

The Importance of Interim Government Support In Bringing Down the Cost of Clean Energy

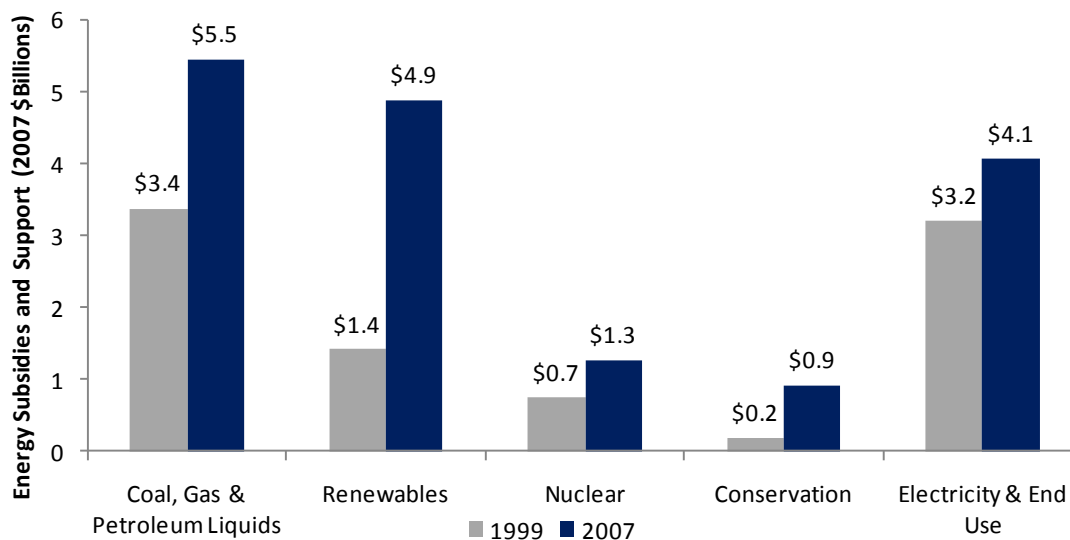
Executive Summary

One of the main arguments against government support for clean energy technologies is that subsidies to date have not worked, and the costs of clean power generation are still higher than for traditional fossil-based electricity. Proponents of this argument also tend to believe that the clean energy industry shows no path forward to reducing costs, and is therefore economically inefficient to support. This perspective has gained traction of late, given concerns over the mounting U.S. deficit and a political and economic need to take action to reduce government subsidies, particularly to industries that may require long-term government support. The objective of this paper is to explain how this perspective overlooks two key factors: (I) government support has been critical to the success of all generation technologies, including conventional technologies; and (II) government incentives have driven technological innovation and scale in emerging industries, and will result in clean energy technologies continuing to advance to grid parity¹ with conventional technologies.

I. Importance of Governmental Support for All Energy Technologies

Throughout history, government incentives have been critical in driving down technology costs and growing new industries to scale. The traditional energy industry, in particular, has benefited from decades of government subsidies², largely because each successive U.S. Administration has recognized how critical an economic and reliable energy supply is to achieving national security and economic growth. Without these subsidies, it is arguable that the domestic oil, coal and gas industries would never have achieved their vast scale and low costs of production. Furthermore, a 2007 analysis by the U.S. Energy Information Administration confirms that all U.S. power industries (in addition to renewable power) continue to receive considerable federal government support – a total of \$16.6 billion in 2007.

Figure 1: U.S. Energy Subsidies and Support by Fuel, 1999 and 2007³



Source: "Federal Financial Interventions and Subsidies in Energy Markets 2007", Energy Information Administration, 2007

¹ The term grid parity refers to the point at which the electricity generated by a clean energy technology is equal to or cheaper than grid power.

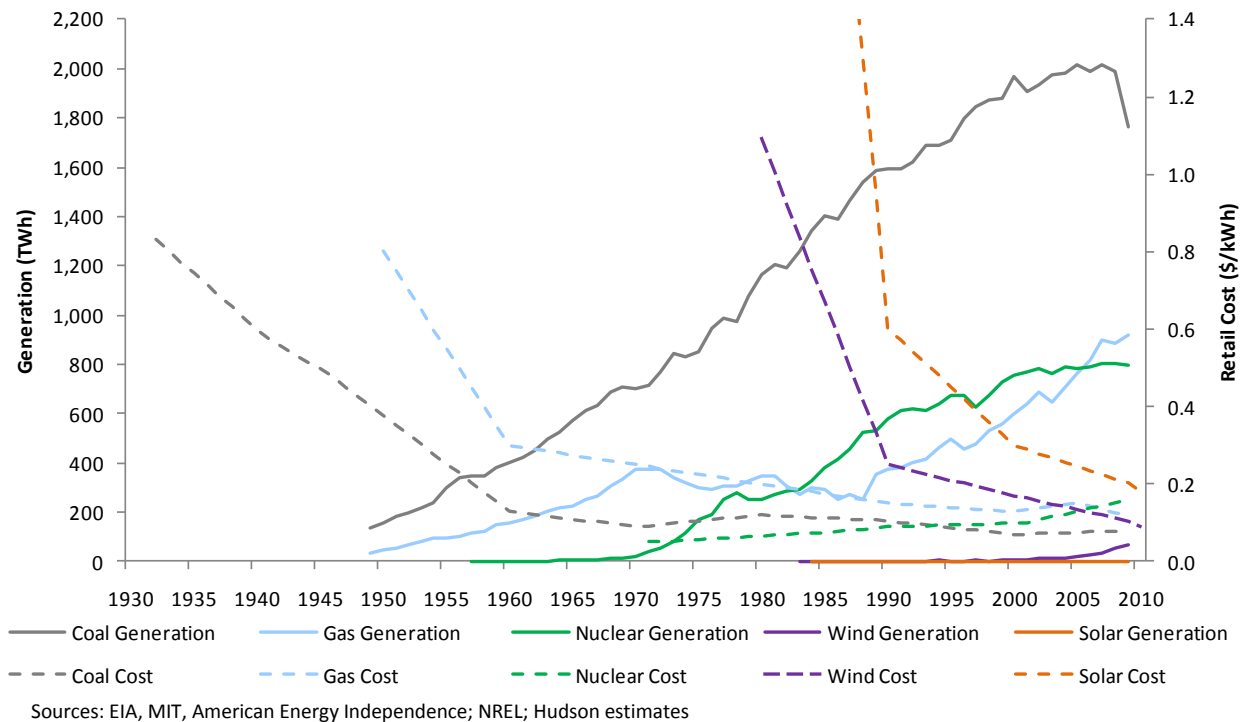
² Note, statistics on fossil fuel subsidies in the U.S. are not regularly published by the government.

³ Analysis produced in response to 2007 request by Senator Lamar Alexander to evaluate Federal energy subsidies directed at electricity production.

II. Interim Governmental Support will Allow the Clean Energy Industry to Continue to Advance to Grid Parity

All energy technologies require scale in order to drive down technology costs. The history of the U.S. power industry demonstrates that all new energy sources start out expensive, and get cheaper with scale. As Figure 2 below illustrates, as the solar and wind industries have grown, technological innovations and commoditization of the value chain have caused costs to fall dramatically. In fact, the historic cost decline trajectory of clean technologies (excluding nuclear) in the U.S. compares very favorably to that of fossil fuel technologies, and this is despite the nominal scale achieved by wind and solar to date, relative to traditional electricity sources.

Figure 2: U.S. Electricity Generation and Retail Cost by Energy Source, 1930 – 2010

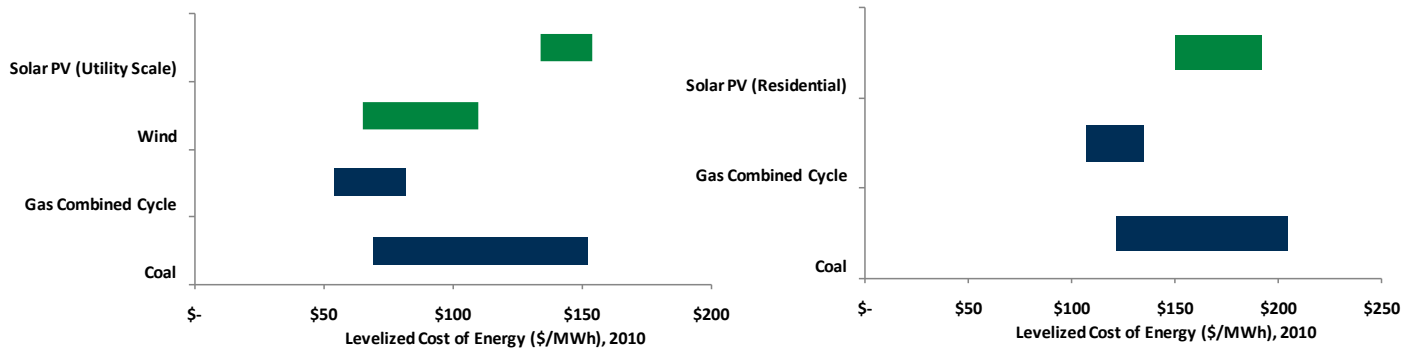


Despite their relatively small scale, many “first generation” clean technologies are already increasingly close to achieving cost parity with conventional energy technologies. A comparative analysis of the Levelized Cost of Energy (“LCOE”) of utility and residential-scale solar PV, wind, gas (combined cycle) and coal in the U.S. in 2010 shows that wholesale wind is already in a similar cost range to both gas and coal, while retail solar is already cost competitive with coal (see Figure 3). In addition, leading U.S. solar manufacturers are currently investing in significant capacity expansions, with associated rapid cost reductions expected in the production of their solar panels. For example, SunPower and Suntech, the two largest volume solar manufacturers in the U.S., are targeting 30% - 40% reductions in the cost of their solar panels over the next three years (see Figure 4)⁴. As the cost of solar panels declines and the scale of projects increases, installation costs will similarly decline. This has been the German experience, where increased scale has resulted in an increased number of project developers and systems installers, thereby driving down the cost of solar projects to a level close to grid parity⁵.

⁴ “SunPower Analyst Day”, SunPower, November 18, 2010; “Suntech Analyst Day”, Suntech, December 6, 2010.

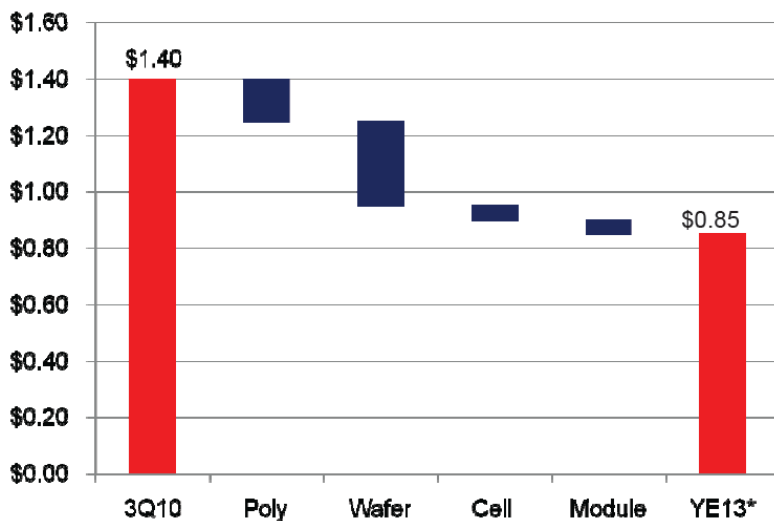
⁵ To compare, the German solar industry was 8 GW, while the U.S. solar industry was 1 GW in 2010.

Figure 3: U.S. Levelized Cost of Wholesale and Retail Energy, 2010



Sources: "Levelized Cost of Energy Analysis – Version 4.0", Lazard, June 2010; Hudson estimates
 Notes: Solar PV assumes conventional silicon modules; gas assumes \$4/MMBtu; coal assumes advanced supercritical pulverized coal at 42.50/MMBtu; retail energy for gas and coal incorporate a \$53/MWh cost of transmission and distribution

Figure 4: Suntech's Module Cost Target (Conventional-Silicon Module)



Source: "Suntech Analyst Day", Suntech, December 2010

Conclusion

Interim government incentives have proven critical in driving increased scale and continued cost reductions in all energy technologies in the U.S. Clean technologies are no exception. In fact, the cost curves for these technologies are still in decline, while those of coal and natural gas are actually on the increase due to growing compliance costs, even with the emerging predominance of shale-derived natural gas and the continued financial assistance provided by the federal government. In the debate over government support for industries in a climate of necessary fiscal austerity, the long-term security, stability and international competitiveness of the U.S. economy must not be overlooked. As history has demonstrated, well-designed policies that successfully drive scale and innovation will enable clean energy technologies to advance to grid parity, resulting in substantial economic and environmental benefits to the U.S.

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ABOUT US PREF

The objective of the US Partnership for Renewable Energy Finance (US PREF) is to unlock capital flows to new, large-scale and distributed renewable energy projects in the United States. To achieve this objective, a balanced and credible group of highly experienced renewable energy financiers from financial institutions, investors, professional services firms, utilities and others have convened as US PREF. US PREF, founded in 2009 with support from the consulting firm GreenOrder, is a program of the American Council On Renewable Energy (ACORE), a Washington, DC - based 501 (c)(3) non-profit organization whose mission is to bring renewable energy into the mainstream of the US economy and lifestyle through research, education, convening, and communications.