

**Northwest Energy Efficiency Task Force
Work Group Recommendations
Oct. 3, 2008**

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Workgroup #1

Measuring What Matters -- Looking ahead, what data must we have to succeed?

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John Kaufmann, Oregon Department of Energy

Background

The Northwest Energy Efficiency Taskforce was established with the following purpose:

Significantly advance the region's energy efficiency achievement through greater regional collaboration, commitment, customer involvement, and pursuit of the most cost-efficient program strategies.

Workgroup #1 was tasked with defining the fundamental data needed in order to have credibility when offering new measures and tracking the accomplishments of existing programs.

The Importance of Data to Energy Efficiency

Although it often gets second priority compared to day-to-day program operations, data collection and analysis is the foundation to successfully increasing the region's energy efficiency. Accurate data are needed to forecast future energy demand, which in turn drives the need for new resources, one of which is energy efficiency. Energy efficiency is built upon, driven by, and evaluated through data.

Historically, the region made significant investments in the 1980s and early 1990s to collect the data needed to support the energy efficiency efforts of the day. However, since the mid-1990s era of deregulation, there has been little regional effort to collect the necessary data in any kind of a coordinated fashion. While this ad-hoc approach may have been adequate (and in some cases may still be appropriate), there are good reasons to question whether it is the best approach as the region moves into a world of significantly ramped up energy-efficiency efforts. Without accurate data, the region stands to miss both the need for new resources and the potential of energy efficiency. Without accurate data, large energy-efficiency programs may continue to spend regional resources in markets that may no longer need additional support. Without accurate data, the region may miss market trends that drive new load growth. Without accurate data, the promise of energy efficiency as the region's resource of choice will not reach its full potential.

Context

This document is based on several key assumptions with relation to data requirements and collection efforts:

- **Regional versus Local Data:** This document assumes that regional data sets will be aggregated from local data in a way that allows for statistical validity at either level depending on the funds available and the need for granularity. Local utilities may still need to carry out some research activities on their own to address issues that are unique to their business.
- **Energy Data versus Electric Energy Data.** Given the multi-fuel nature of the energy markets in the Northwest, it is no longer sufficient to simply collect data about electric end-uses. This document assumes that data will be collected on all fuels appropriate to the questions at hand, including, but not limited to, natural gas. It is also worthy to note that the data collected under the banner of energy efficiency may also support data needs for demand response and load management.

- Frequency of Data Collection. This document also assumes that the data collection efforts described here are repeated on an on-going basis and at a frequency that will capture key market trends.

This recommendation from NEET Workgroup #1 will illustrate the following:

- Entities that need data
- Job functions/roles that require data
- Purpose for the data (i.e. questions to be answered by the data)
- Ways that the data are acquired
- Recommendations for what data needs to be collected, and how, in order to maximize the quality of the information to the most people, and minimize the costs.

Using the expertise in the region, and aware of the current state and future data requirements for planning, implementing and evaluating of efficiency resources, workgroup # 1 has developed the following set of preliminary recommendations. These recommendations will be presented to a wider regional audience in the following months and coordinated with the recommendations from other workgroups.

Summary of Recommendations

1. An entity (or entities) with dedicated funds to plan and coordinate data acquisition for the region is needed. Governance of the responsible entity would be designed to ensure that the goals and objectives of the participating organizations are met. Funding for the organization would need to support multi-year commitments that are necessary due to the long-term nature of some studies. Roles would include:
 - a. Develop and coordinate implementation of a regional research and data collection plan that identifies specific projects, schedules, and costs consistent with b – f below
 - b. Prioritize the need for data (e.g., Will it significantly impact a large current resource? Will it impact a large share of the dollars spent? Does it affect many utilities?)
 - c. Decide the most appropriate and cost-effective way to acquire data (e.g., studies, purchase of existing database)
 - d. Ensure statistical validity of studies both at the regional level and the local level as appropriate
 - e. Leverage regional clout to get data that is unavailable to individuals (e.g., gas usage, load shapes)
 - f. Oversee the operation of the clearinghouse (see item 3 below)
2. Coordinate research so data sets from different time frames and utilities or states can be aggregated to the regional level and can be compared across utility, state, and region. Coordination should provide benefits to all parties in the form of economies of scale or extension to additional geography and should address the following:
 - a. Establishing a common set of definition for sectors/end-uses/measures/methodologies
 - b. Timing/periodicity of research
 - c. Questions
 - d. Sample design
 - e. Cost share principles
 - f. Common metrics (benchmark metrics)

3. Create a dedicated clearinghouse so that data are more readily available to a wide audience. This could include:
 - a. Survey forms, data definition, methodology approach
 - b. Current regional/state/utility economic forecasts
 - c. Current regional/state/utility load forecasts (electric/gas)
 - d. Current fuel price forecasts
 - e. Reports and databases from past studies
 - f. Ongoing baselines that are found in the market
 - g. Incremental costs as they change
 - h. Savings estimates for energy and non-energy benefits
 - i. Evaluated results and measure data from other parts of the country
 - j. Lessons learned from program delivery problems and successes
 - k. Data and reports need to be made available via the web and other electronic formats

4. Commit to funding, resources, and a regular routine of regional data collection to minimize costs and maximize value. Following are examples and representative costs of what we think are sample activities and data that are needed.
 - a. Building characteristics studies: every 5 years, including characteristics, EUIs, and billing analysis (cost of each Residential \$2M, Commercial \$3M, Industrial \$1M, Irrigation TBD, Infrastructure TBD, End Use load data TBD)
 - b. Cost data:
 - i. Systematic cost reviews of existing measures should be conducted every 5 years at an approximate budget of \$1 – \$2 million
 - ii. Annual cost assessments of new/emerging technologies at an approximate cost of \$300,000/year
 - c. Evaluation: All stakeholders in the region need to be committed to using quality evaluation and paying for it. Where appropriate local evaluation efforts will be coordinated. The funding of regional evaluations is estimated at \$2 million a year.
 - d. Market characterizations: \$2.5 million/year. (Allocate at least 1 percent of the regional efficiency spending--currently estimated at over \$250 million--to conduct this type of market research on an ongoing basis to ensure that Northwest key markets are adequately characterized with up-to-date information in order to allow efficiency efforts to be targeted effectively.)
 - e. Develop a common set of questionnaires \$100,000

5. Directly address policy issues that affect the cost and need for data
 - a. What level of precision is needed for each data type before you can move forward?
 - b. Regulatory and cost recovery mechanisms need to recognize the value of data collection efforts and allow for cost recovery.

Future Steps

- Review draft recommendations across workgroups.
- Conduct a survey of all NEET members on the draft recommendations for workgroup #1.
- Develop a more detailed recommendation covering requirements, functionality, and governance of the new organization.
- Develop a more detailed recommendation on budget (cost estimates both full and incremental).

- Further discuss the specific role of existing regional organizations i.e. RTF, NEEA, to see if existing organizations fit the bill.
- Explore the role of state programs.

Workgroup #2

Emerging Solutions and Technologies – How can we keep the pipeline full of energy efficiency innovations for use in the Pacific Northwest?

Co-chairs: Bob Balzar, Seattle City Light
 Susan Herment, Northwest Energy Efficiency Alliance (NEEA)

Introduction

The Northwest Energy Efficiency Taskforce Work Group #2 (WG2) --_Emerging Solutions and Technologies is tasked with looking into "how to keep the pipeline full of energy efficiency innovations for use in the Pacific Northwest."

Our Phase 1 Task is to “assess the current state of energy efficiency in the region including ongoing, research, initiatives, data needs, funding and operational experience. Assess what, if any additional information is needed to determine further action or decisions”

And our Phase 2 Task is to “identify and discuss short-term and long-term strategies and time recommendations to increase efficient energy efficiency development throughout the region”

Currently 60 regional participants have signed up for WG2, with average attendance of 20. Since late July, WG2 has had one meeting, three conference calls and five subgroups have formed and have been actively working in between calls.

Challenge and Approach

WG2 realized early that we needed a quick snapshot of the current state of RD&D, so an on-line survey¹ was fielded to ~ 250 individuals. From the 82 respondents which participated in the survey and represented 63 organizations throughout the Northwest region, it was clear that:

- There was not a commonly held definition of what RD & D is.
- There appeared to be more activity on early commercialization activities such as demonstration projects, versus early research and development activities.
- There is belief that there is a role for regional R D & D, and that it should be a multifunction, multi-jurisdictional effort, with a strong emphasis on regional coordination/collaboration.

From this information, the first subgroups were formed. One focused on drafting a common definition and scope of RD & D, and the second developing an RD & D framework which could be used to house an R D & D inventory.

WG2 reviewed and discussed these drafts and three new subgroups were formed. One to start a RD & D inventory of technologies; one to develop selection criteria for identifying emerging technologies, and one to explore “who should do it”.

¹ The survey results are available on the NEET website.

Current Thinking

WG2 has currently landed on the following definition which encompasses both gas and electric efficiency:

The innovation is an emerging technology or solution that promises a quantifiable increase in efficiency of energy use, production, or distribution as seen by end-use customers in the Region. (Inclusion of demand, water, distributed generation, and direct application renewables are under consideration as additional benefits.)

WG2 has currently landed on the following basic selection criteria, which are broad and fundamental and meant to guide relative ranking for prioritized selection²:

- The innovation has technical promise;
- The innovation has Regional RD & D program promise;
- The innovation has market promise.

WG2 currently believes that there should be a central entity that is held accountable for the Region's energy efficiency RD & D portfolio. The four basic elements of its scope include:

- Identification and tracking;
- Selection;
- Oversight and Coordination;
- Reporting.

The group also discussed that the central entity would not "implement" all of these aspects, but rather contract out with organizations with specific expertise. Lastly, the entity should have permanent dedicated staff and budget, and a volunteer technical and marketing oversight board that would provide advice on selections and coordination.

Finally, WG2 discussed possible entities to fulfill this role, including the Northwest Energy Efficiency Alliance (NEEA), the Regional Technical Forum (RTF), and Bonneville Power Administration (BPA). Pros and cons of each were discussed, but no recommendation at this point.

Recommendations

In order "to keep the pipeline full of energy efficiency innovations for use in the Pacific Northwest," WG2 has the following early recommendations:

NEED FOR FOCUS AND DEDICATION: The RD & D scope should only focus on energy efficient technologies and solutions, and not on other RD & D activities, such as transmission, smart grid, etc. In addition, there must be a central entity and dedicated resources, both staff and funding, for this effort.

NEED FOR LONG TERM FOCUS: The Region must accept that RD & D efforts to develop emerging technologies and solutions need a long term view and commitment. The current measurement paradigm of pure cost effectiveness and benefit cost tests are barriers for this effort and should not be explicitly applied.

² WG2 has also drafted a more comprehensive list of potential criteria that may be useful to fill in details beyond the basic criteria.

ADVOCACY AND POLICY ROLE NEEDS A HOME: Important work such as advocating for code/standard improvements and recommendations to legislatures, and identifying legislative proposals such as tax policies does not fit WG2 scope, and needs further direction. Potentially a legislative task force should be established.

Next Steps

WG2 will continue to refine its thinking and recommendations around the tasks described in the introduction over the next few months. At this point, we do not foresee a need to change our approach. In addition, we will make sure to coordinate with other Workgroup efforts where appropriate. Finally, we look forward to discussion and feedback from the Executive Committee and will incorporate that into our next steps.

Documents Available

More detailed information is available in the following draft documents. If you would like to review any or all, please call or email Susan Hermet at 503-827-8416 x 225 or shermet@nwalliance.org. Meeting notes can be found on the NEET website.

1. Emerging Solutions and Technologies Research Development & Demonstration Survey Summary
2. Decision Framework for Regional RD & D, NEET WG #2 - Emerging Technologies Subcommittee Paper 8/13/08
3. RD&D Framework and Emerging technology inventory list Draft
4. NEET WG #2 –Emerging Technology Selection Criteria, Second Draft 9/24/2008
5. NEET WG #2 (Emerging Technologies) – “Who Should Do It” subgroup [Version 2, September 26]

Workgroup #3

High Impact Energy Efficiency Initiatives – What elements underpin high impact energy efficiency initiatives for business, homeowners and vulnerable customers?

Co-chairs: John Savage, Commissioner, Oregon Public Utility Commission (OPUC)
Stan Price, Northwest Energy Efficiency Council (NEEC)

Challenge:

- Identify initiatives to significantly accelerate the acquisition of conservation in the region in a one-year, five-year, and twenty-year time frame.
- Focus on three paths to accelerate energy efficiency in the region: (1) Identify opportunities for regionally coordinated programs that would achieve more savings than under our current approach; (2) Identify new energy-saving target areas; and (3) Identify ways to improve on the design, delivery, and market penetration of existing programs to achieve more savings.

Process:

- At its first meeting, the workgroup heard from seven experts on their recommendations on what the region should do to significantly accelerate conservation. Their presentations and proposals are listed on the website. Briefs on nine regional energy efficiency program concepts are also listed on the website.
- The workgroup created three sub-groups: residential, commercial, and industrial. Each of the sub-groups has met once to evaluate the nine regional program concepts, to identify other opportunities for significant savings in each sector, identify barriers to achieving savings, and rank-order new initiatives (write-ups from the sub-groups are available on the website).
- The workgroup met a second time to discuss the sub-groups' initial evaluations and recommendations.

Areas of Focus:

Tentatively:

- The residential sub-group identified plug loads, new construction (with a long-run, net-zero goal), new educational and behavioral programs (such as home energy monitors and point-of-sale benchmarking), new financing approaches, and targeting of lower-income households as potential priority areas.
- The commercial sub-group identified data centers and information technology, plug loads, new construction (with a pathway to net-zero buildings), building operating performance, tenant improvements in commercial real estate, target market programs, code and standard development and enforcement, education and training, and organizational business practices as potential priority areas.
- The industrial sub-group identified new educational and behavioral change programs, tailored industry programs, and new financing approaches as potential priority areas.
- There is general agreement that an ongoing regional forum for practitioners to discuss program design and delivery—modeled after the regional technical forum—would be useful.

Research:

- The workgroup is conducting research in three areas: (1) Explain the gap between cost-effective technical potential and achievable cost-effective potential in planning models, (2) Explore the opportunities for savings from distribution system efficiencies, and (3) Identify promising legislative changes.

Preliminary Recommendations:

- The workgroup is not yet far enough along to offer 4 or 5 priority recommendations.

Next Steps:

- The sub-groups will refine their recommendations for priority initiatives in each sector and the full workgroup will approve a final list of priority initiatives. The sub-groups will then flesh out the details of the priority initiatives.

Workgroup #4

The Role of Marketing and Public Awareness in Energy Efficiency – What is the role of marketing in fostering an energy efficient economy?

Co-chairs: Erin Holland, Edelman
Teri Duncan, Bonneville Power Administration (BPA)

Summary

Preliminary research indicates that a scalable regional marketing effort could effectively advance adoption of energy efficiency practices and enhance the efforts of area utilities. A coordinated effort in the Northwest must take into consideration the varying needs of utilities of all locations, sizes and population demographics. It must not compete with existing individual utility brands or marketing efforts. A pre-launch benchmark study and mid-point and post-launch evaluations should be conducted in order to measure impact and effectiveness. Partnerships with city, county and state governments could expand its reach and should be explored. Private sector business and industry should also be considered, possibly to underwrite the effort. A subgroup has been established to continue identifying gaps in existing market research and if needed, recommend new research required in order to solidify any presumptions made in this recommendation. A second subgroup will delve further into developing a strategic approach to a marketing effort for the region.

Outcome

- Conduct a marketing effort that increases energy efficiency in the region.
- The effort will complement and augment, without diluting or compromising, existing utility marketing efforts.
- Identify the appropriate group(s) to lead the development of a new regional marketing effort.
- Identify funding sources to cover costs of developing, implementing, evaluating and sustaining a new marketing initiative.
- Attract and sustain broad support from Northwest utilities, public sector, businesses and public and private NGOs.

Drivers for Regional Marketing:

Higher mandated savings goals in the region, rising energy costs, reliability and increasing demands on existing utility marketing resources are primary drivers for a coordinated regional marketing effort. We know that energy efficiency is the greatest and most cost-effective resource, and is preferable over more costly generating resources. Unified regional messaging would help enhance success and eliminate possible confusion caused by the proliferation of energy and climate-related messages. And, leveraging resources will save money for all stakeholders.

Areas of Focus:

Workgroup #4 identified two primary areas of focus needing further development by workgroup subcommittees: market research and coordinated marketing efforts.

Market Research:

- The region needs to leverage residential segmentation studies already completed by BC Hydro, Puget Sound Energy and BPA (soon to be completed).

- Preliminary assessment of the research gathered to date indicates a need for additional quantitative research to ascertain what consumers know about energy efficiency, which will lead us to how we can affect behavior change. Qualitative research will also help in establishing benchmarks and testing of messages.
- Gaps seem to exist in research on the commercial and industrial market sectors.
- Most current research appears to focus on the I-5 corridor, so we may need to recommend market studies inclusive of a broader representation of the region, including lower density populations.
- Any research conducted could serve as a benchmark for success, with follow-up at specific points during and after any regional campaign.

Issues for Market Research Sub-group:

- Identify additional qualitative and/or quantitative research needed.
- Do we need more research into possible drivers of behavior change?

Coordinated Marketing Effort:

- Other regional campaigns such as Power of One, Flex Your Power, One Thing, Climate Action Now, and Home Energy Makeover Contests, provide models to build upon in developing a Northwest campaign.
- Audit and recommend how to integrate existing and ongoing efforts into a coordinated regional marketing effort.
- Further define final goals and objectives, what we hope to accomplish and how to measure success.
- A campaign needs to be scalable based on markets, geography and size of utilities.
- Provide flexibility for utilities to maintain their existing brands, especially those that have made considerable investments developing their own marketing efforts.
- Develop a marketing plan that includes clear-cut goals, tactics and measures for success.
- Develop unified umbrella messaging, with additional targeted messages that resonate with specific interests and market sectors.
- Test messaging prior to execution.

Issues for Coordinated Marketing Effort Sub-group:

- How should education and behavioral change be integrated into a coordinated regional marketing effort?
- Identify barriers to adoption of a regional effort.
- Will multiple campaigns be necessary to assure that we reach all targets? How would an umbrella initiative inform those campaigns?
- Should regional efforts piggyback on any other environmental concerns (climate change, salmon, carbon footprint)?
- How do we break out energy efficiency vs. renewables?
- How do we ensure a regional campaign results in cost savings?
- How can we engage gas and water utilities as partners in the campaign?
- Should we pursue media and corporate partnerships for major campaigns?
- Who would lead a coordinated marketing effort, and how would it be funded?
- NOTE: Although a minority view, strong opposition to regional branding or marketing campaigns exist in the Workgroup. This view will be further examined by the sub-group.

Marketing Tools Sub Group:

- This sub-group will break out of the campaign sub-group.
- Smaller utilities need a marketing toolkit to participate in energy efficiency marketing efforts at any level, even if a regional initiative is not developed.
- Any regional campaign must include a toolkit of customizable marketing and communication materials that extends beyond collateral.
- Explore the potential for a centralized web site to house the tools for all to use.

Next Steps for October/November:

- Coordinated Marketing Effort and Market Research subgroups continue to address issues outlined in this document.

Post NEET Activities:

- Conduct an energy efficiency symposium of interested parties, utilities, city and state governments, regional stakeholders and businesses. Explore the idea of holding it in conjunction with BPA's annual energy efficiency utility workshop in March.
- Organize an ongoing forum for networking, idea sharing and problem solving for marketing and communications personnel in the industry.

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?

Co-chairs: Cal Shirley, Puget Sound Energy (PSE)
Pat Egan, Pacific Power
Phil Jones, Washington Utilities and Transportation Commission

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>

Workgroup #6

Rethinking Governance and Energy Efficiency Policies – How do we optimize the alignment of regulatory practice with public policy goals?

Co-chairs: Sara Patton, Northwest Energy Coalition (NWEC)
Michael Early, Industrial Customers of Northwest Utilities (ICNU)

Direct Application Renewables

Sub-group chair: Kim Crossman, PECI

Harmonization of Policies and Program Structure with Market Trends, Technical Best Practices, Emerging Technologies

The rise of the green building and integrated design movements along with the availability of emerging technology and growing public awareness of the societal and individual impacts and costs of energy are creating widespread public interest in deploying clean distributed generation.

Simultaneously, the commercialization status and relatively low current deployment of direct application renewables (DAR) creates questions and challenges around best practices in system integration and performance in buildings and on-going concerns about cost-effectiveness.

Harmonized policies, incentives and regulation should encourage everyone to innovate and get to a common goal - energy services that minimize costs to individuals, the environment, utility, system. By continuing to create policies and programs which are difficult to navigate or which actually discourage customer investment in comprehensive approaches to achieving energy savings, the energy policy community fails to serve customer demand or to capitalize on these occurring market forces to meet public policy goals.

Preliminary Recommendations

1. Conduct Primary and Secondary Research Designed to Characterize Different DAR Options to Inform Policy Decisions

As emerging technologies start to see broader commercialization in a changing energy supply landscape, the economic, environmental and performance characteristics of DAR systems are also changing. There is a need to keep current in characterizing the attributes and quantifying the costs and benefits of various types of DAR systems to customers, to utilities and to society in order to determine the appropriate policy response.

2. Modify Treatment of Solar PV and Solar Water Heating Systems Under BPA's CRC to Increase their Use

Currently BPA's program lumps solar strategies and other DAR with other, primarily utility-scale renewable resources rather than with the efficiency programs. Considering solar strategies along with the conservation measures would better reflect the role they

play in the utility system and in the consumer's mind, as well as aligning the resources better for acquisition. Finally, by not including solar strategies in utility consumer-directed resource acquisition efforts, we are sending consumers the message that we do not value the contribution to the system that solar systems can make.

3. Provide Coordinated, Comprehensive Rebate, Incentive and Technical Assistance Information

This recommendation addresses two barriers to the adoption of DAR - (1) the perceived lack of easy, reliable sources of information about DAR technologies themselves and their appropriate use, and (2) the perceived absence of a reliable source for information about available incentives for DAR projects and how those affect DAR project economics. Integrated and coordinated rebate, incentive and technical information for consumers will help them make wise choices at the right time regarding energy and other related utility services. Although electric and gas utilities are stakeholders and may provide their customers with access to this information, informational assistance programs that cross disciplines to serve customers may be best administered by others.

4. New Construction Focus - Solar Ready / Upgradeable/ DG Codes - Preventing Lost Opportunities

Integrating DAR into existing building electrical and mechanical systems can be technically challenging and expensive. New buildings offer a unique opportunity to optimize efficiency, integrate the envelope, lighting (both electric and day lighting) and HVAC systems. New buildings can be more easily upgraded with additional features, such as solar PV, if these future improvements are anticipated and the buildings are designed for the upgrades. The Pacific Northwest currently does not have in place land use or building code regulations that support "DAR-ready" construction, however there are examples of such rules from other parts of the world. There is need to better understand the technical specifications and costs of DAR-ready buildings in order to consider the application of solar-ready or other DAR-ready codes in the PNW.

Load Management/Smart Grid

Sub-group chair: Dave Ward, Tacoma Power

Potential Policy Recommendations Under Consideration

Value of capacity:

- The Region should fully support the Council's efforts to improve assessment of capacity in the Sixth Power Plan
- Regional IOUs should explicitly address capacity needs in their IRP's, addressing both short-term and long-term costs of capacity and fully including avoidable T&D associated with improved system load factors
- Pending a better sense of the value of load and energy management going forward, regional utilities should be encouraged and supported in robust experimentation to improve knowledge of the technologies, program designs, and customer preferences regarding load and energy management
- Load Management/Smart Grid applications may need to be developed that will accommodate both unanticipated increase and decreases in the region's future renewable generation output.

Establish Regional Load Management/Smart Grid Group:

- Smart Grid technology (including AMI) is still maturing and it is not clear whether the current technology will prove to be cost effective, and what the useful life of current AMI technology will be. It may be beneficial to see what lessons are learned from utilities that are installing these systems. NWPPCC has been leading a demand response work group, but its scope does not encompass SG concepts. This type of group could:
 - Track federal legislation and initiatives, assess any impacts to the northwest region and identify and funding opportunities for LM/SG applications.
 - Review what other utilities have accomplished with successful LM/SG initiatives
 - Review other demand response and load management that may not be linked to SG technology
 - Share information on evaluating/assessing the cost effectiveness of LM/SG activities
 - Initiate a cost-benefit analysis study for the region (Washington, Oregon, Idaho, Montana) or establish guidelines for utilities to consider
- The group could support adopting an advisory position that the Region supports open technologies and "mix and match" capabilities and those LM/SG technologies its utilities purchase will meet ANSI and any other standards.
- Assist in coordinating regional pilots and reporting the results.

Smart Grid capability:

- As part of IRP, regional utilities should assess the current state of their grids according to the metrics developed by the US DOE Office of Electricity Delivery and Energy Reliability [follow link to report at:
www.oe.energy.gov/documentsandmedia/Smart_Grid_Workshop_Report_Final

[Draft_08_12_08.pdf](#)] and address in their Actions Plans any planned activities to change the results of these metrics over time, including the cost-effectiveness of any proposed investments.

- States should consider adopting a requirement that utilities evaluate suitability of SG investments BEFORE deploying any "NON-advanced grid technologies," similar to that in the federal legislation.
- States should investigate regulatory barriers to SG investment by utilities, including timing of investment recovery, handling of assets retired prior to the end of previously-set depreciation lives, and effect of SG investment on revenues and whether it is appropriate to address any barriers found with generic policies or utility-specific proposals.

Tax exemptions/Permitting Modifications

- States should consider offering a sales and use tax exemption on the purchase of load management/smart grid technologies (material, services, etc.).
- States should consider offering an income tax incentive for investments load management/smart grid technologies by businesses and households.
- The states should consider either reducing per-house permit fees or offering utilities bulk rates for demand response or smart grid equipment installations. States should also consider a streamlined process for acquiring these permits.

Low income and limited income customers

- Implementation of LM/SG initiatives may adversely impact low income and limited income customers. Utilities should consider reviewing assistance programs to ensure they are in alignment with any new utility plan.
- Additionally, in order to fully realize the full energy efficiency and demand management potential of the Smart Grid, utilities and policy makers need to ensure that low, and limited-income, customer's dwellings are up to modern energy efficiency standards that that customers possess the necessary equipment, end-use device infrastructure and knowledge to fully utilize Smart Grid potential.

Energy Efficiency Imbedded in LM/SG

- More analysis and research is needed to evaluate the potential amount of energy efficiency that may be accomplished through LM/SG activities

Cost Effectiveness

Sub-group Chair: Sara Patton

Rethinking Energy Efficiency Program Policies: How to align regulatory practice with public policy goals

Subgroup task: Review policies and criteria (e.g., various cost effectiveness tests, free rider/driver policies, IOU cost recovery for non-quantifiable elements like R&D and education) to determine their applicability in today's energy efficiency market. (Note that this task was transferred from Workgroup #3.)

Status:

- Completed information gathering/discussion of cost effectiveness protocols set by the Act, Power Council and BPA
- Incomplete data gathering on public utility commission and state legislative protocols
- Remaining issues will be fleshed out in October. They include free ridership, low-income measure cost-effectiveness, point of application of cost-effectiveness criteria, implications of post-2011 BPA power sales contracts on avoided costs, interaction of codes and standards with existing equipment and buildings, recovery of costs for indirect expenditures, and state energy code differences.

Cost effectiveness tests:

The Council, BPA and most state regulatory commissions rely on a Total Resource Cost (TRC) test that compares all quantifiable societal costs against all quantifiable societal benefits to establish whether a particular energy efficiency resource is a better investment than an alternative generating resource. The TRC test has been an appropriate mechanism for Integrated Resource Planning purposes and to help identify key energy efficiency priorities for regional efforts. However, there are some major issues with the TRC and its application to specific program operation that could be considered a limiting factor on accelerated energy efficiency program operations. Issues identified include:

- **Non-quantifiable Benefits:** TRC doesn't work well in situations where it is difficult to quantify societal benefits for measures that have apparent high value for individual consumers. This sometimes leads to "counter-intuitive" program operations where an individual customer may be told they don't qualify for a utility rebate on a piece of equipment for which they see enough value in to pay a significant portion of the costs. While the classic example of this phenomenon is residential replacement windows, other more important examples exist in both commercial and industrial environments. A simple solution for this problem would be to simply pay an incentive based on some cost per kWh of energy saved and let the consumer's willingness to pay be a proxy quantification of non-energy societal benefits.
- **Focus on Current Costs and Benefit:** In most regulatory settings, TRC must be calculated based on demonstrable current costs and benefits. This favors existing technologies that have already achieved economies of scale; it doesn't

allow for long-term costs perspective, and thus sometimes prohibits investment in new energy efficiency opportunities for the future. For example, CFLs were initially only marginally cost-effective at \$15 bulb in 1994, but now 14 years later they represent a significant EE resource and cost only \$1 to \$2 each. If the analysis back in 1994 had concluded that CFLs were not cost-effective, it's hard to believe we would be where we are today without the previous decade of investment in the technology.

- **Confusion of TRC with Willingness to Pay:** TRC as a tool has been most useful as guidance for regional policy and providing direction on which EE measures to go after and also at what scale. However, when it's applied within a specific program as a screening tool for projects or individual measures, it creates major problems with the market. Once a specific measure or targeted market opportunity has been shown to be a better alternative than a generating resource, the program implementation design should be structured based on the most effective way to address barriers to consumer adoption of the technology; e.g. what is the consumer willing to pay. That might include payments of incentives up to some portion of the total cost or it might be based on a flat payment per unit of energy saved. In any case, as long as the overall program total expenditures are less than the avoided generating resource the efficiency program is a better buy for society.
- **Codes and standards:** On the other side of this issue is the convention that utilities should not pay for things consumers are required to pay for by law. Serious gaps in the code and standard enforcement raise questions about the applicability of this convention. The convention can also prevent full energy efficiency achievement when the consumer has a choice between purchasing new equipment that meets or beats efficiency standard OR repairing very inefficient existing equipment.

Decoupling and (for Investor-Owned Utilities) Efficiency-Related Earnings Opportunities

Sub-group co-chairs: Michael Early, ICNU and Dave Robertson, PGE

Issue Overview

There is a vast literature on “decoupling.” We recommend in particular *Aligning Utility Incentives with Investment in Energy Efficiency, A Resource of the National Action Plan for Energy Efficiency, November 2007*, and *Decoupling For Electric & Gas Utilities; Frequently Asked Questions, National Association of Regulatory Utility Commissioners, September 2007*.

Question: Do the current state statutory/regulatory structures for acquiring cost-effective energy efficiency and conservation (“conservation”) strike the right balance between utility/shareholder interests and customer interests (or align these interests to the extent they do not conflict) in acquiring cost-effective conservation?

Utility/Shareholder Interests

1. Timely recovery in rates of all prudently incurred costs for the acquisition of cost-effective conservation.
2. Recovery of fixed costs and “lost margin” to the extent that sales are below forecasted levels used in setting rates due to utility-sponsored conservation measures. In setting rates, the utility commission (PUC) authorizes the utility to charge rates that provide it with the opportunity to recover its fixed costs at forecasted load levels. If actual sales are less than forecasted sales due to utility-sponsored conservation, then the utility will not recover all of its fixed costs due to these measures.
- 2A. Recovery of authorized fixed costs to the extent that sales are below forecasted sales for reasons beyond just conservation (e.g., weather, economic dislocation of customers). If this is the case, the utility will fail to recover its authorized fixed costs. Correspondingly, higher than anticipated sales will yield higher than authorized fixed cost recovery.
3. Even if Numbers 1 and 2 (or 2A) are satisfied, the utility is only “held harmless” regarding utility-sponsored conservation (or regarding fluctuations in retail sales). The utility still lacks any financial incentive to promote conservation.
4. Due to the same regulatory/rate setting reasons as in Number 2, under current ratemaking structures, the utility has an incentive to increase sales above forecasted levels and to “over-recover” fixed costs and increase profits. The incentive varies with utility types: Natural Gas LDCs and “unbundled” electric utilities expense gas costs, and their fixed costs are limited to delivery costs. Integrated electric utilities typically have higher fixed costs associated with generation and delivery assets, so their incentive to increase sales may be greater. Publicly-owned or consumer-owned utilities (e.g. PUDs or cooperatives) also have a financial stake in actual retail sales at or above expectations. But because of their non-profit status, their issue is one of timing and rate structure, rather than loss, since, any shortfall or “windfall” would be rolled forward into rates.

Customer Interests

1. Low rates and/or bills – Conservation should be included in the utility Integrated Resources Plan (IRP) and to the extent that the IRP shows that conservation is the lowest-cost “resource” option, then it should be acquired. Ratepayers need verification that ratepayer funds have produced verifiable MWH savings.
2. Regulatory changes to guarantee recovery of fixed costs if utility-sponsored conservation causes actual sales to fall below forecasted sales should not be a vehicle for shifting other costs and/or risks to customers. Regulatory changes must be specific to the problem.
3. Fair rate of return – To the extent that the utility is guaranteed fixed cost recovery against the risk of under or over-recovery due to actual sales differing from forecasted sales without regard to the cause (i.e., beyond just conservation), then there should be a corresponding adjustment in its return.
4. If sales below forecast levels are trued up, utility revenues on surplus sales – including any utility share of benefits under an adjustment clause – must be addressed.

Potential Statutory/Regulatory Approaches (Need to identify which interests each measure addresses.)

1. IRP. Require utilities to identify and include all cost-effective conservation in their IRPs and to seek authority from PUC to acquire conservation – e.g., Oregon SB 838 for residential and commercial conservation not captured by public purpose charge.
2. Mandate. Require utilities to acquire all cost-effective conservation identified in its IRP or pay a penalty (e.g. Washington I-937).
3. Recovery of Costs. Authorize collection of all prudently incurred costs for cost-effective conservation as expenses.
4. ROE on Conservation “Investments”. Allow utilities a return on efficiency and conservation investment – not just expensed as a cost.
5. “Incentive” ROE. Allow PUC to authorize an “incentive” ROE for conservation investment.
6. Shared Savings Mechanisms. Divide net savings from cost-effective energy efficiency programs equitably among utilities and their customers.
7. Recovery of “lost margin” due to utility-sponsored conservation. - Authorize PUC to establish a true-up limited to lost fixed cost revenues due to utility-sponsored conservation and not other factors such as weather or economic conditions. MWH savings and revenue “losses” must be verified.
8. Fully “decouple” revenues from sales. Actual fixed cost recovery trued up to the authorized level used in setting rates at forecasted sales level, without regard to whether the cause was “lost” sales due to conservation or other factors.
9. Independent Third Party. Ratepayers fund a third party to provide financial incentives and promote conservation with either the utilities taken completely out of the conservation business or allowed to continue conservation efforts

only as a supplement to the third party (e.g. Oregon public purpose charge and Energy Trust with SB 838 changes).

Next Steps

There is some dispute regarding the scope of the “decoupling” question which has resulted in the myriad solutions outlined in the literature and by the states. Each state has taken steps already to address these issues, so there is not one obvious “winning statutory or regulatory measure to be pursued. Other questions must also be answered. For instance, in the future Washington will require utilities to identify and acquire all cost-effective conservation or pay significant penalties. Provided prudent conservation cost recovery is assured, what further Washington incentives, if any, need to be added to this mandate? In addition, Oregon collects a public purpose charge from ratepayers, which is used by the ETO to promote and acquire conservation. The ETO is a non-profit and has no conflicting “disincentive” with its role of promoting and acquiring conservation. Such conservation acquisitions are verified and subject to OPUC review. Are there structural barriers in this Oregon model to achieving additional cost-effective conservation, or is it simply a question of adequate funding of the ETO and the most effective use of these funds? Finally, how will the value of carbon be considered in resource planning to the extent it affects traditional views of cost effectiveness? Will it make many measures previously cost ineffective now achievable?