

Green Jobs – A Rapidly-Growing STEM Sector?

There have been a number of articles in the past few months that suggest that a new category of employment, “green jobs” will be part of the solution to our current economic woes. In this piece, we provide you with a number of references to these articles, with links at the end to additional reports cited in these recent items.

In a *Wired Magazine* article, Alexis Madrigal points out that “green jobs” outpaced other job classifications, growing by 9.1% between 1998 and 2007, as opposed to 3.7% for all jobs. This article drew much of its information from a recent report by the Pew Charitable Trusts, which concludes that the green jobs sector is catching up to the traditional energy sector, which employs 1.27 million people. According to the Pew report, green jobs now employ 770,000 workers in 68,200 businesses. Though it’s not a major part of the U.S. job market, it does compare well with biotechnology, which employs about 200,000 people and is another rising economic sector.

The *Wired* article, quotes from the Pew report:

“Although our numbers are conservative, our report provides the most precise depiction to date of the clean energy economy in the United States,” the Pew researchers wrote. The report shows that environmentally friendly jobs already exist, but most of the “green” jobs aren’t in clean energy at all. A full 65% of the jobs fell into the “conservation and pollution mitigation” category, which includes recycling.

The Pew report concluded:

“President Obama has expressed his support for a federal market-based system that would substantially reduce greenhouse gas emissions, and national standards that would help America draw more of its energy supply from clean, renewable sources and achieve greater energy efficiency. Those federal and state policies, together with continued private-sector support, will position the United States as a leader in the global clean energy economy.”

Even if there are jobs lost in the traditional energy companies, there is expected to be much room for growth in “clean energy.” Right now there are only 89,000 “clean energy” jobs (2007). The findings from Pew are consistent with those of an earlier study at the University of California at Berkeley. The 2004 report by Kammen, Kapadia, and Fripp, found the renewable energy industry was more labor intensive than traditional fossil-fuel businesses. This conclusion suggests that the growth of the so-called green jobs sector should, therefore, lead to job creation.

On a related note, the Department of Energy has announced funding potentially related to “green jobs,” in a number of areas.

High efficiency vehicles: An investment of up to \$240 million for the development of high efficiency commercial and passenger vehicles has been announced. The funding includes approximately \$110 million from the American Recovery and Reinvestment Act, combined with DOE annual appropriations. The funding solicitations are divided into two areas: system level technology development, integration, and demonstration for efficient Class 8 trucks; and advanced technology powertrains for light-duty vehicles. Class 8 trucks are defined as heavy-duty commercial trucks weighing over 33,000 pounds.

The goal of the first area is to increase vehicle freight efficiency by a total of 50% for heavy-duty Class 8 trucks. The projects receiving funding will focus on improving the efficiency of advanced engine technologies and vehicle system technologies, for instance by limiting aerodynamic drag, reducing vehicle weight, and drivetrain hybridization, which uses two types of energy converters rather than just one.

Under the second program area, projects will work to advance the research and development of efficient

engine and powertrain systems for passenger vehicles. For gasoline-fueled vehicles, these cost-competitive components will achieve at least a 25 percent fuel economy improvement compared to 2009 reference vehicles, while diesel-fueled vehicles will be able to attain at least a 40 percent improvement.

The complete FOA (number DE-FOA-0000079), can be viewed at www.grants.gov

Solar energy: The selection of [24 new solar projects](#) to advance photovoltaic (PV) technology research, development, and design—helping to lower the cost of PV generation has been announced. The competitively-selected projects will be eligible for up to \$22 million from the President’s American Recovery and Reinvestment Act and will be matched by more than \$50 million in cost shared funding from private partners.

The new projects range from development of automated assembly processes to semiconductor fabrication. They target manufacturing and product cost reduction with the potential to have a near-term impact on a substantial segment of the PV industry.

In addition, Secretary Chu announced plans to invest up to \$27 million to develop the nation’s solar installation training infrastructure. DOE will fund this effort using \$5 million from the American Recovery and Reinvestment Act as well as \$22 million in annual appropriations.

Carbon capture and storage: As part of the administration’s commitment to develop technologies to reduce carbon dioxide emissions, Secretary Chu announced \$11.3 million for [nine projects](#) that will develop pre-combustion carbon capture technologies that can reduce CO2 emissions in future coal-based integrated gasification combined cycle (IGCC) power plants.

The funding opportunity announcement, [“Pre-Combustion Carbon Capture Technologies for Coal-Based Gasification Plants”](#) is from the FY2009 Budget.

Pre-combustion processes convert fuel into a gaseous mixture of hydrogen and CO2. The CO2 is then separated and the hydrogen can be burned without producing any CO2 in the exhaust gas. Compared with post-combustion processes, the pressure and concentration of CO2 in precombustion processes is relatively high—offering the potential to apply novel CO2 capture technologies such as membranes, solvents and sorbents.

On the Web: Links associated with the various Department of Energy projects have been left in the text, above, as live links. In addition, to see the original DOE press release, go to: <http://www.energy.gov/news2009/7453.htm>

Wired article: <http://www.wired.com/wiredscience/2009/06/green-jobs-grow-770000-americans-already-have-one/>

Pew Report: http://www.pewtrusts.org/our_work_detail.aspx?id=690

University of California, Berkeley report: Kammen, D.M., K. Kapadia, and M. Fripp. 2004. “Putting renewables to work: How many jobs can the clean energy industry generate?” available online at: http://www.ewea.org/fileadmin/ewea_documents/documents/policy/external_documents/040413_renewables_berkeley.pdf

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