
Competency Models In Action:

Community College Offers Competency-Based Biofuels Program of Study

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- Santa Fe Community College Named a Biofuels Center of Excellence
- Using ETA's Energy Competency Models and Stakeholder Feedback to Develop Programs of Study
- Student Success Results in Program Leadership

Introduction

It's not just about the price at the pump. The development of alternative fuels has economic and environmental implications for our country. Energy from abundant, renewable, domestic biomass can reduce U.S. dependence on oil, lower impacts on climate, and stimulate jobs and economic growth.¹

Supported by funding from the U.S. Department of Labor Employment and Training Administration (ETA) for a State Energy Sector Partnership grant, Santa Fe Community College (SFCC) launched a Biofuels Center of Excellence in 2009. Students can learn to make biodiesel, ethanol, algae oil and biogas, preparing them for work in the emerging biofuels industry and for a multitude of biofuel-related career opportunities.

Workforce Need

The availability of skilled workers at all levels will be critical to successfully growing the U.S. bio-industry. Construction and operation of new U.S. biofuel refineries, which have nearly tripled in number since 2004, have already created many new jobs. Scientists and engineers are at work developing new feed stocks, conversion technologies, and advanced biofuels, while construction workers are building the infrastructure needed to transport, store, and deliver the biomass and biofuels².

A robust bio industry will create high paying jobs while helping reduce U.S. dependence on foreign oil. As the industry expands beyond ethanol to include a wide range of advanced biofuels and bio-power, additional jobs will be created. Forecasts of job creation vary. For example, Environmental Entrepreneurs (E2) estimates that 27 advanced biofuel facilities now scheduled for construction could create up to 47,000 direct and indirect jobs by 2016. If current production plans are completed on schedule, studies suggest that one to nearly two million new jobs could be added across the economy in the next 12 to 18 years.³

Approach

"We looked at the biofuels sectors as a whole," says Ann Black, Director, Grant and Contract Training, SFCC. "We asked ourselves this question: 'What are some of the basic competencies that people need to learn to start a career in the renewable energy field?' We worked with a

¹ U.S. Department of Energy, Bioenergy Technologies Office, February 2013.

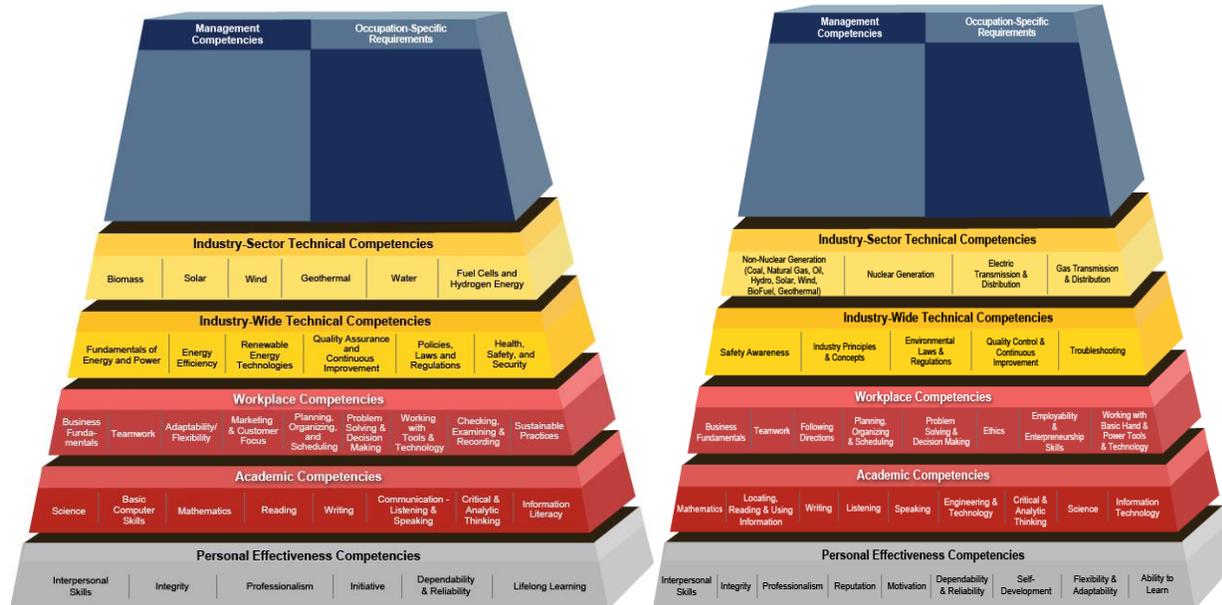
² Ibid

³ Ibid

number of industry partners including Los Alamos National Labs, Sapphire Energy, Springboard Biodiesel, Eldorado Biofuels, and All Power Labs. We also gave close scrutiny to the Industry-Wide Competencies tiers in ETA’s Renewable Energy and Energy Generation, Transmission and Distribution Competency Models.”

Renewable Energy

Energy Generation, Transmission & Distribution



As a result of these deliberations, SFCC now offers a robust biofuels program, offering courses in Alternative Fuels and Advanced Vehicle Technologies, Biofuels, Biology and Chemistry, Introduction to Sustainable Technologies; Electrical and Mechanical Fundamentals; and Planning the Entrepreneurial Venture. These programs of study prepare students for a broad array of career opportunities including plant or lab technician; process coordinator, administrator, project engineer/developer and sustainability coordinator.⁴

Success Story

Luke Spangenburg, a graduate of the first class of the SFCC Center of Excellence for Biofuels in 2010, is now the Center Director. “The program that I went through here gave me the industry skills that I needed to succeed,” says Mr. Spangenburg. “Over three short years, we’ve really developed the sustainability vision here. The SFCC Trades and Advanced Technologies Center is a thriving demonstration of innovative and established approaches to the food, water and energy challenges we are facing. Then we were named a Center of Excellence for Biofuels and we expanded the program into workforce training modules along with our certificate and degree programs. The program has attracted a diversity that is incredible for STEM-related fields. We’ve really focused in the last few years, as a college, growing this infrastructure in relationship with the diverse populations of New Mexico and beyond.”⁵

⁴ <http://www.sfcc.edu/program/biofuels>

⁵ www.algaeindustrymagazine.com

Next Steps

“The next step is to develop a Bioenergy institute which will integrate our existing systems and scale up with industrial collaborators,” says Mr. Spangenburg. “The SFCC Trades and Advanced Technologies Center has a solid infrastructure base with our campus solar electric, solar thermal heating and cooling and rainwater catchment reuse, which was recently awarded LEED Platinum [the U.S. Green Building Council’s highest rating for new construction].⁶”

Related Links

Santa Fe Community College, Biofuels Center of Excellence

<http://www.sfcc.edu/programs/biofuels>

⁶ Ibid