

# CTE's Role in Energy and Environmental Sustainability

BY ALISHA HYSLOP

ACTE Issue Briefs are designed to highlight the role of career and technical education (CTE) in a broader issue of national interest. Each Brief is designed to strengthen the voice of CTE related to the specific issue and to draw more attention to CTE activities and best practices around the country. The Briefs provide background information, highlight research, profile CTE programs and include numerous examples of how CTE is tied to the broader issue. Issue Briefs are designed in a concise, easy-to-read format that is ideal for use in advocacy and public awareness efforts with a variety of audiences. One of the latest Briefs is titled "CTE's Role in Energy and Environmental Sustainability." It was released in the fall of 2008 to capitalize on the renewed national attention focused on energy conservation and production and new green jobs. Read a condensed version of the Brief below, and access the complete text, including case studies and examples, at [www.acteonline.org/issuebriefs.aspx](http://www.acteonline.org/issuebriefs.aspx).

## The Concerns

The American lexicon is shifting to include a new wave of green, with phrases like "energy independence," "eco-friendly," "renewable energy" and "zero carbon footprint" often a part of daily conver-

sation. The attention of policymakers, businesses, educators and the public at large is increasingly centering on efforts to create more energy and environmental sustainability. Whether one's concerns are economic or environmental in nature, the demand for more energy efficient buildings, homes, cars and consumer products is higher than ever before. In addition, 28 states have mandates generally requiring that up to 25 percent of their energy be obtained through renewable sources in the next two decades.<sup>1</sup> This should serve to further increase the demand for new products and processes focused on generating and conserving energy.

The demand for sustainability has created two parallel workforce phenomena—the development of new careers in the green industry, such as solar panel installers and wind turbine technicians; and the "greening" of all other jobs. From construction to business management, sustainability issues are growing very important in a number of career pathways. A report commissioned by the American Solar Energy Society attributed 8.5 million jobs in 2006 to renewable energy or energy efficient industries.<sup>2</sup> As federal, state and local governments mandate or incentivize more energy from alternative sources, the Apollo Alliance predicts that the nation could generate three to five million more green jobs over the next



10 years.<sup>3</sup> These jobs are high skill, high wage and in high demand. They exist in sectors as diverse as landscaping and automotive manufacturing.

Unfortunately, there is a tremendous shortage of individuals with the necessary skills in sustainability practices, and employers seeking more "green-collar" workers often face bleak prospects. In many instances, while the technologies to support the sustainability industry have been or are being created, the industry lacks the skilled workforce necessary to implement and use these technologies. To some capacity, the need for human capital is proving to be a barrier to the continued growth and expansion in energy efficiency and sustainability. The sustainability movement has the potential to dramatically revive employment in many areas around the country, as green-collar careers can replace the jobs of workers in areas with stagnant job growth or layoffs. However, there must be a greater focus by policymakers and business and industry leaders on providing the training and retraining necessary to help shape this new workforce and ensure the continued pipeline of skilled workers.

## CTE Provides Solutions

CTE programs are poised and ready to ease the workforce bottleneck that could limit job growth in sustainability and meet the need for green-collar job training across career areas. Despite the fact that mainstream public interest in sustainability has only recently peaked, high-quality CTE programs already exist around the country to help prepare students for sustainable careers. CTE offers early exposure to students regarding sustainable energy career options through curriculum integration, provides the "cutting-edge" training necessary to ensure future employees meet workforce pipeline needs, and sets an example through state-of-the-art green buildings that become part of the curriculum.

## Exposing Students to a Green Curriculum

Today's CTE is becoming more rigorous in response to growing workforce skill needs, and at the same time remains extremely relevant to students and their lives. It offers unique opportunities for students to explore career options at the same time they are receiving the strong academic and technical foundation necessary to succeed in the 21st century economy.

CTE can be the answer to ensuring that students gain the sustainability knowledge they need to be successful in whatever career they may choose, and that students are exposed to careers in sustainability early enough to consider them as future options. A number of high schools have started to offer this type of exploration and integration of sustainability concepts.

Aiken University High School in Cincinnati has instituted a special environmental sciences program where coursework in all subjects is linked to environmental issues. A CTE Tech Prep articulation agreement that provides college credit will allow students to follow a clear career path to Cincinnati State University in a variety of environmental fields.<sup>4</sup> In other areas, CTE programs are integrating the concepts into already existing programs. Massachusetts CTE instructors attended the Massachusetts Green Building Expo in May 2008 to learn how to integrate green building practices, renewable energy and sustainable design into their courses.

## Preparing the Green Workforce

While exposing students to possible green careers is critical, perhaps the most important role for CTE to play in efforts to increase the United States' energy sustainability is to directly prepare students to be leaders in the future workforce. CTE programs at community and technical colleges are in a unique position to evolve and adapt quickly to the changing



## Henry Ford Academy: Power House High

In August 2008, an innovative new charter school opened on Chicago's West Side. Henry Ford Academy: Power House High welcomed 112 ninth-grade students as part of a partnership between Homan Square, an award-winning community development project on the site of the original Sears, Roebuck and Co. world headquarters, and Henry Ford Learning Institute, a nonprofit organization dedicated to creating public schools in public spaces. The school will operate with an innovative curriculum incorporating the themes of environmental sustainability and green technology. While students will be utilizing temporary space for the 2008-2009 school year, they will move into the Shaw Technology and

Learning Center in 2009. The center is located inside the building that served as the original power generator for the entire Sears world headquarters.

The Homan Square Power House was originally constructed in 1905 and provided electricity, heating and cooling for the complex for nearly 100 years. The building, now on the National Register of Historic Spaces, is being renovated into a dynamic learning environment for Power House High students. The renovated building will include elements of the original energy production technology, and, with the help of Siemens Building Technologies, it will also focus on sustainability through new features such as geothermal heating and cooling. Students will be able to observe the operation of these new energy technologies

technologies in the energy industry, and to create new training programs to meet the growing demands for a skilled and environmentally conscious workforce in this area. Many of the new training programs that have been created in recent years are the direct result of business-education partnerships with strong industry support. A sampling of new programs includes those in water conservation, wind energy, biofuels, photovoltaics, environmental systems technology, energy maintenance and green building technology. Numerous programs in these areas are appearing all around the country.

## Setting an Example through Green Facilities

One of the fastest growing elements of the sustainability movement is the building of green facilities, and the U.S. Green Building Council offers a special Leadership in Energy and Environmental Design (LEED) certification specifically for schools. For CTE facilities, both the challenges and the benefits of sustainability elements can be more extreme. Issues such as air quality and energy usage are more complicated in high-tech labs than

in more traditional classroom spaces, and there is more equipment to evaluate and upgrade. However, CTE facilities are joining in efforts to build more sustainable facilities, which in turn become dynamic learning labs for students and can even have an impact on recruiting students to careers in sustainability. Both high schools and community and technical colleges are involved in efforts ranging from installing solar panels, utilizing daylighting, recycling materials, installing nonpolluting carpet and paint and low-flow water fixtures, to undergoing full-scale renovations or sustainable new building.

## Conclusion

At all levels of education, from career exploration to specific job training, CTE has an essential role to play in energy and environmental sustainability. Without critical CTE activities providing a skilled and ready workforce, all of the investments in new energy-efficient and sustainable technology will be for naught. Around the country, CTE programs focused on a wide variety of green ideas and practices are now in place to ensure the

firsthand and prepare for careers in related fields. For example, renovation plans call for the restoration of the building's 185 feet tall, 14 feet wide radial brick chimney. Restorers hope to incorporate it into the future life of the facility by adapting it through the installation of a wind turbine. The new turbine will be powered by the release of the building's excessive heat and will in turn power LED lights in the school, creating a unique lesson in energy creation and consumption.

Through cutting-edge curriculum and innovation-based learning experiences, students will be equipped with a strong blend of academic knowledge and creative problem-solving skills. They will be prepared for college and career success in a global knowledge economy. **T**

continued pipeline of skilled workers with a strong knowledge foundation. These programs should be recognized for their leadership and expanded so that even more students can participate. Community and political leaders, along with local businesses and industries, should look to CTE programs as the answer to the sustainability workforce challenge. **T**

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**ACTE** Interested in exploring this topic further? Discuss it with your colleagues on the ACTE forums at [www.acteonline.org/forum.aspx](http://www.acteonline.org/forum.aspx).

## Endnotes

- 1 Greenhouse, Steven, "Millions of Jobs of a Different Collar," *The New York Times*, March 26, 2008, [www.nytimes.com/2008/03/26/business/businessspecial2/26collar.html](http://www.nytimes.com/2008/03/26/business/businessspecial2/26collar.html).
- 2 Bezdek, Roger, *Renewable Energy and Energy Efficiency: Economic Drivers for the 21st Century* (Boulder, CO: American Solar Energy Society, 2007).
- 3 Greenhouse, Steven, "Millions of Jobs of a Different Collar."
- 4 Aiken University High School, "Cincinnati's First Environmental Studies School Launched In College Hill," Press Announcement, June 15, 2007, <http://aikenuniversity.cps-k12.org/docs/EnvProgPressRelease61507.pdf>.

# Spotlight on Washington

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