



Sunburnt: Solyndra, Subsidies, and the Green Jobs Debacle

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The Solyndra saga—a hurry-up approval of \$535 million in loan guarantees, followed by restructuring of that loan by the US Department of Energy (DOE) to allow Solyndra's private investors to be repaid before taxpayers, filing for bankruptcy, some 1,100 employees let go, FBI investigators, and the specter of the company's CEO and CFO invoking their Fifth Amendment rights against self-incrimination—is but the latest black eye for green jobs.

While the circumstances of the Solyndra bankruptcy are especially tawdry, and may ultimately prove criminal, the results are not. Whether operating with the best of intentions or not, government simply cannot divine “winners” and “losers” the way markets can. For example, Evergreen Solar was held up by Massachusetts Gov. Deval Patrick as heralding a major new industry in that state worthy of \$58 million in state aid. But the company, after opening up a new factory in Devens, Massachusetts, and hiring 800 employees, closed that factory last March, and relocated to China. Less than six months later, Evergreen filed for bankruptcy, listing almost \$500 million in debts.

In total, the DOE's Loan Program Office, which oversees loan guarantees, reports that as of September 26, 2011, the \$38.6 billion in funds set aside

under the program are supposed to create some 65,000 jobs.¹ That works out to about \$600,000 per job. Although that figure itself is quite large, according to a review of the DOE's records by the *Washington Post*, however, of the approximately \$19 billion loaned out so far, a total of 3,545 jobs have been created.² That comes to over \$5 million per job.

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Defenders of these subsidies offer at least three rationales for continued green largesse, regardless of the actual success of these subsidies.

1. Fossil fuel and nuclear energy have been, and continue to be, heavily subsidized; therefore, green energy must be in order to compete.
2. The green energy industry is in its infancy and thus requires “protection” from the rigors of market competition.
3. The costs of green energy are dropping rapidly and they will soon be fully competitive with other sources of energy.

None of these arguments has any merit.

SUBSIDY FOR ME, BUT NOT FOR THEE

The subsidy argument—that green energy requires subsidies just like fossil-fuel and nuclear energy is based on several misconceptions that, collectively, imply “Two wrongs make a right.”

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Some will point to the absolute dollar value of fossil-fuel and nuclear subsidies as proof positive that these energy resources are more heavily subsidized than wind and solar. That may be true. However, it ignores a slight difference in relative generation. According to data published by the US Energy Information Administration, in 2010, conventional fossil-fuel and nuclear generation was 3,687 terawatt-hours. Renewable generation (wind, solar, biomass, geothermal, landfill gas, etc.) was 168 terawatt-hours, less than 5 percent as large.³ Thus, it would not be surprising if the absolute dollar value of subsidies granted to fossil-fuel and nuclear generation were larger than that for renewable generation.

This raises a related and far more important issue: what, exactly, constitutes a subsidy? The difficulty in discerning what is and is not a subsidy stems from distinguishing between *direct* and *indirect* subsidies. For example, if a solar photovoltaic plant owner is paid a feed-in tariff of 30 cents per kilowatt-hour when the market price of electricity is 5 cents per kilowatt-hour, it receives a direct subsidy of 25 cents per kilowatt-hour. Renewable portfolio standards are another direct subsidy, based on the difference between what is required to be purchased and what would be purchased in an unfettered, competitive market. Also to be included are lower property tax payments, income tax credits, and low- or zero-interest loans (especially ones that are not repaid). All of these are examples of direct subsidies.

Indirect subsidies are far more problematic to define, much less to measure. How about the additional fossil-fuel generating required by electric transmission grids to compensate for the variability of solar and wind generation? What if the solar plant was also granted expedited siting approval? What if roads were constructed to the plant at no charge? One can surely argue whether the latter are

“subsidies,” or part of developing “infrastructure” that would be developed anyway. For some, every dollar of defense spending in the Middle East is a “subsidy” paid by consumers and taxpayers to protect US access to Middle East oil, as is the ability of oil and natural gas firms to reduce their income taxes through a depletion allowance. The Price-Anderson Act, which limits nuclear plant liability, is arguably a subsidy, although determining the magnitude of a subsidy in comparison to the probability of a potential liability is imprecise.⁴

Several recent reports have attempted to measure energy subsidies throughout the world. In a report released in 2010, the International Institute for Sustainable Development, through its Global Subsidies Initiative, estimated worldwide subsidies for fossil-fuel, renewable, and nuclear generation in 2007.⁵ As **Exhibit 1** shows, the GSI-estimated subsidies for renewable energy and biofuels are far higher than for nuclear and non-Organisation for Economic Co-operation and Development fossil fuels.

In May, the nonpartisan US Congressional Research Service (CRS) prepared a study evaluating energy subsidies through tax incentives alone. As that study noted, “While the majority of US primary energy production comes from fossil energy resources, the majority of energy tax related revenue losses are associated with provisions designed to support renewables.”⁶ In 2010, the CRS study found that fossil-fuel tax subsidies totaled \$2.4 billion, while subsidies for renewable energy totaled \$13 billion. Another \$2.1 billion of tax subsidies was provided for energy efficiency and conservation.⁷ These figures do not include other direct subsidies paid to renewable resources.

What these data show is that renewable energy is clearly the recipient of ratepayer and taxpayer largesse, far more so per unit of generation than

Exhibit 1. Subsidies by Generation Type

Generation Type	Subsidy (Billions of US \$)	Energy Produced	Subsidy (\$/MWh)
Nuclear	27	2,719 TWh	\$17
Fossil fuel (non-OECD)	400	4,172 MToe*	\$8
Biofuels	20	34 MToe*	\$51
Renewable (excl. hydroelectric)	45	534 TWh	\$50

*Million tons of oil equivalent.
Source: Global Subsidies Initiative.

either fossil-fuel or nuclear resources. This raises a key policy question: Should we continue to dole out such subsidies? The answer is, in a word, no.

Notwithstanding that the United States has a slight problem with its debt, the arguments for continued subsidies, especially for renewable generation, are based on economic fallacies. Protecting “infant” industries is one of the oldest. The argument is that new industries must be protected from the rigors of the competitive market until the new industries are well established. However, protecting renewable energy generators from markets only perpetuates their inefficiency, because they are not forced to compete.

Solyndra bet on expensive and unproven technology. Would it have done so without taxpayer monies? Perhaps, but its investors would surely have overseen Solyndra’s operation far more carefully. Although some may argue that many start-up businesses fail, there is a canyon’s worth of difference between failing having invested your own money and failing having invested taxpayers’.

The infant industry argument also disproves the “costs are declining” one. The best way to reduce costs is through competition. The natural gas industry is a great example. Technology has reduced drilling costs and expanded reserves, and the fuel efficiency of gas-fired combined-cycle generators continues to increase.

The way to create jobs, green or otherwise, is to reduce uncertainty and let markets work. Artificial subsidies are precisely the wrong remedy. While they can provide short-term gain, especially for those re-

ceiving the subsidies, they inflict far greater long-term pain. Given the state of the US economy, we simply cannot afford more Solyndras. Nor can we afford \$5 million per job green energy programs. A good start would be to let competitive markets work.

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NOTES

1. US Department of Energy, Loan Program Office, https://lpo.energy.gov/?page_id=45.
2. (2011, September 7). Obama green-tech program that backed Solyndra struggles to create jobs. *Washington Post*. Retrieved from http://www.washingtonpost.com/politics/obama-green-tech-program-that-backed-solyndra-struggles-to-create-jobs/2011/09/07/gIQA9Zs3SK_story_1.html.
3. US EIA. *Electric Power Monthly*. Renewable excludes traditional hydroelectric.
4. The Nuclear Energy Institute argues that Price-Anderson is not a subsidy, because it is paid for by nuclear plant owners. See Nuclear Energy Institute. (2011, September). *Price-Anderson provides effective liability insurance at no cost to the public*. Retrieved from <http://www.nei.org/resourcesandstats/documentlibrary/safetyandsecurity/factsheet/priceandersonact/>. Others, including this author, believe it is a subsidy.
5. International Institute for Sustainable Development/Global Subsidies Initiative. (2010, April). *Relative subsidies to energy sources: GSI estimates*. Retrieved from http://www.globalsubsidies.org/files/assets/relative_energy_subsidies.pdf.
6. Congressional Research Service. (2011, May 16). *Energy production by source and energy tax incentives*. Retrieved from http://assets.nationaljournal.com/pdf/051411_CRSSubsidies.pdf; p. 7.
7. *Ibid.*, pp. 5–6.

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