

GOING GREEN ONLINE

Distance learning prepares students

BY ROD GITHENS AND TIMOTHY SAUER



President Barack Obama has touted the development of a new green economy as a tool to rebuild the American economy while creating new jobs. This new economy requires entrepreneurs and innovators to create new businesses and invent new technologies. It also requires technicians with specialized skills to build wind farms, operate renewable fuels plants, and retrofit homes to conserve energy.

In response to these needs, U.S. community colleges have created programs to train a new crop of middle-skill green workers. Many programs aimed at training workers for green jobs serve niche job markets. As a result, some colleges have begun targeting a broader student base beyond their immediate communities. Online degrees and certificates allow community colleges in all community types to participate in retraining the workforce for green occupational skills. Many of our nation's smallest, most rural campuses now serve as hubs for educating future generations of green workers, and much of their success is due, at least in part, to the availability of online training. >>

for success in **green-collar** job markets



As part of a larger multiyear study of online occupational programs in community colleges, researchers at the University of Louisville's [National Research Center for Career and Technical Education](#) sought to understand how many green online programs existed within community colleges. In a study of 321 randomly selected public community colleges, researchers found that 45 percent of colleges offered online occupational programs of some type. Of the 321 colleges surveyed, just 2.5 percent (eight colleges) offered online programs in a "green" industry as of spring 2009, putting these institutions on the leading edge of a trend that remains high in the national conscience.

Green Defined

There is no universally accepted objective definition of "green jobs" (Stone 2009). But a common thread is a requirement that such jobs should

help decrease carbon emissions and improve the environment. These jobs help promote: 1) clean energy, 2) energy efficiency, 3) environmentally friendly production, 4) conservation and pollution mitigation, and 5) training and support for developing the green economy (Pew Charitable Trusts 2009).

Of particular interest to community colleges and workforce development professionals is the subset of green jobs

referred to as "green-collar jobs." Green-collar jobs exist primarily in traditionally blue-collar industries that are transitioning into the production of green products and services. Green positions are primarily middle-skill jobs requiring educational attainment beyond a high school diploma but less than a four-year degree. While many new occupations will emerge in the green economy, the majority of green-collar jobs will form out of existing positions, requiring development of new green skills. For example, when a house is retrofitted to become energy efficient, specially trained existing contractors can do that work.

The Programs

From the survey sample of 321 colleges, 13 green programs were identified. (See *Table*.) Most of the programs are in rural communities and address conservation and pollution mitigation.

Program Name	College & Location	Degree/Credential	Community Type
CLEAN ENERGY			
Windsmith	Minnesota West Community and Technical College, Luverne, MN	Certificate	Rural: Fringe
Renewable Energy Base	Minnesota West Community and Technical College, Luverne, MN	Certificate	Rural: Fringe
Renewable Fuels Technology	Northeast Community College, Norfolk, NE	Certificate	Town: Remote
ENVIRONMENTALLY FRIENDLY PRODUCTION			
Low Impact Development	Haywood Community College, Clyde, NC	Certificate	Suburb: Midsize
CONSERVATION AND POLLUTION MITIGATION			
Conservation Science	Northwest Iowa Community College, Sheldon, IA	Associate in Arts	Rural: Fringe
Environmental Planning	College of Southern Maryland, La Plata, MD	Letter of Recognition	Rural: Fringe
Forestry Technology: Natural Resources Specialist	Haywood Community College, Clyde, NC	Certificate	Suburb: Midsize
Urban Forestry Technology	Dakota College at Bottineau, Bottineau, ND	Diploma	Rural: Remote
Wastewater Plant Operator	Mountain Empire Community College, Big Stone Gap, VA	Career Studies Certificate	Rural: Fringe
Water Plant Operator	Mountain Empire Community College, Big Stone Gap, VA	Career Studies Certificate	Rural: Fringe
Water Quality Technician	Moraine Park Technical College, Fond du Lac, WI	Associate Degree	City: Small
Water/Wastewater Plant Operation	Mountain Empire Community College, Big Stone Gap, VA	Associate of Applied Science	Rural: Fringe
GENERAL GREEN PROGRAMS			
Environmental Management	College of Southern Maryland, La Plata, MD	Letter of Recognition	Rural: Fringe

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Programs Already Under Way **Windsmith—Minnesota West** **Community and Technical College**

The 15-hour Windsmith Certificate Program introduces students to the wind energy industry and related technical, political, environmental, and economic issues. Required courses cover specialized topics, such as wind energy fundamentals and wind energy OSHA standards. In addition, existing courses provide needed skills in electrical circuits, digital circuits, and fluid power hydraulic theory. Graduates have found work as wind turbine technicians and in the construction and repair of wind energy towers.

Renewable Energy Base— **Minnesota West Community and** **Technical College**

The entirely online 17-hour Renewable Energy Base Certificate program is available in two biofuel specialty areas: ethanol and biodiesel. Courses address ethanol processing and separation, biodiesel technologies, regulatory issues, process dynamics, flow diagram reading, and OSHA regulations. Graduates work in the emerging biofuel industry as process technicians and operators.

Renewable Fuels Technology— **Northeast Community College, Neb.**

The entirely online 17-hour Renewable Fuels Technology Certificate program provides students with skills to work in the ethanol production industry, providing them with knowledge in ethanol process fundamentals, piping and instrumentation diagrams, fundamentals of electricity for renewable fuels, process dynamics, microbial ecology, and instrumentation and control.

Urban Forestry Technology— **Dakota College at Bottineau, N.D.**

The 33-hour Urban Forestry Technology Diploma prepares students for careers in the tree care industry. The program is offered entirely online aside from one hands-on, skill-based class that must be completed on campus. This course is offered as a three-day summer

course. Other courses cover topics such as tree identification, plant and soil science, tree pathology diagnosis and care, turf management, and prairie and community forestry. The program was developed with input from the local forestry workforce.

Forestry Technology: Natural **Resources Specialist—Haywood** **Community College, N.C.**

The entirely online 16-hour Forest Technology—Natural Resource Specialist Certificate program prepares students for careers in forestry and wildlife management. Courses cover topics such as tree identification, geospatial information technology, hydrology, soil science, and forest recreation.

Low Impact Development— **Haywood Community College, N.C.**

The entirely online 16-hour certificate program is designed to prepare students with technical skills to assist with the analysis of land and low-impact development. Courses cover topics such as land-planning software programs, soil analysis, hydrology, environmental regulations, and sustainable development.

Water/Wastewater Plant Operation **—Mountain Empire Community** **College, Va.**

Online degree options in the water treatment and wastewater treatment industry include an Associate of Applied Science in Water/Wastewater (67 hours), Water Plant Operator Certificate (24 hours), and Wastewater Plant Operator Certificate (24 hours). All of the required courses can be taken online with lab and internship requirements completed at local sites under approved supervision. Course topics include environmental microbiology, water purification, fluid mechanics/hydraulics, sanitary biology and chemistry, and environmental law. Upon the completion of the required courses, students should be prepared to take the exam for the state Water/Wastewater Plant Operator license.

Green Is Online, **Online Is Green**

Online education and green programs are a natural fit, since online education is inherently green (Williamson 2007). Classes meet virtually, reducing the carbon emissions caused by commuting to campus. Online courses do not require traditional face-to-face classrooms, which use large amounts of energy for heating, air conditioning, and lighting. The virtual classroom environment also reduces the need for printed documents, as most course documents and assignments can be distributed and completed without paper.

Online programs in highly specialized fields provide more opportunities for colleges to serve a large geographical region. Dispersion of students helps to prevent overenrollment in niche programs, especially in smaller communities. Green online programs will continue growing as distance education grows, green programs become more prevalent, and the green economy continues to expand.

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