

Civil Inspectors
Coating Inspectors
Electrical Inspectors
Environmental Inspectors
Instrumentation Inspectors
Mechanical Inspectors
Telecommunication Inspectors
Welding Inspectors

HEALTH & SAFETY (H&S)

H & S Compliance
Emergency Medical Technicians
Fire Fighters
Industrial Hygienists
Paramedics

INDIRECT SERVICES

Marketing & Sales
Teachers or Trainers

LOGISTICS

Airplane Pilots
Barge Operators
Bus Drivers
Deckhands/Stevedores
Divers
Flag
Flight Attendants
Helicopter Pilots
Light Truck Drivers

MATERIAL HANDLING

Warehouse Clerk

Dispatchers
Expeditors
Fork Lift
Freight Handlers
Fueling Handlers
Material Inspectors

OFFICE & FIELD ENGINEERS

Chemical Engineers
Civil Engineers
Electrical Engineers
Mechanical Engineers
Mining Engineers
Project Engineers
Project Managers
Petroleum Engineers
Geoscientists/Geologists

Chemists
Designers
Drafters
Geographic Information Systems Specialists
Lab Technicians
Schedulers/Planners
Surveyors

OPERATIONS & MAINTENANCE

Carpenters
Electricians
Machinists & Millwrights
Maintenance General / Mining Mechanic
Operations Managers & Supervisors
Pipe Fitters

Drill Rig Operators
Instrumentation
Miners
Telecommunications
Diesel Mechanics
Heat and Frost Insulators
Laborers/Nippers/Utilities
Mechanics
Painters
Pipe Coaters
Welders

PLANT & PRODUCTION OPERATORS

Mill Operators
Control Room Operator
Oil & Gas Operator
Process Technician
Power Plant Operators

SECURITY

Guards/Watchmen
Wildlife Control

Red Bold Underlined = Predicted Shortages

Blue Bold = Concern

Green = Available and Essential

ALASKA'S OIL, GAS AND MINING PRIORITY OCCUPATIONS

TIER ONE PRIORITY SHORTAGE

Shortages are projected to exist in these occupations through 2016. Employers may be unable to fill vacancies. Projects and work maybe halted or delayed due to these shortages.

Administrative Managers & Supervisors
Carpenters
Chemical Engineers
Civil Engineers
Control Room Operator
Electrical Engineers
Electricians
Heavy Truck Drivers
Health/ Safety/ Environment Inspector
H & S Compliance
Machinists & Millwrights
Maintenance General / Mining Mechanic
Mechanical Engineers
Mining Engineers
Oil and Gas Operator
Operations Managers & Supervisors
Petroleum Engineers
Pipe Fitters
Process Technician
Project Engineers
Project Managers

TIER TWO PRIORITY CONCERN

Employers are projected to find it increasingly difficult to fill these vacancies. Several variables indicate that if the flow of qualified workers in these labor pools does not increase, shortages will result.

Cooks/Prep Cooks
Cleaners (Industrial)
Drill Operators
Drill Rig Operators
Geoscientists/Geologists
Instrumentation
Mill Operators
Miners
Mobile Equipment Operators
Marketing & Sales
Stewards
Teachers or Trainers
Telecommunications
Warehouse Clerk
Water/Waste Water Operators

TIER THREE PRIORITY AVAILABLE





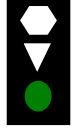

These occupations are essential to the oil, gas and mining industries. Employers currently do not experience significant difficulty in filling vacancies.

Accountants
Administrative Aides
Airplane Pilots
Archaeologists
Biologists
Barge Operators
Bus Drivers
Buyers/Procurement
Chemists
Civil Inspectors
Clerks
Coating Inspectors
Contract Specialists
Crane Operators
Deckhands/Stevedores
Designers
Diesel Mechanics
Dispatchers
Divers
Document Controllers
Drafters
Electrical Inspectors
Emergency Medical Technician





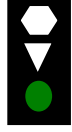

Environmental Inspectors
Expeditors
Fire Fighters
Flag
Flight Attendants
Fork Lift
Freight Handlers
Fueling Handlers
Geographic Information Systems Specialists
Geological Tech Engineers
Guards/Watchmen
Helicopter Pilots
Human Resources
Hydrologists
Industrial Hygienists
Information Technology Systems
Instrumentation Tech Inspectors
Instrumentation Inspectors
Heat and Frost Insulators
Internal Auditors
Lab Technicians
Laborers/Nippers/Utilities

Light Truck Drivers
Maintenance – Light
Material Inspectors
Mechanical Inspectors
Mechanics
Non-Destructive Examiner
Oil & Gas Operators
Power Plant Operators
Painters
Paramedics
Payroll
Pipe Coater
Schedulers/Planners
Secretaries
Supply Chain Managers
Surveyors
Telecom Inspectors
Water or Air Specialists
Welders
Welding Inspectors
Wildlife Control

Putting Alaska's Resources to Work

ADMINISTRATIVE & PROFESSIONAL	
<p>Administrative Managers & Supervisors</p> <ol style="list-style-type: none"> 1. Sets goals, lead, and are responsible for the efficient and effective operation of their departments. 2. Bachelor's degree 3. \$50,000 + per year 	 SHORTAGE
<p>Accountants</p> <ol style="list-style-type: none"> 1. A person charged with fiscal activities including accounts payable and receivable, payroll, purchasing, production. 2. Entry – associate's degree.; advanced – bachelor's degree 3. Entry - \$40,000 + per year; advanced - \$56,000 + per year 	 AVAILABLE
<p>Administrative Aides</p> <ol style="list-style-type: none"> 1. Provides staff support to a manager. 2. H. S. diploma 3. \$36,000+ per year 	 AVAILABLE
<p>Buyers/Procurement (Supply Chain Manager)</p> <ol style="list-style-type: none"> 1. Researches purchase options and reports to management. Purchases necessary machinery, equipment, tools, parts, supplies, or services. 2. Entry – Associates Degree.; Advanced – bachelor's degree 3. Entry - \$36,000+per year; Advanced - \$70,000 + per year 	 AVAILABLE
<p>Clerks</p> <ol style="list-style-type: none"> 1. Perform duties too varied and diverse to be classified in any specific occupation, requiring limited knowledge of office management systems, material handling and procedures. 2. Entry – GED preferred; Advanced – certificate of training 3. \$28,000 + per year 	 AVAILABLE
<p>Contract Specialists</p> <ol style="list-style-type: none"> 1. Negotiates, administers, extends, terminates, and renegotiates contracts. Approves or rejects requests changes from contract specifications and delivery schedule. Arbitrates claims and complaints. Analyzes data. 2. Entry – bachelor's degree preferred; Advanced – masters' degree 3. Entry - \$48,000+ per year; advanced - \$60,000 	 AVAILABLE

Putting Alaska's Resources to Work

ADMINISTRATIVE & PROFESSIONAL (cont.)	
<p>Document Controllers</p> <ol style="list-style-type: none"> 1. Maintains a large volume of files assuring orderly and accurate control, transmittal and archiving of project documents, participates in audits, creates reports. 2. Entry – associate's degree; advanced – bachelor's degree 3. Entry - \$32,000 per year; advanced \$52,000+ per year 	 AVAILABLE
<p>Human Resources</p> <ol style="list-style-type: none"> 1. A person who manages employees and contractors in accordance with company policy and applicable regulations. 2. Entry – diploma; advanced – certification and/or degree. 3. Entry - \$35,800+ per year; advanced - \$76,000+ per year 	 AVAILABLE
<p>Information Technology Systems</p> <ol style="list-style-type: none"> 1. Provides computer support for data management and acquisition, interpretation, statistics, archives, communications and digital security. 2. Entry – Industry Certification; Advanced – certification and/or bachelor's degree 3. Entry \$50,000+; Advanced \$95,000 	 AVAILABLE
<p>Internal Auditors</p> <ol style="list-style-type: none"> 1. A person charged with fiscal activities including accounts payable and receivable, payroll, purchasing, production. Usually requires college level training. 2. Bachelors degree preferred 3. \$56,000+ 	 AVAILABLE
<p>Payroll</p> <ol style="list-style-type: none"> 1. A person charged with fiscal activities including accounts payable and receivable, payroll, purchasing, production. 2. Entry – HS diploma; Advanced – associate's degree, experience 3. Entry - \$36,000 + per year; advanced - \$48,000+ per year 	 AVAILABLE
<p>Secretaries</p> <ol style="list-style-type: none"> 1. Provides staff support to a manager. 2. Entry - HS diploma; Advanced – diploma + experience or associate's degree 3. Entry - \$30,000+ per year; Advanced - \$42,000+ 	 AVAILABLE

CAMPS & CATERING

Cooks / Prep Cooks

1. Persons trained in the safe and attractive preparation of food and beverages.
2. HS Diploma or GED and required certification
3. \$50,000+ per year



CONCERN

Stewards

1. Responsible for all housekeeping, cleaning and maintaining the facilities and camp.
2. High school diploma or GED
3. \$23,000+ per year



CONCERN

Maintenance - Light

1. Maintenance and maintenance planning of buildings and property.
2. High school diploma or GED
3. \$31,200+ per year



AVAILABLE

ENVIRONMENTAL

Cleaners (Industrial)

1. Perform heavy cleaning, janitorial service and snow removal of buildings, equipment and containers and provide oil spill clean-up.
2. High school diploma or GED and confined space certification; other certifications as required
3. \$28,000+ per year



CONCERN

Water/Waste Water Operators

1. Operates various levels of potable and waste water systems
2. Governing authority certification and training.
3. Entry - \$36,000+ per year



CONCERN

ENVIRONMENTAL (cont.)

Archeologists

1. Conduct research to reconstruct record of past human life and culture from human remains, artifacts, architectural features, and structures
2. Four year college degree in archeology or related field.
3. \$37,680+ per year



AVAILABLE

Biologists

1. Research or study basic principles of plant and animal life, such as origin, relationship, development, anatomy, and functions.
2. Four year college degree in biology or related field.
3. \$47,000+ per year



AVAILABLE

Geological Tech Engineers

1. Involved in mineral and energy exploration, evaluation, development and production; engineering site selection, construction and construction material production, groundwater and geo-environmental engineering including geologic hazards assessment. Applies site specific geological knowledge to engineering problems.
2. Four year college degree in geology or mining geology.
3. \$56,000+ year



AVAILABLE

Hydrologists

1. Research the distribution, circulation, and physical properties of underground and surface waters.
2. Four year college degree in geology or mining geology.
3. \$56,000 + per year








AVAILABLE






Water or Air Specialists







1. A person highly knowledgeable and skilled in the application of scientific technology to regulatory compliance with local, state and federal environmental law and regulation.
2. Extensive college level training and certification
3. \$41,000 + per year






AVAILABLE

EQUIPMENT OPERATORS	
<p>Heavy Truck Drivers</p> <ol style="list-style-type: none"> 1. Drive a tractor-trailer combination or a truck with capacity of at least 26,000 GVW. Transports and delivers goods / materials in liquid, loose or packaged form. May be required to unload truck and use automated routing equipment. 2. Certified Drivers License with appropriate endorsements. 3. \$50,000+ per year 	 SHORTAGE
<p>Drill Operator</p> <ol style="list-style-type: none"> 1. Set up or operate drills to remove petroleum products from the earth and to find and remove core samples for testing during oil and gas exploration. 2. High school diploma or GED 3. \$30,000+ per year 	 CONCERN
<p>Mobile Equipment Operators</p> <ol style="list-style-type: none"> 1. Operates mechanical equipment in the process of extraction, transporting and/or separation of mined materials. 2. Certification, training, on-the-job-training 3. \$36,000 +per year 	 CONCERN
<p>Crane Operators</p> <ol style="list-style-type: none"> 1. Operates a mechanical mechanism to lift and position loads in many different directions. 2. Vocational training, certification, or on-the-job training 3. \$38,000+ per year 	 AVAILABLE
FIELD INSPECTORS	
<p>Electrical Inspectors</p> <ol style="list-style-type: none"> 1. Inspects and tests electrical drawings, equipment and installation to meet regulatory code and contract specifications. 2. Associate's or bachelor's degree in related field, experience may substitute for some to all of educational requirements. 3. \$60,000 +per year 	 AVAILABLE

FIELD INSPECTORS (cont.)	
<p>Mechanical Inspectors</p> <ol style="list-style-type: none"> 1. Inspects and tests mechanical systems, equipment and installation to meet regulatory code and contract specifications. 2. Associate's or bachelor's degree in related field, experience may substitute for some to all of educational requirements 3. \$60,000 + per year 	 AVAILABLE
<p>Non-Destructive Examination</p> <ol style="list-style-type: none"> 1. Inspects and tests assemblies and components for mechanical integrity through various non-destructive means. 2. Associate's or bachelor's degree in related field, experience may substitute for some to all of educational requirements 3. \$60,000 + per year 	 SHORTAGE
<p>Civil Inspectors</p> <ol style="list-style-type: none"> 1. Responsible for observing and recording the results of clearing operations: survey work, lines & grades, excavation, blasting operations instrumentation; concrete; drilling; earthworks. The inspection functions are dependent on type of construction. 2. Bachelor's degree (preferred) + certification 3. \$60,000 + per year 	 AVAILABLE
<p>Health/Safety/Environment Inspector</p> <ol style="list-style-type: none"> 1. Develops and implement HSE requirements and programs. Promotes health safety and environmental awareness through training and inspection 2. Bachelor's degree, experience 3. \$60,000+ per year 	 SHORTAGE
<p>Coating Inspectors</p> <ol style="list-style-type: none"> 1. Inspects and test coatings applied to a variety of surfaces (such as piping, insulation, pipeline). 2. Associates or bachelor's degree in related field, experience may substitute for some to all of educational requirements. 3. \$60,000 +per year 	 AVAILABLE

FIELD INSPECTORS (cont.)	
Environmental Inspector 1. Analyzes, measures, inspects and reports on findings of environmental quality (air, water, soil, etc). 2. Bachelor's degree in a field of science 3. \$55,000 + per year	 AVAILABLE
Instrumentation Inspectors 1. Inspects and tests instrumentation and equipment and installation to meet code and contract specifications. 2. Associates or bachelors degree in related field, experience may substitute for educational requirements. 3. \$60,000 + per year	 AVAILABLE
Welding Inspectors 1. Inspects and tests welds and equipment to meet regulatory codes and contract specifications. 2. Training + associates or bachelors degree in related field; experience may substitute for educational requirements. 3. \$60,000 + per year	 AVAILABLE
Telecommunication Inspectors 1. Research, design, test and inspect new and existing telecommunication systems. 2. Bachelor degree preferred 3. \$60,000 + per year	 AVAILABLE
HEALTH & SAFETY (H&S)	
H & S Compliance 1. Provides enforcement of occupational safety and health regulations derived from an established body of law (e.g.: OSHA, MSHA). 2. Associates or bachelor's degree in related field, experience may substitute for some to all of educational requirements 3. \$60,000 - \$100,000 per year	 SHORTAGE
Emergency Medical Technicians 1. Assists in providing emergency medical treatments to all employees. Provides a safe place to work, provides training to employees. 2. High school diploma or GED, certification, valid driver's license 3. \$36,000+ per year	 AVAILABLE

Fire Fighters 1. Control and extinguish municipal and/or forest fires, protect life and property and conduct rescue efforts. 2. High school diploma or GED 3. \$24,180 + per year	 AVAILABLE
Industrial Hygienist 1. Collect data on work environments for analysis by occupational health and safety specialists. 2. Associates or bachelor's in related field, experience may be substituted. 3. \$50,000 + per year	 AVAILABLE
Paramedics 1. Provides emergent and non emergent medical care and rescue at remote client sites. Maintains site specific emergency and evacuation plans. 2. Experience, certification and training 3. \$65,000+ per year	 AVAILABLE

INDIRECT SERVICES	
Marketing & Sales 1. Develops objectives and policies for the sales and marketing departments. Responsible for profit margin and overhead costs, along with competitive positioning of the organization within the market. 2. High school diploma or GED 3. \$34,000+ per year	 CONCERN
Teachers or Trainers 1. Conduct training and development programs for employees. 2. Entry - bachelors degree; advanced – masters (certification may be required) 3. Entry - \$54,000+per year	 CONCERN

Salary base indicates entry level in the oil, gas and mining industry within the state of Alaska

LOGISTICS

Airplane Pilots

1. Pilot and navigate the flight of multi-engine aircraft for the transport of passengers and cargo.
2. Requires Federal Air Transport rating and Certification in specific aircraft
3. \$83,000 + per year



AVAILABLE

Bus Drivers

1. Drive bus or motor coach, including regular route operations, charters and private carriage. May assist passengers with baggage and collect fees.
2. High school diploma or GED, commercial driver's license
3. \$30,000+ per year



AVAILABLE

Deckhands/Stevedores

1. Stand watch to look for obstructions or water depth, turn wheel on bridge, or use emergency equipment as directed by captain, mate or pilot. Break out rig, overhaul and store cargo-handling gear, stationary rigging, and running gear.
2. High school diploma or GED
3. \$30,000 + per year



AVAILABLE

Divers

1. Work below surface of water using scuba gear to inspect, repair, remove or install equipment and structures. May use a variety of power and hand tools. May conduct test or experiments, rig explosives or photograph.
2. High school diploma and certification and licensing
3. \$40,000 + per year



AVAILABLE

Flight Attendants

1. Provide personal services to ensure the safety and comfort of airline passengers during flight. Greet passengers, verify tickets, explain use of safety equipment and serve food and beverages.
2. High school diploma
3. \$40,000 + per year



AVAILABLE

Helicopter Pilots

1. Pilot and navigate the flight of rotary wing aircraft for the transport of passengers and cargo.
2. Requires Federal Air Transport rating and certification
3. \$65,000 + per year



AVAILABLE

Light Truck Drivers

1. Drive a van or truck (less than 26,000 GVW), primarily to deliver or pick up merchandise or packages within a specified area. May require use of automatic routing or location software and loading/unloading of truck.
2. High school diploma or GED and commercial drivers license (CDL)
3. \$30,000 + per year



AVAILABLE

MATERIAL HANDLING

Warehouse Clerk

1. Receive, store and issue materials, equipment, tools and other items from stock, warehouse or storage yard. Keep records, maintain inventory, and compile reports.
2. No degree required.
3. \$19,000 + per year



CONCERN

Dispatchers

1. Schedule and dispatch workers, work crews, equipment or service vehicles for conveyance of materials, freight or passengers or for normal installation, or emergency repairs rendered outside the place of business.
2. High school diploma or GED
3. \$30,000 + per year



AVAILABLE

Expeditors

1. Coordinate and expedite the flow of work and materials within or between departments of an establishment according to production schedule.
2. High school diploma or GED
3. \$33,000 + per year




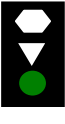




AVAILABLE







Forklift







1. Sort, move, and store palletized material or product in a location that is safe using a forklift or pallet mover and maintain accurate location records.
2. Certification – OSHA and/or site specific (4-8 hours); on-the-job training
3. \$21,000 + per year









AVAILABLE







MATERIAL HANDLING (cont.)	
Freight Handlers <ol style="list-style-type: none"> 1. Load, unload, and move materials at a plant, yard or other work site. 2. No degree required. 3. \$21,000 + per year 	 AVAILABLE
Material Inspectors <ol style="list-style-type: none"> 1. Inspect, test, sort, sample, or weigh materials or products for defects, wear and deviations from specifications. 2. High school diploma or GED 3. \$28,000 + per year 	 AVAILABLE
OFFICE & FIELD ENGINEERS	
Chemical Engineers <ol style="list-style-type: none"> 1. Plans, designs, supervises, monitors and adapts chemical processes to control and manipulate forms of matter and energy to produce a desired outcome. 2. Bachelor's degree 3. \$70,000 + per year 	 SHORTAGE
Civil Engineers <ol style="list-style-type: none"> 1. Plans, designs, and oversees construction and maintenance of building structures, and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, water and sewage systems, and waste disposal units. 2. Bachelor's degree 3. \$70,000 + per year 	 SHORTAGE
Electrical Engineers <ol style="list-style-type: none"> 1. Designs, develops, tests, or supervises the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use. 2. Bachelor's degree 3. \$70,000 + per year 	 SHORTAGE
Mechanical Engineers <ol style="list-style-type: none"> 1. Plans and designs tools, engines, machines, and other mechanically functioning equipment. Oversees installation, operation, maintenance, and repair of such equipment as centralized heat, gas, water, and steam systems. 2. Bachelor's degree 3. \$70,000 + per year 	 SHORTAGE






OFFICE & FIELD ENGINEERS (cont.)	
Mining Engineers <ol style="list-style-type: none"> 1. Designs, supervises and adapts mining processes and procedures to maximize the value of the mine. 2. Bachelor's degree 3. \$70,000 + per year 	 SHORTAGE
Project Engineers <ol style="list-style-type: none"> 1. Uses programs and facilities, makes construction drawings, to meet codes and industry/owner standards, creates change orders as required and coordinates construction for compliance with drawings, schedules, timelines and costs. 2. Bachelor's degree 3. \$70,000 + per year 	 SHORTAGE
Project Managers <ol style="list-style-type: none"> 1. Manages all aspects of a project or construction to ensure that goals, timelines, costs and quality standards are achieved or exceeded 2. Bachelor's degree in related field and additional certification, experience and or project training 3. \$70,000 + per year 	 SHORTAGE
Geoscientist/Geologist <ol style="list-style-type: none"> 1. Helps locate mineral and petroleum deposits and underground water resources, evaluates ore value, prepares reports and maps, and interprets data to recommend action/study. 2. Bachelor's degree 3. \$54,000 + per year 	 CONCERN
Petroleum Engineers <ol style="list-style-type: none"> 1. Devises methods to improve oil and gas well production and determine the need for new or modified tool designs. Oversees drilling and provides technical advice. 2. Bachelor's degree 3. \$68,000 + per year 	 SHORTAGE
Chemists <ol style="list-style-type: none"> 1. Conducts qualitative and quantitative chemical analyses or chemical experiments for quality or process control. 2. Bachelor's degree 3. \$60,000 + per year 	 AVAILABLE





OFFICE & FIELD ENGINEERS (cont.)	
<p>Designers</p> <ol style="list-style-type: none"> 1. Prepares detailed drawings and designs using drafting instruments or computer aided-design equipment. Modifies and refines designs to conform to customer specifications or changes. 2. Bachelor's degree 3. \$55,000 + per year 	 <p>AVAILABLE</p>
<p>Drafters</p> <ol style="list-style-type: none"> 1. Prepare detailed working diagrams, including dimensions, fastening methods, and other engineering information. 2. Associate's degree or vocational certification 3. \$42,000 + per year 	 <p>AVAILABLE</p>
<p>Geographic Information Systems Specialist (GIS)</p> <ol style="list-style-type: none"> 1. Examines and compiles geographic information and technical data using a variety of sources. 2. Associate's degree in geology 3. \$49,000+ per year 	 <p>AVAILABLE</p>
<p>Lab Technicians</p> <ol style="list-style-type: none"> 1. Performs lab and field tests to monitor the environment, investigate and research. 2. Bachelor's degree 3. \$48,000+ per year 	 <p>AVAILABLE</p>
<p>Planners/Schedulers</p> <ol style="list-style-type: none"> 1. Produces comprehensive schedules for major projects, maintenance and contractor activity. Monitors backlogs, equipment outages or upgrades. Resolves complex scheduling problems minimizing impacts to operations. 2. Bachelor's degree with basic knowledge of planning, scheduling processes including system. 3. \$68,000+ per year 	 <p>AVAILABLE</p>
<p>Surveyors</p> <ol style="list-style-type: none"> 1. Makes exact measurements and determine property boundaries of land or land features on or near the earth's surface for engineering, mapmaking, mining, land evaluation, construction, and other purposes. 2. Certification and training 3. \$57,000 + per year 	 <p>AVAILABLE</p>

OPERATIONS & MAINTENANCE	
<p>Carpenters</p> <ol style="list-style-type: none"> 1. Constructs and repairs mostly wooden structures. Builds forms for concrete work. 2. Apprenticeship or other vocational skills training plus on the job training 3. \$50,000 + per year 	 <p>SHORTAGE</p>
<p>Electricians</p> <ol style="list-style-type: none"> 1. Provides preventive maintenance, repair and calibration of protective relays, low and medium voltage switch gear, lighting and control systems, power distribution systems; including batteries, chargers, UPS systems and generator sets up to 4 MW and heat trace systems. 2. Apprenticeship or other vocational skills training plus on the job training 3. \$70,000 + per year 	 <p>SHORTAGE</p>
<p>Machinist & Millwrights</p> <ol style="list-style-type: none"> 1. Installs, aligns, maintains, makes and/or repairs parts and repairs mechanical systems including motors, generators, pumps, compressors, turbines, crushers, grinders and conveyors. 2. Associate's degree or apprenticeship or other vocational skills training plus on the job training 3. \$70,000 + per year 	 <p>SHORTAGE</p>
<p>Maintenance General/Mining Mechanic</p> <ol style="list-style-type: none"> 1. Conducts preventive maintenance and repair of plant facilities and equipment. 2. Associate's degree or apprenticeship or other vocational skills training plus on the job training 3. \$40,000+ per year 	 <p>SHORTAGE</p>
<p>Operations Managers & Supervisors</p> <ol style="list-style-type: none"> 1. Sets goals, leads, supervises and coordinates individuals and activities to ensure the plant and facilities operations meet or exceed business goals. 2. Bachelor's degree and experience in related field 3. \$70,000+ per year 	 <p>SHORTAGE</p>
<p>Pipe Fitters</p> <ol style="list-style-type: none"> 1. Constructs and maintains piping systems for both pressure and atmospheric service in accordance with applicable codes. 2. Experienced and qualified welder with appropriate mathematical background. 3. \$70,000+ per year 	 <p>SHORTAGE</p>

Salary base indicates entry level in the oil, gas and mining industry within the state of Alaska

OPERATIONS & MAINTENANCE (cont.)	
<p>Drill Rig Operators</p> <ol style="list-style-type: none"> 1. Works on a drilling rig and performs labor, handles drill pipe during drilling, assists in rigging up and rigging down. 2. Entry – high school; advanced – associate's degree 3. Entry - \$40,000+ per year ; advanced - \$50,000+ per year 	 CONCERN
<p>Instrumentation</p> <ol style="list-style-type: none"> 1. Installs, maintains, troubleshoots and repairs automatic control systems. 2. Associate's degree 3. \$50,000 + per year 	 CONCERN
<p>Miners</p> <ol style="list-style-type: none"> 1. Works to extract ore or minerals from the earth. 2. GED and vocational training (certification may be required) 3. \$30,000 + per year 	 CONCERN
<p>Telecommunications</p> <ol style="list-style-type: none"> 1. Installs and maintains communications systems including telephone, radio computer and associated equipment. 2. High school diploma and vocational training 3. \$53,000 + per year 	 CONCERN
<p>Diesel Mechanic</p> <ol style="list-style-type: none"> 1. Diagnoses, adjust, repair, or overhaul trucks, buses, and all types of diesel engines. 2. Certification and training 3. \$52,000 + per year 	 AVAILABLE
<p>Heat and Frost Insulators</p> <ol style="list-style-type: none"> 1. Apply insulation materials to pipes, tanks, boilers, ducts, and other surfaces requiring thermal control of temperatures. 2. High school diploma or GED 3. \$32,000 + per year 	 AVAILABLE

OPERATIONS & MAINTENANCE (cont.)	
<p>Laborers/Nippers/Utilities</p> <ol style="list-style-type: none"> 1. Performs non-skilled labor as required in any or all areas of the construction and operation. 2. GED 3. \$27,000 + per year 	 AVAILABLE
<p>Mechanics</p> <ol style="list-style-type: none"> 1. Inspect, repair and maintain vehicles and equipment in shop. 2. Certification and training 3. \$35,000 + per year 	 AVAILABLE
<p>Painters</p> <ol style="list-style-type: none"> 1. Applies protective and decorative coatings to equipment and facilities in both construction and maintenance contexts. 2. GED 3. \$32,000 + per year 	 AVAILABLE
<p>Pipe Coaters</p> <ol style="list-style-type: none"> 1. Set-up, operate or tend machine to coat or paint product with rust-or fire proofing product. 2. GED and on-the-job training 3. \$27,000 + per year 	 AVAILABLE
<p>Welders</p> <ol style="list-style-type: none"> 1. Use hand-welding, flame-cutting, hand soldering, or brazing equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products. 2. High school and on-the-job training 3. \$32,000 + per year 	 AVAILABLE

PLANT & PRODUCTION OPERATORS	
<p>Mill Operators</p> <ol style="list-style-type: none"> 1. Set up, operate or tend milling operations. 2. High school diploma, certification 3. \$33,000 + per year 	 <p>CONCERN</p>
<p>Control Room Operators</p> <ol style="list-style-type: none"> 1. Controls the operation of petroleum refining or processing units. May specialize in controlling manifold and pumping systems, gauging or testing oil in storage tanks, or regulating the flow of oil into pipelines. 2. Entry – high school and training; advanced – associate’s degree 3. Entry \$45,000 + per year ; advanced – \$68,000 + per year 	 <p>AVAILABLE</p>
<p>Oil & Gas Operators</p> <ol style="list-style-type: none"> 1. Distributes or processes gas for utility companies and others by controlling compressors to maintain specified pressures on main pipelines. 2. Entry – associate’s degree; advanced – bachelor’s degree 3. Entry - \$55,000 + per year; advanced - \$68,000 + per year 	 <p>AVAILABLE</p>
<p>Power Plant Operators</p> <ol style="list-style-type: none"> 1. A person who operates and maintains power generation equipment for both baseline and standby capacity. 2. Bachelor’s degree, certification 3. \$55,000 + per year 	 <p>AVAILABLE</p>



SECURITY	
<p>Guards/Watchmen</p> <ol style="list-style-type: none"> 1. Serves in lieu of policeman, fireman, paramedic, rescue technician and property and production security. 2. High school diploma and on the job training 3. \$25,000 + per year 	 <p>AVAILABLE</p>
<p>Wildlife Control</p> <ol style="list-style-type: none"> 1. Provides protection for workers and wildlife. Controls pests, vermin or other wildlife in buildings or surrounding areas per applicable regulations. 2. High school diploma and on the job training; may require firearm safety course. 3. \$30,000 + per year 	 <p>AVAILABLE</p>

EXHIBIT I

Data from the Department of Labor and Workforce Development, Research and Analysis section

1. "Putting Alaska's Resources to Work" (PARW) Needs Assessment Committee collected data from Research and Analysis relating to Alaska's oil, gas and mining occupations spanning 2004 to 2016.
2. Committee members reviewed the data, identified, weighted and then statistically analyzed the data based on four criteria: number of jobs at 10, growth of occupation at 9, age of worker at 7 and non-resident rate at 4.
3. Occupations were then re-sorted based on their statistical priority ranking.

Categories and Definitions

1. Using the BP Gas Line document entitled "What's In It For Me? Project Jobs" and adding additional occupational categories and titles the committee organized the occupations according to nomenclature common to industry (i.e. first category is Administrative and Professional).
2. A crosswalk of definitions was developed utilizing both the Standardized Occupational Classifications (SOC) and those terms and definitions common and understandable to industry.

Industry Outreach

1. PARW Needs Assessment Committee approached eight key industry stakeholder groups and requested, received and incorporated their feedback into this report:
 - a. The Mining Human Resources (HR) Group on 9/21/07 and 11/8/07
 - b. The Oil and Gas HR Group on 9/12/07
 - c. The Alaska Support Industry Alliance on 9/11/07
 - d. Associated Builders Contractors on 9/11/07
 - e. Association of General Contractors of Alaska on 9/11/07
 - f. Alaska Truckers Association Inc. on 9/12/07
 - g. The Alaska Native Claims Settlement Act HR Group on 11/8/07
 - h. The PARW Coalition on 10/11/07.
2. Additionally, members followed up on referrals for one on one interviews and web site research recommended by industry.
3. Finally, the findings and input were assimilated into a final draft report which was reviewed and adopted by the Needs Assessment Committee, the PARW Coalition and the APICC Board.

EXHIBIT II

ACKNOWLEDGEMENT OF THOSE WHO CONTRIBUTED TO THIS REPORT

Needs Assessment Committee Participating Members:

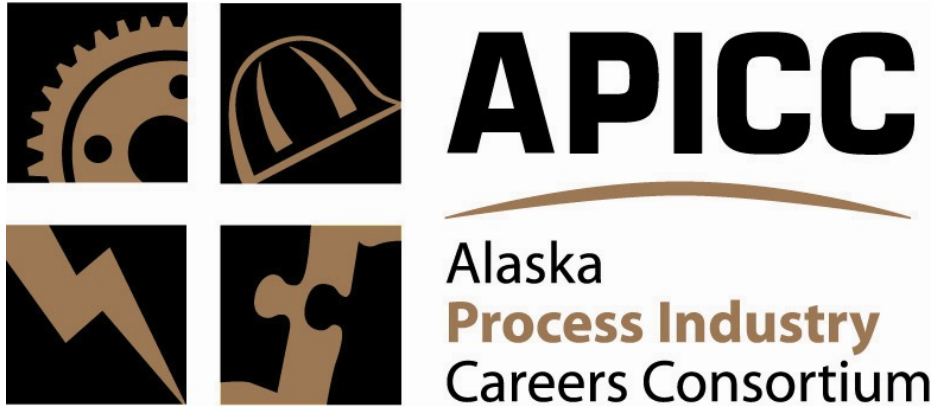
Dave Williams, ConocoPhillips, Chair, Retired
Mary Shields, Northwest Technical Services Inc., Chair
Victoria Pohl, University of Alaska Anchorage, Co-Chair
Larry Bethel, Environmental Management Inc
Bill Hurley, ConocoPhillips
Tara Jollie, State of Alaska, Department of Community Affairs
Jule McGee, Alyeska Pipeline Service Company
Roxanna Moe, Arctic Slope Regional Corporation
Dave Rees, APICC
Karen Skoglund
Carolyn Smith, NANA Development Corporation
Heather Spear, Calista Corporation
Dr. Gary Turner, University of Alaska Anchorage, Kenai River Campus
Colleen Ward, Xcel

Members from each of the following Industry Groups:

The Mining Human Resources (HR) Group
The Oil and Gas HR Group
The Alaska Support Industry Alliance
Associated Builders Contractors
Associated General Contractors Alaska
Alaska Truckers Association Inc.
The Alaska Native Claims Settlement Act HR Group
The Putting Alaska's Resources to Work (PARW) Coalition

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Craig McCloud, Doyon Universal



VISION

This information serves as an invaluable foundation to accomplish the vision of “Putting Alaska’s Resources to Work” (PARW) –

“ALASKA WILL HAVE A HIGHLY SKILLED AND GLOBALLY COMPETITIVE RESIDENT WORKFORCE THAT MEETS THE CURRENT AND FUTURE NEEDS OF THE OIL, GAS AND MINING INDUSTRIES.”