

Workgroup #5

Building the Energy Efficiency Workforce of the Future –

Facing today's demographics, how do we create systems that build and sustain energy efficiency talent to meet today's and the future's needs?

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Work Group Challenge

Facing today's demographics, how do we create systems that build and sustain energy efficiency talent to meet today's and the future's needs?

Process to Address the Challenge

- Work Group met 8/14 and 9/12
- Rely on expertise and input of group members and literature review
- Staff from PSE and PacifiCorp provided support
- Decided to focus on short-term actionable items (0-5 years)

General context & background: National and regional trends and issues

Opportunities

- NAPEE National Action Plan for Energy Efficiency January 2008 report to leadership committee:
 - In the near term, National EE programs to grow 15% a year, ESCO revenues to increase 22% a year
 - EE 2008 Program budgets estimated at \$2.46 billion
 - ESCO 2008 Revenues estimated to total \$5.35 billion
- Clean energy mandates/RPS requirements/Green Workforce legislation direct utilities to recruit employees and develop programs to meet clean energy targets:
 - 25 states have RPS in place including WA, OR, and MT
 - 16 States have Energy Efficiency Requirements including WA
 - These initiatives increase the demand and competition for workers
 - American Solar Energy Society counts 8 million jobs created in the U.S. energy efficiency industry in 2006 alone (3.7 million directly in efficiency).
 - ACEEE predicts 14,000 additional jobs over 15 years in Florida if energy efficiency programs are expanded as planned.
 - The Northwest Energy Efficiency Council (NEEC) estimates current day employment of 2,500 with an additional 2,500 trades jobs supported in Oregon as a result of project installation.
 - The Apollo Alliance (2004) and Wisconsin (forthcoming) estimate 10 jobs created for every \$1 million invested in energy efficiency measures.

Challenges

- There is difficulty in identifying true workforce and job data for the energy efficiency industry. While there are elements that are clearly part of the energy efficiency industry (e.g. federal/state programs, utilities, insulation industry) there is also significant workforce included in segments of larger industries like lighting, appliances, building and automotive.
- Retirements in the energy industry estimated at 50% over next five years.

- Legacy of industry deregulation, consolidation and de-emphasis of EE programs, following suit, education and training programs to fill positions also constricted.
- Culture clash between norms from aging workforce and young workforce expectations of greater flexibility, different supervision.

Future

- Demographic trends of declining numbers in working age cohorts to 2030.
- Working age cohorts increasingly ethnically diverse including segments with lower participation in post secondary education.
- Long-term projections of energy supply costs continue to climb, making energy efficiency an even more attractive long-term alternative

Research Completed to Date

What skills are needed to implement energy efficiency planning, development and implementation?

- No formal study has presently been identified in the region specifically examining EE occupations and skills assessments.
- An Analysis of Clean Energy Workforce Needs and Programs in Oregon - defines the workforce needs, catalogs training programs currently available or under development, recommends actions to address the gap between companies' needs and existing training and workforce programs.
- The Northwest Energy Efficiency Council is conducting a survey of 400 Energy Efficiency industry companies to identify significant workforce needs.
- A Management Information Services report to The American Solar Industry 2007 explained: *Bounding and defining the Energy Efficiency workforce is difficult as it is both an identifiable industry segment in utilities, weatherization, and government programs; and a partial segment of other industries such as building, lighting, and vehicles.*
- Specific technical skills are mentioned in reports, but this list is not comprehensive nor a systematic analysis:
- Building Sciences Engineers: mechanical, controls, electrical
- Building Sciences Trade Skills:
 - Training opportunities for trades workers on efficiency projects
 - Project Management Skills with a foundation of EE technologies and theory
 - Financial Analysis and Evaluation
- Technicians required to implement EE upgrades and systems: (HVAC, pipe fitters, plumbers, electricians, electrical engineers, carpenters, welders, machinists)
- Workplace Skills
 - Energy efficiency experience/hands on experience
 - Interpersonal skills: communicating with customers and contractors to manage projects
 - Showing up on time, prepared to work
 - Completing tasks on time
 - Remedial math skills required before engaging in training programs

What are the current workforce demographics and analysis for the region?

- No formal study has presently been identified in the region specifically examining EE workforce demographics

- Clean Energy Jobs not tracked as such by state employment agencies i.e. lack of SIC codes specifying clean energy manufacturing vs. general manufacturing.
- Inference from Washington and Oregon Electric Sector Survey by WSU Energy Extension indicates:
- There is a trend of fewer workers in the population for replacement existing and new positions, particularly for executive leadership, management, power engineering and other skilled electric occupations.
- Competition hiring skilled trade workers from a limited pool among several industry sectors including: commercial construction, manufacturing, and the pulp and paper industry.
- Increasing ethnic diversity in working age cohorts and lower participation in post secondary education among this segment
- Very similar demographic profiles for Oregon and Washington those aged 55+ will increase by 89% to 2030 while those aged 16-54 will only increase 22%
- Decline or modest growth in engineering and technical degrees

What are the high priority jobs that need attention now?

- NEEC Northwest Energy Efficiency Council Survey: Engineering, Mechanical, HVAC/R Specialist, Communications, Commissioning, Marketing/Sales, Project Management, Consultant
- Athena Institute Survey 2007: Energy Efficiency Engineers, Jr. – Sr. Level Engineers, Commissioning and Design Simulation, *Engineering with Fuel Cell Expertise*
- California Long Term Energy Efficiency Strategic Plan, August 2008: Energy efficiency engineering, Construction, Maintenance, Program design and implementation, Financial Analysis, two categories of staffing development
- New types of jobs that do not presently exist:
 - Corporate emissions officer
 - Supplemental training for existing positions: see above listed

What post high school programs exist in the Northwest to train an energy efficiency workforce?

Existing programs include but are not limited to:

- Washington: Center of Excellence for Energy Technology, University of Washington, Seattle University, Washington State University
- Oregon: Lane Community College, NEEI, BPA. Portland Community College, Energy Trust of Oregon Energy Star Energy Technical School Program, Union Apprenticeship Training Centers (11 responded to survey)
- Idaho: Idaho State University Energy Systems Technical Education Center
- NEEC survey respondents reported near neutral ratings on confidence that universities, community colleges, trade schools and union training programs were keeping up with changing EE technology and emerging clean tech fields.

What research or other efforts are currently underway to meet energy efficiency workforce needs in the region, in the West and across the country?

Best Practices Models

- PSEG Public Service Enterprise Group New Jersey is already implementing their strategy. (White paper Developing New Jersey's Green Energy Workforce.)
 - Short term pursue 3 strategies:

- Attract and train a greater number of diverse and skilled workers to the green energy industry.
 - Create workforce development partnerships that help the energy industry adapt to the evolving green economy.
 - Facilitate knowledge transfer between green and existing workforce.
 - Long term State of NJ conducting Energy Master Plan assessing skill gaps and barriers to green workforce expansion.
- CEWD Center for Energy Workforce Development
 - Non-profit Consortium of Electric, Natural Gas, and Nuclear Utilities and their associations, contractors and unions to develop solutions for the workforce shortage in the utility industry.
 - Clearinghouse of best practices submitted from consortium.
 - Idaho Power a member of consortium.

Studies that extend beyond NEET Timeline

- DOE Office of Energy Efficiency and Renewable Energy hired Lawrence Berkeley National Labs to conduct a study of EE workforce needs focusing on the C/I sector, draft report expected February 2009.
- Sustainable Oregon Workforce Initiative:
 - Conducted workforce gap analysis study of Oregon clean energy workforce needs:
 - Defines the needs of the workforce needs of Oregon clean energy companies
 - Describes clean energy training programs in Oregon
 - Identifies the gaps between industry needs and available training programs
 - Outlines a series of recommendations for addressing the gaps
 - Plans to conduct a targeted assessment to determine workforce opportunities and needs in phase 2 (date not yet identified)
- Oregon Economic & Community Development Department is working on a Clean Tech Action Plan to:
 - Identify workforce needs
 - Possible public/private solutions in a variety of industries
 - One specific work group represented the energy efficiency industry
- Oregon Energy Efficiency Working Group is a governor-appointed group charged with developing concepts related to energy efficiency in the built environment, specifically in the residential, non-residential and industrial sectors. The group is expected to complete its work by the end of August, 2009
- Washington is conducting a green jobs labor market survey due to be completed in January 2009 through the Washington State Employment Security Department.
 - The Washington State University Energy Extension Program published the Workforce Survey of Electric Sector Employers in Washington and Oregon in January of 2008. While focusing on occupational groups in energy production, some of the findings may foreshadow the forthcoming Green Economy Labor Market Survey underway in Washington.
- California Long Term Energy Efficiency Strategic Plan August 2008
 - Outlines implementation plan to coordinate and establish energy efficiency in all levels of state's educational system
 - Near term actions (2009-2011) include:
 - Conduct an in-depth formal statewide EE workforce needs assessment and training and education resource inventory.

- Assess current and alternative funding mechanisms for workforce education and training.
- Create a utility specific web portal identify entities to co-fund with utilities.
- Coordinate and develop education and training at colleges, technical schools, adult education, skilled trades training and K-12 level schools.
- Develop marketing and outreach program partnering with community-based organizations to train qualified workforce.

What initiatives do individual states have to promote a green-collar workforce?

- New Jersey Energy Master Plan
- California Long Term Energy Efficiency Strategic Plan August 2008
- Sustainable Oregon Workforce Initiative
- Washington HB 2815
 - Defines green jobs as those in the primary industries of a green economy that promote environmental protection and energy independence.
 - Sets goal of having 25,000 green jobs by 2020.
 - Directs agencies to survey labor market, workforce training and recruitment, barriers to minority participation, but does not fund training.
- Oregon Clean Energy Initiative
- Oregon Bureau of Labor & Industries is working with the Governor's Office to develop a plan for 2009 to revamp the current state workforce system to streamline and improve workforce development initiatives and to better respond to current and emerging industry demands, such clean technologies. There is also a component that would redirect federal workforce dollars toward industrial and vocational K-12 education in ten pilot projects around the state.
- Oregon Climate Responsible Workforce concept coming out of the Governor's Energy Efficiency Work Group.
 - Directs all state agencies responsible for conferring or administering professional licenses within the building industry to incorporate sustainability and climate change related topics into examination and continuing education requirements to obtain and maintain licensure.
- Engineering & Technology Council is asking Oregon legislature for \$37.2 million to increase number of engineering graduates in OR to support industry.
- Oregon Community College & Workforce Development has prepared a policy package for the 2009 session that includes a request of \$15 million in funding for rebuilding Career and Technical Education (CTE) programs statewide, connected with regional economic labor market needs in clean technology, sustainability and other high wage, high skill, or high demand occupations.
- Presently Idaho has workforce development programs that focus on nuclear and conventional energy needs, but neither Idaho nor Montana have any workforce development focused on green jobs.

Barriers that need to be addressed and potential solutions

Current process is fragmented

- Lack of strategic coordination among: utilities, education, organized Labor, state coordinating boards, private training, community-based and non-profit organizations
- Lack of coordination/communication between public and private training programs; union and community college programs.

- Industry has little awareness of workforce resources available to them.
- Colleges need industry data on:
 - Types of jobs needed
 - Pay rates
 - Skills required
 - Demand levels for positions

Little/no state or federal funding

- California Long Term Energy Efficiency Strategic Plan August 2008
- The IOUs are not in a position to effectuate the level of change needed to create a comprehensive workforce education and training program, nor can IOU ratepayers fully fund the effort.

Competition with other “green” and high-tech industries for similar job skills

- Clean Technology initiatives and assessments to date emphasize renewable technologies and fuels.
 - Despite the needed magnitude of energy efficiency, it is likely that there is a lack of public awareness of the career opportunities and contributions of energy efficiency to the green economy.
- General demographic trend of dearth of skilled labor resulting in increased competition among industries.

Lack of awareness of energy efficiency as a significant part of the green job market.

- In the review of literature for this report, energy efficiency received a smaller share of attention than other green energy production segments, yet the magnitude of its contributions to a greener portfolio should highlight its important role.
- Given the lack of attention to energy efficiency’s role in the green economy in the professional assessments reviewed, one can conclude there is a general lack of awareness of energy efficiency careers, contributions of energy efficiency to the greater good, and pathways to become a member of the energy efficiency industry.

Areas of Focus for Solutions and Preliminary Direction for the Region

Areas of Focus	Preliminary Recommendations
Energy efficiency occupations and job skills have not been clearly defined or inventoried as a subset of green workforce employment.	Create an index of energy efficiency occupations and work skills and estimate demand levels.
	Emphasize the role of energy efficiency in the green economy reduced emissions and job creation
	Create a common language and consistent process across states to define and track green jobs
	Add a clearinghouse function to track energy efficiency job data
A bridging strategy will likely need to be implemented for energy efficiency knowledge transfer between the retiring workforce and new hires.	Contract with retiring workers to continue working in a mentoring role transitioning to a part time basis
	Offer more attractive incentives to the present workforce population
	Increase internal training and education
Despite notable efforts in Oregon and Idaho, the energy industry has not yet effectively engaged education institutions, labor, and government to produce the workforce necessary to meet the demands for energy efficiency deployment. Yet, Resources exist in the region to build an energy efficiency workforce pipeline, communication among parties and funding are issues.	Utilities in the region should identify and develop partnerships with key resources among: <ul style="list-style-type: none"> State workforce boards State education systems <ul style="list-style-type: none"> K-12 levels Community and Technical Colleges Universities Private training programs: <ul style="list-style-type: none"> Trade Allies Trade Organizations Labor and apprenticeship programs
Areas of Focus	Recommendations
(Continued from above)	Community non-profit associations transitioning low-income workers <p>Organize and advocate with partnerships to secure funding for energy efficiency training.</p>
Create infrastructure to fill the workforce pipeline	Leverage the existing workforce development infrastructure (listed above) to: <p>Communicate demand for energy efficiency careers</p>

	<p>Inventory skills required and develop supporting curricula</p> <p>Recruit students for programs</p>
	<p>Replicate the “Lane College Model” within the region to expand the pool of technical and management workers</p>
	<p>Expand training programs for skilled labor and non-technical occupations</p>
<p>Increase awareness and attractiveness of energy efficiency careers in the region</p>	<p>Initiate a marketing campaign to attract and retain workers to the industry:</p> <p>How do we align EE with values of a younger and more diverse workforce?</p> <p>What does EE offer that other industries don't?</p> <p>What is the long term employment outlook for EE occupations?</p> <p>What are the career paths for various EE occupations?</p> <p>Create a regional clearinghouse for best practices housed in a regional entity such as NEEA</p>