



#### IN THIS BRIEF:

This Issue Brief will explore the growing role that career and technical education programs play in efforts to increase energy and environmental sustainability. 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.

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 conversation. As headlines around the country tout high gas prices, power outages related to problems with the electrical grid, and natural disasters that disrupt the flow of energy, the attention of policymakers, businesses, educators and the public at large is increasingly centering on efforts to create more energy and environmental sustainability.

# The Concerns

## DEMAND FOR SUSTAINABILITY

While "sustainability" has many definitions and interpretations, sustainable development was commonly defined in 1987 by the Brundtland

Commission as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs."<sup>1</sup>

There are disagreements on the extent of the current energy and environmental crisis and its impact on future generations, but there is no debating the fact that the world's energy demand is increasing dramatically, that oil prices have risen steadily, and that carbon emissions have escalated.<sup>2</sup> 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.

Bill Coburn, partner, PricewaterhouseCoopers, elaborated, "The growing demand for environmental products and services could translate into one of the biggest new markets in recent memory."<sup>3</sup> An estimated \$71 billion was invested in new renewable energy capacity worldwide in 2007, and clean energy was the third-largest area of venture capital investment.<sup>4</sup>

## Six Leading Green Economy Investments<sup>5</sup>



High-tech companies like Siemens, Hewlett-Packard, Apple, SunMicrosystems,<sup>6</sup> and Subaru Isuzu Automotive<sup>7</sup> have launched green initiatives, creating products and processes that conserve energy and resources. Americans purchased more than 330,000 hybrid automobiles in 2007<sup>8</sup>, and rental car companies are increasing their fleets of hybrids as well. About 250,000 U.S. homes already have some type of solar energy system, and another 2,500 homeowners have installed their own wind turbine.<sup>9</sup>

Twenty-eight states have mandates generally requiring that up to 25 percent of their energy be obtained through renewable sources in the next two decades.<sup>10</sup> This should serve to further increase the demand for new products and processes focused on generating and conserving energy.

#### **GROWING WORKFORCE NEEDS**

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." 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>12</sup> For example, Randall Swisher, executive director of the American Wind Energy Association, has estimated that by 2030, nearly a half-million new jobs could be created in the wind industry, in manufacturing, construction and operation.<sup>13</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.

As the *San Francisco Chronicle* reported after a summit on green-collar jobs, "California's new green tech economy won't get very far if the state doesn't develop the workforce that eco-friendly businesses need." California already lacks enough solar panel installers, and needs more workers with experience in green building techniques and renewable energy development.<sup>14</sup>

Many jobs in green industries use the same technical skills as existing industries, but with skilled-worker shortages in areas like engineering, manufacturing and construction technology, the new jobs often lack qualified applicants. For example, the demand to make

"Our mission is to help our customers manage their buildings' energy costs, improve reliability, and enhance performance while having a positive impact on the environment."

-SIEMENS BUILDING TECHNOLOGIES

buildings more energy efficient increases the need for insulation workers, carpenters, roofers, building inspectors, construction managers and electricians.<sup>15</sup>

The sustainability industry has the power 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

Career and technical education (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 the term "sustainability" has only been around for two decades, and mainstream public interest has only recently peaked, high-quality CTE programs already exist around the country to help prepare students for sustainable careers.

Community and political leaders, along with local business and industries, should look to CTE programs as the answer to this workforce challenge, and aim to invest in and expand these programs and opportunities so that even more students can participate. CTE programs are flexible and responsive to economic and workforce needs, placing them in a prime position to serve the growing and evolving green industry.

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 GREEN CURRICULUM**

Today's CTE is becoming more rigorous in response to the growing skill needs in the current economy, and at the

In August 2008, an innovative new charter school opened on Chicago's West Side. Henry Ford Academy: Power House High<sup>16</sup> has 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 (HFLI), 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, 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, heat 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 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. same time remains extremely relevant to students and their lives. Often organized around 16 career clusters, such as "Agriculture, Food, and Natural Resources" and "Manufacturing," with more specific programs of study that link secondary and postsecondary coursework, CTE offers unique opportunities for students to explore career options at the same time they are receiving the strong academic foundation necessary to succeed in the 21st century economy.

CTE has often been turned to as the answer as policymakers around the country examine ways to reform high schools

As the state of Oregon works to become a leader in the areas of sustainability and renewable energy, workforce development has become a critical priority. Columbia Gorge Community College, located along the state's border with Washington, has stepped up to help fill the pipeline.

While the traditional resource-based economy of the region has declined, there is tremendous growth of renewable energy industries. For example, there are more than 20 major wind farms operating or in development within the college's service area, and a new wind farm was recently approved that will double the state's wind-generated energy capacity.<sup>17</sup>

A study of the workforce needs related to this growth has estimated that companies will need 600 wind technicians in the next three years.<sup>18</sup> Many will come from the one-year certificate and two-year associate of applied science degree options in renewable energy technology now offered by the college, the first renewable energy training program of its kind on the West Coast. The full program began in the fall of 2007 after a six-month pilot.

Seven wind companies are working with the college to serve as advisers for the program, and a number are also contributing funds. Grants include \$150,000 over three years from PPM Energy, and equipment from wind developer AES Corp. The 2007 PPM Energy grant assisted primarily with faculty support for the development of the program.<sup>19</sup>

Columbia Gorge prepares students for careers related to wind energy, and careers in hydro-generation, automated manufacturing and as engineering technicians. Students take courses such as Intro to Wind Turbine Operations, Alternate Energy Power Generation and Industrial Control Systems. Demand has been extremely high, with a waiting list for the program.<sup>20</sup> and help more students earn high school diplomas and transition to postsecondary education. It is also 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.

For example, leaders of California's State Building and Construction Trades Council think the state needs more CTE in high schools. Jay Hansen, legislative and political director, said, "We're not going to be able to build anything and do any green retrofits until we have a workforce to do that. If we wait until they're out of high school to start training them, we're going to lose a lot of people."<sup>21</sup> Hansen's comments point to the need to expose students to careers in green areas early in their educational experience.

A number of high schools have started to offer this type of exploration and integration of sustainability concepts. California's Lake Tahoe Unified School District has plans for a green academy at South Tahoe High School that would expose students to careers in green construction, auto mechanics and technology.<sup>22</sup> Aiken University High School in Cincinnati has instituted a special environmental sciences program where coursework in all subjects is linked to environmental issues. For example, an "ECOnomics" course will combine 11th-grade economics standards with a look at how the forces of the marketplace affect the environment. 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>23</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.<sup>24</sup> An agriculture program in Urbana, Illinois, will

"Sustainability meets the needs of the present without compromising the ability of future generations to meet their own needs."

-BRUNDTLAND COMMISSION

incorporate ideas of community development and ecology. In Western Slope, Colorado, about 500 students participate in an annual Energy Career Day to meet representatives from the energy industry and participate in hands-on, interactive presentations.

#### PREPARING THE GREEN WORKFORCE

While exposing students to the concept and possible 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 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 recent new programs includes:

- A "Water Conservation Technician" associate degree at Lane Community College in Oregon, in partnership with the American Water Works Association.<sup>25</sup>
- A "Wind Energy and Turbine Technology" associate degree at Texas State Technical College West Texas, developed by faculty in collaboration with industry advisers from Florida Power and Light, General Electric and the West Texas Wind Energy Consortium.
- An "Alternative Energy Technology: Biofuels" associate degree and related certificate programs at Central Carolina Community College in North Carolina, developed closely with industry and the North Carolina Biofuels Center.<sup>26</sup>
- A photovoltaic technician training program at Sierra College Nevada County Campus in California, supported by solar panel companies in Nevada and Placer counties, the City of Roseville, the Nevada County Contractors Association and the Nevada County Economic Resource Council.<sup>27</sup>

Numerous other programs in these areas, and others such as energy maintenance and environmental systems technology, are popping up around the country. Green building technology is another area that is growing quickly. The U.S. Green Building Council recognized a number of CTE programs as part of its 2008 Excellence in Green Building Curriculum Recognition Awards and Incentive Grants.<sup>28</sup> Yavapai College in Prescott, Arizona, was recognized for its Residential Building Technology program where students learn how to incorporate climatespecific building materials and to implement sustainable design and building practices.

Santa Fe Community College in New Mexico received an incentive grant to develop an online course as part of its certificate program in green building that documents the entire process of building an energy-efficient house generating its own power. Eastern Iowa Community College also received an incentive grant to develop a course titled "Green Construction Technolo-

# Emerging Careers in Sustainable Energy<sup>29</sup>



gies" as part of its Renewable Energy Systems Technician program. The course will provide students with the skills necessary to build sustainable and affordable housing, and additional modules will be developed for insertion into other programs such as HVAC, interior design, horticulture and manufacturing maintenance.

Federal and state governments are also getting involved in helping to expand postsecondary programs related to sustainability. Northeast Community College in Nebraska offered the state's first Renewable Fuels Technology associate of applied science degree through a program which began in 2007 and has since expanded across the state. The program is being funded by an almost \$2 million grant from the U.S. Department of Labor Community-Based Job Training program and a \$60,000 grant from the Nebraska Department of Economic Development Value-Added Agriculture program.<sup>30</sup>

### SETTING AN EXAMPLE THROUGH GREEN FACILITIES

One of the fastest growing elements of the sustainability movement is the building of green facilities. The U.S. Green Building Council offers a special Leadership in Energy and Environmental Design (LEED) certification specifically for schools, and education is expected to have the largest green building growth in the future, according to a survey by McGraw Hill Construction.<sup>31</sup>

The average green school uses one-third less energy, saving direct costs that can be reinvested in student achievment.<sup>32</sup> The U.S. Green Building Council found that, "Green schools cost less to operate, freeing up resources to truly improve students' education. Their carefully planned acoustics and abundant daylight make it easier and more comfortable for students to learn. Their clean indoor air cuts down sick days and gives our children a head start for a healthy, prosperous future. And their innovative design provides a wealth of hands-on learning opportunities."<sup>33</sup> Perhaps most importantly, green school initiatives have been proven to increase student achievement.<sup>34</sup>

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 In 2001, leaders at Ohio's Career and Technology Education Centers (C-TEC) of Licking County began planning for a new addition to their building. C-TEC serves approximately 1,200 high school students in CTE programs and thousands of adults and businesses through workforce development and continuing education programs.

The school's energy bills were very high, and efforts to reduce these bills eventually led the school leaders to information about LEED certification to improve the building's overall environmental performance. A bond levy provided most of the financing for the \$42 million building. C-TEC doubled its size to 340,000 square feet, and renovated its current facility to meet LEED standards. At the time construction began in 2004, many suppliers didn't have access to green products, but the school was still able to use the latest technologies to enhance its space.

The new facility uses carbon monoxide detectors in each classroom, a ribbon of windows to provide day lighting throughout the facility, waterless urinals, a white reflective roof, recycled materials where possible, and numerous other sustainable strategies. New training labs were constructed with separation of air to improve air quality and reduce cross-contamination. During construction, 6,200 tons of construction waste was recycled, 94 percent of the total.

Efforts to increase sustainability throughout each program in the building are also being phased in. For example, automotive and diesel mechanics labs begin by recycling oil, then oil filters, then antifreeze.

In addition to the new building, C-TEC also launched an environmental science curriculum to help students use the building to make real-world connections to academic learning and encourage entry into careers in areas related to sustainability. The new course covers topics such as the ecosystem, energy sources, conservation, environmental legislation, pollution, biodiversity and population patterns.

As a result of the school's work, students are more energetic, and the new building and sustainability strategy saves money. According to Ron Cassidy, C-TEC Superintendent, "Instead of paying for our waste, now we are being paid for it." The expansion and renovation project, completed in July 2007, obtained LEED "silver" certification on June 2, 2008. C-TEC is the first LEED certified public school building in the state of Ohio. The Ohio School Facilities Commission followed by setting the LEED Silver rating as the standard for all new schools in the state. 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.

There are approximately 2,100 dedicated secondary level CTE facilities or area vocational schools across the country, and CTE programs exist in almost 14,000 comprehensive public high schools and over 1,300 community and technical colleges.<sup>35</sup> These schools are doing everything 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.

High schools and community and technical colleges are engaged in the sustainability effort. For example, Northwest Career and Technical Academy in Las Vegas, Nevada, was recently constructed using an eco-friendly design, and at Cape Cod Community College, the new Lyndon P. Lorusso Applied Technology Building used features such as waste diversion, low-emitting materials, alternative energy sources, and a gray-water system to earn a Gold LEED rating.<sup>36</sup>

Energy efficient buildings can also have an impact on recruiting students to careers in sustainability. At Mills College in Oakland, after tours were given to perspective students of its new energy-efficient natural sciences building, applications in the areas of environment and science studies increased.<sup>37</sup>

# 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 energyefficient and sustainable technology will be for naught.

Around the country, CTE programs focused on a wide variety of green ideas and practices have stepped up to ensure the 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 business and industries, should look to CTE programs as the answer to the sustainability workforce challenge.

# Endnotes

- United Nations, "Report of the World Commission on Environment and Development," General Assembly Resolution 42/187, December 11, 1987, www.un.org/documents/ga/res/42/ares42-187.htm.
- 2 Carbon Dioxide Information Analysis Center, "Global Fossil Fuel Carbon Emissions," http://cdiac.ornl.gov/trends/emis/glo.html.
- 3 Schein, Jonathan, "Green Could Be Biggest New Market in Recent Memory," The Daily Green, February 28, 2008, www.thedailygreen.com/ environmental-news/latest/green-tech-55022801.
- 4 Kammen, Daniel, "Clean Energy and America's Future," San Francisco Chronicle, May 18, 2008, www.sfgate.com/cgi-bin/article.cgi?f=/ c/a/2008/05/18/IN3R10MGSK.DTL.
- 5 Pollin, Robert, and Jeannette Wicks-Lim, "Job Opportunities for the Green Economy: A State-By-State Picture of Occupations that Gain from Green Investments," (Amhurst, MA: Political Economy Research Institute, University of Massachusetts, Amherst, June 2008).
- 6 Kessler, Michelle, "HP Joins Other Tech Outfits Going Green(er)," USA Today, January 29, 2008, www.usatoday.com/tech/products/ environment/2008-01-29-green-tech\_N.htm.
- 7 Howard, Doug, "According to Forum, Green is Good," Herald Journal, www. thehj.com/main.asp?SectionID=9&SubSectionID=32&ArticleID= 22699&TM=21958.61.
- 8 Electric Drive Transportation Association, "Hybrid Sales Figures/Tax Credits for Hybrids," www.electricdrive.org/ index.php?tg=articles&topics=7.
- 9 Pogue, Paul, "Clean Energy Gains Power," Angie's List Columbus, April 2008.
- 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.
- 11 Bezdek, Roger, Renewable Energy and Energy Efficiency: Economic Drivers for the 21st Century (Boulder, CO: American Solar Energy Society, 2007).
- 12 Greenhouse, Steven, "Millions of Jobs of a Different Collar."
- 13 Skoloff, Brian, "Taxes, Worker Shortage Worry Renewable Energy Firms," USA Today, February 2, 2008, www.usatoday.com/money/industries/ energy/2008-02-02-alternativeenergy\_N.htm.
- Baker, David, "State Has Serious Green-Collar Labor Shortage, Summit Attendees Say," San Francisco Chronicle, January 15, 2008, www.sfgate. com/cgi-bin/article.cgi?f=/c/a/2008/01/15/BUMTUF5CG.DTL.

- 15 Dresang, Joel, "Going Green Seen as Job Aid: 340,000 State Workers Would Benefit, Report Says," *Milwaukee Journal Sentinel*, June 2, 2008, www. jsonline.com/story/index.aspx?id=757516.
- 16 "Homan Square: Education," http://education.homansquare.org.
- "Oregon Wind Farm Could be World's Largest" *Portland Business Journal*, July
  28, 2008, www.bizjournals.com/portland/stories/2008/07/28/daily1.html.
- 18 Dietz, Diane, "Demand Growing for Employees in Renewable Energy," Ashland Daily Tidings, April 14, 2008, www.dailytidings.com/2008/0414/ stories/0414\_greenjobs.php.
- 19 Iberdrola Renewables, "PPM Energy Funds Wind Tech Training to Support Industry Growth," Press Release, October 18, 2007, www.ppmenergy.com/ rel\_07.10.18.html.
- 20 Columbia Gorge Community College, "Renewable Energy Technology," www.cgcc.cc.or.us/Academics/RenewableEnergyTechnology.cfm.
- 21 Baker, David, "State Has Serious Green-Collar Labor Shortage, Summit Attendees Say."
- Tahoe Daily Tribune, "Vocational Education Could Go Green," March 12,
  2008, www.tahoedailytribune.com/article/20080312/NEWS/135205582.
- 23 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.
- 24 Hilliard, John, "Tech Teacher Forum in Marlborough Focused on Getting Green," *The MetroWest Daily News*, May 28, 2008, www. metrowestdailynews.com/news/x1878563228/.
- 25 Lane Community College, "Water Conservation Degree in the Works," Press Release, December 3, 2007, www.lanecc.edu/mpr/news/reloog51.htm.
- 26 "CCCC will Offer Biofuels Degree Program," Chatham Journal Weekly, November 29, 2007, www.chathamjournal.com/weekly/news/local/ cccc-biofuels-degree-program-71129.shtml.

- Sen, Soumitro, "Solar Tech Training Coming to College," *The Union.com*, April 2, 2008, www.theunion.com/article/20080402/NEWS/805891416.
- 28 "USGBC Announces Recipients of Excellence in Green Building Curriculum Recognition Awards & Incentive Grants," *BuildingOnline*, May 8, 2008, www.buildingonline.com/news/viewnews.pl?id=7082.
- 29 White, Sarah, and Jason Walsh, "Greener Pathways: Jobs and Workforce Development in the Clean Energy Economy," (Madison, WI: Center on Wisconsin Strategy, University of Wisconsin–Madison, 2008).
- 30 Northeast Community College, "Northeast's Renewable Fuels Program Featured in National Publication," Press Release, July 14, 2008, www. northeastcollege.com/AN/News\_Events/News/story.php?id=896.
- 31 Green Building SmartMarket Report: 2006 Green Building Issue (New York, NY: McGraw-Hill Publications, 2005).
- 32 Kats, Gregory, Greening America's Schools: Costs and Benefits, (Washington, DC: Capital E, October 2006).
- 33 U.S. Green Building Council, "Build Green Schools," www.buildgreenschools.org.
- 34 Kats, Gregory, Greening America's Schools: Costs and Benefits.
- 35 National Center for Education Statistics, "Career and Technical Education Statistics," http://nces.ed.gov/surveys/ctes/tables/index.asp.
- 36 Cape Cod Community College, "Lyndon P. Lorusso Applied Technology Building," www.capecod.mass.edu/web/occ/green/lorusso.
- Hsu, Tiffany, "Colleges, Universities Take the Lead in Building Green," Los Angeles Times, July 7, 2008, www.latimes.com/news/local/ la-me-ecocollege7-2008jul07,1,4573819.story.

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