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Chairman Baucus, Ranking Member Grassley, and Members of the Committee, I am honored to appear before you this morning to offer my views on workforce training and development issues facing the United States electric utility sector as we transition to a new energy economy.

I am Van Ton-Quinlivan, Director of Workforce Development and Strategic Programs at Pacific Gas and Electric Company (PG&E). PG&E is California's largest utility, providing electric and natural gas service to more than 15 million people throughout northern and central California.

Our work on energy efficiency, demand response and support of clean generating technologies is part of a broad portfolio designed to provide advanced energy solutions to our customers. To support these efforts, we have established programs aimed at ensuring that we have the workforce available to build, operate and maintain these vital resources.

As our sector looks ahead, we see an aging infrastructure, the advent of new power generation, electricity delivery and end use technologies, and a workforce with an average age ranging from the mid-40s to 50-years old. These demographics present a particular challenge to the industry because electric power employees traditionally retire at 55. In fact, over the next five years, 30 to 40 percent of electric utility industry's workforce is eligible to retire, and at PG&E, we expect that number to be closer to 40 percent. These expected retirements are from the ranks of workers needed to maintain our existing infrastructure and do not include workers needed to deploy and maintain new technologies and infrastructure.

We employ roughly 20,000 people -- administrative, management, construction, technicians, engineers, linemen, energy auditors, and others. PG&E, as with all utilities, provides a range of

employment opportunities for workers with various skills and education levels. Utilities are unique in that we are located in every community across the country, from large cities to small towns. The need for a reliable stream of workers for our sector will touch every state and region of the country, some more than others.

At the same time, according to studies conducted by the National Commission on Energy Policy, Clean Edge, and Pew Charitable Trusts, not only will our sector need to replace a large segment of the existing workforce in the next five years, but we will also need to ensure that there is a workforce able to fill jobs in those sectors that support our industry, for example, welders, sheet metal workers, energy auditors, building maintenance engineers, accountants, and architects.

In fact, according to a study conducted by the Brattle Group, our industry is poised to make approximately $2 trillion in capital expenditures over the next 10 to 20 years to meet future demand and replace our current infrastructure. This investment will occur not only in power generation, but also transmission, distribution, customer service and energy efficiency. This is a significant amount of capital that will flow into our sector, and out. At the same time, we have seen an uptick in capital flowing to the clean tech sector. For example, along with investment flowing to biotech, software and medical devices, clean energy technologies alone saw $3.3 billion of venture capital flow toward it in 2008, according to New Energy Finance, with $13.5 billion flowing globally.

Before making these massive capital expenditures in infrastructure and the training programs to support them, clear direction from Congress is needed with regard to our nations' energy and climate policy.

Congress has taken many important steps in recent years that begin to provide our industry with that policy direction, including provisions in the American Recovery and Reinvestment Act to advance smart grid and renewable energy technologies and steps to rationalize critical energy tax policies, many of which this Committee and its members, in conjunction with others, helped to advance: renewable energy tax credits for solar, wind, hydroelectric, and other sources; innovative options that help monetize tax credits; bonus depreciation; and tax credits for energy efficient buildings, windows and appliances. These have all been critical and this infusion of resources has the potential to facilitate actions that will both drive technology and advance workforce training. However, many of these actions have been temporary or time-limited. And,

for an industry that makes long-term capital decisions, deploys assets with long lead times, and has an employee turn-over rate that is below the national average, we need a clear, long term, national policy direction that builds off this strong foundation. Doing so will help unlock more of this investment and send the signal to our industry regarding the types of expenditures we need to make and the workers we will need to hire.

Some state policies have helped bring the country to the cusp of capitalizing on the development and deployment of new energy technologies. For example, according to Clean Edge, a host of start ups such as smart grid networking companies, high efficiency window and green building material providers and others have emerged in pockets around the country. This is in addition to renewable manufacturers and developers. We believe that state policies alone are not sufficient to expand these clean energy opportunities, including new nuclear, carbon capture and storage, significant new transmission and pipeline capacity, renewable energy – and see them materialize nationally.

In addition, training in the skills necessary to support the energy sector has not been a national priority for many years. It is no longer certain that this vital sector will be able to draw from a deep pool of highly skilled, technically trained individuals to build and maintain electric systems, particularly those based on new technologies or those that have not been deployed in decades. In fact, according to a report issued by the National Commission on Energy Policy (NCEP), in which PG&E participated, this capacity has eroded over the past two decades. As a result, the electric power sector is facing the challenge of having an aging workforce that is nearing retirement and a limited pool of skilled workers to fill open positions. Retirements in the electric sector have the potential not only to jeopardize the ability of the industry to maintain the nation's current electric infrastructure, but present great challenges in terms of having the skilled workforce to support next-generation technologies including power plant technologies, new metering technologies, and the back-office operations required to support them.

The NCEP Task Force on America's Future Energy Jobs (Task Force) brought together representatives from labor, the electric power industry, and the training and educational sectors to better understand and start to address these issues. Task Force members commissioned Bechtel Power, Inc. to provide estimates of the workforce needed to design and construct the new generation associated with a transition to a low-carbon economy. The Task Force members also estimated the workforce needed to build the supporting infrastructure for these next-generation,

low carbon technologies, including transmission lines, pipelines, Smart Grid and energy efficiency. The group sought to move beyond anecdotes about "green jobs" to evaluate workforce needs associated with building and supporting energy infrastructure for a future low-carbon energy system, what the group called "future energy jobs". After estimating the future workforce demands, the group assessed the ability of the current workforce training system to meet this demand and made recommendations on how to better align workforce supply with workforce demand.

Key insights from that report are:

- *A decline in career and technical education has stressed the electric power sector's training capacity*. The career and technical education system, which prepared students to work in the skilled crafts, has declined in the past two decades. Since the mid-1990s, the number of high school students taking trade- or industry-related career and technical courses has declined 35 percent. As a result, individuals do not have the skills they need to succeed in apprenticeship programs or in-house training programs.
- *A large percentage of the electric power sector workforce is nearing retirement*. The electric power sector directly employs about 400,000 people, 30 to 40 percent of whom will be eligible for retirement or will leave the industry for other reasons within the next five years. Compounding this demographic shift, many workers appear to be delaying retirement due to the economic downturn, and this could create a larger disconnect if workers retire en masse when economic conditions improve.
- *Creating a low carbon energy system will require more workers with new skills*. In addition to replacing retiring workers, the industry will need an unprecedented number of skilled workers to design, construct, and operate the next generation of electric sector infrastructure. By the 2020's, design and construction in the electric power sector could require as many as 150,000 workers, roughly equivalent to 40 percent of the workforce employed to operate and maintain the current electric power sector. Similarly, by 2030, roughly 60,000 people will be needed to operate and maintain new generating assets, or 15 percent above the current workforce.

The overarching insight from this analysis is that, at present, the U.S. must focus on the dual challenges of transitioning to a low carbon economy and supporting the workforce needs resulting from a major domestic effort to accelerate investment in these new technologies.

The deployment of new technologies and generating assets will require new design, construction, operation, and maintenance skills. This is an important opportunity for new job creation and economic growth. If too few individuals with necessary expertise are available, however, workforce bottlenecks could materialize and the ability to take on workers at a sufficient pace could be slowed.

In fact, some economists are seeing this phenomena happening now in other sectors. John Silva, chief economist with Wells Fargo Securities, noted on November 6th that "There's a real mismatch between the unemployed people out there compared to what job openings are available." For example, he said construction workers who lost a job when the housing bubble burst do not have the skills to compete for jobs in sectors that are hiring, such as health care and technology.

It is this situation that we are working to avoid and on which the NCEP Task Force report is focused. PG&E has supported job training for decades both to help us and the broader industry. For example, we currently employ approximately 400 people who work on energy efficiency and demand response programs, and another 200 field staff in this area. This team works together with our customers to improve efficiency and save energy.

To ensure we have a workforce capable of delivering these services both in-house and through third-party contractors, we operate the following training facilities:

- PG&E Energy Training Center in Stockton, CA. This is the longest continually operating energy education center in the U.S., which has provided more than 68,000 people with hands-on training in installation, construction and energy audits.

- PG&E Food Service Technology Center in San Ramon, CA. This facility provides energy efficiency consulting and training to the food services industry.
- Pacific Energy Center in Can Francisco, CA. This facility provides energy efficiency education and training "upstream" to architects, engineers, and building operators and, in 2008, reached over 7,000 people.

Anticipating current trends, we launched the PG&E PowerPathway workforce development program in 2008, with a vision to build capacity in California to produce the skilled workers needed by PG&E and the energy and utility industry.

Inherent in the PowerPathway strategy is a commitment to have our employees reflect the communities we serve. We wanted a model of career pathways that could effectively lead candidates from all communities, including our underserved communities, to good energy sector jobs.

The PowerPathway model rests on a 3-legged stool where each party focuses on what it does best.

- The first leg is the employer. As an employer, PG&E focuses on articulating the skills that we need and on hiring.
- The second leg is outreach. We work with the Workforce Investment System which partners with local community-based organizations that have a role with economic development and therefore can do a better job of outreach into our communities, to pre-screen candidates and case manage them through the entire training process.
- The third leg is training. We work with local community colleges to develop custom curricula to help candidates be better prepared to compete for jobs in our industry.

Over the last two years, we have completed eight PowerPathway programs in five geographic regions throughout our service area. We have seen significantly improved diversity and quality of candidates due to the program. We have also transitioned veterans into our sector through the assistance of state grants and the help of the AFL-CIO.

These PowerPathway graduates qualified at an unprecedented level on PG&E's pre-employment test. And, over 50 percent of those who completed the pilot programs were hired by PG&E or its contractor partners—leading to positions with a starting wage of at least $19.50 per hour.

And, going forward, we will be doing even more. For example:

- In order to help our communities access ARRA funding for "green jobs" training as well as jump start their training, we will be sharing PG&E's 30 years worth of energy

efficiency curriculum with the community college system through our PowerPathway Training Network in Energy Efficiency.

- We are investing in California State University-East Bay as a regional focal point to deliver certificate programs in the power engineering and Smart Grid arena. CSU-East Bay and PG&E jointly launched a new four-course Certificate in Power Engineering.
- We launched five high school academies in collaboration with the California Department of Energy. Our high school academies will be themed around the topic of "New Energy," in the hopes of introducing today's students to the wide applications of the academic skills to the world of energy careers.
- We are also expanding efforts to share best practices with other employers with the goal of having additional employers engage in a collaborative approach to workforce development. For example, PowerPathway was awarded a grant from the California Department of Veterans Affairs to train recently separated veterans through courses at City College of San Francisco and Fresno City College.

When it is time to hire, employers go to where the talent exists. Policies need to focus on establishing a pipeline of skilled workers. In the midst of a recession with growing unemployment, it was the collective view of the NCEP Task Force that it is imperative to get ahead of the curve, invest in our energy sector workforce, and ensure that we have the skilled workforce we need to achieve our long-term national energy objectives.

The NCEP Task force recommended:

- Evaluating regional training needs and facilitating multi-stakeholder energy sector training programs across the country.
- Improving energy sector workforce data collection and performance measurement metrics and tools.
- Identifying training standards and best practices for energy sector jobs.
- Providing funding support to individuals seeking energy sector related training and education.
- Aggressively focusing on revitalizing math and science skills, education and career counseling of individuals interested in pursing energy sector jobs.

We respectfully suggest that policymakers consider these recommendations when reauthorizing the Workforce Investment Act and when crafting energy and climate legislation.

We appreciate the efforts Congress has made thus far and are hopeful that the Senate will work expeditiously to craft a comprehensive energy and climate package with a focus on those provisions that can quickly transition workers into the new energy economy. Models are clearly out there and efforts are underway -- the challenge is to leverage existing programs and create the capacity needed throughout the country.

Thank you.