



US PREF

U.S. Partnership for
Renewable Energy Finance

Renewable Energy Finance, Market & Policy Overview

April 2014

Renewable Energy Policy is Driving Massive Private Capital Investment

The U.S. has implemented policies that have successfully attracted massive sums of private capital to the burgeoning renewable energy industry.

- ▶ Over \$300 billion was invested in the U.S. renewable energy sector from 2004-2013.
- ▶ In 2013 alone, \$36 billion was invested in U.S. renewable energy. (1)
- ▶ This capital has been invested to create domestic supply chains that support both our domestic energy market and the global energy technology industry, which attracted \$1.6 trillion in global new investment from 2004-2013.
- ▶ Global clean energy sector investment in 2013 alone is estimated at \$214 billion. (2)

Renewable Energy Cost ↓ = f (Industry Scale ↑)

- ▶ Thanks to policies that have driven investment, and therefore industry growth, both wind and solar PV have reduced their respective equipment costs over the past 4 years by ~43% and ~80% respectively.
- ▶ Empirical data suggests that coal, natural gas, and nuclear generation technologies have required massive increases in scale in order to achieve current favorable cost structures. Solar and wind, by contrast, are continuing to experience significant improvements in their cost structure with relatively much smaller increases in scale.

Economic Impact: Job Creation

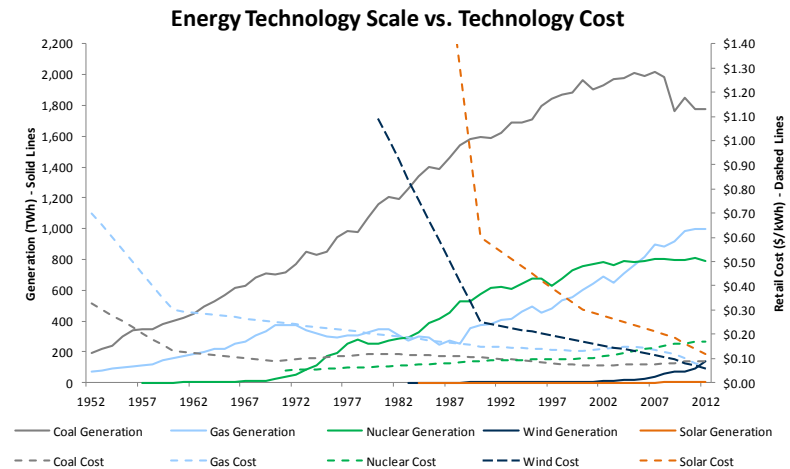
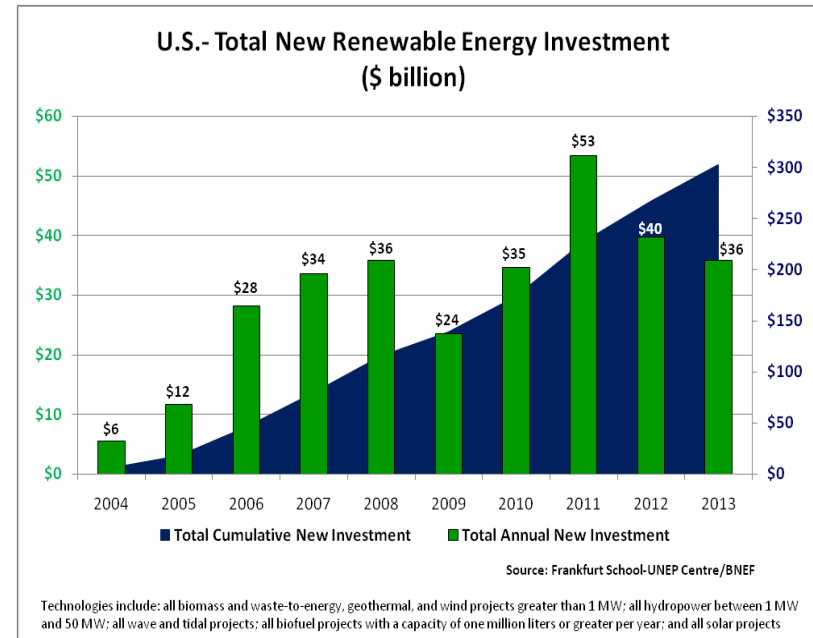
- ▶ The solar industry experienced a nearly 20% growth in employment from 2012-2013, 10 times the national average.
- ▶ The industry is forecasting jobs growth at 15.6% in 2014. (3)
- ▶ At the end of 2012, over 80,000 wind-related jobs existed in the U.S. (4)

(1) UNEP and BNEF, *Global Trends in Renewable Energy Investment 2014*, http://fs-unep-centre.org/sites/default/files/attachments/14008nef_visual_12_key_findings.pdf

(2) Ibid.

(3) The Solar Foundation, *National Solar Jobs Census 2013: The Annual Review of the U.S. Solar Workforce*, January 2014

(4) AWEA, *Wind Energy Facts at a Glance*, <https://www.awea.org/Resources/Content.aspx?ItemNumber=5059>



Impact of Renewable Energy Finance Policies

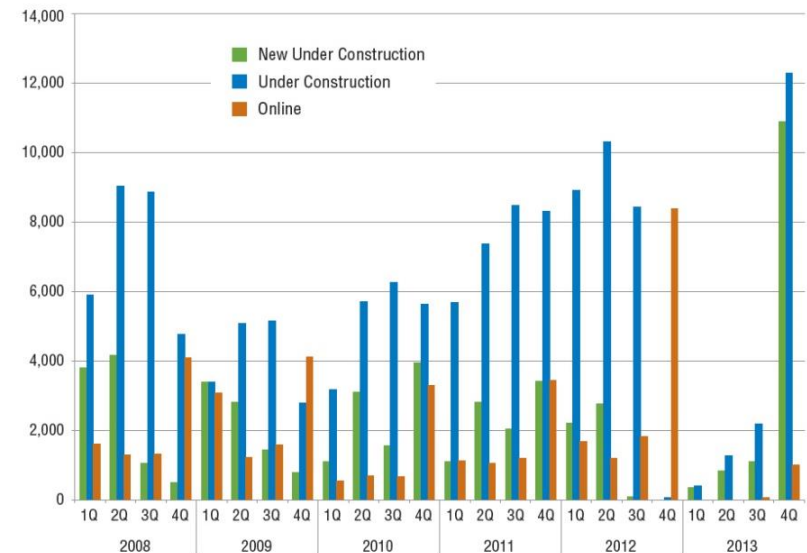
Production Tax Credit (PTC)

- ▶ Per-kilowatt-hour tax credit for electricity generated; provides 2.3¢/kWh for wind, landfill gas, biomass, hydroelectric, geothermal electric, municipal solid waste, hydrokinetic power, anaerobic digestion, tidal energy, wave energy, and ocean thermal energy projects; generally applies to first 10 years of operation.
- ▶ Deployment and innovation in the wind industry, largely due to the PTC, has allowed for a 90% reduction in the cost of wind power since 1980. (1)
 - ▶ In the last four years alone, wind energy costs have decreased by 43% due to stable policy and technological advancements. (2)
- ▶ Current projections indicate new wind build increases to 6.5 GW in 2014 and 8.5 GW in 2015. With the PTC expiring, new installations are forecasted to fall to 2.5 GW in 2016. (3)

Commence Construction Modification: Impact on the Wind Industry

- ▶ January 2013 legislation revised the credit by (a) replacing “placed in service” deadlines with “commence construction” deadline, and (b) extending deadline for wind energy facilities by one year, through December 31, 2013.
- ▶ Late extension of the PTC contributed to a 92% reduction in new wind installations in the U.S. in 2013.
 - ▶ Only 1.6 MW were installed in Q1 2013 and 0 MW were installed in Q2 2013
- ▶ However, more than 12,000 MW entered construction in the final quarter of 2013. (4)
 - ▶ This equates to enough generation to power 3.5 million homes per year

Completed and under construction wind power capacity, 2008–2013



Source: American Wind Energy Association

(1) AWEA, *Federal Production Tax Credit for Wind Energy*.
 (2) AWEA, *AWEA U.S. Wind Industry Fourth Quarter 2013 Market Report*, January 30, 2014
 (3) BNEF, *H1 2014 North America Wind Market Outlook: Aftermath of Expiration*, February 27, 2014
 (4) AWEA, *AWEA U.S. Wind Industry Fourth Quarter 2013 Market Report*, January 30, 2014

Impact of Renewable Energy Finance Policies

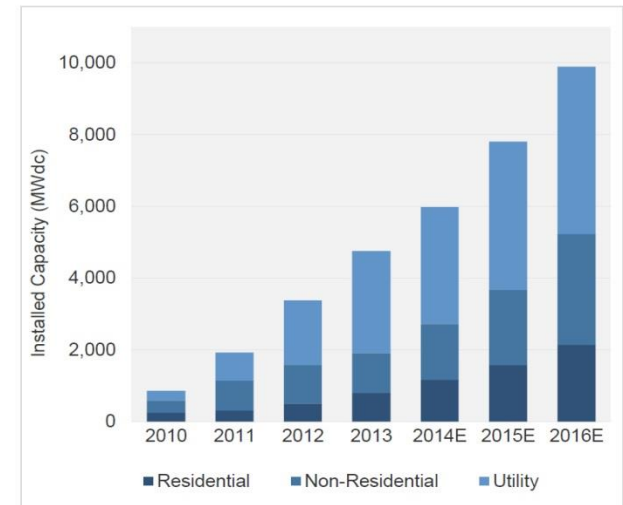
Investment Tax Credit (ITC)

- ▶ 30% tax credit for solar, wind, geothermal, fuel cell (with and without renewable fuels), municipal solid waste, CHP/cogeneration, solar hybrid lighting, tidal energy, and microturbine systems on residential and commercial properties.
- ▶ The multiple-year extension of the residential and commercial solar ITC has helped solar installations to grow by over 3,000% since the ITC was implemented in 2006, employing nearly 143,000 American workers. (1)
- ▶ ITC has been a significant driver of the scale deployment of solar power, which has contributed to massive reductions in the average system prices – falling 60% since 2006 -- and in the cost of solar panels and other critical components of the solar supply chain. (2)
 - ▶ The effects of the ITC on average installed solar PV system price have resulted in cost decreases from \$7.50 per watt in 2009, to \$4.75 per watt in 2011, and finally down to \$3.63 per watt in 2012. (3)
- ▶ The U.S. installed 4,751 MW of solar PV in 2013, up 41% over 2012 and nearly fifteen times the amount installed in 2008. Forecasting for 2014 calls for 26% overall growth in the U.S. solar market, with installations reaching nearly 6 GW. (4)

Commence Construction Modification: Potential Impact on the Solar Industry

- ▶ Large, utility-scale solar projects often require multi-year development timelines:
 - ▶ Significant and time-consuming financing, siting, and permitting; projects often take three to four years to complete.
- ▶ A change in the language to a commence construction standard provides certainty and flexibility to utility-scale solar projects.
- ▶ With 12 large-scale solar projects expected to come online in 2016, a September 2013 analysis from SEIA reveals that the median time from the early steps of development to commencement of construction is just over three years.
 - ▶ SEIA predicts that a change in the language to reflect commence construction would yield an additional 4,000 MW of electric generation capacity in 2017 and 2018. (5)

Figure 2.14 U.S. PV Installation Forecast, 2010-2016



Source: Solar Energy Industries Association

(1) American Council On Renewable Energy, *The Outlook for Renewable Energy in America: 2014*, March 2014

(2) Ibid.

(3) SEIA, *The Case for the Solar Investment Tax Credit*, January 29, 2014

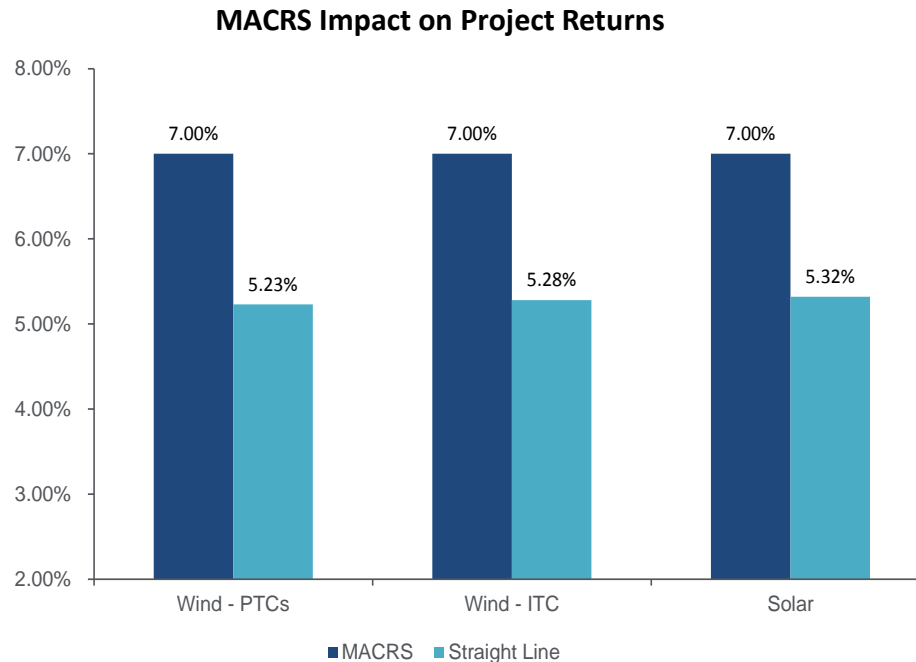
(4) American Council On Renewable Energy, *The Outlook for Renewable Energy in America: 2014*, March 2014

(5) SEIA, *Commence Construction Modification for Renewable Energy Tax Incentives*, September 5, 2013

Impact of Renewable Energy Finance Policies

Modified Accelerated Cost Recovery System (MACRS)

- ▶ Under the current tax depreciation system, the capitalized cost of tangible property is recovered over a specified life by annual deductions for depreciation.
- ▶ Essential in driving private investment to renewable energy infrastructure, MACRS has served to immediately lower consumers' electricity costs, create high-paying American jobs, enhance energy independence, and reduce greenhouse gas emissions.
- ▶ MACRS reduces the present value of corporate income tax liabilities for renewable project developers, enabling developers to place more renewable energy projects in service, and for those projects to deliver renewable energy at lower cost to consumers.



Source: US PREF, *MACRS Depreciation and Renewable Energy Finance*

Market Innovation

The industry has responded in part to the current policy uncertainty with development of important finance innovations, including YieldCo, Green Bonds, and Securitization finance structures.

YieldCo is an entity that owns cash-generating infrastructure assets, allows investors to purchase shares, and spins out dividends to public markets. Goal is to provide an attractive total return to investors through a mix of regular dividends payments and sustainable growth.

- ▶ Extremely tax efficient with no corporate tax projected for almost 10 years.
- ▶ Includes a mix of technologies and assets with project based leverage, and can include assets with certain tax equity structures.
- ▶ NRG Yield, Inc. is a unit of NRG Energy Inc. with 1.3 GW of rated solar and wind generation; raised almost \$431 million in July 2013.
 - ▶ Sold approximately 19.6 million shares valued at \$22 per share, raising almost \$431 million in an initial public offering based on 1.3 GW of rated energy, including solar and wind assets.

Green Bonds enable capital-raising and investment for new and existing projects with environmental benefits.

- ▶ Green Bond sales to development banks, projects, and companies reached \$14 billion in 2013, a new record.
- ▶ The growth in green bond activity has been catalyzed by the release of Green Bond Principles by a consortium of bank and loaning agencies in 2014.
- ▶ Citigroup predicts that green-bond sales and initial public offerings backing clean-energy and environmental ventures will expand to account for 10 to 20 percent of a \$7 trillion per year market for securities by the end of the decade. (1)

Securitization involves pooling loans to create consolidated securities that investors can purchase; allows greater levels of investment for clean energy projects.

- ▶ SolarCity's securitization in November 2013 raised \$54.4 million in bond sales, generating a BBB+ credit rating
- ▶ The company's contracts were effectively positioned for securitization due to the perceived stability of electricity sales from solar systems as a long-term source of revenue.

Benefits of Extending Master Limited Partnerships (MLP) to Renewable Energy Projects

- ▶ Renewable energy MLP status would be a very important policy addition that, when combined with existing tax driven policies, would not only support, but also accelerate growth in renewables.
- ▶ The MLP investor base has many attractive attributes that potentially expand the amounts of lower cost capital to renewable energy projects, which is especially important as the industry scales up.
- ▶ The MLP Parity Act, as currently drafted, could help raise this additional capital from institutional MLP investors against already operating projects, making available to renewable energy private investors and developers approximately 40% of the \$400 billion MLP capital market. (2)
 - ▶ With applicability to renewable energy, this investment base is likely to grow with investors attracted to renewable energy's typical profile as a stable, long-term cash generator via secure power purchase agreements with credit-worthy counterparties (utilities).

(1) Sally Bakewell, *CitiGroup Executive Sees Capital Markets Reviving Renewables*, BNEF, January 27, 2014

(2) US PREF, *Renewable Energy MLP Considerations*, May 2013

Industry Investment & Growth at Risk Due to Uncertain Policy

- ▶ A decade of increasing scale in wind and solar, made possible in large part by effective tax policies for renewable energy, has helped achieve dramatic reductions in the cost of wind and solar, much as traditional energy resources were able to achieve in the early and middle of the last century, thanks to favorable tax policies and other government support.
 - ▶ More than 37% of all new U.S. power generation capacity in 2013 came from renewable energy sources. (1)
- ▶ To achieve continued growth, and to help America avoid excessive and risky reliance on a few critical fossil fuels, the continued deployment at scale of renewable energy is essential. Despite this, the continued deployment of renewable energy is now at risk, primarily due to continuing policy uncertainties.

Clean Energy Policy is a Bi-Partisan Issue

- ▶ It is important to note the long history of strong leadership that both Democrats and Republicans have shown in advancing clean energy policy.
 - ▶ The Energy Policy Act of 1992 removed obstacles to wholesale power competition and established a program for federal support on a competitive basis for renewable energy technologies.
 - ▶ The Energy Policy Act of 2005 established the Loan Guarantee Program for innovative energy technologies, the tax credits for residential solar investment, and the Renewable Fuels standard.
 - ▶ The Energy Independence and Security Act of 2007 improved the Renewable Fuels Standard and Corporate Average Fuel Economy Standards.
 - ▶ The Emergency Economic Stabilization Act of 2008 extended the PTC for one year and the ITC for eight years while also eliminating the \$2,000 tax credit cap for residential solar electric installations.
- ▶ At the state-level for nearly 20 years, Democratic and Republican Governors, state legislatures and regulatory commissions have established or enhanced many of the 37 state renewable portfolio standards and goals.

(1) FERC, <http://www.renewableenergyworld.com/rea/news/article/2014/01/renewable-energy-provides-37-of-all-new-us-electrical-generating-capacity-in-2013>



ABOUT US PREF

US PREF is a coalition of senior level financiers who invest in all sectors of the energy industry, including renewable energy. Members educate the public sector to assure renewable energy finance legislation impacts the market as efficiently and effectively as possible, with the goal of helping to unlock capital flows to renewable energy projects in the United States. US PREF is a program of the American Council On Renewable Energy (ACORE), a Washington, DC - based non-profit organization dedicated to building a secure and prosperous America with clean, renewable energy.

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