

Alaska Process Industry Careers Consortium

Special: Priority Occupations Report 2008



APICC: A Critical Part in Alaska's Workforce Investment System

- Focused on the specific, technical needs of a major industry cluster: Industrial & Engineering
- More breadth and statewide consistency than individual program advisory committees or employer sponsored training
- Endorsed by AWIB as a means to better define the technical needs within an industry in a more targeted manner
- Actively engaged with Workforce Investment Boards, One-Stop Job Centers, School to Work and other State/Federal/Local programs
- Intended to enhance and promote career pathway efforts at all levels, K-12 through to post-secondary and incumbent workers



**Statewide
Policy**



**Regional
Policy &
Implementation**



**Local Program
Implementation**



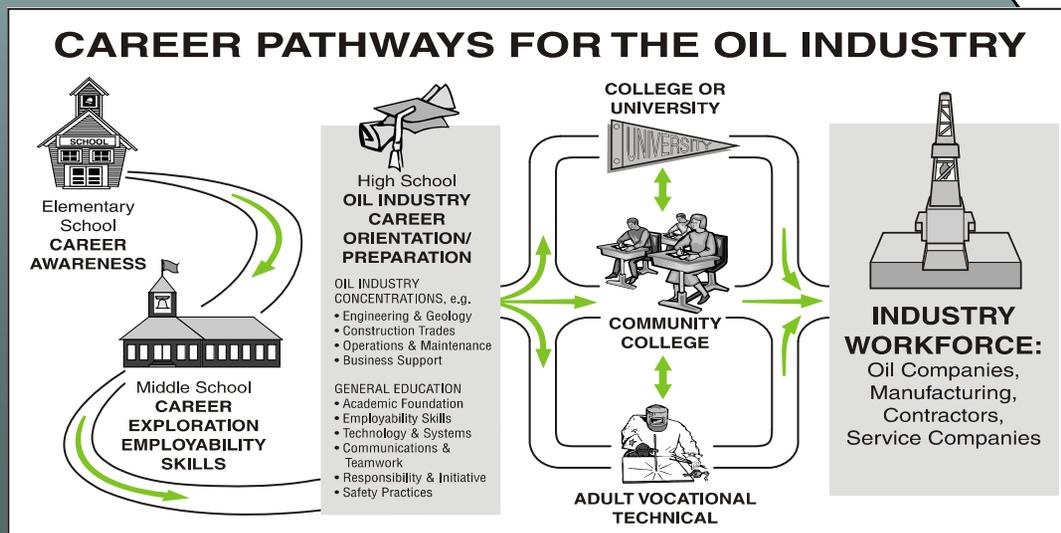
**Industry Specific
Workforce Development**

APICC Strategic Plan

- **Assess workforce needs**
- **Employer involvement necessary**
- **Define or restate industry standards**
- **Assess current training vs. standards**
- **Form partnerships: Curriculum**
 - develop, revise and implement
- **Resource through the partnership**
- **Recruit the trainees**
- **Commit to employ successful students**
- **Review/revise as industry needs change**
- **Renew the needs assessments**

- **Organization of partners /stakeholders:**
 - industry
 - training providers
 - Native organizations
 - government
- **Industry Needs Assessment**
- **Process Tech Program**
- **Career Awareness / Outreach / TIE**
- **Plan to Put Alaskans to Work**
 - Engage the Stakeholders
 - Train the Workforce
 - Employ the Skilled Alaskans
 - Adaptively Sustain the System

APICC Outcomes



The Needs Assessment Process

- **Focused on current operations**
 - Identified the jobs utilized in the industry
 - Industry HR groups
 - Specific Industry focus groups
 - Data for industry projects & operations
 - DOL Industry Data
 - Determined the Availability of skilled workers
- **Key Players**
 - Alaska DOL: R&A, Services and Workforce Development Group
 - 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
 - University of Alaska



ALASKA'S OIL, GAS AND MINING PRIORITY OCCUPATIONS

ADMINISTRATIVE & PROFESSIONAL

Administrative Managers & Supervisors
 Accountants
 Administrative Aides
 Buyers/Procurement
 Clerks
 Contract Specialists
 Document Controllers
 Human Resources
 Information Technology Systems
 Internal Auditors
 Payroll
 Secretaries

CAMPS & CATERING

Cooks
 Stewards
 Maintenance - Light

ENVIRONMENTAL

Cleaners
 Archaeologists
 Biologists
 Geotechnical Engineers
 Hydrologists
 Water or Air Specialists
 Water/Waste Water Operators

EQUIPMENT OPERATORS

Heavy Truck Drivers
 Drill Operators
 Mobile Equipment Operators
 Crane Operators

FIELD INSPECTORS

Electrical
 Mechanical
 Non Destructive Examination
 Civil
 Coating
 Environmental
 Instrumentation
 Welding
 Telecommunication

HEALTH & SAFETY (H&S)

H & S Compliance
 Inspector
 Fire Fighters
 Industrial Hygienists
 Medical

INDIRECT SERVICES

Sales
 Teachers or Trainers
 Real Estate

LOGISTICS

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

MATERIAL HANDLING

Warehousemen
 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
 Geoscientists/Geologists
 Petroleum Engineers
 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
 Insulators
 Laborers/Nippers/Utilities
 Mechanics
 Painters
 Pipe Coaters
 Welders

PLANT & PRODUCTION OPERATORS

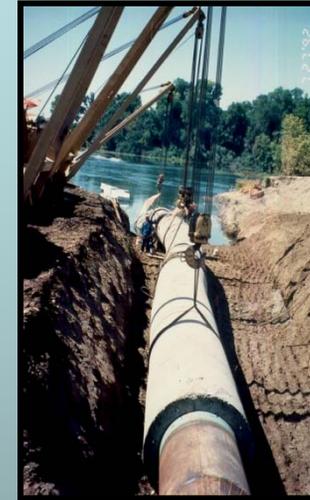
Mill Operators
 Control Room Operators
 Oil & Gas Operators
 Power Plant Operators

SECURITY

Guards/Watchmen
 Wildlife Control

ASSESSMENT

- **Two-step process:**
 - Utilize DOL data to determine numbers currently in the jobs and the overall supply
 - Aggregate industry input on numbers and (subjective) ability to find skilled workers
- **Validate occupations / terminology with industry & Department of Labor**
 - Cross-walk industry job titles with DOL and the Standard Occupational Codes
 - Provide job descriptions for occupations
 - 2007 DOL Pipeline Construction project cross-reference



ALASKA'S OIL, GAS AND MINING PRIORITY OCCUPATIONS

TIER ONE PRIORITY SHORTAGE

Shortages currently exist in these occupations. Employers are unable to fill vacancies. Projects and work are being halted or delayed due to these vacancies.

Administrative Managers & Supervisors
 Carpenters
 Chemical Engineers
 Civil Engineers
 Cleaners
 Electrical Engineers
 Electricians
 Heavy Truck Drivers
 H & S Compliance
 Machinists & Millwrights
 Maintenance General (Mining Mechanic)
 Mechanical Engineers
 Mining Engineers
 Pipe Fitters
 Operations Managers & Supervisors
 Project Engineers
 Project Managers
 Safety Inspector

TIER TWO PRIORITY CONCERN

Employers are finding 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
 Drill Operators
 Drill Rig Operators
 Geoscientists/Geologists
 Instrumentation
 Mill Operators
 Miners
 Mobile Equipment Operators
 Non Destructive Examination Inspector
 Petroleum Engineers
 Sales
 Stewards
 Teachers or Trainers
 Telecommunications
 Warehousemen

TIER THREE PRIORITY AVAILABLE

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

Accountants	Environmental Inspectors	Light Truck Drivers
Administrative Aides	Expeditors	Maintenance - Light
Airplane Pilots	Fire Fighters	Material Inspectors
Archaeologists	Flagmen	Mechanical Inspectors
Biologists	Flight Attendants	Mechanics
Barge Operators	Fork Lift	Medical
Bus Drivers	Freight Handlers	Oil & Gas Operators
Buyers/Procurement	Fueling Handlers	Power Plant Operators
Chemists	Geographic Information Systems Specialists	Painters
Civil Inspectors	Geotechnical Engineers	Payroll
Clerks	Guards/Watchmen	Pipe Coaters
Coating Inspectors	Helicopter Pilots	Real Estate
Contract Specialists	Human Resources	Schedulers/Planners
Control Room Operators	Hydrologists	Secretaries
Crane Operators	Industrial Hygienists	Surveyors
Deckhands/Stevedores	Information Technology Systems	Telecom Inspectors
Designers	Instrumentation Inspectors	Water or Air Specialists
Diesel Mechanics	Insulators	Water/Waste Water Operators
Dispatchers	Internal Auditors	Welders
Divers	Lab Technicians	Welding Inspectors
Document Controllers	Laborers/Nippers/Utilities	Wildlife Control
Drafters		
Electrical Inspectors		

The Priority Occupations

- Results of the analysis: **Priorities**
 - O& M Crafts
 - Engineers
 - Integrity & Safety
 - Supervisors
- Displaying the data for career seekers



2004 - 2014

Oil, Gas & Mining

PRIORITY OCCUPATIONS

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

- oFirst, the number of jobs, growth of the occupation, age of workers in the job and number of non resident workers for 2004-2014 was analyzed.
- oSecond, industry provided first hand input regarding current difficulty in hiring for each occupation.

INDICATORS

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

Red/Shortage – Difficult to find qualified workers to hire in this occupation and positions often remain vacant for periods of time.

Blue / Concern– Difficultly in finding 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 health of the oil, gas and mining industries.

INDICATOR OF ESSENTIAL OCCUPATIONS



Shortage



Concern



Available

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. Associates 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. Associates 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. Associates or bachelor's and experience in related field 3. \$50,000 + per year 	 <p>SHORTAGE</p>
<p>Pipe Fitters/Plumbers</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>

OFFICE & FIELD ENGINEERS

Chemical Engineers

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

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

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

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

Mining Engineers

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

1. Using end use specifications designs systems and facilities, makes construction drawings, meets applicable codes and industry/owner specifications, creates change orders as required and coordinates construction for compliance with drawings, schedules and timelines and costs.
2. Bachelor's degree
3. \$70,000 + per year



SHORTAGE

Project Managers

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

FIELD INSPECTORS

Electrical Inspectors

1. Inspects and tests electrical drawings, equipment and installation to meet regulatory code and contract specifications.
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

Mechanical Inspectors

1. Inspects and tests mechanical systems, equipment and installation to meet regulatory code and contract specifications.
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

Non Destructive Examination

1. Inspects and tests assemblies and components for mechanical integrity through various non-destructive means.
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

How to Use the Data & the Process

- Identify Workforce priorities / work with AWIB
- Identify Training priorities for providers
 - Identify industry standards for occupations
 - Assess current / future programs re the standards
- Career guidance for students, other potential workers
- Career awareness for educators, government officials
- Design and implement Tech-Prep, apprenticeship and intern programs
- Identify ways to transition into occupations
 - Military
 - Displaced workers
- The process can be utilized for any industry

Skill Areas	Skill Levels						
	1	2	3	4	5	6	7
Applied Mathematics ☆			X	X	X	X	X
Reading for Information ☆			X	X	X	X	X
Locating Information ☆			X	X	X	X	
Business Writing	X	X	X	X	X		
Writing	X	X	X	X	X		
Listening	X	X	X	X	X		
Observation			X	X	X	X	
Teamwork			X	X	X	X	
Applied Technology			X	X	X	X	
= Skill level not defined or measured by the WorkKeys system							
☆ = Skill area included in ACT's National Career Readiness Certificate							



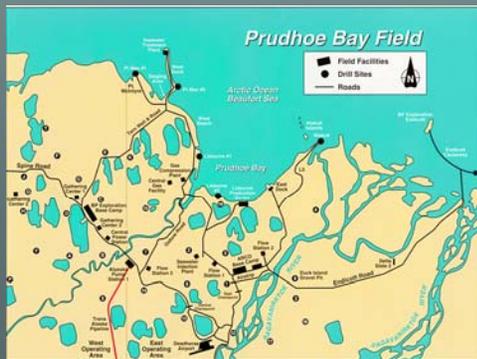
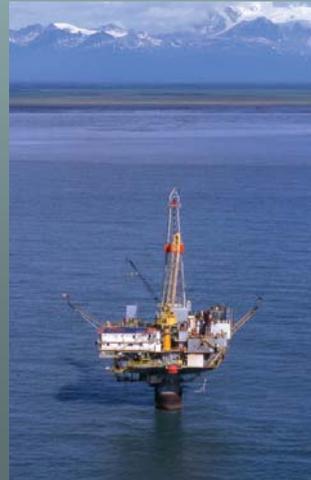
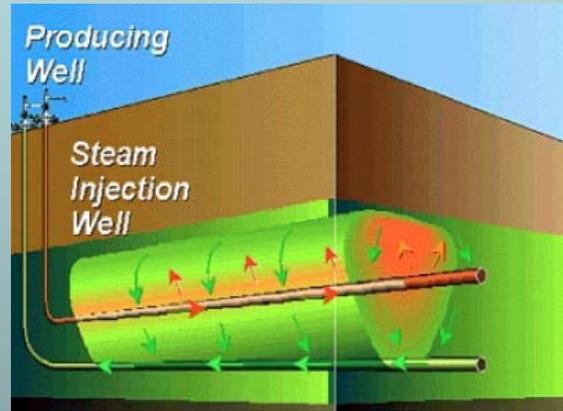
Next Steps

Partner with Education & the State agencies:

- Quantify the gaps in supply & demand (how many jobs, availability, etc.)
- Identify gaps in training / development for the occupations
- Work with the State's workforce development implementation committee
- Develop a web-page delivery system for the data; align with ALEXsys and AKCIS
- Continuously chart progress for the industry workforce development plan
- Move out the horizon

Projects Not Included In The Projection- An Abbreviated List

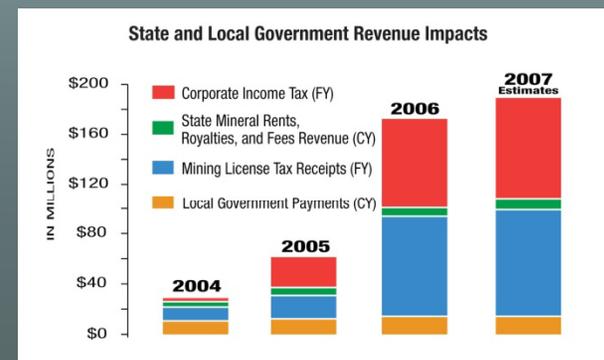
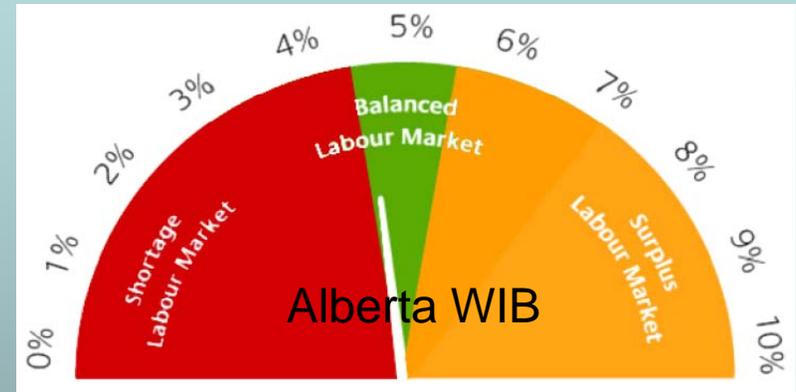
- Port of Anchorage
- Healy Coal Mine expansion
- Bristol Bay OCS
- Knik Arm Bridge
- Western Arctic Coal Project
- Sable Creek Gemstone Mine
- Nenana Basin



- Future expansion of Red Dog Mine
- TSAIA 4th Runway
- Instate petrochemical projects resulting from ANS gas line
- Mat-Su railroad spur
- 20+ Alaska mine prospects currently under exploration and development work
- Chukchi Sea OCS

The Competition For The Workforce- Influences Now And In The Future

- Continental and global competition for skilled oil, gas and mining workers
- Aging workforce
- Increasing demand for energy and minerals spurring more projects and more demand for skilled workers



Action needs to be taken as soon as possible!

- Make education and training more affordable & accessible
- Promote trades and increase apprenticeship training
- Reduce barriers for under-represented groups
- Substantial support for making work more attractive
- Consider the needs of *all* industries

Specific Recommendations to the State Administration:

- Take a clear leadership role in developing a workforce development system for Alaska.
- Encourage industry and enable it to be collaborative in providing the information needed to identify workforce priorities.
- Assure Education owns their role in workforce development.
 - Ready for work certifications
 - Employability skills
- Provide Education and the agencies with the resources and tools to measure and develop the workforce.

AGIA
Training Strategic Plan
A Call To Action



Skill Areas	Skill Levels						
	1	2	3	4	5	6	7
Applied Mathematics ☆			X	X	X	X	X
Reading for Information ☆			X	X	X	X	X
Locating Information ☆			X	X	X	X	
Business Writing	X	X	X	X	X		
Writing	X	X	X	X	X		
Listening	X	X	X	X	X		
Observation			X	X	X	X	
Teamwork			X	X	X	X	
Applied Technology			X	X	X	X	

= Skill level not defined or measured by the WorkKeys system
 ☆ = Skill area included in ACT's National Career Readiness Certificate

Specific Recommendations to AWIB:

Support efforts to provide: Information:

- School to work: clear pathways
- Career guides in the schools

Preparation:

- Vocational & technical education capacity
 - Increase CTE
 - Increase math, science & technology (Engineering academies)
 - Increase co-op / school to work opportunities
- Employability skills at all levels (K-12, Post-sec)
- Retain students in schools
- Support post-secondary providers
- Expand UA scholars program to include CTE programs
- Build infrastructure for instructors

Access:

- Increase opportunities for incumbent worker upgrades
- Distance delivery
- Developmental education for HS dropouts
- Retain students
- Increase capabilities for RTCs
 - Developmental / Transition function
 - Base level

