



Alaska State Energy Sector Partnership and Alaska Workforce Investment Board Alternative Energy, Renewable Energy and Energy Efficiency Workforce Development Plan DRAFT 1-27-12

The State has established several Energy goals that affect the Energy Sector economy.

- Alaska will improve energy efficiency on a per capita basis in Alaska by 15% in 2020
- Alaska will produce 50% of its electrical power from renewable sources by 2020
- Energy retrofit 25% of the state public buildings by 2020
- Achieve 50% energy from alternative and renewable sources by 2025

The State has invested more than \$1 Billion toward these goals.

- \$450 million for the Alaska Home Energy Rebate and Weatherization Program to make thousands of homes more energy efficient and reduce household energy costs
- \$250 million for a Commercial Construction Energy Efficiency Revolving Loan Program that offers owners of public buildings low cost loans to retrofit properties where energy savings pays the loan
- \$250 million for a Alaska Renewable Energy Fund grant program

The Legislature also created the Emerging Energy Technology Fund aimed at supporting development of new technologies not prioritized under the Renewable Energy Grand Fund.

The federal American Reinvestment and Recovery Act (ARRA) have invested in Alaska energy sector projects, and the Energy Sector economy of Alaska is experiencing significant growth. In addition, thousands of homeowners have invested their money in making homes more efficient,

The US DOL awarded the Alaska Workforce Investment Board a \$3.6m ARRA grant for “green job” training in 2010 based on the formation of the Alaska State Energy Sector Partnership, the preliminary education, training and employment plan, and the delivery of an Energy Sector Workforce Plan for Alaska that would be adopted by the AWIB.

The Alaska State Energy Sector Partners (ASESP) are the:

- Alaska Workforce Investment Board
- Alaska Department of Labor and Workforce Development
- Alaska Energy Authority
- Alaska Housing Finance Corporation
- University of Alaska
- Alaska AFL-CIO
- Denali Commission
- US DOL Alaska Office of Apprenticeship
- Alaska Works Partnership, Inc.

The ASESP planning process for the workforce development plan has also included input from the Department of Education and Early Development, Department of Transportation and Public Facilities, the Alaska Joint Electrical Apprenticeship and Training Trust, and Fairbanks Alaska Area Plumbers and Pipefitters Joint Apprenticeship Training Committee.

The Energy Sector workforce plan will include: Energy Efficiency End User Technology (retrofit of existing structures), Geothermal, Hydroelectric, Wind Turbine, and Biomass industries. The education and training spectrum begins with career awareness, career and technical education, occupational training and degrees. Alaska has a robust weatherization training network and an emerging energy efficiency, alternative and renewable energy education system. Workforce planning must focus on near opportunities and projects on the horizon that will offer businesses and workers a solid foundation within the Energy Sector Market. The plan will be based on occupation labor market demand projections and provide supply side strategies for meeting the demand for a highly skilled and technically trained Energy Sector workforce.

The Energy Sector workforce is emerging from a variety of industries in Alaska. The 2011 Alaska Economic Trends survey of Alaska's "Green Jobs" found:

- Green jobs are not an industry of their own; they span all industries where employers pursue more environmentally sustainable concepts
- 9.4% of Alaska employers (1,552) employers have workers in a "green job"
- There are more than 5,000 workers in the "green jobs" workforce
- Most workers in green jobs don't spend 100 % of their time producing a green product or service
- The largest concentration of green jobs is in local government
- Tour guides as an occupation had the largest green employment
- About half of all green jobs require extensive on-the-job training, certification, or special licensing
- More than 40% of green jobs are performed by construction workers

Alaska has three distinct "energy districts"; Southeast Alaska; Railbelt and South-Central Alaska; and Bush/Rural Alaska. The distinctions include the current primary energy source; hydro-electric, natural gas and fuel oil.

Southeast Alaska

Southeast Alaska has plentiful hydroelectric energy, relatively low cost electricity, and predominantly oil and wood for space heating. There are mixes of communities where interties connect them to each other and power sources, and other communities that are more similar to the Alaska Bush/Rural communities described below, with stand-alone grids on diesel power. There are numerous opportunities for wind, tidal and hydroelectric power for renewable energy systems, though small markets and high costs make that prohibitive in some areas. Plentiful hydroelectric power provides some of the lowest cost electricity in the nation. There are some communities where overcapacity is a factor, and interties were constructed to provide additional outlets for the unused power.

One consequence of the diesel to hydro-electric switch is that it has made biomass energy attractive for times when the demand for hydro-electric outpaces supply. In 2010, Sealaska Corporation installed the state's first large-scale pellet boiler at its corporate headquarters in Juneau. Additional wood-fired boilers have been installed in Craig and Coffman Cove. These projects may provide a local market for processed wood made from Tongass National Forest timber.

Railbelt and South-Central Alaska

There are two sub-regions in this district, the Copper Valley corridor from Valdez to Delta Junction, including Tok and Eagle, and the area known as the railbelt, from Nanwalek in the south to Coldfoot in the north. These two sub-regions are not currently tied together through interties, but that has long been discussed as a possibility, and efforts to run North Slope natural gas to Anchorage would further that and perhaps make it a reality.

Bush/Rural Alaska

Bush/Rural Alaska is accessible only by air or water, and is not connected by road. It is distinguished from the other two regions/states by extremely high energy prices; approaching six times the US average for electricity, and heating oil prices up to four times the national average. Stand alone micro-electric grids powered by diesel generators are the norm. Wind – diesel systems are appearing now, with increasing frequency.

The bush/rural Alaska is plagued by high shipping costs, lack of a skilled labor force for power plants and other generation and distribution systems. Lack of maintenance over time has taken its toll on buildings, power plants, electric grids, and heating systems.

Oil storage has been problematic, with numerous leaks and spills occurring over the years in the process of shipping, transferring and storage. When rivers run with low water, barges are unable to deliver fuel. Ice prevents delivery of fuel in winter, and if a community runs short, air freighted fuel is required to get the village through until a barge can resupply in the spring. Air freight can add several dollars per gallon to the cost of the fuel at retail.

While other natural resources are in abundance in some areas, energy sources are very site specific. Some geothermal, wind, solar and tidal potential exists, but are expensive to develop for tiny markets of under 500 people. Still, anything that can displace expensive diesel is a benefit.

Most Alaska communities have developed and implemented an ongoing Energy Plan. These plans have identified locally available energy resources for generating electricity and heat. It is critical that the Energy Plans optimize community/village scale energy systems. As wind-diesel systems become more prevalent and our technology and expertise advances, Alaska has an opportunity to export our knowledge with these systems to other remote places around the world. Our experience optimizing small scale rural energy systems could benefit many of the people on our planet who currently live without electricity.

RE/EE Workforce Development Plan

The ASESP and AWIB submitted an initial workforce plan to the USDOL for the developing the workforce in 2009. The initial plan was established, in part, to guide the allocation of federal resources in compliance with the federal ARRA. The initial plan was approved by the Alaska Workforce Investment Board in 2010 and submitted to the USDOL as part of Alaska's State Workforce Activities. The final plan will be submitted to the AWIB by March, 2012.

Energy Sector workforce planning will focus in on:

- Existing occupations expected to experience an increase in employment demand;
- Existing occupations with significant change to the work and worker requirements; and
- New and emerging Energy Sector occupations.

Planning will be research based, focused on the Energy Sector economic market, identifying labor demand and provide strategies to supply the workforce. It will create educational Energy Sector

Career Paths where students and adults can connect to the courses and training they will need to participate in the Energy Sector economy. A key focus will be to develop the outreach and communications needed to inform communities about Energy Sector projects and legacy jobs in their area and a timely response for local training needs. The result will be a highly educated and technically trained Alaska workforce capable of meeting Alaska's Energy Sector needs into the future.

Goal

Create and implement a comprehensive Energy Sector Workforce Plan to meet the challenge of educating and training Alaskans so workers, businesses, employers, and communities benefit from economic opportunities associated with building alternative and renewable energy sources, operating and maintaining energy systems, and making homes and buildings more energy efficient.

The plan will increase economic opportunities for Alaska businesses, Alaska's workforce and communities through new sustainable energy supplies, energy efficiencies, reduced energy consumption, and stable energy costs. The plan has identified six strategies. The six strategies are divided into three categories: Staging of Policy and Procedures (strategies one and two); Outreach (strategies three and four); and Implementation of Policy and Procedures (strategies five and six).

Staging of Policy and Procedures:

Strategy 1: The ASESP and AWIB will create and implement a State Energy Sector Workforce Plan

- 1(a) The ASESP will present an initial workforce plan to the AWIB for approval
- 1(b) Identify AE, RE, EE projects, location and timeline
- 1(c) Identify Alaska's "green" occupations by energy industry sector and estimate labor supply and demand (labor market analysis)
- 1(d) Connect Energy Sector workforce development planning (K-12 and postsecondary) with other energy policy councils, industry representatives and agencies
- 1(e) Monitor USDOL ASESP grant activities and refine workforce plan
- 1(f) ASESP will make recommendations to the AWIB for guiding public workforce resource allocation to meet emerging Energy Sector project and workforce training needs

Strategy 2: Align the ASESP Workforce Plan with the Energy Pathways

- 2(a) Review the Alaska State Energy Plan to align Energy Sector workforce components with energy pathways and regional plans
- 2(b) Examine labor market information among industries connected to the Energy Sector to better understand true labor demand and supply
- 2(c) Identify where the Energy Sector sits among education "career clusters", the education and skills required to follow a career path and connecting points for students and adults along the career path(s)
- 2(d) Align Energy Sector Career Path with education systems in accord with Alaska's Career and Technical Education Plan

Outreach:

Strategy 3: Through public outreach, increase awareness about the Energy Sector Industry, employment, and career opportunities

- 3(a) Develop Energy Sector outreach message, media and steps for successful outreach initiatives
- 3(b) Develop outreach and career awareness information and career activities for K-12
- 3(c) Develop outreach and career awareness information for adults and career information for distribution through Alaska's Job Centers network
- 3(d) Inform public about Energy Sector programs of study through School District CTE, University of Alaska CTE, Registered Apprenticeship Sponsors, Industry Associations and public information outlets

Strategy 4: Identify available Energy Sector occupational course, certificate, license and degree requirements, education and training gaps in Alaska, and recommend ways to close those gaps

- 4(a) Research energy sector courses, certificate training and degrees and on-line courses available in Alaska
- 4(b) Identify energy sector workforce and training gaps
- 4(c) Report findings to the AWIB with recommendations for closing Energy Sector education and training gaps

Implementation of Policy and Procedures:

Strategy 5: Strengthen Energy Sector Workforce System to meet future labor demand

- 5(a) Endorse nationally recognized industry skill standards certification or licensing for Energy Sector workforce that meet Alaska market conditions
- 5(b) Augment Energy Sector education and training with new resources
- 5(c) Promote and create professional development opportunities for educators and trainers

Strategy 6: Assess the progress of implementing the Energy Sector Workforce Plan and continue to make workforce system improvements through public policy

- 6(a) ADOLWD will evaluate the employment outcomes of persons trained for RE/EE occupations/Captured in training report – DBP
- 6(b) The ASEP will determine the employment success rate of each RE/EE training program/Captured in training report – DBP
- 6(c) Research and analyze economic impact of Energy Sector market and jobs on Alaska's economy
- 6(d) Examine employment policies in state procurement contracts related to Energy Sector projects and recommended policy changes that increase for local workers in Energy occupations
- 6(e) Develop and support business incentives for "Alaska Hire" Policy investigation