Alaska Maritime Workforce Development Plan

Supporting a strong, sustainable maritime workforce in Alaska

Developed by representatives of

Alaska Fisheries, Seafood, and Marine Industry Sectors
Alaska State Agencies
University of Alaska

May 2014

Executive Summary

Introduction

The *Alaska Maritime Workforce Development Plan* is a call to action and a guide for industry, government, and educators to work together to enable Alaska's maritime sector to remain economically vibrant, ensure that Alaskans are qualified to fill these skilled and well-paid positions, and increase the number of Alaskans in this workforce.

Alaska's Maritime Workforce

Every day thousands of people across the state work in jobs and businesses related to Alaska's oceans and waterways. Alaska harvests more than 60% of our nation's seafood; goods, services, and passengers are dependent on water transport; the Alaska Marine Highway System alone carries an average of 312,000 passengers and 98,000 vehicles per year. Alaskans depend on our waters for food, livelihood, and recreation.

The maritime sector represents Alaska's largest private employer and is a significant economic force in the state. It represents over 500 firms statewide and a workforce of more than 70,000 people including:

- Seafood harvesters—over 30,000 permit holders and crewmembers.
- Seafood processors—over 25,000 jobs.
- Boat building/repair—over 600 jobs.
- Research, enhancement, and management—over 2,000 jobs.
- Marine transportation, freight, other occupations and service industries—over 3,000 jobs.

However, maritime employers note that the number of Alaskans who have the necessary skills to fill these positions is too low to meet the demand. An aging or "graying" workforce was identified by many employers.

The maritime workforce shares a number of cross-cutting skills among occupations. Employees with transferable or cross-cutting skills are able to work in a variety of occupations within the maritime sector. Prioritizing the development of these skill sets and weaving them into a variety of programs can result in a more cross-trained, flexible workforce.

Goals and Strategies of the *Alaska Maritime Workforce Development Plan*

The *Alaska Maritime Workforce Development Plan* was crafted through a collaborative partnership of industry, state agencies, and the University of Alaska representatives, and are listed in Appendix A. Collecting data, defining goals and strategies, and synthesizing the Plan took time and commitment from the representatives, as they worked together for more than two years. They will continue their efforts as implementation begins.

The goals of the *Alaska Maritime Workforce Development Plan* are to help sustain and enhance the economy of Alaska and its communities by:

1. **Developing a responsive workforce that enables the maritime sector to remain a substantial contributor to the state,**
2. **Guiding Alaska's workforce to discover and prepare for the wide range of employment opportunities in the maritime sector, and**
3. **Increasing the number of Alaskans working in skilled maritime occupations.**

Five overall strategies were identified as paths toward meeting the goals of the Plan:

1. **Grow awareness of occupations and develop career pathways.**

   Ensure that Alaskans understand and can access the opportunities for career-level and well-paying jobs in maritime occupations in all regions of Alaska.

2. **Improve workforce readiness.**

   Maritime industry employers identified the need for workers to have an essential skill set (soft skills) coming into a job. This is a critical skill set to build and foster for both entry-level jobs and as an important foundation for higher-level positions.

3. **Train Alaskans for maritime careers.**

   Coordinated training between K-12 educators, regional training centers, and the University of Alaska is needed to prepare high school students for additional training or work in the maritime sector, and provide opportunities for adults to join the workforce, upgrade their skills, or advance their careers.

4. **Support recruitment and retention.**

   Recruitment and retention are critical to ensure that the maximum number of Alaskans are aware of and can take advantage of job opportunities in the maritime industry.

5. **Promote sustained industry engagement.**

   The *Alaska Maritime Workforce Development Plan* must be driven by identified needs from maritime employers. Sustained engagement will provide ongoing guidance, and is critical to effectively organize, advocate for, and implement the Plan's goals, strategies, and action steps.

In addition to these overall strategies, the Plan identifies 23 specific occupations and occupational groups in need of focused tactics, to increase the number of Alaskans employed in these areas. The *Alaska Maritime Workforce Development Plan* does not identify all occupations in the maritime field. As new information becomes available and the Plan is implemented, this list of occupations will grow and change.

- **Seafood harvesters—**commercial fishing permit holders, crewmembers, and shellfish farmers. This group identified a need for *technical training for harvesters, and specifically noted a high need for vessel maintenance and repair technicians available in fishing ports.*
  - » Commercial Seafood Harvester (permit holders and crewmembers)
  - » Vessel Repair and Maintenance Service Provider
  - » Shellfish Farmer
- **Seafood Processors—**Nine high need occupations were identified and processors noted *the lack of skilled Alaskans to fill these jobs.*
  - » Seafood Plant and Floating Processor Engineer
  - » Refrigeration Engineer and Technician

- » Seafood Production Manager
- » Electrician
- » Can Machinist
- » Quality Control and Assurance Manager and Technician
- » Baader Technician
- » Seafood Plant Manager
- » Deckhand

- **Research, enhancement and management—**the Alaska Department of Fish and Game, salmon and shellfish hatcheries, and other research and management agencies and institutions. ADF&G has the greatest number of jobs, and identified five occupations that range in skill level and are challenging to fill. In particular, ADF&G noted *that salary differentials have resulted in a drain of employees to federal or private jobs.*
  - » Biometrician
  - » Fish and Wildlife Technician
  - » Fishery Biologist
  - » Fisheries Scientist
  - » Fish and Game Coordinator
  - » Fisheries Economist, Analyst and Management Specialist
  - » Fishery Management Specialist at NOAA Fisheries
  - » Hatchery Manager

- **Marine occupations and support industries—**this group is large and diverse in number, and *identified a wide range of cross-cutting skills and skill levels needed,* such as vessel operations, shipbuilding, and vessel maintenance and repair.
  - » Ship building
  - » Vessel Operations: Deckhand, Vessel Engineer, Captain
  - » Vessel Repair and Maintenance Service Provider

Opportunities for Alaskans to enter the maritime workforce in skilled occupations are available across the state. The Plan provides pathways for Alaska, its communities, and its residents to benefit from these opportunities. Implementing this Plan must be a dynamic process that responds to new information and changes in both the maritime economy and Alaska's natural resources.

Efforts are under way to implement the ideas and activities in this plan. The ongoing commitment and engagement of industry, state government, and education and training providers are needed to realize the goals and implement the strategies of the *Alaska Maritime Workforce Development Plan.*

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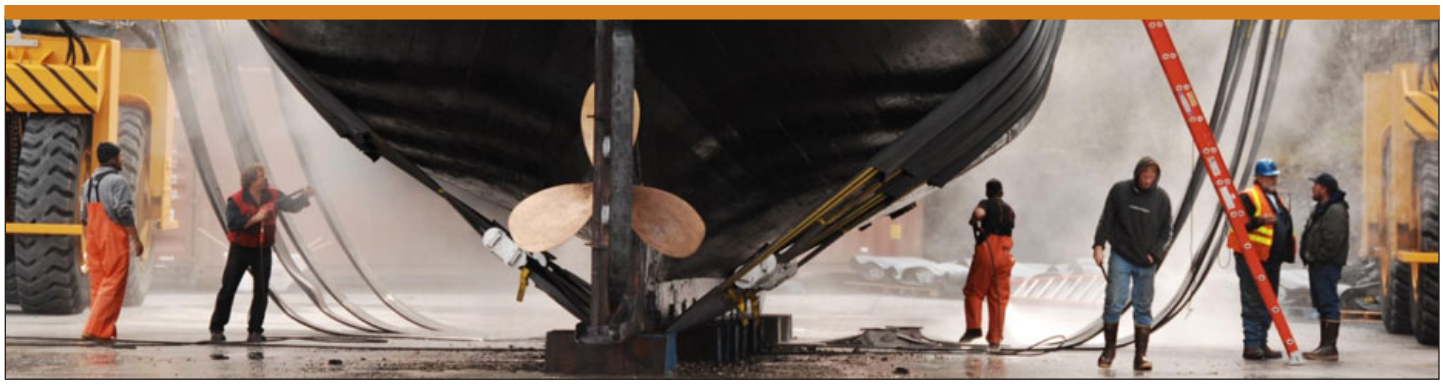


Acronyms

ADF&G	Alaska Department of Fish & Game
AVTEC	Alaska's Institute of Technology
AWIB	Alaska Workforce Investment Board
CDQ	Community Development Quota
DEED	Alaska Department of Education and Early Development
DCCED	Alaska Department of Commerce, Community and Economic Development
DOLWD	Alaska Department of Labor and Workforce Development
DOTPF	Alaska Department of Transportation and Public Facilities
FSMI	Fisheries, Seafood and Maritime Initiative
IAC	Alaska Maritime Workforce Industry Advisory Committee
NMFS	National Marine Fisheries Service
NPFMC	North Pacific Fishery Management Council
NOAA	National Oceanic and Atmospheric Administration
UA	University of Alaska
UAA	University of Alaska Anchorage
UAF	University of Alaska Fairbanks
UAS	University of Alaska Southeast
UFA	United Fishermen of Alaska
USCG	US Coast Guard
WACDA	Western Alaska Community Development Association

Overview and Goals of the *Alaska Maritime Workforce Development Plan*

Introduction

The *Alaska Maritime Workforce Development Plan* is the first comprehensive effort to understand and address the workforce development needs of Alaska's fisheries, seafood, and marine industry employment sector. The Plan is a guide and call to action for industry, government, and educators to work together to support and enhance this important workforce.

Successfully directing stakeholder energy and resources to follow the strategies outlined in this plan will keep Alaska's maritime sector economically vibrant, increase the number of Alaskans in this workforce, and ensure that Alaskans are qualified to fill the skilled and well-paid maritime positions.

Importance of the Maritime Sector

The maritime sector, as defined in this plan, includes seafood harvesters; seafood processors; fisheries research, enhancement, and management; and marine occupations and support industries. Collectively, this sector is Alaska's largest private employer with more than 500 firms statewide and a workforce of over 68,000.[1] In 2011, the seafood industry alone contributed $6.75 billion in total economic impact to the state, and employment within the industry can be found across Alaska. According to the American Maritime Partnership, Alaska ranks third in the nation in per capita maritime jobs, and the thousands of Alaskan jobs directly related to the maritime industry contribute more that $1 billion in economic impact.[2] More than 800 different Standard Occupational Codes are associated with jobs in the maritime industry.[3] Businesses in this industry range from a number of large employers to thousands of sole proprietorships including seafood harvesting and service operations[4] (see Appendix B).

Until now, these occupations have not been formally characterized as a unique and related workforce. Consequently, agencies that track workforce participation and measure an industry's economic value do not have collective data for this sector.

An important and unique part of Alaska's economy, and its culture, is the harvest of seafood and other marine life for subsistence. Recommendations included in this plan could complement the subsistence lifestyle, while developing a workforce with skills to align with maritime industry jobs.

[1, 3, 4] Education and Training Gap Analysis for the Fisheries, Seafood, Maritime Workforce, prepared by McDowell Group for the University of Alaska, May 2012. http://www.alaska.edu/fsmi/

[2] American Maritime Partnership (2014) Alaska Top 3 in Nation for Maritime Jobs Per Capita [press release]. http://www.americanmaritimepartnership.com/2014/03/20/alaska-top-3-nation-maritime-jobs-per-capita/

Table 1. Employment estimates for top maritime employers in Alaska

Commercial harvesters	10,000 permit holders, 21,800 crewmembers
Seafood processors	25,000 employees, 300 firms
Alaska Department of Fish & Game	1,700 employees
Alaska Marine Highway System	1,300 employees
US Coast Guard	2,000 members stationed in Alaska
Saltchuk, owner of Totem, Foss, and other marine transportation related businesses	1,200 employees in Alaska
Polar Tankers	260 employees
Fish hatcheries	250 employees
Vigor Industrial operating Alaska Ship and Drydock	200 employees
North Star Terminal and Stevedoring	500 employees
SeaRiver Maritime (operates tankers for Exxon Mobil)	100 employees
Three pilotage companies	120 employees
Dock workers	400 longshoremen
Other maritime employers, including Horizon Lines, American President Line, Crowley, Foss, Cook Inlet Tug & Barge, Brice Marine, and many small oil, gas, and transportation companies	500–1,000 employees, estimated

Need for a Maritime Workforce Development Plan

The goals of the *Alaska Maritime Workforce Development Plan* are to help sustain and enhance the economy of Alaska and its communities by:

1. **Developing a responsive workforce that enables the maritime sector to remain a substantial contributor to the state,**
2. **Guiding Alaska's workforce to discover and prepare for the wide range of employment opportunities in the maritime sector, and**
3. **Increasing the number of Alaskans working in skilled maritime occupations.**

Employers surveyed during development of the Plan noted that the number of Alaskans with the necessary skills to fill the available maritime positions is too low to meet demand. In many occupations employers note a "graying" or increasing age of their workforce. The commercial fishing industry identified the need to "ready the next generation" to fill its positions. Seafood processing companies notice similar conditions, and the Alaska Department of Fish and Game, one of the largest employers in this sector, anticipates significant retirements over the next several years. Many of the maritime job skills are also needed in other industries as well.

The *Alaska Maritime Workforce Development Plan* offers a pathway to increase the number of Alaskans working in highly skilled and well-paid occupations in the maritime industry. This, in turn, will increase the impact of the maritime sector on Alaska's economy. Both outcomes provide a service to the state.

This statewide strategy will guide the development of appropriate secondary and career technical education and training, professional development, and effective recruitment and retention efforts for maritime occupations. By implementing the *Alaska Maritime Workforce Development Plan,* the resources of industry, educators and state government will be aligned to achieve their collective goals.

The *Alaska Maritime Workforce Development Plan* is designed to be used by:

- Industry employers
- State of Alaska
- University of Alaska
- Regional training centers
- Other education and training providers
- School and employment counselors
- Prospective employees

Alaska's Maritime Workforce is Vast and Diverse

For the purposes of developing this Plan, the maritime sector was divided into four groups: (1) Seafood harvesters, (2) Seafood processors, (3) Research, enhancement, and management and (4) Marine occupations and support industries.

Seafood Harvesters

Seafood harvesters include commercial fishing permit holders, crewmembers, and shellfish farmers. Approximately 7,000 of the 10,000 commercial fishing permits are held by Alaska residents. Of the 22,000 crewmember licensees, half are held by Alaskans. Shellfish farmers are a small segment of the workforce, representing about 100 jobs; however, expectations are for growth in this subsector.

Over 8,000 vessels are registered with the State of Alaska for commercial fishing. The construction, maintenance, and upgrade of these vessels create a high demand for well paid service jobs for Alaskans.

Seafood Processors

Seafood processing is Alaska's largest manufacturing industry accounting for roughly 75% of the state's manufacturing employment. According to a recent economic valuation of the seafood industry by the Alaska Seafood Marketing Institute, more than five billion pounds of harvested seafood was processed by 162 companies in Alaska in 2011, employing 25,112 workers.[5]

There are nearly 80 shore-based processing plants in Alaska, in addition to 77 catcher-processor vessels and more than a dozen floating processors. These operations span the coast of Alaska from Kotzebue to Adak to Metlakatla. At least 35 companies employ 100 or more workers annually.

Seafood processing employment peaks at more than 20,000 during the height of the summer salmon season. Despite the fact that Alaska residents make up less than 30% of the overall seafood processing workforce, the industry still employs 6,800 Alaska residents, which accounts for nearly 40% of total payroll.

[5] Economic Value of the Alaska Seafood Industry, prepared by McDowell Group for the Alaska Seafood Marketing Institute, July 2013. http://pressroom.alaskaseafood.org/wp-content/uploads/2013/08/AK-Seafood-Impact-Report.pdf

Research, Enhancement, and Management

Fisheries, ocean, and marine research and management employees in Alaska are a significant part of the maritime workforce. The work they perform is critical to the health of our waters and the aquatic resources. ADF&G employs over 1,700 personnel, and federal agencies such as the National Marine Fisheries Service, North Pacific Fishery Management Council, US Fish & Wildlife Service, US Forest Service, the National Park Service, and the Bureau of Land Management employ hundreds of researchers and resource managers. In addition, Alaska's universities, private consulting firms, nongovernmental organizations, Community Development Quota (CDQ) groups, and other regional Native nonprofits employ fisheries researchers.

Thirty-one public and private nonprofit salmon hatcheries in Alaska employ over 400 workers to enhance commercial and sportfish opportunities statewide. Two small shellfish hatcheries in Alaska also employ hatchery managers and technicians.

The marine research sector in Alaska is significant and growing. This is due in part to increasing interest for future development in the Arctic, and in the oceanographic changes occurring in the North Pacific. Employers include universities; research institutions; private consulting firms; and borough, state, and federal agencies.

Marine Occupations and Support Industries

Alaska's marine occupations and support industry workforce is large and diverse, comprising hundreds of large and small businesses and thousands of workers in a wide range of occupations. A partial listing of these occupations is included in Table 2. Most marine industry support employers in the state are small businesses. One of the largest single employers in this sector is the Alaska Marine Highway System with a workforce of 1,300.

Currently, there is no comprehensive statewide data on the economic impacts of this sector. In 2013 the Southeast Conference issued its report, *The Maritime Economy of Southeast Alaska,* which provides some baseline information on employment numbers, percentage of employees who are Alaska residents, worker turnover, and sector contribution to the state's economy. This necessary baseline data is not available for the sector statewide.

Table 2. The range of marine occupations and support industries in Alaska

Ship and boat building, vessel repair and maintenance	**Marine environmental responders**
Passenger water transportation, including ferries and water taxis	**Net and gear design and construction, and deck machinery design and construction**
Tour and charter boat operations	**Marine research vessel operations**
Cargo vessel operations, including container, tug and barge, lighterage, and fuel transport	**Naval and US Coast Guard support activities (not including uniformed personnel)**
Towing, salvage, and vessel assist operations	**Oil and gas exploration, support, and supply**
Port, harbor, and marina operations, longshoremen	**Fuel distribution and sales**
Marine and coastal engineering, design, construction, inspection, and management	**Marine equipment and supply**

A multiskilled individual in the marine trades may work in several occupations during the course of a year, often as a self-employed entrepreneur. In large operations, many employees may need to be similarly multiskilled. The labor market for the marine sector is global. Workers with skills and qualifications flow in and out of Alaska in response to opportunities and Alaska jobs in this sector must be competitive to retain workers.

Cross-Cutting and Essential Skills of the Maritime Workforce

Many occupations in the maritime workforce share similar skills, referred to as *cross-cutting skills.* Employees with transferable or cross-cutting skills are able to work in a variety of occupations within the maritime industry. Prioritizing the development of these skill sets and weaving them into a variety of programs can result in a more cross-trained, flexible workforce. The figure below illustrates this with skill sets in the center and related sets of occupations connecting to them on the outside.

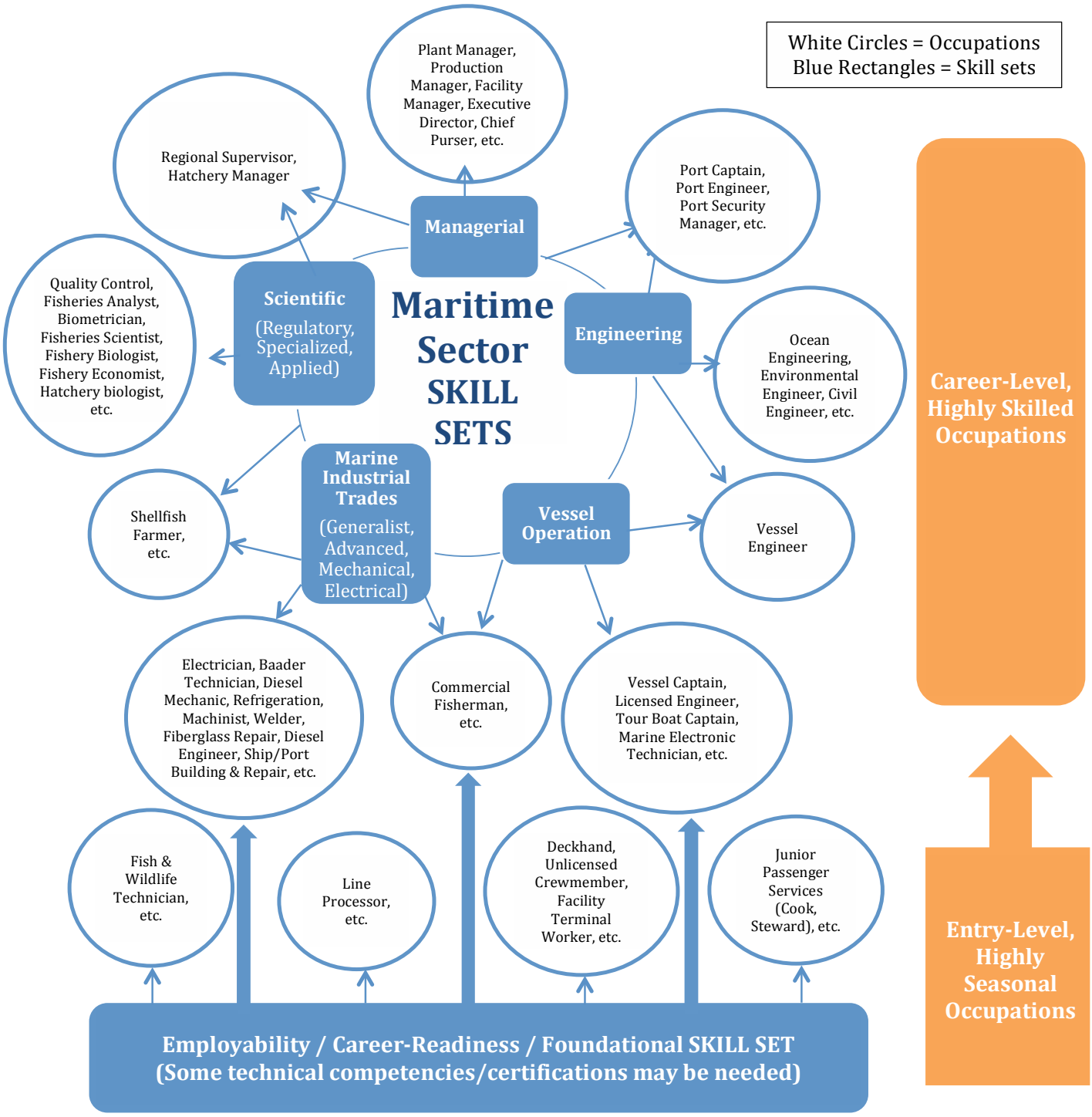
Another common framework to conceptualize a workforce development effort is known as Career Clusters. Appendix C provides a *Career Cluster and Pathway Mapping for Alaska Maritime Occupations*.

Beyond common skill sets and the focus on the marine or watershed environment, there are traits that tie the maritime occupations in Alaska together, including remoteness of the workplace, long hours and physical work in a demanding environment, and a high percentage of workers who are self-employed.

ESSENTIAL OR "SOFT SKILLS" FOR A READY WORKFORCE

Employers identified the need for workers to have solid foundational skill sets or "soft skills." Job readiness skills seem particularly important in the maritime industry due to the remote locations and

Cross-Cutting Skill Sets in the Alaska Maritime Sector



intensity of many of the occupations. These essential skill sets are critical to build and foster. They provide an important gateway to higher-level positions. Many employees in maritime occupations work their way into higher positions from seasonal, entry-level jobs.

Employers emphasized the importance of the following soft skills and attributes:

- Drug-free
- High school diploma or GED
- Organizational abilities
- Basic proficiency with computers
- Appropriate interpersonal skills
- Safety awareness
- Reliability
- Willingness to work long hours
- Follow instructions
- Problem-solve
- Function in stressful situations
- Time management
- Work independently
- Team player
- Effective communication
- Self-motivation

Methodology

The *Alaska Maritime Workforce Development Plan* is a result of a collaborative effort by leaders of the maritime sector, representatives of five state agencies including regional training centers, two legislators, and University of Alaska personnel. The University of Alaska coordinated the planning process, which was initiated in 2011 through its Fisheries, Seafood and Maritime Initiative (FSMI).

The following steps were taken to create this Workforce Development Plan.

- An inventory was completed of all maritime related training currently offered by the University of Alaska system and other training providers in Alaska.
- An initial gap analysis of educational and training needs for the Alaska maritime sectors was prepared by the McDowell Group under contract to the University of Alaska.
- Industry discussions were held through two industry open forums. The industry requested UA to coordinate the *Alaska Maritime Workforce Development Plan.*
- To build momentum for the Plan, a meeting was called by Governor Sean Parnell, UA President Patrick Gamble, and Rasmuson Foundation chairman Ed Rasmuson with executives from a number of seafood companies and Community Development Quota groups. The group collectively encouraged and supported the development of the Plan as a means to support and build Alaska's maritime workforce.
- The Alaska Maritime Workforce Industry Advisory Committee (IAC) was formed, at the invitation of UA President Patrick Gamble, to support and assist in the creation of the *Alaska Maritime Workforce Development Plan.*
- Occupational needs assessments were undertaken for four groups: (1) seafood harvesting, (2) seafood processing, (3) research, enhancement and management, and (4) marine occupations and support industries.
- IAC identified specific maritime sector occupations and skillsets as an outcome of the needs assessments and developed corresponding action steps.
- IAC developed five broad strategies to develop, build and enhance Alaska's maritime workforce.

Additional information including gap analyses, occupational needs assessments, training inventory, meeting summaries, and participants can be found at the FSMI website: www.alaska.edu/fsmi.

Overall Strategies for Developing the Maritime Workforce

Five overall strategies were identified by the Alaska Maritime Workforce Industry Advisory Committee as critical in supporting the maritime workforce in Alaska. They are:

1. **Grow awareness of occupations and develop career pathways.**
2. **Improve workforce readiness.**
3. **Train Alaskans for maritime careers.**
4. **Support recruitment and retention.**
5. **Promote sustained industry engagement.**

Strategy 1: Grow Awareness of Occupations and Develop Career Pathways

RATIONALE

As Alaska's largest private employer, the maritime sector offers many diverse career opportunities in the fisheries, seafood and marine industries. In addition to career jobs, there are opportunities for entrepreneurs with training and experience to develop businesses.

Highlighting the opportunities for career-level, well-paying jobs in all regions of Alaska can influence more youth and adults to choose these careers. Tailoring career awareness efforts to specific audiences, such as former military and coastal youth will increase effectiveness. Developing career pathways and creating direct links between educational opportunities and employment will encourage Alaskans to seek these careers.

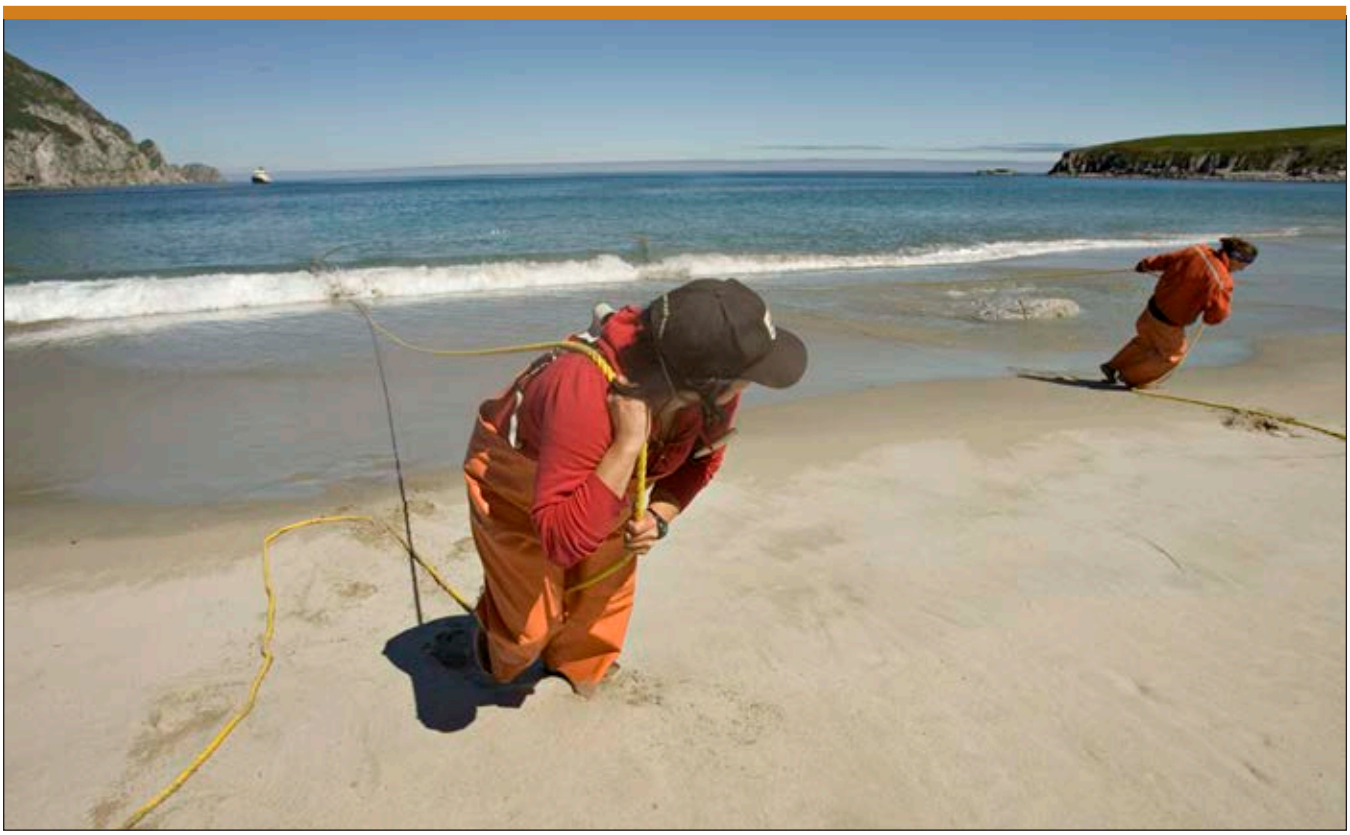
ACTION STEPS

1.1 Develop an inventory of occupational fields to be marketed, using the *Alaska Maritime Workforce Development Plan* as a guide.

- Develop a set of common information categories to define each occupation such as demand for workers, compensation and benefits, working conditions, seasons, or other unique aspects.

1.2 Increase public awareness of maritime occupations and opportunities.

- Develop a common identifier for the *Alaska Maritime Workforce Development Plan,* and activities associated with implementation of the Plan, such as a logo.
- Review existing career awareness programs for other industries, in-state and out-of- state, evaluate for effectiveness, and identify the most effective features.



- Develop communication strategies directed at target audiences.
  - » Develop communication tools—website, written materials, slide shows, and public service announcements.
  - » Present information in positive ways that emphasize lifestyle and job satisfaction.
  - » Note that rural residents may need to leave their communities for training required for a job in their home community and maritime work seasons may coincide or overlap with seasonal subsistence activities.
  - » Leverage a full range of resources, including industry engagement and support, DOLWD, DCCED, UA, DEED, and private education and training organizations.
  - » Target audiences such as former military and coastal youth.
  - » Promote the message that entry-level positions in the maritime industry may lead to opportunities for long-term employment, advancement, and enhanced skills through on-the-job-training.

1.3 Gather and align maritime workforce data to leverage existing career exploration and job search tools in the state.

- Enhance the Alaska Career Information System (AKCIS), AlexSYS, and Workplace Alaska with maritime industry information to identify available education/training programs by location.

- Develop postcards or flyers to attract traffic to a web-based, *Hot Jobs* publication or report, for maritime employment opportunities.

1.4 Implement career pathways methodology in the K-12 system and beyond.

- Define maritime career pathways.
- Support UA Alaska Career Pathways Initiative, when appropriate, to focus on career paths for maritime careers.
- Refer to Alaska Career & Technical Education Plan (DOLWD), when appropriate, to support maritime careers.
- Work with other education/training and career service providers and resources as appropriate.

1.5 Create maritime workforce curriculum, activities and experiential opportunities for youth and adults.

- Develop an Introduction to Maritime Careers class and offer to high school students through Alaska's Learning Network.
- Focus on basic skills and job readiness as well as specialized and technical skills or knowledge.
- Present varied opportunities for career exploration rather than attempting to direct individuals into particular fields or occupations.
- Emphasize cross-cutting skills and knowledge to open up the broadest range of opportunities, so that individuals who find themselves unsuited to one occupation will be able to transition easily into another.
- Consult with middle and high school teachers and advisors on the best way to get awareness raising content into school programs and curricula.

RESPONSIBLE PARTIES

Industry employers, UA, regional training centers, other training entities, DOLWD, DEED, DCCED, and school districts.

FUNDING SOURCES

DOLWD's Youth First program, industry, public and private grants.

EVALUATION

Evidence that the following components have been produced and are being used: maritime occupations are accurately described via maritime sector website, Introduction to Maritime Careers class, marketing materials developed and used across the state, and AKCIS and other job-search tools.

Strategy 2: Improve Workforce Readiness

RATIONALE

Maritime employers identified the need for workers to have a solid *essential* skill set—or *soft skills,* coming into the job. This is a critical skill set to build and foster in potential and current maritime industry employees as these skills also establish an important foundation for higher-level positions. In the maritime sector many workers earn their way up from entry-level positions. Barriers to promotion include past behavioral problems and lack of basic math and language skills. These workforce readiness skills are needed beyond the maritime industry, and will help to serve Alaska's broader workforce development efforts.

ACTION STEPS

2.1 Improve workforce readiness through improved math skills.

- Develop an adult-specific course to supplement math skills for people looking to enter or move up in the maritime workforce.
- Develop applied exercises for curriculum that relate to maritime careers. The math course created for the construction industry's workforce development is a good example. Provide and encourage use of these maritime industry exercises in high school or adult education classes.
- Enhance employer awareness of and involvement in developing training modules. Encourage employers to require and reward this training.
- Support supplementing common core math standards with any or all the steps identified above.

2.2 Increase awareness about choices that are appropriate and those that may bar employment (e.g. drug use, criminal record) to encourage prevention. Increase support services to overcome barriers.

- Target underserved audiences for recruitment.
- Consider developing "second–chance" programs.

2.3 Enhance career readiness skills in both youth and adults.

- Support youth employability skills using maritime career related information and programs.
  - » Develop job profiles for Work Keys, the high school pre-graduation career skills scoring test, related to maritime careers and skills.

  - » Engage employers to provide internships that excite youth about maritime industry work opportunities.
  - » Engage State of Alaska youth program employers to partner with maritime sector employers and create additional opportunities.
- Develop and provide maritime industry training (local and online) in safety, OSHA requirements, work ethics, and basic workplace readiness.
- Encourage employers to require and/or recognize training in their hiring and promotion decisions. Strengthen links between training and employment and promotion.

RESPONSIBLE PARTIES

Alaska Maritime Workforce Development Plan coordinator, DOLWD, DEED, school districts and other education and training entities, and industry employers.

FUNDING SOURCES

DOLWD Youth First; industry for student support, internships, and content support; public and private grants.

EVALUATION

Work Keys in place, internships available, math skill modules in use, employers linking with trained individuals and recognizing training.

Strategy 3: Train Alaskans for Maritime Careers

RATIONALE

A strong workforce for the diverse maritime occupations in Alaska requires a wide variety of high-demand technical skills. The training for these occupations builds on itself as individuals acquire skills from basic to advanced, potentially moving them from entry-level to skilled positions. Coordinated training is needed that prepares high school students for further training or work, and provides opportunities for adults to join this workforce or upgrade their skills. Further, there is a need to assist employers to promote within their organizations by finding professional development training resources.

ACTION STEPS

3.1 Identify gaps between the highest priority workforce needs and existing training/education programs.

- Review existing maritime related courses, programs, and resources across the entire Alaska education/training system and identify program gaps based on maritime sector priority areas, as determined by the Alaska Maritime Workforce Industry Advisory Committee.

- Conduct an assessment to identify key knowledge and skills required to effectively prepare a workforce for the gap occupations.

3.2 Develop programs in Alaska to fill identified gaps or collaborate with best-in-class programs outside Alaska to help Alaskans access needed training.

- Collaborate with employer/industry representatives to develop and support programs that meet industry standards.
- Support UA faculty and other trainers to develop their skills and certifications, enabling them to offer classes that meet industry standards and practices.
- Promote student apprenticeships, internships, practicums, and experiential opportunities (this includes making students aware of available opportunities and assisting industry in sponsoring quality student experiential opportunities).
- Support student orientation, advising, and career counseling services.
- Expand partnerships with local communities in order to integrate education, training, and research into community service.

- Provide resources that assist students in gaining employment.
- Assess program effectiveness with student exit surveys and employer satisfaction surveys.
- Ensure ongoing industry involvement by forming program-level advisory committees.
- Promote the education tax credit program as a way for businesses and employers to support education/training programs to meet workforce needs (see Appendix D).
- Explore developing maritime trade courses in high schools by working with DEED to identify communities and school districts that need templates and models for maritime industry job training.

3.3 Improve access to training/education programs.

- Include maritime sector course offerings, programs, schedules and other resources, including job placement information, on a searchable Alaska maritime career website.
- Increase student access to maritime training programs by providing e-learning, blended, and traditional distance education options.
- Develop training/education schedules to accommodate seasonality of maritime occupations.

- Integrate hands-on, real world experiences into education and training.

3.4 Coordinate program development; use existing resources such as shared instructors, facilities, equipment, and curricula; and coordinate delivery among training programs and employers.

- Review existing resources and providers to identify the most cost effective way to deliver quality education/training.
- Share existing equipment, curricula, and expertise to maximize training delivery efficiencies.
- Coordinate program development and delivery across the Alaska education system to ensure transferability.
- Minimize duplication by rotating course offerings. Schedules should meet regional needs, which includes being mindful of local subsistence activities.

RESPONSIBLE PARTIES

DEED, *Alaska Maritime Workforce Development Plan* coordinator, DOLWD, Alaska Maritime Workforce Industry Advisory Committee, UA and other education and training providers.

FUNDING SOURCES

State agencies, UA, public or private grants, industry support.

EVALUATION

The maritime sector training gap analysis reviewed on an annual basis. Data to track includes number of students pursuing education/training in maritime industry sectors, student satisfaction with their ability to access quality training, number of individuals placed in jobs, and overall employer satisfaction with training of employees.

Strategy 4: Support Recruitment and Retention

RATIONALE

Recruitment and retention are critical steps to ensure that the maximum number of Alaskans take advantage of job opportunities. In addition to Career Awareness action steps found in Strategy 1, a number of action steps are identified below that allow recruitment best practices to be identified, enhance current work by the Alaska Job Centers, and support compensation reviews to encourage industry competitiveness. As Alaskans fill the jobs, steps can be taken to encourage continued employment and urge them to further develop their skills and knowledge.

ACTION STEPS

4.1 Promote programs that target Alaska residents for workforce development, with particular attention to coastal and Alaska Native communities, former military personnel, and others who are underrepresented in the maritime workforce sector.

- Partner with existing programs within the DOLWD, Alaska Department of Military and Veterans Affairs, the US Veterans Administration, and military branches in Alaska to assist exiting military personnel, retirees, and other veterans who possess skills and abilities responsive to the needs of Alaska's maritime industries.
- Establish and circulate a pool of industry best practices and incentives as examples for employers to use to increase the number of Alaska hires.
- Improve placement of people who have training and education with maritime industry employers; improve connecting employers with education/training providers.
- Develop an online clearinghouse for available jobs and internships.
- Create a "how to get a job in maritime industry careers" website and/or resource book.
- Annually evaluate the progress made in hiring Alaskans for maritime occupations and publish results electronically.
- Publicize successful Alaska maritime industry hiring practices to highlight the progress being made in the state.
- When appropriate, develop programs that support the intent of the federal Magnuson–Stevens Act Sec 305(j) (see Appendix E).

4.2 Regularly review and compile compensation data for similar positions both within and outside Alaska.

- Regular compensation reviews and compiling data on similar occupations both in and outside of Alaska should be conducted to provide employers, employees and government agencies with data and information about how pay scales influence both recruitment and retention.

4.3 Reinvigorate the Alaska DOLWD sponsored Seafood Industry Advisory Committee, and expand to include the marine industries and research sectors.

- Create a network to enable sharing of employees.
- Share best practices for recruiting and retaining employees.

4.4 Leverage information and communications technology to extend the reach and effectiveness of all Alaska Job Centers that provide career counseling, and active job placement referrals.

- Develop references and standards to train personnel at all Alaska Job Centers to provide career counseling and active job placement referrals about maritime industry needs and standards.

RESPONSIBLE PARTIES

DOLWD, industry and agency employers.

FUNDING SOURCES

Public and private grant funding, agency workload allocations, industry.

EVALUATION

Accomplish the following: Reinvigorate DOLWD Seafood Industry Advisory Committee, increase awareness of successful recruitment and retention programs, conduct salary compensation reviews, create Alaska hire booklet.

Strategy 5: Promote Sustained Industry Engagement

RATIONALE

Workforce development is ongoing and requires commitment and collaboration by industry, community groups, government, and education/training providers in order to leverage resources and deliver efficient and effective programs. Industry needs to be actively engaged to ensure that workforce development efforts respond to industry needs. Improving the accuracy of workforce data across the maritime sectors in Alaska is critical to track the progress of workforce development efforts. Challenges to keep industry engaged are the diverse nature of the employers in the maritime sector and demonstrating that industry participants receive sufficient value from their efforts to implement the *Alaska Maritime Workforce Development Plan.*

This strategy recognizes that an industry-led structure is important to attract the support and funding necessary to organize, advocate for, and implement the maritime workforce development objectives.

ACTION STEPS

5.1 Gain support of the *Alaska Maritime Workforce Development Plan* by the Alaska Workforce Investment Board.

- Encourage AWIB to formally endorse the Plan through its resolution process, engage with the maritime sector on a continuous basis, and provide a pathway to workforce investment resources to implement this plan.

5.2 Employ a statewide *Alaska Maritime Workforce Development Plan* coordinator to support implementation of the Plan.

- This person will coordinate the implementation of the *Alaska Maritime Workforce Development Plan* by working with all education and training providers, state agencies, and industry.
- The Alaska Maritime Workforce Industry Advisory Committee will work with DOLWD, DEED, DCCED, UA, and industry to identify where the coordinator will work and how the position will be funded.

5.3 Continue the role of the Alaska Maritime Workforce Industry Advisory Committee as advisor to implement this Plan.

- Consider restructuring the IAC as implementation begins.
- IAC's role is to serve as industry contact for the *Alaska Maritime Workforce Development Plan* coordinator.

5.4 Achieve one or two priorities from the workforce development plan for each of the four industry sectors by identifying and implementing those that are readily achievable in the next 12-24 months.

- Work with industry-led group, training providers and agencies to implement agreed upon priorities; search for funding opportunities and partnerships; be accountable to advisory group and funders.

5.5 Engage with DOLWD, DCCED, and DEED to most effectively coordinate the early stages of implementation.

- Work with agency staff and industry to coordinate implementation of the Plan.
- Recognize agencies will have more limited roles when competitive grants are being sought.

5.6 Engage with UA and other education and training providers to implement areas where their expertise is best suited to respond to the Plan.

- Encourage coordination across the entire UA system and with DOLWD, DCCED, DEED, industry, and other education and training providers to effectively and efficiently respond to this Plan.
- Work with UA and other education and training providers to ensure ongoing commitment to the maritime sectors in their education, training, and research.

5.7 Improve maritime sector workforce data.

- Capture, define, and coordinate industry and state/federal labor department efforts for data collection and reporting.
- Use the data for the purpose of workforce needs analyses and program evaluation.

RESPONSIBLE PARTIES

Maritime industry sectors, UA, AWIB, DOLWD, DEED, DCCED, regional training centers, other education and training providers.

FUNDING SOURCES

UA, DOLWD grant funds, public and private grants, industry.

EVALUATION

Evidence that industry is engaged. It advises and directs the implementation of the *Alaska Maritime Workforce Development Plan* and participates in internships, apprenticeships, etc. AWIB engages with the maritime industry in implemention of the Plan.

Occupation Descriptions and Action Steps

Twenty three maritime occupations, or occupation groups, were identified as needing specific workforce development attention. While these by no means represent all maritime occupations, they were the most frequently cited during the occupational needs assessments. The five overall strategies and action steps outlined above (grow awareness of occupations and develop career pathways, improve workforce readiness, train Alaskans for maritime careers, support recruitment and retention, and promote sustained industry engagement) apply to all twenty-three maritime occupations. Action steps below are additional steps specific to each occupation.

Identified sectors and their occupational priorities include:

- **Seafood harvesters—**commercial fishing permit holders, crewmembers, and shellfish farmers. This group identified a need for *technical training for harvesters, and specifically noted a high need for vessel maintenance and repair technicians available in fishing ports.*
  - » Commercial Seafood Harvester (permit holders and crewmembers)
  - » Vessel Repair and Maintenance Service Provider (outlined under marine occupations)
  - » Shellfish Farmer
- **Seafood Processors—**Nine high need occupations were identified and processors noted *the lack of skilled Alaskans to fill these jobs.*
  - » Seafood Plant and Floating Processor Engineer
  - » Refrigeration Engineer and Technician
  - » Seafood Production Manager
  - » Electrician
  - » Can Machinist
  - » Quality Control and Assurance Manager and Technician
  - » Baader Technician
  - » Seafood Plant Manager
  - » Deckhand (see Marine Occupations and Support Industries, below)
- **Research, enhancement and management—**the Alaska Department of Fish and Game, salmon and shellfish hatcheries, and other research and management agencies and institutions. ADF&G has the greatest number of jobs, and identified five occupations that range in skill level and are challenging to fill. In particular, ADF&G noted *that salary differentials have resulted in a drain of employees to federal or private jobs.*
  - » Biometrician
  - » Fish and Wildlife Technician
  - » Fishery Biologist
  - » Fisheries Scientist

  - Fish and Game Coordinator
  - Fishery Economist, Analyst, and Management Specialist
  - Fishery Management Specialist at NOAA Fisheries
  - Hatchery Manager
- **Marine occupations and support industries—**this group is large and diverse in number, and *identified a wide range of cross-cutting skills and skill levels needed,* such as vessel operations, shipbuilding, and vessel maintenance and repair.
  - Ship building
  - Vessel Operations: Deckhand, Vessel Engineer, Captain
  - Vessel Repair and Maintenance Service Provider

Action steps specific to an occupation are detailed in each description that follows.

Seafood Harvesting

Commercial Seafood Harvester

OVERVIEW

Commercial seafood harvesters, or commercial fishermen, are skippers and crew, who hold State of Alaska and/or federal commercial fishing permits, quota shares, and crew licenses and are engaged in commercial fishing for their livelihood seasonally or year-round.

Commercial seafood harvesters represent approximately 10,000 permit holders and 22,000 crewmembers. Those who are residents live throughout Alaska, with the highest percentage of permit holders concentrated in Anchorage. Most of these permit holders also operate as small, independent business owners and entrepreneurs.

Commercial seafood harvesters are undergoing a generational transition, or "graying of the fleet," with their average age increasing markedly. Today, the industry is experiencing the first generational transition in which nearly 100% of the fishery resources have some form of limited access requiring new entrants to purchase limited entry permits or quota shares for each fishery in which he or she wishes to participate. These trade on the open market and require a significant capital investment. At the same time, the regulatory and technical requirements to be a successful harvester are requiring increased skills on many levels to maximize success and profit.

OCCUPATION-SPECIFIC ACTION STEPS

- Provide access and support for financial management and business training.
- Explore the need for a program similar to the reduced loan fee incentive for an Alaska Housing Finance Corporation loan which links financing terms to financial training.

- Support developing programs that encourage Alaska access to permits or quota ownership, within the authority of governing law.
- Develop and deliver industry specific trainings that may include vessel repair, maintenance and operations, safety, fishing technology, business management, the regulatory process and fisheries management.

Vessel Maintenance and Repair Service Provider

(also see Marine Occupations and Support Industries below)

OVERVIEW

Vessel maintenance and repair service providers were identified by seafood harvesters as one of the primary needs to support the continued well-being of the commercial fishing industry. Many ports are without sufficient highly trained vessel repair technicians leading to more downtime for harvesters during the fishing season and lost income. This occupational group is described in detail below in the Marine Occupations and Support Industries section.

Shellfish Farmer

OVERVIEW

Shellfish farming encompasses the activities of growing, harvesting, processing, marketing and selling bivalve seafood products. The individual shellfish farmer must be multiskilled to be successful, or operate a large enough farm to employ others who can specialize in certain aspects of the operation.

Shellfish farming in Alaska is a growing industry. There are approximately 60 shellfish farms in various stages of development in coastal Alaska and all are small businesses or part of a regional Native corporation effort. This subsector is expected to grow in the near future, requiring additional employees to fulfill its workforce needs.

OCCUPATION-SPECIFIC ACTION STEPS

- Increase awareness about small business loans to support entrepreneurs, by providing information about what loans are available and points of contacts and other references that can provide access to capital for entering commercial fishing industry.
- Provide access and support for financial management and business training.
- Explore the need for a program similar to the reduced loan fee incentive for an Alaska Housing Finance Corporation loan, linking financing to financial training.

Seafood Processing

Seafood Processing Engineer (Plant Engineer or Chief Engineer)

OVERVIEW

Seafood plant engineers (shoreside) or seafood chief engineers (floating processor) ensure that factory machines, generators, diesel engines, and their support systems (e.g., hydraulic, pneumatic, electrical) are maintained and function in good order. The seafood processing engineer is responsible for the proper installation and maintenance of mechanical systems according to industry standards and regulations as well as maintaining and monitoring spare parts inventory. The title of engineer includes a range of positions/skill sets needed in shoreside and floating processing operations, all of which are critical to operations.

Plant or chief engineer was the most-cited need in the seafood processor occupational needs assessment. Respondents noted the lack of qualified candidates as their main challenge to fill engineering positions. Engineering expertise and work history are essential requirements to shoreside and large vessel operations. Chief engineers (floating processors) develop through a more formalized process based on US Coast Guard licensing requirements, which take into account training and experience. (See vessel engineers for more information).

Job opportunities are expected to increase in the future, as processing plants become more technically sophisticated due to increased automation, as regulatory requirements become increasingly complex, and as experienced senior engineers in the existing workforce retire.

OCCUPATION-SPECIFIC ACTION STEPS

Development of this occupation will closely resemble the descriptions for vessel engineer (below) as well as some of the skills for vessel maintenance and repair service provider.

- Perform additional analysis to determine if developing an Alaska-based engineer training program would be cost effective as an alternative to the expensive practice of sending employees to the Lower 48 for training.
- Increase the availability of USCG-approved training courses for licenses.
- Explore viability of a seafood industry-specific maritime degree programs.
- Provide refrigeration certification programs within the state.
- Encourage or provide avenues for "cadet/midshipman" internships to provide exposure and experience on floating processors and vessel operations.

Refrigeration Engineer and Technician

OVERVIEW

Refrigeration engineers and technicians provide safe installation, operation, maintenance, and function of mechanical refrigeration/freezer systems; facilitate improvements; test and flush refrigeration systems; ensure that policies and safety standards are met; and implement analysis and modification of procedures as needed.

This was the second-most cited need in the seafood processor occupational needs assessment. Employers noted the extreme difficulty in finding trained and experienced refrigeration personnel. Not only are wages for comparable jobs in other industries higher and hard to compete with, refrigeration positions tend to be seasonal rather than year-round. There is also a discrepancy between

offshore and onshore refrigeration wages. In addition, refrigeration positions may require work in remote locations, in inclement conditions, and industry's past experience has found that technically qualified applicants often lack essential skills.

OCCUPATION-SPECIFIC ACTION STEPS

- Offer a refrigeration education and training program in Alaska.
- Offer apprenticeship programs that extend on-the-job training and classroom instruction.
- Coordinate among industry to develop a pool of refrigeration candidates in the state and identify schools in the Lower 48 that would likely admit these students, if in-state training is not available.
- Develop incentives that encourage refrigeration graduates to work in Alaska.
- Incentivize refrigeration staff to welcome and mentor new employees.

Seafood Production Manager

OVERVIEW

A seafood production manager plans, directs, coordinates, and controls activities of workers engaged in production to maximize efficiency and minimize expenses; oversees, monitors, and ensures compliance with quality assurance standards; coordinates staffing and duty assignments; monitors and motivates workers to achieve production goals; assesses inventory requirements; and is responsible for factory through-put and equipment modification when species and products change.

This was the third-most cited need in the seafood processor workforce survey. The greatest challenge reported by companies was difficulty in finding candidates with the necessary skills.

OCCUPATION-SPECIFIC ACTION STEPS

- Utilize existing Alaska Seafood Processing Leadership Institute; consider adaptations to the leadership institute to fit additional careers in seafood processing sector.
- Identify other training or educational options for management training.
- Shift focus from recruitment for entry-level processing jobs to developing careers in the seafood sector.

Electrician

OVERVIEW

Electricians install, maintain, and repair electrical systems (3-phase 480/240 V and single phase 240/120 V) including seafood plant equipment and machinery; diagnose malfunctioning apparatuses; and on floating or at-sea processors are part of the engine room department, which is a mix of industrial/marine electricians.

OCCUPATION-SPECIFIC ACTION STEPS

- Identify specialty priorities and achieve statewide process for specialty training.
- Offer apprenticeship programs that extend on-the-job training and classroom instruction.

Can Machinist

OVERVIEW

Can machinists are responsible for can line setup and operation, seam evaluation, can integrity, and general can line maintenance. This was the fifth most cited need in the seafood processor workforce survey. A major challenge cited was finding applicants with sufficient knowledge and experience.

OCCUPATION-SPECIFIC ACTION STEPS

- Consider internships or registered apprenticeships.

Quality Control and Assurance Manager and Technician

OVERVIEW

Quality control personnel ensure that processing facilities are safe and sanitary for seafood production; pass all government and customer audits; represent company in interactions with regulatory agencies; and ensure that monitoring, inspection, and evaluation of all products for wholesomeness and product integrity is in compliance with product specifications. They define, review, improve, and teach quality policies to production management. Quality control personnel ensure compliance with food safety rules and regulations and respond to customer complaints.

This was the seventh-most cited need in the seafood processor workforce survey. Respondents reported difficulty finding certified applicants who understand food quality and are willing to work in remote, high production and fast-paced conditions seasonally. Survey results indicated there are many current job openings.

OCCUPATION-SPECIFIC ACTION STEPS

- Provide information about, access to, and funding for training and career opportunities in quality control/quality assurance (QC/QA).
- Explore with industry members whether developing a pool of QC/QA candidates in Alaska would be beneficial.
- Offer a food science degree program through UA.
- Establish an internship program.

Baader Technician

OVERVIEW

Baader technicians assemble, repair, adjust, and maintain Baader seafood processing machinery.

This was the eighth-most cited need in the seafood processor workforce survey. Respondents said it is difficult to find people with Baader-specific training and work experience.

OCCUPATION-SPECIFIC ACTION STEPS

- Identify and provide formal Baader equipment training.

Seafood Plant Manager

OVERVIEW

Shore Plants: The plant manager is responsible for managing all aspects of processing plant operations. This includes all seafood production, facility maintenance, supervision of plant employees, and all human resource activities; sets, monitors, and ensures compliance with quality assurance standards; compliance with environmental safety, seafood product safety/integrity regulations and other applicable laws and regulations; pre-season preparations and post season plant closures; prepares annual budget and tracks overhead costs; monitors and controls costs including production, shipping, product recoveries, and project costs; management of products, parts, and supplies; backload and offload operations; oversees all worker training, including new hires and safety; maintains working relationship with fishermen, employees, communities and customers; and ensures all company protocols are strictly followed.

Floating Operations: This position has similar responsibilities and required skills to the shore plant manager except that the plant is a factory onboard a floating platform or vessel.

The forecast for the number of operating plants is expected to remain stable or decrease. However, the increased use of automation and technology, which displaces the current use of unskilled labor, could potentially shift the skill set required of plant managers. In addition, the trend toward a more corporate approach to plant management, especially with the increased emphasis on various government compliance programs, could increase the need for senior plant personnel with a high degree of responsibility and expertise but below the organizational level of plant manager.

By definition, plant managers are further along in their careers. For this reason and the previously mentioned demand for their skills outside of the maritime industry, a 10% attrition rate is a conservative forecast for the next five years (to 2019). Recruiting and retaining plant managers for operations in Alaska, rural areas in particular, was identified as a challenge.

OCCUPATION-SPECIFIC ACTION STEPS

- Develop a recruitment strategy targeting individuals already familiar with Alaska and with ties to the state and community, to reduce attrition.
- Training should recognize the current informal "dual track" ascension system. Some are served through undergraduate college programs that emphasize or at least inform students of the upward career mobility in seafood processing operations in the core fields of business, management, and engineering. For others, the on-the-job-training route coupled with overall leadership, management, basic accounting and other elements required of upper level management assists their entrance and accelerates their advancement.
- Develop a career ladder or management training system leading to senior positions in plant management. Identify, cultivate, train, and promote workers already employed in the seafood industry to step up to positions that require additional responsibilities and skills.
- Provide in-house and other training opportunities for current staff to prepare for advanced positions.

Research, Enhancement, and Management

The Alaska Department of Fish and Game identified five occupations that are critical but difficult to fill in their workforce. Two others were identified by federal fishery agencies and one by private, nonprofit hatcheries.

Many of these positions require formal undergraduate and/or graduate degrees. Skill sets in this sector are often transferable among research, enhancement and management employers.

Biometrician

OVERVIEW

Biometricians develop and apply statistical and mathematical methodology to research and management of commercial, recreational, and subsistence fisheries. Biometricians may use their technical expertise in statistical and biometric issues to provide policy review.

Biometricians often work in a university setting, but in Alaska, many biometricians are employed by ADF&G and NOAA Fisheries. Biometricians are needed across the state, especially in Juneau, Kodiak, Anchorage, and Fairbanks. Workforce development survey results revealed that data management and biometrics will be "types of training that are either needed now or expected in the next 10 years to be in short supply."

The survey results also found that candidates often lack good technical foundation and knowledge of how to apply biometric skills to fisheries management. Many also lack local knowledge of and

experience with Alaska's fisheries. Often there are language barriers since many applicants are foreign nationals, which can sometimes severely impede written and verbal communication skills.

ADF&G finds it difficult to compete with federal agency and private industry compensation packages.

OCCUPATION-SPECIFIC ACTION STEPS

- Make all positions open to "all applicants" and encourage employers to give Alaska residents preference at the interview stage, rather than at the recruitment level.
- Facilitate communications with educators, such as UA faculty, to ensure applicants' skills meet work requirements.
- Interface more with universities and collaborate on curriculum reviews; consider having more ADF&G staff as adjunct UA faculty.

Fish and Wildlife Technician

OVERVIEW

Fish and wildlife technicians perform biological field sampling and research functions. Technicians may work at field sites, in office settings, on vessels, or in laboratories. Technicians are hired by ADF&G and federal agencies such as the US Forest Service and US Fish and Wildlife Service, and by private or nonprofit companies and other organizations engaged in fieldwork.

Fish and wildlife technicians make up a large percentage of ADF&G's workforce; the agency hires more than 500 workers each year. Many ADF&G managers say that technicians are the "backbone" of the agency and it is of paramount importance to have a skilled technical workforce. Technician work is often seasonal, requiring continuous recruiting as most workers stay for only one field season.

Educational programs will need to change as generational shifts occur. Prospective applicants will need to be more skilled with computers and suited to "indoor" office work rather than outdoor "get your hands dirty" type of work that field technicians currently fill. Often technician positions are filled by college students pursuing degrees in fields other than fisheries or biology. Some knowledge of fisheries, wildlife, aquaculture, or subsistence technical practices and procedures would be helpful.

OCCUPATION-SPECIFIC ACTION STEPS

- Increase outreach in rural areas and to high school students through directed programs and internships.
- Provide training to develop skills in boat handling, small engine repair, field work practices, and fish identification to allow for more "fish and wildlife technician work-ready" candidates.
- Expand and utilize the University of Alaska Southeast (UAS) Fisheries Technology Program.

Fishery Biologist

OVERVIEW

Fishery biologists plan, develop, direct, conduct, and evaluate fisheries management and research projects. They are employed at state and federal agencies, at universities and other research institutes, and with private companies and nonprofits. There are opportunities for advancement with experience and/or graduate training at both the MS or PhD levels.

Within ADF&G, journey level fisheries biologists may serve as an area management or research biologist, as a biologist specializing in a technology such as hydroacoustics, or in resolving complex issues contributing to management decisions. In all roles, fishery biologists are responsible for planning and controlling the resources necessary to perform the work, with a broad scope of activities and limited guidance, and extensive interaction with the public.

In 2012, 23% of ADF&G's journey level fishery biologists were eligible to retire in less than one year. There are often too few Alaska residents applying for these jobs. Nonresidents often require a longer transition period in a new position to gain the experience a resident has acquired in past jobs with ADF&G or a federal agency. When there is a shortage of qualified Alaska applicants, recruiting from outside of Alaska may not be an option because of specialized training and experience that is not common outside of Alaska.

Often lower-level career biologists are reluctant to take the "next step" promotion, either because they are early in their careers (year 5 to 10 in a 30-year retirement) or do not want to be in a higher-level position, which is often attributed with more bureaucratic responsibility and less field work, for the majority of their careers. In addition, if a biologist has been in a position for more than five years, the immediate pay increase for the promotion is minimal, and there is little incentive to take a position with more responsibility for little financial gain. Incentivizing this career track is a challenge.

OCCUPATION-SPECIFIC ACTION STEPS

- Facilitate communications with educators, such as UA faculty, to ensure applicants' skills meet employer needs and requirements.
- Expand ADF&G's internship program and increase recruitment-focused public relations and outreach.
- Change the advanced step placement process to equally benefit ADF&G employees and those coming from outside the department.
- Work with UA on degree specific requirements to ensure that graduates have more of the necessary skills upon completion of a degree program.

Fisheries Scientist

OVERVIEW

Fisheries scientists are generally employed at universities and federal or state agencies. ADF&G fisheries scientists independently plan and manage fisheries research, determine methodologies or disciplines in addressing complex fisheries problems and issues, direct research projects and technical services, and may be responsible for statewide management of a specialized research unit or functional area of fisheries research.

Fisheries scientist positions are in the state's supervisory and policy-level job class. An ADF&G fisheries scientist may serve as chief of research for the Division of Sport Fish, or as chief of research for salmon, groundfish, or shellfish fisheries for the Division of Commercial Fisheries.

The fisheries scientist job class at ADF&G has two levels, both of which have workforce development challenges. In 2012, 30% of ADF&G fisheries scientists were eligible to retire within one year. However, this job class has few turnovers, which makes growing or mentoring an employee from within difficult. Resident applicants tend to have Alaska experience, which is valuable to the position.

OCCUPATION-SPECIFIC ACTION STEPS

- Facilitate communications with educators, such as UA faculty, to ensure applicants' skills meet employer needs and requirements.
- Make all positions open to "all applicants" and provide the advantage to Alaska residents at the interview stage.

- Promote mentoring of current ADF&G employees so they are better prepared for promotion when positions become available.

Fish and Game Coordinator

OVERVIEW

Fish and game coordinators are in a supervisory class with substantial responsibility. They are biologists/managers responsible for planning, organizing, and directing activities and resources to efficiently accomplish the goals of an ADF&G division.

In 2012, 31.3% of ADF&G fish and game coordinators were eligible to retire. Most current personnel "grew up" in the department and rose through the ranks. Fishery biologists III or IV are the best prepared candidates for fish and game coordinator or regional supervisor positions, but it is difficult to get them to apply because of compensation challenges.

Although there is a pay increase it is "not significant enough to give up fun work and sea duty pay for drudgery." Some fish and game coordinators serve as a regional supervisor, and others manage a research or harvest management program. The difference in duties between these two positions is dramatic, with significant increased responsibility, authority and stress in the manager position, yet pay is not commensurate with duties. This is another reason it is difficult to promote staff into higher levels.

OCCUPATION-SPECIFIC ACTION STEPS

- Facilitate communications with educators, such as UA faculty, to ensure applicants' skills meet employer needs and requirements.
- Provide on-the-job-training related to leadership and management.
- Identify likely advancement pathways in job description to enable employees to steer training and experience toward next level.
- Promote mentoring current ADF&G employees so they are better prepared for and willing to accept promotions when positions become available.

Fishery Economist/Fishery Analyst/Fishery Management Specialist

OVERVIEW

Fishery economists identify and analyze economic issues pertaining to fisheries management. In Alaska, fishery economists can be employed by the federal or state management system or at a private firm or nonprofit. Fishery analysts and fishery generalists employed by the North Pacific Fishery Management Council may have a background in biology or other field coming into the job.

At the North Pacific Fishery Management Council, fisheries economists, fishery analysts, and fishery management specialists participate on a team of social, economic, and biological analysts from

Council staff and from the staffs of other agencies. Economic and social impact analyses, including cost-benefit and distributional economic impact analyses, are required to help the Council develop management approaches for fisheries.

In the past 24 months, 80% of new hires for fisheries economists were recruited from outside of Alaska. The Council notes that they have had little success in attracting Alaska Natives and other underrepresented populations into their workforce.

OCCUPATION-SPECIFIC ACTION STEPS

- Facilitate communications with educators, such as UA faculty, to ensure applicants' skills meet employer needs and requirements.

Fishery Management Specialist at NOAA Fisheries

OVERVIEW

Fishery management specialists at NOAA Fisheries collect and analyze fishery management program data and oversee fishery monitoring, scale inspections, and catch monitoring plans. The position requires excellent writing and communication skills, and the ability to work in a dynamic environment within a team. Individuals need a working knowledge of federal regulations governing North Pacific fisheries and federal rulemaking process. Experience working with the fishing industry is desired. NOAA has particular need for fishery management specialists in Juneau, Anchorage, Kodiak, and Dutch Harbor.

Fishery information staff collects, organizes, analyzes, and disseminates fisheries and economic information that provides a basis for development, implementation, and administration of fisheries management operations. They design, implement, and maintain fisheries information systems that provide data used to analyze socioeconomic, biological, and operational effects to determine effective management and conservation. Program management staff perform studies and make revisions to existing policies and procedures to ensure the effective implementation and execution of the multi-faceted programs.

OCCUPATION-SPECIFIC ACTION STEPS

- Facilitate communications with educators, such as UA faculty, to ensure applicants' skills meet employer needs and requirements.

Hatchery Manager

OVERVIEW

Salmon and shellfish hatchery managers need a combination of traditional management skills and industry-specific knowledge and experience. Hatchery managers need training or hands-on experience in fish/shellfish biology, people management, harvest management and maintaining mechanical systems in remote locations. Hatchery managers conduct environmental monitoring and compliance, permitting and program evaluation. Experience working with the fishing industry is desired.

Hatchery managers provide biological, budgetary, program, and personnel analysis for hatchery operations. They develop potential program expansions and implement, administer, and ensure compliance of regulatory programs prescribed by fishery management plans, amendments, and regulations related to hatcheries. Hatchery managers normally report to an operations/production manager or program manager.

There are 31 hatcheries in Alaska, three federal, three state-owned sportfish, and 25 private nonprofit facilities. Hatchery programs operate 24 hours a day, 365 days a year and require someone on-site at all times. Managers are in middle management and are responsible for day-to-day operations, overseeing million dollar budgets and managing from 2 to 20 people. Many hatchery managers ascend through the ranks. Alaska experience is critical. Federal hatcheries are primarily research facilities working with salmon but also with groundfish and other species. Sportfish hatcheries are operated by the state and primarily serve the Anchorage and Fairbanks areas, while the 25 private nonprofit hatcheries are large production facilities that focus on common property salmon fisheries and are located in coastal Alaska.

OCCUPATION-SPECIFIC ACTION STEPS

- Engage hatchery organizations (regional aquaculture associations, ADF&G, NOAA Fisheries) to participate in middle and high school programs related to fisheries culture.
- Develop internships using formal arrangements with high schools and target junior and senior high school students.
- Expand and use the UAS Fisheries Technology Program.
- Encourage advanced training via distance programs such as the master of science in fisheries at University of Alaska Fairbanks or out-of-state programs allowing professional development to be offered at remote sites.

Marine Occupations and Support Industries

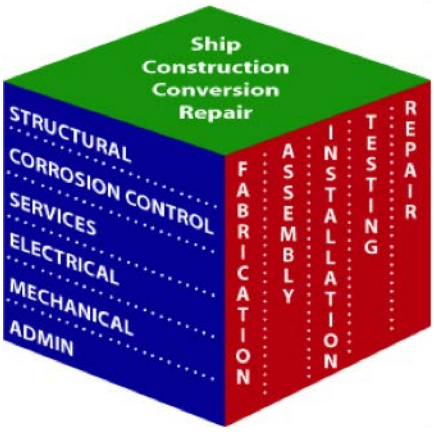
Shipbuilding and Repair

OVERVIEW

Alaska has one major shipbuilding company in Ketchikan, a smaller one in Sitka, large vessel repair and maintenance facilities in Seward and Kodiak, and boat builders in several locations around the state.

Shipbuilding and repair is included in the US Employment and Training Administration's High Growth Job Training Initiative under Advanced Manufacturing. The eleven shipbuilding processes are fabrication, assembly, installation, testing, repair, corrosion control, structural, mechanical, electrical, services, and administration. Related skills include pipefitter, platefitter, and forklift and crane operator.

The shipbuilding and repair industry requires multiskilled workers who can move from one task to another, requiring cross training, as well as learning fundamentals such as industrial practice, safety, and materials. Training in this field prepares employees for shoreside and at-sea occupations in construction and maintenance of vessels and equipment.



Alaska's shipyards and repair facilities require a continuing supply of skilled workers in these trades. As reported in industry journals, these skills are in short supply nationwide. This sector is also experiencing a graying of the workforce, a non-resident factor, and an anticipated increase in demand over the next 20 years due to a trend toward having construction, refit and repair done in state. Also anticipated is increased maritime activity associated with oil exploration and production and climate-related opening of new trading routes in the Arctic.

Nationally, average annual wages in shipbuilding and repair are 45% higher than the average for private sector economy.[6] Similar earnings ratios are reported in Ketchikan.

[6] The Economic Importance of Shipbuilding and Repairing Industry, Maritime Administration, May 30, 2013. http://www.marad.dot.gov/documents/MARAD_Econ_Study_Final_Report_2013.pdf

OCCUPATION-SPECIFIC ACTION STEPS

- Conduct a shipbuilding careers awareness campaign as part of the broader maritime industry careers awareness program.
- Establish an Alaska ship and boat building employers council to delineate current and future employee skills requirements.
- Identify existing ship/boat building training programs, such as those that Vigor conducts in Seattle and Portland.
- Integrate shipbuilding skills into existing in-state vocational/ technical courses, e.g., welding, fabrication, electrical, refrigeration, etc.

Vessel Operations: Deckhand, Engineer, Captain, and Officer

OVERVIEW

Vessel operations positions—captains, engineers, and deck personnel—require a variety of skills. Captains (other than on small fishing vessels) are licensed, engineers and engine room personnel may be licensed or unlicensed, and most deck personnel are unlicensed. On merchant ships deck officers are licensed, and unlicensed personnel must have seaman's credentials. Most operating skills are transferable among many classes of vessels and to some shoreside occupations.

The Alaska Marine Highway System (AMHS) is the state's largest nonmilitary-vessel-operating employer, but many other companies employ vessel crews, such as seafood processing companies, towing and lighterage companies, marine transportation/freight lines, passenger tour boats, research vessels, salvage and environmental remediation companies. Total numbers are not available although Saltchuck, which owns Totem Ocean Trailer Express, Foss Maritime, Cook Inlet Tug & Barge and other marine transportation businesses, employs 1,200 people in Alaska and another 300 in Seattle to support its Alaska operations. AMHS has nearly a thousand employees in shipboard positions. Polar Tankers, which ships oil out of Valdez for ConocoPhillips, currently employs 260 in seagoing positions. Industry journals indicate that seafaring, in general, also has a "graying" challenge. With increased oil exploration and maritime logistics activity, and Alaska's healthy seafood industry, the number of positions will increase. These occupations pay well above average wages.

Captains: Occupational needs assessment results indicate a steady demand for US Coast Guard licensed captains for various sizes and classes of vessels. Job titles include vessel officer, captain, master, captain of floating seafood processing vessels, captain of towing vessels (tugs), captain of sightseeing tour vessels, charter boat captain, and marine pilot.

Engineers and engine department personnel: There is consistent demand for vessel engineers with mechanical training or higher-level engineer training. They maintain, operate, and repair mechanical, electrical, hydraulic, pneumatic, and refrigeration systems. Skill sets apply to many onboard and shoreside occupations. On merchant ships US Coast Guard licensed personnel job titles include chief engineer, second engineer and designated day engineer, while unlicensed positions include qualified member of the engine department, such as oiler, wiper, deck engineer, junior engineer and pumpman. On some classes of vessels, licenses and credentials are not required to work as a vessel engineer.

Deck personnel: Both the US Coast Guard licensed and unlicensed mariners crew boats and ships with a wide range of duties including alternating with the captain in control of the ship, swabbing the decks, fighting fires, launching lifeboats, and operating high tech machinery and devices. Deck officers on ships are US Coast Guard licensed personnel including

chief officer and chief mate; unlicensed ratings include boatswain, able seaman, ordinary seaman, or simply "deckhand" on smaller vessels.

OCCUPATION-SPECIFIC ACTION STEPS

- Partner with industry and educators to develop an awareness program that introduces prospective employees to vessel operations career opportunities. Target rural coastal residents and commercial fishermen, former military personnel, and other students or adults interested in engineering and academic and technical education and training.
- Establish a vessel careers counseling program that advises prospective applicants on meeting the requirements for employment and avoiding disqualifying behaviors.
- Establish a data base/clearinghouse function that can refer applicants to education/training not available in state, including maritime academies, commercial training companies, and community colleges/tech schools.
- Advertise and showcase education and training opportunities in Alaska to potential students (e.g. AVTEC and UAS maritime courses).
- Establish internship/apprenticeship programs with vessel operating employers.

Vessel Repair and Maintenance Service Provider

OVERVIEW

Vessel repair and maintenance (VRM) service industry providers include the need for the following skill sets: diesel and outboard engine mechanic, steel and aluminum welding and fabrication, fiberglass, marine electrical, hydraulics, marine refrigeration, machinist, and other vessel and equipment specialties. VRM service providers are often small business owners or independent service providers (e.g., electronics, hydraulics, engine repair). These technicians are available in fishing ports, and often have more advanced skills than fishermen. Many of these skill sets are similar to those in shipbuilding or vessel engineers, but may not require certification.

VRM specialists maintain and repair a wide range of engines and machinery, mainly shoreside. Experience as a mechanic can lead to a career as a port or vessel engineer with further training and experience. A port maintenance mechanic also handles welding, electrical wiring, pile and dock repair, concrete repair, used oil handling, boatlifting, and blocking. Marine mechanic is a high-priority occupation due to difficulty recruiting qualified workers. Current technicians are aging out of the workforce and new technicians with the required skill sets are needed across sectors.

A shortage of skilled support technicians in ports to repair and maintain vessels can reduce revenues to a wide range of mariners, including commercial fishermen. Many fishermen repair and maintain their own vessels or others' vessels during the off-season. Availability of training in these skills can benefit more individuals than just those in VRM positions.

OCCUPATION-SPECIFIC ACTION STEPS

- Provide K-12 outreach about shoreside technical businesses as an occupation and develop career pathways.
- Offer training in technical skills at ascending levels to develop highly skilled technicians.
- Offer business skill development to self-employed marine trade service providers.
- Partner with industry vendors for training.

Conclusion

The *Alaska Maritime Workforce Development Plan* reflects the work of many people across the state over a two-year period. The maritime employment opportunities in Alaska are vast and diverse. This plan does not cover all occupations or needs of the maritime industry, but it takes the first step in documenting current critical needs.

Many opportunities exist for Alaskans to enter the maritime workforce in skilled occupations throughout Alaska. Implementing this Plan must be a dynamic, ongoing process that evolves in response to new information, technology and changes in the fisheries, seafood, and marine sectors of Alaska's economy. As our natural resources and marine and freshwater environments change, our workforce needs and applications will as well. It is in the best interest of Alaska, its communities, and its residents to monitor and adapt to these changes, particularly in developing a responsive workforce.

Efforts are underway to implement the ideas and activities in this Plan. It will take commitment and engagement by industry, state government, and education and training providers to realize the goals and implement the strategies of the *Alaska Maritime Workforce Development Plan.*

APPENDIX A

Acknowledgements

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RECOGNITION

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APPENDIX B

Employment Numbers

Tables are excerpted from *Education and Training Gap Analysis for the FSM Workforce,* May 2012, prepared for the University of Alaska by the McDowell Group. The full report can be found at www.alaska.edu/files/fsmi/FSMFinalReport5-14-12.pdf.

These tables break down selected employment indicators by sub-sectors to the extent possible with available data. It gives a sense of the overall potential market for education and training within each of the subsectors. The table highlights the large component of resident FSM employment represented by commercial fishing. Government workers shown are limited to those for whom data was readily available. They are employees of the Alaska Department of Fish and Game, USCG, and the National Marine Fisheries Service (NMFS).

Employment in Alaska Maritime Industries

Maritime Sub-Sector	# Workers	Percent Resident	# of Resident Workers	Wages and/or Resident ($MM)	Average Age
Commercial Fishing[1]	30,980	56%	17,349	$1,742.0	N/A
Seafood Processing/Marketing	22,412	27	6,051	$323.2	40
Water Transportation	4,056	62	2,515	134.2	39
Sportfish Guiding[2]	3,034	72	2,184	N/A	N/A
Boat Building/Repair	693	76	527	21.5	38
Salmon Hatcheries	456	64	292	10.7	37
Marine Engineering/Surveying	183	85	156	12.1	40
ADFG, USCG, NMFS	5,641	N/A	5,077 [4]	N/A	N/A
Total[3]	68,042	N/A	34,150	N/A	N/A

[1] Workers represent total count of fishermen fishing commercial permits and adult crewmembers. Earnings are estimated gross ex-vessel earnings for the industry and are not directly comparable to wages in other industries.
[2] Guiding employment is estimated based on 2010 license and logbook data. Figures cover saltwater and freshwater guides. Residency is based on address data provided by guides.
[3] Data provided on residency and age apply to private sector only; data was not available for government employees.
[4] For purposes of estimating potential training demand, McDowell Group assumes that 90 percent of these state and federal workers are residents of Alaska. Adding these workers to the private sector data brings the proportion of resident workers from 47 percent to approximately half.
Note: Data on age applies to Alaska residents only, as data is not available for nonresident workers.
Source: DOLWD, CFEC, ADFG, ASMI, NOAA, US Office of Personnel Management and American Forces News Service.

The remaining tables in this section show only workers who are covered under Alaska's unemployment insurance program. These include private-sector wage and salary workers, but not sole proprietorships. The latter encompass, for example, most of the sportfish guides shown in the previous table. In addition, thousands of fishing and government jobs are not covered by the data. Nevertheless, the table may help identify the approximate overall market for certain types of education and training, this time by occupational area. The next table segments the FSM workforce by occupation using Standard Occupational Codes.

Private Sector Wage and Salary Employment in Alaska's Maritime Sector, 2010, by Type of Occupation (not including government or most guiding and commercial fishing)

All Private Sector Wage/Salary Maritime Industries	# of Workers
Production Occupations	18,697
Transportation and Material Moving Occupations	3,121
Office and Administrative Support Occupations	1,163
Installation, Maintenance, Cleaning, and Repair Occupations	1,065
Management and Financial/Business Operations	456
Sales and Related Occupations	325
Architecture and Engineering Occupations	189
Life, Physical, and Social Science Occupations	177
Business and Financial Operations Occupations	115
All Other	2,607

Source: DOLWD.

The next table shows the same employment data grouped by type of FSM business (Boat Building, Hatcheries, Seafood Processing, Selected Marine Engineering and Surveying, and Water Transportation).

Private Sector Wage and Salary Employment in Alaska's Maritime Sector, 2010, by Type of Business (not including government or most guiding and commercial fishing)

	# of Workers
Boat Building	
Construction and Extraction Occupations	222
Production Occupations	188
Installation, Maintenance, and Repair Occupations	104
Office and Administrative Support Occupations	72
Sales and Related Occupations	65
Management Occupations	14
All Others	28
Total	**693**

Hatcheries	
Farming, Fishing, and Forestry Occupations	293
Management Occupations	38
Installation, Maintenance, and Repair Occupations	30
Life, Physical, and Social Science Occupations	21
Office and Administrative Support Occupations	20
All Others	54
Total	**456**

Seafood Processing	
Production Occupations	19,931
Installation, Maintenance, and Repair Occupations	685
Office and Administrative Support Occupations	568
Management and Financial/Business Operations	221
Architecture and Engineering Occupations	99
Life, Physical, and Social Science Occupations	93
All Others	815
Total	**22,412**

Selected Marine Engineering & Surveying	
Architecture and Engineering Occupations	84
Life, Physical, and Social Science Occupations	49
Office and Administrative Support Occupations	37
All Others	13
Total	183

Water Transportation	
General Labor/Operations	1,887
Sailors/Oilers/Navigation	1,120
Management	272
Maintenance	248
Operating Engineers and Truck Drivers	235
Cooking	172
Administrative	81
Specific Pipeline Operations	27
Other	14
Total	**4,056**

Source: DOLWD.

For purposes of estimating FSM training and education needs, it would be helpful to know how long specific positions typically remain vacant and how often hires are made out of state for that reason. Unfortunately, there is no public source for that information. DOLWD has data on occupation and duration of employment by individual social security number. However, the data does not show why individuals leave particular positions (for example, whether there was simply not enough work). Neither does the data show how long positions remain open.

APPENDIX C

Career Cluster and Pathway Mapping for Alaska Maritime Occupations

Career Clusters provide a framework or structure to organize and deliver quality career and technical education programs. It is a methodology of teaching and training developed by and for the National Association of State Directors of Career Technical Education Consortium.

In total, there are 16 Career Clusters in the National Career Clusters® Framework, representing more than 79 Career Pathways to help students navigate their way to greater success in college and career.

As an organizing tool for curriculum design and instruction, Career Clusters® provide the essential knowledge and skills for the 16 career clusters. It can also function as a useful guide to develop programs of study bridging secondary and postsecondary curriculum and for creating individual student plans to create a complete range of career options. Because the framework encompasses both secondary and postsecondary education, the Career Cluster structure can also inform efforts to strengthen and improve students' transitions from secondary to postsecondary education. The University of Alaska uses Career Clusters to organize the Career Pathways Program of Study framework that eases transitions for secondary students into post secondary training programs. A feature of the Career Pathways Program of Study framework is the ability for secondary students to earn college credit in career and technical courses while they are still in high school.

Depending on the business and industry environment, a state may adapt a Career Clusters® framework to reflect their state's educational objectives, standards, and economic development priorities.

The State of Alaska, and in particular the Department of Labor and Workforce Development, Department of Education and Early Development, and the University of Alaska are all familiar with and use the Career Cluster framework as appropriate to their missions and guidance from policy makers.

The Alaska Department of Labor and Workforce Development drafted the following schematic as a means to consider the maritime sector needs depicted in a Career Cluster framework.

Alaska Maritime Sector Needs in a Career Cluster Framework

Agriculture, Food, and Natural Resources
The production, processing, marketing, distribution, financing, and development of agricultural commodities and resources including food/fish, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources.

Pathways: **Natural Resource Systems**
Food Products and Processing Systems

Priority Occupations: Commercial Seafood Harvester
Shellfish Farmer
Hatchery Manager

Manufacturing
Planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance, and manufacturing/process engineering.

Pathways: **Production**
Manufacturing Production Process Development
Maintenance, Installation, and Repair
Quality Assurance

Priority Occupations: Seafood Processing Engineer (Plant engineer or chief engineer)
Refrigeration Engineer and Technician
Seafood Production Manager
Electrician
Can Machinist
Quality Control and Assurance Managers and Technicians
Baader Technician
Seafood Plant Manager

STEM—Science, Technology, Engineering, and Math
Planning, managing, and providing scientific research and professional and technical services (e.g., physical science, social science, engineering) including laboratory and testing services, and research and development services.

Pathways: **Science and Math**

Priority Occupations:
Biometrician
Fish and Wildlife Technician
Fishery Biologist
Fisheries Scientist
Fish and Game Coordinator
Fisheries Economist/Fishery Analyst/Fishery Management Specialist
Fishery Management Specialist/NOAA Fisheries

Transportation, Distribution, and Logistics
Planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional and technical support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.

Pathways: **Transportation Operations**
Facility and Mobile Equipment Maintenance

Priority Occupations:
Vessel Maintenance and Repair Service Providers
Vessel Operations: Deckhands, Engineers, Captains and officers
Vessel Repair and Maintenance Service Providers
Shipbuilding and Repair

APPENDIX D

Alaska Education Tax Credit

Prepared by the Alaska Department of Labor and Workforce Development, Alaska Department of Education and Early Development, and the Alaska Department of Revenue. Updated: August 2011.

The Alaska Education Tax Credit Program provides a tax credit to businesses that make contributions to Alaska universities and accredited nonprofit Alaska two-year or four-year colleges for direct instruction, research, and educational support purposes. The tax credit can also be taken for donations to a school district or state-operated vocational technical education and training school for vocational education courses, programs, and facilities. Donations to school districts for purposes other than vocational education courses, programs, and facilities do not qualify.

Changes in 2011 (effective July 1, 2011) allow donations for an annual intercollegiate sport tournament, Alaska Native cultural or heritage programs for public school staff and students, and a facility in the state that qualifies as a coastal ecosystem learning center under the Coastal American Partnership.

Who qualifies? If your company pays any of the following taxes to the State of Alaska you may be eligible to claim an Education Tax Credit:

- Alaska Corporate Income Tax (AS 43.20.011)
- Fisheries Business Tax (AS 43.75.015)
- Fishery Resource Landing Tax (AS 43.77 .010)
- Insurance Premium Tax/Title Insurance Premium Tax (AS 21.89.070)
- Mining License Tax (AS 43.65.010)
- Oil and Gas Production and Transportation Tax (AS 43.56.010)
- Oil and Gas Property Tax (AS 43.55.011)

How much can companies save? The examples below reflect recent changes to Alaska law—effective January 1, 2011—that provide even greater benefits for schools. In addition to the state tax credit, businesses may qualify for federal tax savings by making charitable cash donations.

Gift Amount	Alaska Education Tax Credit	Estimated Federal Tax Benefit*	Total Tax Savings (State and Federal)	Net Cost of Donation
$10,000	$5,000	$1,750	$6,750	$3,250
$50,000	$25,000	$8,750	$33,750	$16,250
$100,000	$50,000	$17,500	$67,500	$32,500
$200,000	$150,000	$17,500	$167,500	$32,500
$300,000	$250,000	$17,500	$267,500	$32,500
$400,000	$300,000	$35,000	$335,000	$65,000
$500,000	$350,000	$52,500	$402,500	$97,500
$1,000,000	$600,000	$140,000	$740,000	$260,000
$9,800,000	$5,000,000	$1,680,000	$6,680,000	$3,120,000

*Assumes a federal tax rate of 35%. This calculation is simplified and actual results may vary depending upon the unique circumstances of each taxpayer. Please contact your tax consultant for further information.

How is the new Alaska Education Tax Credit calculated?

- Donations up to $100,000: donors still receive a tax credit of 50%.
- Donations of $100,000 to $300,000: the new 100% credit applies to the amount of the donation over $100,000 up to $300,000.
- Donations of $300,000 to $9,800,000: the new tax credit of 50% applies to the amount of the donation over $300,000, limited to a maximum credit of $5 million.

APPENDIX E

The Magnuson–Stevens Act Section 305(j)

The Magnuson-Stevens Fishery Conservation and Management Act is the principal law governing marine fisheries in the United States. Section 305 of the MSA references Western Pacific and Northern Pacific Regional marine education and training. To date, this section of the Act has not been implemented but is in concurrence with many of the recommendations found in the *Alaska Maritime Workforce Development Plan.*

MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT, SECTION 305

(j) WESTERN PACIFIC AND NORTHERN PACIFIC REGIONAL MARINE EDUCATION AND TRAINING—

(1) IN GENERAL— The Secretary shall establish a pilot program for regionally-based marine education and training programs in the Western Pacific and the Northern Pacific to foster understanding, practical use of knowledge (including native Hawaiian, Alaskan Native, and other Pacific Islander-based knowledge), and technical expertise relevant to stewardship of living marine resources. The Secretary shall, in cooperation with the Western Pacific and the North Pacific Regional Fishery Management Councils, regional educational institutions, and local Western Pacific and Northern Pacific community training entities, establish programs or projects that will improve communication, education, and training on marine resource issues throughout the region and increase scientific education for marine-related professions among coastal community residents, including indigenous Pacific islanders, Native Hawaiians, Alaskan Natives, and other underrepresented groups in the region.

(2) PROGRAM COMPONENTS— The program shall—

(A) include marine science and technology education and training programs focused on preparing community residents for employment in marine related professions, including marine resource conservation and management, marine science, marine technology, and maritime operations;

(B) include fisheries and seafood-related training programs, including programs for fishery observers, seafood safety and seafood marketing, focused on increasing the involvement of coastal community residents in fishing, fishery management, and seafood-related operations;

(C) include outreach programs and materials to educate and inform consumers about the quality and sustainability of wild fish or fish products farmed through responsible aquaculture, particularly in Hawaii, Alaska, the Western Pacific, the Northern Pacific, and the Central Pacific;

(D) include programs to identify, with the fishing industry, methods and technologies that will improve the data collection, quality, and reporting and increase the sustainability of fishing practices, and to transfer such methods and technologies among fisheries sectors and to other nations in the Western, Northern, and Central Pacific;

(E) develop means by which local and traditional knowledge (including Pacific islander, Native Hawaiian, and Alaskan Native knowledge) can enhance science based management of fishery resources of the region; and

(F) develop partnerships with other Western Pacific Island and Alaskan agencies, academic institutions, and other entities to meet the purposes of this section.