

**Testimony on Green Jobs and their Role in our Economic Recovery**

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**Testimony before the Subcommittee on Workforce Protections  
of the House Committee on Education and Labor**

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## **Five Questions about Green Jobs**

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Madam Chairman, members of the Committee, I am honored to testify before your Committee today on the question of green jobs and their role in our economic recovery.

An aggressive push for a green economy is well underway in the United States. Many people routinely assert that “green jobs” can simultaneously improve environmental quality and reduce unemployment. These assertions are used to justify spending billions of dollars to subsidize preferred industries or technologies. The recent revelations regarding the (mis)use of Federal government subsidies by AIG provides a warning of how large-scale spending without sufficient due diligence can be misdirected. Before we repeat that experience in another industry, we should perform sufficient due diligence. Today’s testimony is organized around five questions that should be asked of those who would like to spend money subsidizing the creation of “green jobs.”<sup>1</sup>

Question 1: What is the *net* increase in jobs / energy produced?

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<sup>1</sup> This testimony is based on research conducted jointly with Andrew Morriss, Andrew Dorchak, and Roger Meiners, “7 Myths About Green Jobs” available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1357440](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1357440) and “Green Jobs Myths” available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1358423](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1358423).

The most prominently cited estimates of jobs<sup>2</sup> created do not estimate the number of jobs that would be destroyed as the result of a move from current energy technology to alternative energy production. Many green jobs are substitutes for existing jobs. An increase in electricity generation from wind, solar, or other sources will substitute for energy from, say, coal-fired generation, which in turn will reduce employment in coal mining and processing. The net impact on employment will depend on the relative labor intensity of energy production in the respective sectors at the margin of added or subtracted production.

The labor intensity – the labor required per unit of energy produced – is much higher in the green jobs sector. Advocates point to this higher labor requirement as a benefit because it will tend to increase employment. However, this confuses an end (goods and services valued by consumers) with a means (labor). If the cost of energy increases as a result of inefficient production, then the net benefits available to the citizens of the United States decreases. Many goods become more costly and American producers become less competitive in world markets. The efficiency of energy use has increased dramatically over time, which is one reason for our high productivity and standard of living. It would be a mistake to discard this proven record of progress in favor of untested, costly alternatives.

Even in the favored green industries, increasing labor efficiency has been an important component in making the technologies more commercially viable. For example, corn-based ethanol cost reductions in the United States have been driven in part by economies of scale in

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<sup>2</sup> United States Conference of Mayors, U.S. METRO ECONOMIES: CURRENT AND POTENTIAL GREEN JOBS IN THE U.S. ECONOMY, 2008; American Solar Energy Society, RENEWABLE ENERGY AND ENERGY EFFICIENCY: ECONOMIC DRIVERS FOR THE 21<sup>ST</sup> CENTURY, 2007; Center for American Progress, GREEN RECOVERY: A PROGRAM TO CREATE GOOD JOBS AND START BUILDING A LOW-CARBON ECONOMY, 2008; United Nations Environment Program, GREEN JOBS: TOWARDS DECENT WORK IN A SUSTAINABLE, LOW-CARBON WORLD, 2008.

farm operations and the advanced technology necessary to convert corn into ethanol. If instead we had thousands of workers diligently squeezing corn by hand we would not produce more biofuel but we would vastly inflate the number of green jobs and dramatically increase the cost of the fuel.

Many green jobs reports start with the assumption that spending public money is the source of the additional economic activity. However, that expenditure comes from higher taxes now or in the future. Because people engage in activities to avoid taxation, the cost of the tax exceeds the revenue yielded by the tax, a phenomenon known as deadweight loss. Such actions are wasteful but they are an unavoidable part of any tax policy. Including deadweight loss in the analysis of the supposed value of green jobs created by increased public spending will reduce the net benefit of the subsidy. The green jobs advocacy literature does not incorporate such estimates, which implies that their results overstate the benefits. The most glaring oversight is that these issues are not even mentioned in the literature.

Question 2: What are the assumptions?

The advocates for green jobs expenditures claim that their programs will have a large impact because of the added jobs and other benefits created as those hired into green jobs spend their paychecks. This claim rests on economic multiplier analysis. Multipliers are based on the idea that an increase in activity by one firm will lead to an increase in activity by other firms. For example, the contractor for a new football stadium buys concrete, the concrete subcontractor buys new tires for its trucks, all the firms' workers go out to dinner, and so forth. Multipliers are

difficult to observe and must be estimated by indirect means, usually a modeling technique known as input-output analysis.

Input-output analysis relies on two key assumptions, neither of which can be made for green jobs. The first is constant coefficients production, which means that the ratio of outputs to inputs is *constant* regardless of the scale of production or the time period. This eliminates the possibility that inputs may be substituted for each other, either because of technical progress or because of changes in factor prices. For example, a typical assumption would be that if a dollar of energy was required to produce \$10 of steel at the time the input-output table was created, then this relation will continue to hold. In reality, if the price of energy increases, the relation is likely to change as higher energy prices induce steel producers to change production techniques to reduce the energy used per unit of steel. Since green jobs proponents concede that green energy will cost more per unit than conventional fuels<sup>3</sup>, the ratio of energy costs to production is not constant and this assumption is violated. The assumption that technological progress will operate favorably for wind, solar, and other preferred approaches while not operating for oil, gas, coal, and nuclear power is *prima facie* evidence that the jobs estimates are created using an inappropriate methodology.

The second crucial assumption for input-output analysis is that the relationship between production factor prices is constant. In most cases, the relation between inputs and outputs is calculated using dollar values rather than physical quantities. This approach is valid only if the physical quantities and the monetary values have a constant ratio, in other words if there are

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<sup>3</sup> For example, the study from the Center for American Progress (p. 6) notes that \$1 million spent on solar energy will currently produce considerably less energy than \$1 million spent on oil.

fixed prices over time. That is unlikely to be the case for green jobs since a key justification for public support for green technology is that oil and coal will become more expensive, either for technological reasons or because of a tax based on carbon dioxide emissions. Because of the pervasive role of energy, such changes would alter factor prices throughout the economy, again making the input-output analysis inappropriate.

Question 3: What makes a job “green”?

There is no standard definition of a green job. According to the studies most commonly quoted, green jobs pay well, are interesting to do, produce products that environmental groups prefer, and do so in a workplace that is unionized or expected to be unionized in the near future. Such criteria have little to do with the environmental impacts of the jobs.

Being green differs depending on who is doing the classification. In an odd twist, the Conference of Mayors report (p. 12) counts *current* nuclear power generation jobs as green jobs, yet does not count *future* jobs in nuclear power as green jobs. The United Nations report excludes all nuclear power related jobs and many recycling jobs, while at the same time expanding their definition in other areas by including all jobs asserted to “contribute substantially to preserving or restoring environmental quality.” (p. 3) The UN version of green jobs is extended to include jobs in the supply chain. For example, wind turbine towers involve large amounts of steel and so employment in the steel industry counts so long as the steel ends up in a turbine. The steel jobs themselves are not required to have a low environmental impact, it is sufficient that the steel produced goes to a favored product. As a result, important value judgments are embedded in the definitions and not explained.

These definitional issues are not simply inconveniences that make it impossible to compare the claims of different reports. More importantly, they represent a fundamental confusion about the idea of a green job, a confusion that must be resolved before committing taxpayer dollars. The lack of transparency about the assumptions underlying various definitions provide incentives for special interest groups to have their jobs designated as green while excluding their rivals from the favored designation.

Question 4: What is the added value from the job?

One problem with the green jobs literature is that it consistently counts jobs as a benefit rather than a cost. The purpose of a business, green or not, is not to *use* resources but to *produce* a good or service desired by consumers that could be sold for more than the cost of production. For a given level of output, businesses that use more resources are less efficient – have higher costs – than those using fewer resources. Many jobs created in response to government mandates are not a benefit of the program but rather a cost. Such costs may be worth incurring for the benefits a program produces, but they must be counted as costs not benefits.

The Conference of Mayors report includes lawyers and administrators of regulations as benefits of green jobs spending. This is analogous to claiming an increase in prison guards as a benefit of the war on drugs. By making labor the end, rather than treating labor as the means to production of environmentally friendly goods and services, the literature makes a foundational error. Promoting inefficient use of labor will steer resources towards technologies, firms, and industries that will be unable to compete in the marketplace without ongoing subsidies. Dooming

the environmentally friendly sector to an unending regime of subsidies is fiscally irresponsible and harmful to any efforts to build a competitive and environmentally friendly economy.

Many of the benefits of producing products accrue to the owners of the intellectual property underlying the products. In the case of wind power, most of the patents and other key intellectual property are held by European firms. We import the high value parts of the process, and Americans perform the relatively low value operations of assembly and installation. This is analogous to the situation in much U.S. manufacturing in which Chinese firms perform assembly work but U.S. firms capture most of the value.

Question 5: How are technologies being chosen?

The green jobs literature calls for massive shifts in power generation technologies. The literature is selectively optimistic about favored approaches (wind, solar, biomass) and pessimistic about disfavored ones (coal, nuclear). However, the premise that reorienting our economy in a greener direction by shifting to “sustainable” energy production is questionable because most jobs in renewable energy sectors appear to be subsidy driven. For example, a study done for the American Wind Energy Association and the Solar Energy Research and Education Foundation estimated that if the investment tax credit for solar/photovoltaic projects and the production tax credit for wind energy were not renewed at the end of 2008, then those industries could lose 77 percent of their jobs.<sup>4</sup>

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<sup>4</sup> Navigant Consulting, *Economic Impacts of the Tax Credit Expiration*. Prepared for the American Wind Energy Association and the Solar Energy Research and Education Foundation, 13 February 2008, Navigant Consulting, Bedford, MA.



Indeed, U.S. subsidies for renewable energy projects are so attractive that in 2008, BP announced that it dropped plans to build wind farms and other renewable projects in Britain; instead it is shifting its renewable programs to the United States, where government incentives for clean energy projects provide “a convenient tax shelter for oil and gas revenues,” as a BP spokesman noted.<sup>5</sup> Royal Dutch Shell also announced it was abandoning wind energy projects in Britain in favor of the U.S.<sup>6</sup> In Germany, environmental advocates are arguing that wind power is an inefficient and ineffective method of reducing CO<sub>2</sub> emissions.<sup>7</sup> These developments lend support to the idea that renewable energy is viable only where there is taxpayer support or mandates.

To attempt to transform modern society in the way proposed by the green jobs literature is an effort of staggering complexity and scale. To do so based on wishful thinking and bad economics would be the height of irresponsibility. There will be significant opportunities to develop new energy sources, new industries, and new jobs in the future. I am confident that a market-based discovery process will do a far better job of developing those energy sources, industries, and jobs than a series of mandates or subsidies based on imperfect information and hidden assumptions.

Thank you for giving me the opportunity to testify today. I would be happy to answer any questions.

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<sup>5</sup> Terry Macalister, *Blow to Brown as BP scraps British renewable plan to focus on US*, THE GUARDIAN (7 November 2008).

<sup>6</sup> Danny Fortson, *Shell to quit wind projects*, THE SUNDAY TIMES (7 December 2008).

<sup>7</sup> Anselm Waldermann, *Wind Turbines in Europe Do Nothing for Emissions-Reduction Goals*, SPIEGEL ONLINE INTERNATIONAL (10 February 2009), <http://www.spiegel.de/international/business/0,1518,606763,00.html>.