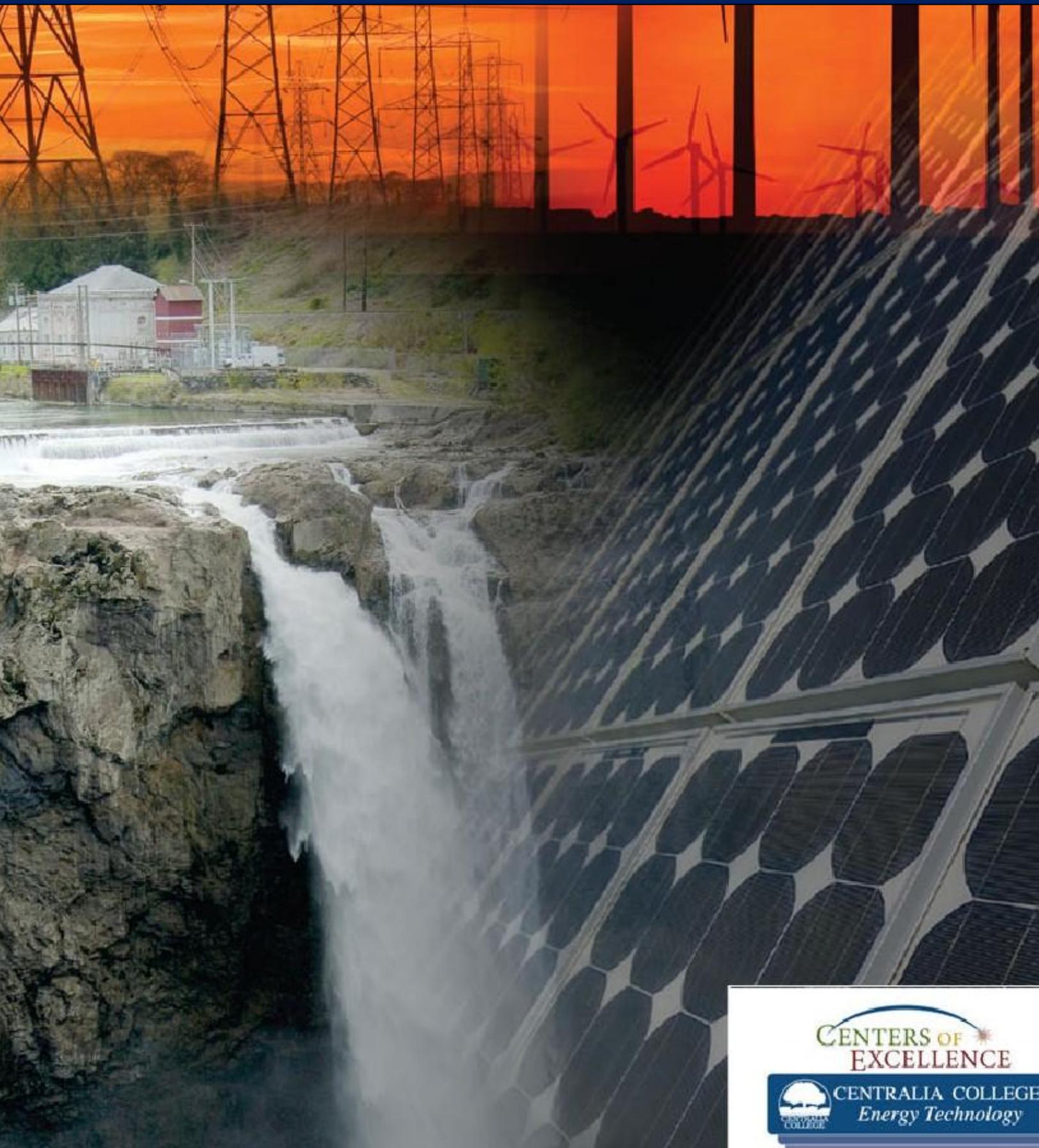


WASHINGTON STATE CENTER OF EXCELLENCE FOR ENERGY TECHNOLOGY ANNUAL
REPORT 2009 - 2010



CENTERS OF
EXCELLENCE



CENTRALIA COLLEGE
Energy Technology

Washington State Center of Excellence for Energy Technology

Centralia College, Centralia WA

2009/2010 Annual Report

The Washington State Center of Excellence for Energy Technology (COE) is a statewide economic development initiative led by an expert industry, labor leader, and education advisory board. The COE was designated by the State Board for Community and Technical Colleges in 2004 as the state's energy workforce clearinghouse. In 2009, the Centers of Excellence were codified into WA State Legislation (HB1323) making Washington the only state in the country to note Centers in state statute. Constituents of the CoE include industry, labor, education, and workforce and economic development councils throughout the state. The COE serves as a point-of-contact and resource hub for energy industry trends, best practices, innovative curriculum, and professional development opportunities.

The Center of Excellence for Energy Technology has become recognized as a national model among energy industry leaders providing strategic coordination for the energy industry's skilled workforce. The Center is led by a broad based partnership comprised of industry, labor, workforce and economic development leaders that guide the center to:

- Develop a mature industry and labor partnership to better understand the ever changing workforce issues facing electric utilities and independent power producers.
- Translate energy industry research into "Best Practices" training and education to ensure programs meet industry's workforce needs.
- Provide clear education and career pathways for students and job seekers for entry into high skills high wage energy jobs.
- Create a competitive workforce pipeline to meet increasing energy demands and support the economic future of Washington State.

The Center's Advisory Board is comprised of the following organizations:

- **Industry:** Avista Utilities, Bonneville Power Administration, Centralia City Light, Portland General Electric, Puget Sound Energy, Seattle City Light, Tacoma Power, and TransAlta
- **Organized Labor:** International Brotherhood of Electrical Workers Local 77 and Washington State Labor Council AFL-CIO
- **Education:** Regional Education and Training Center (Satsop Campus), Center of Excellence for Homeland Security (Pierce College), Center of Excellence for Construction

(Renton Technical College), Spokane Community College, Washington State University (WSU) Extension Energy Program, Evergreen State College, Clark College, Wenatchee Valley College, North Thurston School District, and New Market Skills Center (High School).

- **Agencies/non profits:** Pacific Mountain Workforce Development Council, Lewis County Economic Development Council, U.S. Department of Labor Apprenticeship and Veterans Conservation Corp.

Research Projects - coordination among energy industry, labor and education providers

Research guides the direction of the Center's workforce efforts by ensuring the development and delivery of programs that meet the energy industry's workforce needs. As a result, CoE partners sponsored two energy workforce research reports this year, both of which were authored by Dr. Alan Hardcastle and researchers at WSU's Extension Energy Program and funded by WIRED. In addition to earlier work conducted in 2008 that outlined workforce needs for traditional power generation, transmission and distribution **Workforce Challenges of Electric Sector Employers in Washington and Oregon**, the '09/10 studies address Renewable Energy and Energy Efficiency sectors.

Renewable Energy Industry Trends and Workforce Development in Washington State

examined trends in a range of renewable sectors and interviewed employers and other experts in solar, wind, bio-energy, small hydropower, and hydro efficiency upgrades. State policies driving renewable growth, concerns about impending retirements, workforce shortages, and lack of education and training capacity to support continued growth were among the key findings. The study concluded with a call for a strategic approach and stronger statewide coordination among renewable sectors and the education/training providers.

Energy Efficiency Industry Trends and Workforce Development in Washington State – Phase I

describes regional and state growth in energy efficiency sector. The report also integrates research showing that national, regional, and state policies and investments supporting energy conservation are also driving employment projections that suggest that the workforce will need to expand rapidly to meet growing demand for energy efficiency products and services. The report notes that sustaining growth in Washington's large energy efficiency sector will require attracting, preparing, and supporting new employees and incumbent workers through standards-based education and training programs that impart the skills required by the industry.

Occupational Skill Standards – creating the platform for training

The CoE Advisory Board recognized that the quality and consistency of the college and apprentice programs can be assured only if the foundation of the training programs is based on industry-driven occupational skill standards. To that end, the Energy Skill Standards library was expanded in '09/10 by Dr. Alan Hardcastle, WSU Extension Energy Program and CoE's work on the new Power Plant Electrician, Combustion Turbine and Wind Technician standards.

- **Wind Turbine Technician Skill Standards:** the nation's first Wind Technician Skill Standards were developed and funded by WIRED, Energy Northwest, and Montana State University's Wind Montana Program.

Terry Meade, Project Mgr, Nine Canyon Wind Project, Energy Northwest states, "The skill standards (developed by WSU, The Center of Excellence at Centralia College, and a partnership of industry and labor) are an important first step in helping the educational sector provide the specific training needs of the industry. Energy Northwest has chosen to be actively involved in the development of the skill sets and is looking forward to further contributing as a partner with the educational sector to help these skill sets be used to develop quality training programs."

"The International Brotherhood of Electrical Workers is proud to endorse the work that has been done to accomplish better prepared workers in the Wind Industry" Don Guillot, Business Manager, IBEW Local 77

- **Combustion Turbine Skill Standards:** Puget Sound Energy collaborated with the Center of Excellence for Energy Technology and WSU Extension Energy Program to objectively identify and quantify the required knowledge, skills, and abilities through the development of occupational skill standards.

*"The skill standards were developed by experienced members of the industry working together to achieve not just consensus but unflinching support of the standards by the broadest cross-section of partners from the power industry in the Northwest. We are proud of organized labor's participation in the prolonged process required to bring such an important concept and the guideline document to life."
Bob Guenther, President, Lewis/Thurston/Mason Central Labor Council, Vice-President, 3rd District Washington State Labor Council AFL-CIO, Chair, RETC, Satsop, IBEW Lobbyist.*

- **Plant Electrician Skill Standards** provide a specific tool for communicating with students, incumbent workers and experienced electricians from other industry sectors what will be expected of them in the electric power industry.

“As electrician work has become more complex, it is increasingly difficult to recruit qualified personnel. For example, while commercial and residential electricians often install a lot of the equipment used in the power industry, very few ever troubleshoot these systems. The skill standards provide power generation employers with a systematic way to identify the core work of our employees, and a measure for assessing how new technologies in the changing workplace will alter the skill requirements for power plant electricians in the future. The Power plant electrician skill standards offer assurance that future applicants will have the foundational knowledge, skills and abilities needed to succeed in the industry and a practical, detailed roadmap for colleges and other training programs to follow as they establish or modify relevant electrician programs.” Pat McCarty, Power Generation Manager, Tacoma Power and Chair, Center of Excellence for Energy Technology Advisory Board

“PSE will use the information developed by the skill panels as we refine and improve our registered apprenticeship standards and tasks to accurately reflect the needs of the occupation. Others can use the skill standards in the industry, academia, workforce development and job skills training to develop programs and paths to careers in the Combustion Turbine world”, Troy Nutter, Manager, Training and Procedures, Chair, Pacific Northwest Center of Excellence for Clean Energy Governance Board, Vice Chair, RETC, Satsop.

Community and Technical College Collaboration: The Center of Excellence for Energy Technology serves the entire State of Washington’s Community and Technical college system of 34 colleges in the development and dissemination of energy workforce training and education. Since 2005, training capacity for energy program has increased from serving five to the now nineteen colleges delivering energy programs. The results of the ’10 CTC assessment system survey noted the CoE for Energy as having touched more colleges than any other center.

- **Energy Career Resource Guide** was developed to help individuals looking for a career in the energy industry to locate programs across the state at the various Community and Technical colleges. The program guide can be viewed at:
<http://www.centralia.edu/coe/pdf/ProgramGuidebook-v6.pdf>

- **Energy Efficiency Auditor Faculty Training** was developed and delivered in partnership with the Centers of Excellence for Energy and Construction and WSU Extension Energy Program. This class was attended by faculty representing 14 community and technical colleges. The course focused on how to translate the knowledge of Building Science 101, proper equipment usage, and understanding the Energy Audit Script. The field portion of the class taught proper usage of the Blower Door, Infra-red camera and combustion safety equipment with experiential learning on three residential homes.

- **General Physics Online Training** is delivered via the Center of Excellence branded website to incumbent workers and apprentices at Puget Sound Energy, Bureau of Reclamation Grand Coulee Dam, Lewis County PUD and Centralia, Peninsula, Wenatchee Valley, and Grays Harbor Colleges Energy Technology Programs. This shared site houses over 6000 interactive modules that provide technical knowledge on energy systems.

- **Energy Technology Program Delivery** – The Center of Excellence continues to support distance delivery of the nationally recognized Centralia College Energy Technology Power Operations program via Interactive televideo broadcast. This year Grays Harbor College was included in delivery along with current Peninsula, and Wenatchee Valley College sites. Collectively program enrollment increased by 50 students '09/10 academic year with placement into High Skills High Wage jobs at 85% with organizations such as Bonneville Power Administration, Puget Sound Energy and TransAlta.

- **American Recovery and Reinvestment Act (ARRA)** – The Center of Excellence was invited to serve on the Evergreen Jobs Team created through HB2227 established to ensure that the state's workforce is prepared for the new green economy and that the state attracts investment and job creation in the green economy seeking to make Washington a net exporter of green energy technology and components.
 - The CoE and its industry and labor advisory board supported the Workforce Training and Education Coordinating Board State Energy Sector Grant application by arranging communication exchange forums with energy industry, labor, community colleges, workforce board and councils. The grant was funded in the amount of \$5,973,635.

 - Other collaborative grants submitted but not funded include the IBEW International Department of Labor Energy Training Partnership application for a Wind Technician Training program in Washington State and the Washington State Labor Council Department of Labor Energy Training Partnership application for training in Renewable Energy. Community College partners with strong energy programs were identified in each application.

Summit 2010: Best Practices in Sustainability

June 24 and 25, Regional Education and Training Center, Satsop Campus

When the 5th annual Best Practices Summit convened in June, it was again sponsored by the Washington State Centers of Excellence for Energy and Construction. This year's keynote address was delivered by David Allen, executive vice-president of Seattle's nationally recognized McKinstry. In President Obama's 2008 message, he stated, "All across America I've seen entrepreneurs and innovators who point the way to a better future, starting with energy independence. "Recently, I visited the McKinstry Company in Seattle. They're retrofitting school and office buildings to make them energy efficient, creating jobs, saving their customers money, reducing carbon emissions, and helping to end our dependence on Middle Eastern oil. As President, I'll use companies like McKinstry as a model for the nation."

Industry, Organized Labor, Legislative and Regulatory organizations offered Best Practices themes and the future of the energy workforce. June 25th Keynote speaker was Charlie Earl, Executive Director of the Washington State Board of Community and Technical Colleges (CTC) who shared collaborative practices in the CTC system and its relevance to the economic future of the state. The 200 guests included CTC, high schools, and universities; government, industry and organized labor/apprenticeship. Contributing to the success of the event were generous sponsorships totaling \$6250. The 2010 summit raised \$6697 in scholarship funds to be shared among the CTC system for energy and construction students in need. The Veterans Conservation Corp donated a flag for the opening ceremony that had traveled through Iraq and was sold at auction raising \$750 to support a student Veteran.



Community and Technical College System Support

Community or Technical College Served	Program Marketing (web/hard copy resource guide)	Program Development and/or Delivery Support	Dissemination of Industry Trends: Best Practices Summit Attendance	Occupational Skill Standards	Faculty Development Energy Efficiency Train the Trainer	Grant Collaboration *NF (not funded) * F (funded)
Bellingham	X					X *(NF)
Bellevue			X			
Big Bend	X					
Cascadia	X		X		X	X *(F)
Centralia	X	X	X	X	X	X *(F)
Clark	X					
Columbia Basin	X					
Edmonds	X		X		X	X *(F)
Everett					X	
Grays Harbor	X	X	X	X		X *(NF)
Green River					X	
Lake Washington	X					
North Seattle			X			
Olympic	X			X	X	
Peninsula	X	X		X	X	X *(NF)
Renton			X	X		
Seattle Central	X					
Skagit Valley					X	
South Seattle	X			X		X *(NF)
Shoreline	X		X			
Spokane	X		X			X *(F)
Spokane IEL	X					X *(NF)
Walla Walla	X	X	X	X	X	X *(NF)
Wenatchee	X	X	X	X		X *(NF)
Whatcom	X				X	

High School Outreach

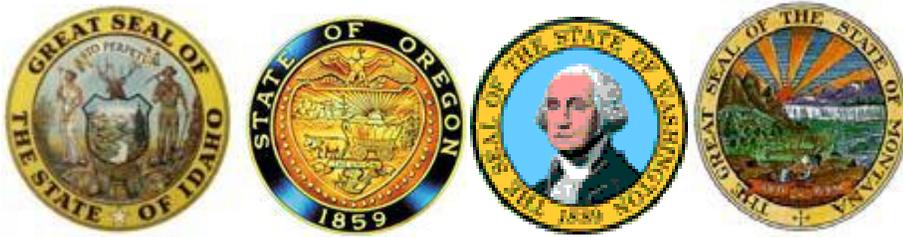
Career Video “We Bring the Power” was developed at the request of the energy sector panel to reach out to High School age students to make them aware of the energy career opportunities. The video covered plant operator, lineman, fiber technology, mechanics, electricians, machinists, customer service, security, computers, and meter reader occupations. Filming was done at the Tacoma Power Cowlitz River Project, Lewis County PUD, Mason County PUD, River Ridge High School, IBEW and Centralia College. The video was delivered to all of the Career and Technical Education directors representing all of the school districts in Washington State and copies were made available to the CoE advisory board.

<http://www.centralia.edu/coe/index.html>

High School Innovation Projects The Centers of Excellence for Energy Technology, Marine Manufacturing and Construction sponsored a competition-based project utilizing the outreach/education videos produced by the Energy, Marine and Construction Centers of Excellence as a catalyst for the creation of projects around marine, construction and energy. At the completion of this project, 4-6 student teams statewide shared a final product demonstrating enhanced exposure to construction, energy and marine projects with emphasis on Science, Technology, Engineering and Math (STEM) subjects and related pathways. Student teams were required to present at the State Apprenticeship Education Conference in May. The teams selected included:

- Vancouver-Hudson’s Bay School: Alternative Energy and Waste Water Treatment Plant
- Tumwater New Market Skills Center: Construction
- Central Kitsap High School: Storm Drain Energy Generator
- Centralia High School: Off-the-grid Solar Sustainable Food Production

Judges awarded Central Kitsap High School the winning project. Each student received \$500 towards future educational expenses upon high school graduation. Centralia High team presented at the Energy and Construction Best Practices Summit in June.



Northwest Governors Support CoE Initiative

The governors of the four Northwest states joined forces to urge the U.S. Department of Energy to support a grant submitted by the Center of Excellence. The four were C.L. “Butch” Otter of Idaho, Ted Kulongiski of Oregon, Christine Gregoire of Washington, and Brian Schweitzer of Montana. The four governors sent a joint letter to Dr. Steven Chu, Secretary of Energy, urging the approval of the establishment of a new regional energy collaboration called the ***Pacific Northwest Center of Excellence for Clean Energy***.

The Center was one of twelve \$5,000,000 grant awardees of U.S. Dept of Energy ARRA Smart Grid Workforce Training funded. This will create the Pacific Northwest Center of Excellence for Clean Energy (Washington, Oregon, Idaho, Montana and Utah) to develop and deliver Smart Grid incumbent and new hire training and education programs. The application was endorsed by the Northwest Energy Efficiency Taskforce comprised of the 13 major Pacific Northwest utilities.

The \$4,998,859 grant was funded to support the development and delivery of a coordinated approach to clean energy workforce development in the partner states. The focus of the training will address the integration of Smart Grid into the incumbent workforce on both the supply and demand sides of the energy sector as well as the transition of workers to new technologies as legacy job functions become obsolete.

The Project Deliverables:

- Deliver smart grid training for utility workers in a five state region (Washington, Idaho, Montana, Oregon, Utah),
- Create online smart grid training and information portal for utilities, businesses, and consumers,
- Share best practices on smart grid training using a regional and national approach.

Regional and National Associations

The Center of Excellence for Energy Technology continues to draw regional, national and international attention as a model for energy workforce and economic development.

2009/2010 involvement included:

- **The Northwest Energy Efficiency Taskforce (NEET)** is an executive level group representing utilities, customers, state government, environmental groups and energy efficiency entities in Washington, Oregon, Idaho and Montana. NEET was convened in early 2008 with a mission to maximize the region's energy efficiency achievement through greater regional collaboration, commitment, customer involvement, and pursuit of the most cost effective resource for rate payers. The NEET Executive Committee selected the Washington State Center of Excellence for Energy Technology at Centralia College to spearhead coordination among energy efficiency training providers and increase regional coordination on training, educational programs, curriculum and skill standards. NEET endorsed the Department of Energy Smart Grid Workforce grant application submitted by the Center of Excellence to create the Pacific Northwest Center of Excellence for Clean Energy. The \$5,000,000 grant was awarded to support the development of a clean energy workforce specific to smart grid and aggressive demand side management as a significant portion of the region's energy resource.

*Cal Shirley, V.P., Energy Efficiency
Puget Sound Energy*

- **National Commission on Energy Policy (NCEP)** - NCEP Taskforce on America's Future Energy Jobs Report released in 2010 cited the Center of Excellence for Energy Technology as a model for national replication. COE Director Barbara Hins-Turner served on the 2009 Task Force on America's Future Energy Jobs, convened by the NCEP. Final report can be viewed at: <http://bipartisanpolicy.org/library/report/task-force-americanas-future-energy-jobs>
- **U.S. Department of Education** delegation to *Global Competitive and Sustainable Education and Training Workshop* in Bonn, Germany hosted by the German Federal Ministry of Education and Research (BMBF) for the purpose of developing a bi-national training cooperative for "Green Occupations".
- **U.S. Canada Clean Energy Forum** The Council, in partnership with Natural Resources Canada, hosted the "Building a Power Workforce of Tomorrow" forum, which was delivered under the

Canada - U.S. Clean Energy Dialogue. The bi-lateral forum was held on February 17 & 18, 2010 in Toronto, Ontario. Report can be viewed at: http://www.brightfutures.ca/en/projects/Canada-S%20Forum/pdf/Dialogue_Forum_Report.pdf

- **Corporation for a Skilled Workforce (CSW)** is focused on developing policies and cultivating practices to foster the lifelong attainment of needed skills and knowledge. The Center of Excellence was invited to present to with CSW at the West Virginia Community College Presidents Technical Training on Industry Linkages and Cody, Wyoming Economic Development Forum. <http://www.skilledwork.org/>
- **Center for Energy Workforce Development (CEWD)** was formed to help utilities work together to develop solutions to the coming shortage of skilled workforce in the utility industry. Center Director Barbara Hins-Turner serves on the CEWD National Education Committee. Advisory Board member Troy Nutter, Training and Operations Mgr, Puget Sound Energy and Jim Lowery, CoE WIRED Energy Coordinator presented with CEWD at 2010 National Association of Workforce Board Assc, Washington DC. <http://www.cewd.org/>
- **Center on Wisconsin Strategy (COWS)** 2010 *Greener Skills* study cited the Center of Excellence as developing renewable energy and energy efficiency curricula and training workers per industry demand in a “model way” by conducting labor market studies and talking to industry and labor before implementing strategies. <http://www.cows.org/pdf/rp-greenerkills.pdf>
- **Society of Human Resource Management (SHRM)** June 2010 *Can They Keep Our Lights On?* CoE Advisory Board members were interviewed and cited as having in-depth knowledge of energy industry skilled workforce needs and an action plan to support the industry’s demand (see attached). <http://www.shrm.org/Publications/hrmagazine/EditorialContent/2010/0610/Pages/0610roberts.asp>



Center of Excellence Board of Directors

Message from the Chair - Barbara Hins-Turner

In 2009, Washington became the first and only state in the nation to codify Centers of Excellence into state statute. In an effort to meet legislative mandates and solidify our statewide leadership role, the Center Directors formed as a board to cohesively support Centers in becoming increasingly strategic with outreach to industry, labor, economic and workforce development and to positively impact and serve the Community and Technical College system and K-12.

Washington is recognized nationally for creating the Center model as a state sector strategy to serve as an economic development driver for industries that help the economy grow. Given the economics of our state and nation, this is a critical time for the Centers and the system to develop a competitive workforce pipeline that will ensure the economic future of Washington State.

An important strategic opportunity for Centers rests in linking to the state's efforts to expand the "green economy," which assumes that the state's economic and environmental goals are interdependent. Even more important, lasting economic and environmental benefits can only be achieved if these efforts emphasize *sustainability*, by focusing on fulfilling present and future needs while ensuring that assets such as renewable, natural and human resources are used wisely and nurtured over time.

As we move into the new decade, it is the goal of the Centers to integrate *sustainability* into every facet of our system's workforce training and education programs. This can only be accomplished by identifying and integrating sustainability practices, efficiency measures, and conservation impacts into workforce development initiatives for the industries represented by the Centers. It is the collective goal of the Washington State Centers of Excellence to lead the nation in developing a sustainable workforce that will serve our state and nation in the new 21st century economy.

Leveraged Funding:

Date	Funding Organization	WA State Grants	Federal Grants	Industry Contracts	Industry, Labor, Education Contributions	Total	CTC System Energy Program Support	COE	Partners Funded	
July 1, '09- June 30, '10	Dept. of Labor WIRED Yr 3		110,000.00			110,000.00		110,000.00		
Aug '09 - Dec '09	WIRED - Student OJT Training Scholarship		3,500.00			3,500.00	3,500.00	-		
Jan '10	WIRED - Wind Skill Standard Layout Design		7,000.00			7,000.00		7,000.00		
Mar '10	WIRED - National Workforce Board Conference - DC		1,200.00			1,200.00		1,200.00		
Dec '09	Puget Sound Energy Online - 162 seats @ \$244			39,528.00		39,528.00		39,528.00		
Dec '09	Grand Coulee Online 50 seats @ \$244			12,200.00		12,200.00		12,200.00		
Dec '09	Lewis County PUD online pilot 1@ \$244			244.00		244.00		244.00		
Dec '09	Puget Sound Energy CT Skill Standards			40,000.00		40,000.00		40,000.00		
April '10	Pacific County PUD			2,138.00		2,138.00	1,738.00	400.00		
June '10	Summit Sponsorships				6,259.00	6,259.00		6,259.00		
June '10	Summit Scholarships				6,197.00	6,197.00	6,197.00			
Oct '09	Corporation for A Skilled Workforce - W Virginia CTC Sector Training				1,537.00	1,537.00		1,537.00		
Nov '09	Corporation for A Skilled Workforce - Wyoming Skill Panel				845.00	845.00		845.00		
Feb '10	U.S Canada Clean Energy Forum				966.00	966.00		966.00		
May '10	U.S Delegation to BIBB, Germany				3,000.00	3,000.00		3,000.00		
June '10	Gates Foundation				700.00	700.00		700.00		
June '10	Northwest Energy Efficiency Taskforce Contract			20,000.00		20,000.00		20,000.00		
Awarded April '10	Dept of Energy ARRA Smart Grid Grant (To Fund Fall '10)		4,998,859.00			4,998,859.00	362,509.00	1,619,724	3,016,626.00	
	Total	-	5,120,559.00	114,110.00	19,504.00	5,254,173.00	373,944.00	1,863,603.00	3,016,626.00	5,254,173.00



Can They Keep Our Lights On? Vol. 55 No. 6

A retirement surge, clean energy, a smart grid and other trends in utilities industries demand urgent attention to workforce planning.

6/1/2010

By Bill Roberts

Here's one natural disaster the nation's utility executives can see coming: a tsunami of retirees that could swamp the economy. The electric power industry estimates 30 percent to 40 percent of its 400,000 workers will be eligible to retire by 2013. From executives to plant managers, and from engineers to skilled craft workers— who literally keep the lights on—the retirement deluge threatens to create a chasm between supply and demand for workers.

Human resource leaders in every utility have known about this exodus for at least five years. The recession gave them a reprieve. Yet, few have used the practice of workforce planning to determine strategic direction and ensure that the right people are in the right place at the right time and at the right price.

The results of inaction are alarming. With some exceptions, HR and other executives at most utilities don't know enough about what skills they'll need—or when. They aren't hiring fast enough to fully train replacements, they can't find enough science- savvy high school graduates for apprenticeships, and the industry does not do enough to promote itself. What's more, North American utility managers aren't doing enough to capture information in retirees' heads—tacit knowledge that could be washed away like flotsam.

Last year, the National Commission on Energy Policy in Washington, D.C., set up the Task Force on America's Future Energy Jobs. The task force includes leaders from industry, unions, education and training. Its report sounds this alarm: "The United States is facing a critical shortage of trained professionals to maintain the existing electric power system and design, build and operate the future electric power system. ... The ability to maintain a highly reliable, economically affordable electric power system while modernizing the nation's generating infrastructure to support an advanced, low-carbon technology portfolio is in serious jeopardy."

There's clearly opportunity—seized by only a few so far—for utilities' HR executives to prove

their strategic value through workforce planning. Lucky Break Squandered? The electric worker shortage is not a new story. Neither is the similar situation at natural gas utilities, employers of 106,000 U.S. workers. What's new: Utilities caught a break when many workers postponed retirement because pension funds took a hit during the recession. However, HR professionals at those utilities typically didn't use the time to prepare for a surge in retirements. "The workforce challenges facing utilities [are] real. The severity of the problem may be slightly exaggerated but, if so, not by much," says Scott B. Manning, a partner at ScottMadden Inc. in Atlanta who consults with power companies. "Utility labor supply and demand fundamentals remain a looming issue. Most utilities have failed to take advantage of this brief reprieve."

The Center for Energy Workforce Development in Washington, D.C., a nonprofit consortium of electric, natural gas and nuclear energy utilities and their associations, conducted a survey in 2008 of 56 electric and natural gas companies that employ 267,800—46 percent of the nation's electric and natural gas workers. In five categories, up to 49 percent of workers will need to be replaced by 2013. On the bright side, companies had stepped up hiring, mainly one-to-one replacements. Here's a spot check of three companies:

- At DTE Energy Corp. in Detroit, one-fourth of the 10,000 workers could retire by 2013.
- At Toronto Hydro Corp., one-third of the 1,700 workers could retire by 2017.
- At PacifiCorp in Portland, Ore., half of the 6,800 workers could retire by 2020.

Besides retirements, utilities must plan for the new skills required by clean energy and the smart grid, says Barbara Hins-Turner, a member of the Task Force on America's Future Energy Jobs, and executive director at the Center of Excellence for Energy Technology at Centralia College in Centralia, Wash.

Demographic shifts also need to be factored in as ethnic groups become more dominant in the population and among candidates for utility jobs, adds Alan Hardcastle, senior research associate with the Extension Energy Program at Washington State University in Olympia. "We see ethnic minorities, Latinos in Washington, who are underserved in education," he says, adding that they will need more education to be as productive as the utility workers they replace.

Missing an Opportunity

Not every HR professional and executive in every North American utility faces crises. Chelan County Public Utility District, a rural hydroelectric utility in Wenatchee, Wash., found that retirement among its 636 workers was of immediate concern in only a few job groups. Corporate leaders learned this through rigorous workforce planning analysis.

"There is still a three- to six-year window within which most utilities can solve their aging

workforce issues using optimally efficient solutions. After that, solutions may become very expensive,” predicts Randy Stedman, the former Chelan HR executive who launched workforce planning initiatives there. He’s now principal of Workplace Practices Group LLC in Lake Oswego, Ore.

The process of workforce planning for utilities and other industries goes like this: Understand the business strategy, determine the talent needed for the strategy, and prioritize needs. Figure the net number of people and skills that will be needed; identify gaps and priorities for closing them based on strategic value and urgency. Decide on actions and investments to align overall strategy, HR strategy and talent management processes with business requirements.

But unlike at Chelan and a few other places, utility executives tend to be reactive, except when planning for capacity.

“That’s the culture. They are really good at solving a problem when it occurs,” observes consultant Bob Grant, vice president of operational excellence at KEMA Inc. in Burlington, Mass.

“Workforce planning is not about hiring in the next six months, but what should my workforce look like in three to five years,” explains Katherine Jones, chief executive officer of Independent Consulting Services in San Mateo, Calif. In 2008, she surveyed 290 companies in various industries and found that 56 percent were doing some sort of workforce planning, most in the planning to plan stage. So, utilities aren’t the only laggards.

Job Category	Percent potential attrition and retirements	Estimated retirements	Estimated replacements needed
Technicians	49.0%	20,500	27,000
Non-nuclear plant operators	47.6	9,000	12,000
Engineers	44.7	10,000	14,500
Pipefitters and pipelayers	45.0	6,500	8,500
Line workers	40.2	19,000	29,500

Source: Center for Energy Workforce Development's 2008 survey of 56 U.S. utilities.

Knowledge Capture: One Person at a Time

The nation's utilities need more workers like Jerry Richards and Justin Wilhelm.

With 42 years of experience, Richards is lead instrumentation and controls engineer at the Fermi II nuclear power plant in Newport, Mich. Like other engineers approaching retirement, he has knowledge to share. "People like me want to leave knowing that the effort here is going to go on seamlessly and bump-free," he says.

Richards, 63, mentors Wilhelm, 26, as part of Fermi's mentoring program. While earning an engineering degree at the University of Michigan at Dearborn, Wilhelm participated in Fermi's cooperative education program and became a full-time engineer in 2007. He's "excited about the knowledge transfer."

Together, the two men are switching over the control instruments to new digital gear. Wilhelm is learning about the original analog equipment and the control room Richards helped design.

"We have unique problems and unique tools to solve those" problems, Richards says. "Justin has been immersed in our unique problem solving techniques."

Richards has also imparted soft skills for dealing with maintenance workers.

"Everyone talks about how to transfer knowledge," says Kate Herwick, director of corporate human resources for DTE Energy Corp. in Detroit, owner of the plant. "It is through this one-on-one relationship."

Utility officials are trying a number of approaches to retaining knowledge:

- PacifiCorp in Portland, Ore., has a knowledge transfer document it asks workers to use—with modest success—for procedures they began using years ago.
- Puget Sound Energy Inc. in Bellevue, Wash., contracted with technical writers to interview employees and write reports. After success in one business unit, other units have been more open to the process.
- Southern Co. in Atlanta uses knowledge mapping for critical jobs identified

through workforce planning.
The process helps break down a job into hard and soft skills.

—Bill Roberts

Workforce Planning in Action

Larger utilities are more likely to embrace workforce planning. Southern Co. in Atlanta, with 26,000 employees and electricity customers in four states, began the process years ago.

“We’re trying not to be just reactive,” says Marsha Johnson, senior vice president of HR and chief diversity officer. “This retirement challenge provides an opportunity to look at the business strategy. It calls on HR to be closer to the business than ever.”

Historically, utilities had low attrition rates and few reasons to plan. “I can’t recall when our turnover was greater than 6 percent,” she says. “You don’t worry about a lot of volatility in your workforce, but you don’t invest in a lot of forward-looking stuff either. Now, we are focusing on short- and long-term results around workforce planning.”

Johnson’s staff applies workforce analytics to the problem. “With each year, we’ve added more rigor and discipline,” she says. “Historically, our average retirement age is 59. Over the next five years, significant numbers are turning 59. Predictive modeling requires us to go way beyond that fact.”

Last year, Southern Co.’s turnover was 5 percent, giving recruiters breathing room. “We used the year to develop deeper layers of understanding about the work and the replacement situation. This calls on HR to understand what employees are doing and to ask questions more directly than we’ve asked before,” Johnson says.

Replacement hiring is only part of the equation, she adds. “Workforce planning is an integrated process that helps determine what the work is, whether it will change, what resources are needed and the best way to provide the human resources.”

As a result of planning, Southern Co. has stepped up longtime efforts in cooperative education and hiring from the military and has launched initiatives to revamp benefits and improve employee engagement.

Small utilities also benefit from workforce planning. At Chelan County Public Utility District, Jennifer Taylor, SPHR, organization development manager, analyzed the retiree problem and is now developing a plan for skill sets and training needed in three to five years.

Using spreadsheets, Taylor and the compensation and benefits manager built a statistical model based on age, tenure, historical retirement data, turnover rate, recruiting metrics, time to train hires and differences among three retirement plans. They concluded that the retirement issue was not seriously urgent because “projected” retirement age is later than the “eligible” age and because process improvements have reduced the number of replacements needed.

Among 33 occupational groups, five hot spots caused immediate concern: technicians, system operators, control system engineering, water and wastewater operators, and operations management. Managers were already aware of them. “They had the foresight in 2005 to do an analysis—mostly through anecdotes— and got permission to hire apprentices,” Taylor says.

Hire Ahead—or ‘Holy Cow’

Then, the recession put advanced apprentice hiring on hold. “We had a bad year financially in 2009. Where we know we have gaps, we wanted to do some hiring but are holding off,” Taylor says.

Measuring the gap is important but not the final goal, Stedman says. “Filling the gap requires solutions be developed and investments be made. Just when Chelan determined the dimensions of its workforce development challenges were manageable with then-existing resources, the recession reduced the resource pie.”

Ideally, utility executives would step up hiring now because new employees need a few years to be trained to fully replace retirees. But hiring in advance is a hard sell to executives and utility regulators—even though the 5,000-worker regulatory profession also faces a retirement surge, according to the National Association of Regulatory Utility Commissioners.

Utility executives rarely blink at multimillion-dollar power plant upgrades, “but if you need to plan, hire and develop workers, building capabilities that will cost a million dollars, it comes from a different budget and they have a different perspective,” says Brad Kamph, president of Interliance Consulting Inc. in Santa Ana, Calif.

“Like most utilities, we’re not doing a lot of hiring ahead,” says Curt Meyers, director of staffing, learning and development at PacifiCorp, an electric provider to six Western states. “The month when 50 retire, people will say, ‘Holy cow—maybe we should have listened.’ I’m anxious for that to happen and then we’ll finally do something.”

Grant says commissions don’t often approve rate increases for hiring ahead: “The utility can only afford to bring on so many trainees because it can’t get rate reimbursement.”

Sometimes, it can: Ave Lethbridge, vice president of organizational effectiveness at Toronto Hydro, an electricity distribution utility, has hired more apprentices due to coming retirements.

First, she had to convince management, and then the Ontario Energy Board. “You have to disclose all your assumptions and facts. Success lies in HR partnering with operations.”

At Fermi II, DTE Energy Corp.’s nuclear plant in Newport, Mich., Kristina Ward, a workforce planner, used nuclear power regulations to make the case for strategic hires. “We are required through regulation to have a certain number of people to do certain tasks,” Ward says. “So we know where the gaps are, especially for the required qualifications.”

After identifying 34 positions in six high-risk categories, “We went to the board of directors and were able to get some money to do strategic hiring,” she says. The relationship she built with the plant’s comptroller was key to moving ahead on this.

Workforce planning at Fermi II was a pilot project. DTE Energy, owner of Detroit Edison Co. and Michigan Consolidated Gas Co., plans to launch the practice across the company, says Kate Herwick, director of corporate HR.

Education and Marketing

Like other industries, utilities’ recruiters suffer from a lack of high school graduates with the necessary science, technology and math skills to train for the jobs. Filling the supply pipeline with adequately educated young people remains a serious challenge.

Puget Sound Energy Inc. in Bellevue, Wash., with 2,800 employees, has 49 apprentices—the most since 1972—but struggles to fill slots. Troy Nutter, manager for training and apprenticeships, says only 10 percent of the applicants pass the entrance test on basic algebra and electricity. A four-year apprenticeship costs \$420,000 in wages, benefits and training, so Puget Sound Energy needs recruits who are likely to succeed, Nutter says.

Workforce planning can illuminate the problem, but state, regional and national efforts are required to solve it. Nationally, the Center for Energy Workforce Development has launched some initiatives. With collaboration among industry, unions and educators, Washington is ahead of most states.

Nutter, for example, serves on a statewide group determining skill sets for electricity jobs and helping school officials design curricula. And the Centralia center of excellence develops and disseminates energy curricula to state community colleges. Since 2005, it has expanded energy related training from five colleges to 19. In 2009, 593 students were in or had just graduated from these programs.

If the U.S. could solve its science and math problem today, it would make scant difference because few people want to work for utilities. The industry lacks appeal.

“One challenge is to make sure the business stays attractive to young people. We don’t tell our

story effectively,” Johnson says. Southern Co. has numerous relationships with high schools, technical schools and universities.

“The industry has never done a good job of promoting itself,” Hins-Turner says. Green energy offers an avenue, though. “It is a purpose, a cause. Kids feel like they’re doing something for the environment and cleaning up the mess.”

Washington high school students must explore several careers. At 11 skills centers across the state, they get hands-on experience in energy and other areas, Hins-Turner says.

If utility careers had a better image, more kids might recognize they don’t need college to get good jobs and understand the importance of math and science. “Seventy percent of our jobs in energy need more than high school but less than college. How do we get people into that mindset?” Nutter asks.

Here’s one suggestion: Imagine an Army-style “Be all that you can be” TV ad for power line work. It could extol the technical acumen and physical stamina required and tout the rewards of teamwork and the occasional heroic opportunities to keep the lights on—not to mention pay and benefits that are well above average.

If an ad like that ever airs during televised football games, the nation’s utilities could be on their way to building a new image among youth—and perhaps solving their workforce crisis.