Renewable Energy Education, Have we got it right?
2011 Clean Energy Workforce Education Conference
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Kim C. Walton
Michigan Alternative & Renewable Energy Center (MAREC)
Grand Valley State University
Kim Walton is the new Program Coordinator at the Michigan Alternative & Renewable Energy Center (MAREC) part of Grand Valley State Univ. Kim will be building on the workshops, courses and other events now being held at MAREC, plans to expand the programming to better utilize the facility and consults with nonprofits on renewable energy issues and technologies.

Kim owns a farm near Hastings MI. She installed her first renewable system in the 80’s, back in the “good old days” when there was a 50% Federal rebate and a 25% (NC) State rebate. She co-founded and co-manages Basic Solar and Renewables, LLC in 2007. “At Basic Solar, I conduct the marketing program, provide public education, and determine the training needs of the company.” Kim also conducts site and load analysis for installing renewable energy system.

Kim has her Bachelors in Appropriate (Renewable) Technology from Appalachian State University in Boone North Carolina. ASU is a leading university in the field of renewable energy education and technologies. A Masters on Environmental Analysis from Western Michigan University, which expanded on her knowledge from specific technologies, to issues and barriers that can prevent the adoption of renewable technology or sustainability life styles changes.
Green Jobs sector has been one of the brighter spots in the US and world economy, the growth has been good and looks to continue to improve.

US educational system is trying to prepare students and retrain older workers to meet the projected demands for these jobs. There are concerns that a disconcert is occurring between perceived job opportunities and the current needs of the industry.

Are we offering the right types of training or are we saturating a job market that is not yet there? If this concern is legitimate, does it just apply to Michigan or is it a wider problem?
Kim C. Walton

Program Coordinator for MAREC/GVSU

BS Appalachian State University
Industrial Technology
Appropriate Technology
Geology

MA Western Michigan University
Geography
Environmental Analysis
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US educational system is trying to prepare students and retrain older workers to meet the projected demands for these jobs.
Through work in the industry I have seen concerns that there is a disconcert between perceived job opportunities and the current needs of the industry.

Are we offering the right types of training or are we saturating a job market that is not yet there?

AND

If this concern is legitimate, does it just apply to Michigan or is it a wider problem?
Michigan and North Carolina are states with very different climates and demographics but also with some important similarities.
Both states have had:
The disappearance of their manufacturing base
A history of renewable energy education that dates back many decades
The Mother Earth News was a "Back to Earth" magazine that moved to Hendersonville NC in the early 1970’s.

Soon workshop and training were offered at the Eco Village to teach folks how to build and install renewable energy technologies.
Appalachian State University’s Sustainability & Appropriate Technology programs had roots in a Department of Energy installation and operation of the Mod-1 Turbine from 1977 - 1983. Located on Howard’s Knob in Boone, NC. Home of Appalachian State University
“The academic community from Appalachian State University… has conducted energy seminars, including wind energy reviews, and are conducting their own wind energy project … (Appalachian State web site) ”.

The interest in these educational events leads to a more formalized education format.
Jordan College was a small liberal arts college that started the Energy Institute as a teaching opportunity for its students, with the goal of having one of its campuses become as energy independent as possible.
The Great Lakes Renewable Energy Association (GLREA) was founded in 1991, to promote use and education of renewable energy in the Great Lakes region.

In 1995, several graduates from the Jordan Energy Institute's Science for Renewable Energy Technology were elected to the GLREA board of directors.
The Solar training and certification program started shortly after that, and was one of the leading training programs in the county for a decade.

GLREA was moved to Dimondale MI in 2003
**Michigan** In 2009, the renewable energy industry supported 5,282 direct and indirect renewable energy jobs in Michigan, comprised of 3,270 from solar energy, 1,143 from bio-energy, 840 from wind energy, and 29 from hydroelectric (ACORE 2010 Navigant Consulting, Inc.).

**North Carolina** In 2009, the renewable energy industry supported 1,092 direct and indirect renewable energy jobs in North Carolina, comprised of 225 from solar energy, 791 from bio-energy, and 76 from hydroelectric (ACORE 2010 Navigant Consulting, Inc.).
Outcome

Michigan, in spite of its poor economic times, is comparable to other eastern and mid-western states in it’s green industry sector growth and needs. If there is a disconcert between perceived job opportunities and the needs of the industry, this is more than one state’s problem.
Current Issues

There has been a large shift in the population that is seeking renewable energy education

- Are we offering the training that employers are seeking?
- Are we training for current job opening or future possibilities?
- Is the industry hype meeting the real needs and expectations of the workforce it seeks to have trained?
According to the Solar Foundation report (2010):

U.S. solar companies expect to add jobs at a pace that is much faster than the general economy, and are highly optimistic regarding their overall revenue growth over the near term.
According to the Solar Foundation report (2010):

As of August 2010, the U.S. solar industry employs an estimated 93,000 solar workers - defined as those workers who spend at least 50% of their time supporting solar-related activities.

Over the next 12 months, there will reportedly be an increase of 24,353 new jobs in the solar industry a 26% increase.
According to the North Carolina Wind Working Group:

Every 100 MW of installed wind power capacity provides:

- 310 full-time equivalent (FTE) manufacturing sector jobs,
- 67 contracting and installation jobs, and
- 9.5 jobs in operation and maintenance every year (Methipara et al., 2008).
North Carolina Wind Working Group:

6.7 GW = 6700 MW

6700 MW ÷ 100 = 67  (for every 100 MW)

67 x 386.5 Jobs = 25,896 wind jobs for 2010

Solar Foundation report (2010):

24,353 solar job over the next year.

An estimated 50,249 of new jobs from these two sectors in the next year.
Of the 168 college, universities, or workforce trainings institutions surveyed there were 241 programs offered:

- 63 offered certificates
- 112 offered associate degrees, and
- 40 offered bachelors or graduate degrees.
The certificate programs were one year programs.

Associate degrees typically take two to three years to complete, and

Bachelor’s degree takes 4-5 years.
If each institution graduated an average of 12 students through a program yearly:

- 1128 complete Certificates
- 1464 complete Associate degrees
- 480 complete Bachelor’s or above

For a total of 3072 workers
Employment

Job Listing Surveys Sept-Nov. 2010
271 Positions

- HS/Tech/Assoc/None: 21%
- Bachelor's: 64%
- Master/PhD: 15%
USA Jobs - Government site

- GS 1-4 Assoc/None/Tech: 3%
- GS 5-7 BA/BS: 30%
- GS 8-15 MS/PhD: 67%
In the Renewable Energy sectors of Solar & Wind there will be about 50,000 new jobs in the next year.

According to current renewable energy job listings:

79% in the private sector and 90% in the government will need *at least* a Bachelors Degree.

And only 14% of new workforce training & education will provide that Bachelors Degree.
I would like to thank the Grand Valley students who assisted with this project:

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