

New York Solar Study

January 2012

Summary of Findings and Recommendations

The Power New York Act of 2011 directed NYSERDA to conduct a study to evaluate the costs and benefits of increasing the use of solar photovoltaics (PV) in New York State to 5,000 megawatts (MW) by 2025. As requested by the Act, the following represents NYSERDA's findings and recommendations that are based on the conclusions of the technical analysis completed in the Study.

NEW YORK'S RENEWABLE ENERGY CONTEXT

New York State is a national leader in the deployment and production of renewable energy. This leadership is attributable to New York's strategic pursuit of policies designed to develop a diverse portfolio of renewable energy resources, including solar, wind, hydropower and biomass. New York's diverse portfolio approach capitalizes on the State's many renewable resources – this diversity is New York's strength. The success of this approach is reflected by the fact that New York has developed more than 1,800 MW of renewable energy, exclusive of hydropower, more than any other state in the Northeast. Including hydropower, New York's renewable energy capacity is comparable to the entire renewable energy capacity of the other eight states in the Northeast.

In a recent U.S. Department of Energy (DOE) report, New York ranked 5th in the nation for the amount of installed renewable energy capacity providing electricity to the state. New York was the only state east of the Mississippi named in the top 5, and the only Northeast state placing in the top 10.

COST OF ACHIEVING A 5,000 MW PV GOAL

There is significant uncertainty in estimating the cost of PV out to 2025. Experts project that the installed cost of PV by 2025 could range from \$1.4 to \$4.3 million per installed MW. This range and various assumptions about the renewal of the federal tax credit, set to expire in 2016, formed the basis of the scenarios analyzed in the Solar Study.

The Low Cost scenario is based on the DOE SunShot goal for PV cost reduction and assumed extension of the federal tax credit through 2025. The High Cost scenario is based on long-term historical trends and assumed the federal tax credit would revert to a pre-federal stimulus level following expiration of the current credit in 2016. The most likely scenario, referred to as the Base Case, is based on a survey of experts by the DOE and assumed a moderate reduction of the federal tax credit beyond 2016. The Base Case estimates \$2.5 million per installed MW for large-scale systems and \$3.1 million per installed MW for small-scale systems.

- The cost of achieving a 5,000 MW goal exceeds the benefits using the Base Case scenario.
- The cost of PV and the availability of federal tax credits through 2025 are the driving factors of cost in a 5,000 MW goal.
- The Low Cost scenario had a net benefit while the High Cost scenario had a net cost four times as high as the Base Case.
- In the Base Case, achieving a 5,000 MW goal would have a ratepayer impact of \$3 billion over the study period (2013 – 2049), which would equal on average a 1% impact on ratepayer electric bills. In any given year, this rate impact could be as much as 3%.

Note: The study period goes beyond 2025 because PV installations in 2025 have a 25-year life-span, and ratepayers are assumed to pay for the power generated by these installations throughout the life of the systems.

- The ratepayer impact under the Low Cost scenario would be approximately \$300 million, whereas the impact under the High Cost scenario would be \$9 billion.

JOB IMPACT

Modeling of the Base Case scenario found that while direct PV jobs would be created, the impact on New York's economy as a whole would be a net negative primarily due to the ratepayer impact.

- Approximately 2,300 jobs associated directly with PV installation would be created for the installation period through 2025.
- Economy-wide jobs would be reduced by 750 through 2049 because of a loss of discretionary income that would have supported employment in other sectors in the economy.
- The Gross State Product (GSP) would be reduced by \$3 billion through 2049, representing an annual decrease in GSP of less than 0.1%.
- The Low Cost scenario would lead to a creation of 700 jobs economy-wide through 2049, while the High Cost scenario would lead to a loss of 2,500 jobs.

ENVIRONMENTAL IMPACT

A 5,000 MW goal would yield the following environmental benefits through 2049:

- A 4% reduction in fossil fuel consumption equal to 1,100 trillion Btus.
- A 3% reduction in carbon dioxide (CO₂) emissions equal to 47 million tons.
- A reduction of nitrogen oxides (NO_x), which produces smog and acid rain, by 33,000 tons (4%); sulfur dioxide (SO₂), which also produces smog and acid rain, by 67,000 tons (10%); and mercury by 120 pounds (3%).

POLICY OPTIONS

The study reviewed numerous government policies and best practices used around the world to stimulate demand for PV systems. Four specific policy options were analyzed to determine their relative rate impact to New York.

- Solar Quantity Obligation Using Tradable Solar Renewable Energy Credits (SRECS) with a Price Floor Mechanism, similar to approaches adopted in neighboring states. Under this policy option, utilities (or other entities) are responsible for buying SRECS (tradable certificates that represent the production of one MWh of electricity generation from a PV system) from the spot market, but prices are supported by a long-term minimum price that provides a greater degree of revenue certainty to developers and investors.
- Auction for Long-Term Contracts by Electric Distribution Companies, similar to an approach adopted by California. Under this policy option, utilities manage a competitive procurement under which they award long-term contracts to purchase renewable energy.
- Hybrid Upfront Incentives for Residential and Small Commercial & Industrial (C&I) with a Central Procurement Approach to Large C&I and MW-Scale Installations, similar to New York's current Renewable Portfolio Standard (RPS) approach. Under this policy option, rebates are provided for small PV systems and incentives for larger PV systems are provided by a central procurement entity through some type of competitive bidding.
- Hybrid Standard Offer Performance-Based Incentives for Residential and Small C&I and Auctions for Long-Term Contracts for Large C&I and MW-Scale Installations, similar to proposals under consideration in the State Legislature. Under this policy option, utilities are responsible for providing incentives to larger projects through a competitive procurement and long-term contracts. Smaller projects receive performance-based incentives, typically a standard offer (in cents per kWh produced).

The results of the four specific policy options analyzed included:

- A quantity obligation with price floor is the most expensive policy option and is projected to cost 50% more than the least-cost policy option.
- The other three policy options have comparable costs, with hybrid upfront incentives for smaller customers and central procurement for larger customers being the least expensive policy option.

RECOMMENDATIONS

Given the major uncertainties in PV technology cost reductions and the continued availability of federal tax credits over this time period, there is a significant range in the potential cost estimates to ratepayers of meeting a 5,000 MW goal by 2025.

The magnitude and range of this cost uncertainty (\$300 million – \$9 billion) is substantial, and strongly suggests the need for a policy response and investment strategy that is both flexible and responsive.

Nevertheless, even with this range of cost uncertainty, given the many potential benefits that PV has to offer and the long-term potential for lower-cost PV technology, New York State should support continued investment in the steady and measured growth and deployment of PV as part of a sound and balanced renewable energy policy.

New York should strengthen such investment through continued development of policies such as net metering, sales tax exemptions and interconnection standards that could further reduce the cost of PV installation and remove barriers to reaching the targets.

This strategy should also be complemented by additional efforts to reduce the balance of system costs for PV, including more streamlined permitting processes, and continued financial support for targeted research and development, workforce training and business development.

Continued federal incentives will play a critical role in the magnitude and predictability of future PV prices. In addition, the SunShot goal articulated by the DOE is an aggressive and meritorious goal that, if achieved, would substantially reduce PV cost and change the benefit-cost equation. New York State should strongly support continued federal incentives and aggressive federal research efforts to reduce the cost of PV to consumers.