# National Energy Technician Education Summit

# SUMMARY

Ninety individuals representing a cross section of the energy industry, community colleges, universities, government agencies, and non-profit organizations participated in the National Energy Technician Education Summit from December 8 to 10 in Washington, DC. Collaborative discussion during the summit focused on current and projected industry needs, financial opportunities and constraints, and the educational programs that help to provide a trained workforce. Using facilitated large-and small-group discussions, summit participants developed recommendations to help shape the future direction of energy technician education in the United States. A summary of several recommendations identified through a consensus process appears on the following pages. A full report of the summit and the several dozen recommendations that surfaced during the three-day meeting will be published in spring 2011.

The American Association of Community Colleges (AACC) and the Advanced Technology Environmental and Energy Center (ATEEC) convened the summit with support from the Advanced Technological Education (ATE) program of the National Science Foundation (NSF). AACC, the primary advocacy organization for community colleges at the national level, represents almost 1,200 two-year, associate degree-granting institutions. ATEEC, an ATE Center of Excellence, is located at Scott Community College in Bettendorf, Iowa. The college is part of the Eastern Iowa Community College District. The summit followed up on seven regional conversations ATEEC held in 2009 and 2010. *Regional Energy Conversations*, the report from these NSF-supported meetings, identifies the fastest growing energy jobs in seven regions across the country in addition to crosscutting technical and employability knowledge and skills.

AACC and ATEEC thank NSF for its support. They are also grateful to the summit participants for their intellectual contributions to the summit and their ongoing efforts to prepare the energy technician workforce with the skills that the nation needs. Energy technicians apply the knowledge, skills and abilities to perform the scientific, technical, communication, and regulatory tasks needed to optimize the sustainable production, delivery, and use of energy resources.

**Keynote Presentation**

Max Wei, a senior research associate at Lawrence Berkeley National Laboratory, gave the keynote speech on the transition to a new energy economy. Wei has studied the employment outcomes of sustained investment in energy efficiency and low carbon energy sources. "A new energy economy would be a secure economy," Wei said, noting that Americans' desire to lessen the nation's dependence on foreign oil and to improve the environment will likely drive

innovation and employment in the future. He expects careers that involve energy efficiency and renewable energy sources to remain strong for technicians. He notes that many of the technician or associate degree jobs are in manufacturing, construction, operations, and maintenance. Some parts of manufacturing can be outsourced and energy equipment can be imported from China. “But,” he said, “construction, operations, and maintenance. . . cannot be outsourced." Wei pointed out that growth in the energy workforce will depend on how much the nation invests in efforts to limit climate change and the pace at which incumbent technicians retire. He anticipates U.S. workforce growth generated by new energy sources will be concentrated in specific geographic regions such as the Central Plains for wind, the Southwest for solar, and the Southeast and North Central states for biomass. ATEEC's regional energy conversations found similar workforce trends.

**Panel Presentations & Table Discussions**

***Traditional Energy***

Many of the panelists' responses and participants' comments during the Traditional Energy session suggested that community colleges focus on energy technicians' foundational skills, particularly their math knowledge. “The foundation is critical," one speaker said. She added that a firm understanding of energy-related concepts makes it possible for technicians to learn new technologies, work in various energy sectors, and relocate. By obtaining input from multiple energy industries, community colleges can identify essential energy-related knowledge and crosscutting technical skills. By working with regional workforce boards, community colleges facilitate coordinated, regional approaches to employment needs. Several people urged utilities and other energy employers to offer faculty paid internships to gain first-hand experience with the technical and soft skills employers need.

***Renewable Energy***

The Renewable Energy panelists affirmed the importance of foundational and soft skills. "Give me a technician that's got a good, solid fundamental understanding of electrical theory, power generation, safety, and … some work-in-height experience. I can … teach them the specifics," one wind energy panelist said. A solar energy industry representative suggested that instead of ramping up technology-specific energy programs community colleges should insert the particular skills used by solar, wind, and other emerging technologies into existing programs. Several participants mentioned the need for technician education programs to create pathways that lead to licensure, so technicians have the option to work for a wide variety of industries or run their own energy businesses.

***Energy Efficiency***

Much of the Energy Efficiency panel discussion centered on how technicians' skills affect the energy efficiency of commercial buildings. "We need  whole building thinkers," one speaker said. Another noted, "You can't have a high performance building without a high performance operator." The panelists pointed out that city and state limitations on energy consumption are driving efficiency efforts and, in turn, demand for energy technicians. The Environmental Protection Agency developed an ENERGY STAR college-level course to meet the need for practical lessons in commercial building energy efficiency. One participant suggested that community colleges partner with utilities, industry, and government initiatives to incorporate students' classroom assignments with actual efficiency efforts. The environmental benefits of careers that focus on energy efficiency could appeal to people who want to grow a greener economy.

***Transportation***

State policies are driving transportation industry changes and will determine where technician jobs will be in the future, the transportation panelists said. For instance, if electric vehicles sell as predicted on the East and West Coasts it will push demand for technicians to make the infrastructure changes required for battery recharging or battery swapping stations. Several speakers noted that several ATE centers already lead state and regional collaborations with automakers to develop workforce skills.

**Recommendations**


During the Working Group phase of the summit 10 mixed stakeholder groups discussed strategic questions that explored how the changing energy economy will impact the needs for technicians. In the closing hours of the summit, all the groups shared their top recommendations on each of six strategic questions. The summit participants then voted on the recommendations, which were written on large pieces of paper and displayed for everyone to read and consider. The consensus process identified:

- Energy efficiency and replacement of retiring workers as the biggest growth areas for technicians.
- Math, science, analysis, mechanics, electronics, and information technology as key technical skills for technicians.
- Good communication, problem solving, teamwork, social intelligence, integrity, salesmanship, and entrepreneurship as key soft skills for technicians.

- National certifications or credentials, core competencies, and national technician education standards as key things energy sector stakeholders can collaborate on to develop the workforce.
- Revising existing programs with enhanced skills, rebranding them to make them more attractive to students and their families, and revamping their infrastructure as effective ways to prepare for emerging green occupations.
- Establishing a national clean energy standard; reintegrating career technical education programs or classes into comprehensive high schools; and making funding of science, technology, engineering and mathematics a top priority at all education levels were identified as key policy changes that would improve the technician workforce.
- Projects with solid labor and market intelligence, those with national or regional industry partnerships, train-the-trainer programs, and industry internships for faculty as strategic investments by funders to support the future needs of energy technician education.

Participants wrapped up the summit with succinct messages to four audiences. Some of those shared include:

**To educators:**
- Know Math, Know Success
- Green Economy Hinges on Technical Education

**To business and industry:**
- Join Us to Prepare YOUR Workforce
- Investment & Involvement Equal Profit

**To policymakers:**
- Reward Successful Results
- Provide Consistent, Incentivized, Transparent Policy

**To funders:**
- Energy Incentives–$2 Billion
- Green Manufacturing–$4 B
- Clean Energy Credits–$10 B
- New Transportation–$20 B
- Energy Security–PRICELESS