

## RENEWABLE ENERGY

### NEW JERSEY

New Jersey's solar electricity generating program has evolved into one of the most successful market-based incentive programs in the country. The state is second only to California in the amount of installed solar electric generating capacity. This article examines how New Jersey's program has evolved into the nation's premier market for solar investment and compares it to other state programs.

## New Jersey's Solar Renewable Portfolio Standards—A Model for Success

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**D**espite being one of the smallest states in the nation, New Jersey is second only to California in installed solar electric generating capacity. No other solar market is growing faster. What is the secret to New Jersey's success? The combination of the high cost of electricity, generous state and local tax incentives, and the most aggressive statewide solar incentive program in the nation gives New Jersey a solar investment climate like no other.

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### I) New Jersey

In the summer of 2003, solar investment in New Jersey was a largely untested market that involved only a small number of solar developers, all of whom relied principally on direct state installation rebates of up to \$0.35 per installed watt. The rebates were successful in cutting the cost of installation of solar energy systems by up to 40 percent, but solar projects were not producing an income stream sufficient to support debt service or to entice private equity investment. In response to the nation's growing concern about global warming and dependence on foreign oil, and to combat rising energy prices, New Jersey modified its regulations in October 2003 to implement the New Jersey Electric Discount and Energy Competition Act (the 2003 Amendments).<sup>1</sup>

The 2003 Amendments revised the state's Renewable Portfolio Standards (RPS) to require that suppliers in New Jersey generate 6.5 percent instead of 4 percent of total electricity through renewable resources by 2008.<sup>2</sup> This required increase was a necessary first step, but concern remained that the market's reliance on direct

<sup>1</sup> N.J.S.A. 48:3-49.

<sup>2</sup> N.J.A.C. 14:4-8.3 implemented the recommendations of the state's Renewable Energy Task Force to increase the required percentage of class I renewable energy in 2008 from 4 percent to 6.5 percent.

government rebates and lack of an RPS enforcement mechanism would prevent New Jersey from achieving the state's renewable energy goals.

To address these concerns, the 2003 Amendments also instituted the use of the Solar Renewable Energy Certificate (SREC) and the Solar Alternative Compliance Payment (SACP).

The SREC provided the solar investment market with saleable solar credits, thereby avoiding the need to depend solely on government rebates. An SREC is issued to the owner of every registered solar electric generating system in the state for each megawatt hour of electricity generated. Suppliers can purchase SRECs from system owners through auctions, brokers, online trading services or long-term forward contracts.

The SACP constituted the monetary penalty enforcement mechanism needed to motivate suppliers to comply with the newly revised RPS: Pursuant to the 2003 Amendments, in the event suppliers fail to generate the mandated amount of solar electricity in any given energy year<sup>3</sup> they are required to pay one SACP for each megawatt hour they fall short. In lieu of paying the SACP, generators may retire an SREC for each required SACP.

Obviously, if an electric supplier can purchase an SREC for less than the SACP, the supplier will realize a direct savings. As such, the values of SRECs are governed by market-based supply and demand. When the demand for SRECs (as determined by the RPS) outpaces the supply, SRECs trade for slightly less than the SACP.<sup>4</sup> When the supply of SRECs outpaces demand, their value will necessarily decline.

### Source of Income for Investors, Lenders

The sale of SRECs provided the additional source of income solar investors and lenders were looking for, and the 2003 Amendments set the stage for the explosive growth of New Jersey's solar energy market. By the end of 2003, approximately 100 solar energy systems had been installed in New Jersey with an aggregate capacity of approximately 1,500 kilowatts.<sup>5</sup> During the 12-month period following the 2003 Amendments, an additional 282 solar electric generating systems with an aggregate capacity of 2,144 kilowatts were installed. By the end of 2007, a total of 2,714 systems with an aggregate capacity of 47,517 kilowatts had been installed. New Jersey's solar market was beginning to heat up. However, something more was needed for the state to meet its aggressive Renewable Portfolio Standards.

By the fall of 2007, New Jersey's solar market was expanding based on a combination of installation rebates and SREC sales. The SACP was \$330, and SRECs were trading for approximately \$225. In an effort to accelerate the pace of solar installations and to move away from reliance on direct installation rebates, in September 2007 the New Jersey Board of Public Utilities (the BPU) set a fixed SACP schedule through the 2016 energy year. The SACP was increased to \$711 for energy year 2009 and thereafter will decrease by 3 percent annually through 2016, at which time the SACP is sched-

uled to be revaluated based upon then-existing market conditions. As a result, SREC values tripled and the number of solar installations skyrocketed. By the end of calendar year 2008, New Jersey's total installed capacity was in excess of 65,000 kilowatts.<sup>6</sup>

By the summer of 2009, New Jersey's installed solar capacity was approaching 100,000 kilowatts. However, it was becoming clear that more changes were needed if the state was going to meet its solar energy goals. Solar developers had no shortage of potential projects, but financiers were reluctant to invest. The country was also in the middle of a deep recession that had caused the money that previously had been available for direct installation rebates to dry up. New Jersey's lucrative SREC program was producing the supplemental income stream necessary to support debt service and to satisfy equity investors, but investors and lenders were unwilling to rely on an income stream that was the product of BPU regulations that could be changed or abolished by a simple majority vote at the next meeting of the BPU. Solar investors and lenders were looking for long-term market stability.

In January 2010, the New Jersey Legislature took action by passing the Solar Energy Advancement and Fair Competition Act (the Act).<sup>7</sup> The Act codifies New Jersey's RPS and SACP into statute. As a result, investors and lenders were able to take comfort that the regulatory framework upon which they rely could not be changed without the affirmative action of the State Senate, State Assembly, and governor. Just as importantly, the RPS is now measured in a fixed number of gigawatt hours to be generated, as opposed to a percentage of the overall electricity demand, which takes some of the guesswork out of predicting the future value of SRECs. Further, the Act codifies the SACP schedule through 2016 and requires the BPU to promulgate an SACP schedule through 2026. Following passage of the Act, energy year 2009 and energy year 2010 resulted in approximately \$117 million in SREC value being retired, which accounted for approximately 50 percent of the RPS.<sup>8</sup> The remainder of the RPS was met through SACP payments.

The Act not only provided a framework to support solar investment in the near term but also set the stage for aggressive growth for years to come. The RPS is 442 gigawatt hours for energy year 2012, increases to 596 gigawatt hours for energy year 2013, 772 gigawatt hours in energy year 2014, and increases aggressively annually thereafter until it reaches 5,316 gigawatt hours in energy year 2026 and beyond.

Further, the Act provides that if the RPS is met for three consecutive years beginning in energy year 2013 and as a result the value of SRECs declines, the RPS is automatically increased by 20 percent for each remaining year of the RPS, which would result in a 2026 RPS of over 6,300 gigawatt hours. Additionally, the SACP is codified at \$658 for energy year 2012 and decreases by

<sup>3</sup> An energy year commences on June 1 and ends on the following May 31.

<sup>4</sup> In energy year 2011—June 1, 2010 through May 31, 2011—SRECs traded on average at approximately 97 percent of the SACP.

<sup>5</sup> New Jersey REC Market Update as of Dec. 27, 2007.

<sup>6</sup> See New Jersey's Board of Public Utilities and New Jersey's Clean Energy Program 2008 Annual Report at [http://www.njcleanenergy.com/files/file/Library/CLEAN%20ENERGY%202008%20Annual%20Report%20final\(1\).pdf](http://www.njcleanenergy.com/files/file/Library/CLEAN%20ENERGY%202008%20Annual%20Report%20final(1).pdf).

<sup>7</sup> Senate Bill A3520, passed Jan. 17, 2010.

<sup>8</sup> See New Jersey's Renewable Portfolio Standard Rules 2009 and 2010 draft annual reports at <http://www.njcleanenergy.com/renewable-energy/program-activity-and-background-information/rps-background-info>.

3 percent annually until energy year 2016 when it will be \$594.

### Certainty Sought Regarding SACP

The BPU has not yet promulgated the SACP for energy years 2017 through 2026 despite the Act's requirement to do so. However, New Jersey's recently released proposed Energy Master Plan recommends that the SACP be reduced by approximately 20 percent in 2017 to \$475 and further reduced by 3 percent annually thereafter, which would provide for an SACP of approximately \$357 in 2026. In any event, the SACP schedule may not be reduced once it is promulgated.

Solar developers in New Jersey have been able to take advantage of both the Act and the Federal Investment Tax Credit, which allows system owners to take a tax credit equal to 30 percent of qualified project costs<sup>9</sup> and to benefit from accelerated depreciation, which allows system owners to depreciate their entire investment in as little as five years.<sup>10</sup> Finally, New Jersey provides a full sales tax exemption for solar energy equipment and provides a full ad valorem real estate tax exemption for systems that generate electricity for on-site consumption.<sup>11</sup> Since passage of the Act, solar developers and investors not only have been able to benefit from generous tax incentives, but also have been able to take advantage of a statutory SREC program that often produces an income stream that far exceeds the value of the electricity generated by the system.

As a result, solar development in New Jersey has exploded. The state had one of the strongest growth markets for solar energy installations in 2010 and in the first quarter of 2011. For the first quarter of 2011, New Jersey installed 42,000 kilowatts of solar capacity, representing 49 percent growth over the first quarter of 2010. As of June 30, 2011, New Jersey had 10,086 solar energy array projects installed across the state, providing over 380 MW of installed capacity. Nationwide, only California has more installed solar capacity and number of installations.<sup>12</sup>

### SREC Supply to Exceed Demand?

New Jersey solar developers have historically enjoyed robust SREC values since inception of the program, as the demand for SRECs has always exceeded supply. As a testament to the overwhelming success of the state's statutory framework, for the first time New Jersey solar developers are facing a real possibility that SREC supplies will exceed demand in energy year 2012, which is resulting in a sharp decline in SREC values.

During the first week of July 2011 (the second month of energy year 2012), SRECs were trading for approximately \$400<sup>13</sup> despite an SACP of \$658. Fortunately for solar developers and investors, SRECs generated by

<sup>9</sup> The American Recovery and Reinvestment Act of 2009 converted the 30 percent tax credit to a one-time cash grant through 2011.

<sup>10</sup> System owners are eligible for bonus depreciation equal to 100 percent of qualified basis in the first year for systems put in service in 2011 and 50 percent of the qualified basis in the first year for systems placed in service in 2012.

<sup>11</sup> See N.J.S.A. 54:34B-8.33 and N.J.S.A. 54:4-3.113b; see also <http://www.dsireusa.org/incentives/index.cfm?getRE=1?re=undefined&ee=1&spv=0&st=0&srp=1&state=NJ>.

<sup>12</sup> See [http://www.nj.gov/dep/newsrel/2011/11\\_0088.htm](http://www.nj.gov/dep/newsrel/2011/11_0088.htm).

<sup>13</sup> Flett Exchange website statistics. See <http://www.flettexchange.com/>.

systems in New Jersey are valid in the year in which they are generated and for two energy years thereafter.<sup>14</sup>

As such, developers and investors can take advantage of the additional SREC demand that will be generated by the 35 percent Renewable Portfolio Standards increase that will occur in June 2012 and the additional 30 percent increase in the RPS that will occur in June 2013. Thereafter, the RPS will continue to escalate aggressively until 2026 when it will require more than 12 times the currently existing installed capacity, an increase that will require \$15 billion to \$20 billion in additional investment.<sup>15</sup>

## II. Other State Solar Programs

Many states have a regulatory framework to encourage solar investment and development that is similar to New Jersey's, but solar investors and developers across the country consider New Jersey's solar energy market the premier market because it is the only one that combines a meaningful, predictable, and aggressively increasing solar-specific portfolio standard coupled with a similarly meaningful, predictable, and aggressive method of enforcing compliance.

### A) Massachusetts

One state that has a regulatory framework similar to that of New Jersey, although not as successful, is Massachusetts. The state has an SREC program, and suppliers of electricity must produce a statutorily determined amount of solar electricity each year or pay a penalty.<sup>16</sup> The penalty currently is \$550 per megawatt hour; however, unlike in New Jersey, there is no set future penalty schedule. Instead, the penalty is subject to reduction by the Massachusetts Department of Energy annually if the department determines that reduction is necessary based on market conditions.<sup>17</sup> The penalty applicable for each year is determined in January of the applicable year. Although this structure gives the state Department of Energy the flexibility to adjust the penalty as market conditions dictate, the lack of a predetermined penalty going forward makes it very difficult, if not impossible, for solar developers and investors to predict the value of SRECs into the future. As a result, it is very difficult for developers and investors to accurately predict a project's future cash flow.

Another shortcoming of the Massachusetts program is its size. The program calls for 400 megawatts of installed capacity by 2020,<sup>18</sup> which is significantly less than the 4,500 megawatts of installed systems required to meet New Jersey's goal. In addition, the annual re-

<sup>14</sup> N.J.S.A. 48:3-87(p). See also [http://www.sretrade.com/new\\_jersey\\_srec.php](http://www.sretrade.com/new_jersey_srec.php).

<sup>15</sup> It will take approximately 4,600 megawatts of system capacity to generate 5,316 gigawatt hours of electricity; 330 megawatts of capacity existed of April 30, 2011. Using the current price of \$4.20 per installed watt, it will take approximately \$18 billion to install the remaining 4,270 megawatts of systems required to meet the RPS.

<sup>16</sup> See Mass. Gen. Law Chapter 25A, Section 11F(f); see also [http://www.dsireusa.org/incentives/incentive.cfm?Incentive\\_Code=MA05R&re=1&ee=1](http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=MA05R&re=1&ee=1).

<sup>17</sup> The penalty may not be reduced by more than 10 percent in any calendar year.

<sup>18</sup> See 225 CMR 14.07; see also [http://www.mass.gov/Eoeea/docs/doer/rps\\_aps/225-CMR-14.00-122010-tracked-changes.pdf](http://www.mass.gov/Eoeea/docs/doer/rps_aps/225-CMR-14.00-122010-tracked-changes.pdf).

quirement has not been set in advance, but rather is calculated annually based upon a number of factors. The 2011 requirement has been set at 69 megawatts, and the 2012 requirement will be determined prior to Aug. 30, 2011. Like its penalty structure, Massachusetts has retained the flexibility to adjust its solar requirements annually based on market conditions. However, the resulting uncertainty makes it very difficult to predict the value of an SREC, and consequently a solar project, into the future.

In an effort to stabilize SREC values, Massachusetts has developed a unique Solar Carve-Out Program, which extends the life of unsold SRECs and provides some downside SREC price protection through a state-run auction with a minimum purchase price. While the Solar Carve-Out Program provides a minimum purchase price for an SREC, the relatively small size of the Massachusetts solar program provides little comfort that SRECs can be sold at all if the supply exceeds the demand.

## **B) Pennsylvania**

Pennsylvania also has a regulatory framework similar to New Jersey's with a fixed solar generation requirement and a penalty structure for enforcement. Like that of Massachusetts, the Pennsylvania solar program is relatively small, with only 44 megawatts of system capacity required in 2012, rising to 71 megawatts in 2013 and 117 megawatts in 2014.

With approximately 71 megawatts of system capacity already installed and 100 megawatts of projects in the development pipeline, there is little room for further development in the near term. As a result, SREC prices in Pennsylvania have dropped from approximately \$300 in July 2010 to about \$50 in July 2011.

Additionally, Pennsylvania lacks a definitive penalty schedule. The penalty is set at double the average price of SRECs purchased in the applicable energy year. Although the amount of the penalty appears to make sense, unfortunately, the penalty is not determined until six months after the end of each energy year. As such, it is impossible to predict the future amount of the penalty, and, therefore, the future value of an SREC.

Finally, unlike New Jersey, which only accepts New Jersey SRECs, Pennsylvania suppliers can retire SRECs from any registered system within the territory serviced by PJM Interconnection, a regional transmission organization that coordinates the movement of wholesale electricity in all or parts of 13 states and the District of Columbia.<sup>19</sup>

## **C) Maryland**

Maryland is a third state with a solar program similar to that of New Jersey. Maryland does not have a set solar generation requirement, but requires that a set percentage of all produced electricity be generated by solar energy. As such, although the requirement can be estimated, unlike in New Jersey, it cannot be known in

advance. The requirement is estimated to be 60 megawatts in 2012 and 120 megawatts in 2013 and thereafter increasing until it reaches 1,380 megawatts in 2023.

Maryland has a penalty structure similar to New Jersey, but it decreases much more rapidly. The penalty is \$400 through 2014, decreases to \$350 in 2016, and continues to decline until it reaches \$50 in 2023. As a result, SREC values in Maryland likely will be lower than those in New Jersey. Additionally, Maryland has historically accepted SRECs from any registered system in the PJM territory. Fortunately for solar investors and developers, Maryland will no longer accept out-of-state SRECs after Jan. 1, 2012.

## **D) Ohio and Washington, D.C.**

Ohio and Washington, D.C., also have solar programs similar to New Jersey's, but their total required capacity is only a fraction of that required by New Jersey, their penalty for failure to comply is much less than New Jersey's, and they accept out-of-state SRECs. As a result, it is likely that Ohio and Washington, D.C., will have SREC prices significantly lower than New Jersey.

## **E) California, New York, and Puerto Rico**

Although there are relatively few states that have a solar program that resembles New Jersey's, there are numerous states that are currently considering such programs. California, which has more installed solar capacity than any other state, does not have an SREC program.

California's solar market has relied on installation rebates, local feed-in tariffs and other direct governmental incentives to encourage development. However, in January, the California Public Utilities Commission issued a decision authorizing the use of tradable renewable energy credits for RPS compliance.<sup>20</sup> Additionally, there is a bill in the New York Legislature<sup>21</sup> that if passed would create a market-based SREC program to encourage solar development.

Puerto Rico has recently passed legislation implementing a market-based SREC program that will take effect in 2015.<sup>22</sup>

## **III) Conclusion**

New Jersey's solar program has become the most successful statewide market-based solar incentive program in the country. Other states have similar programs, but to date no statewide program works as well. New Jersey's unmatched combination of predictable and aggressive Renewable Portfolio Standards and Solar Alternative Compliance Payment structures has created a solar development environment that is attracting eager participants from all over the world. For those states that are looking to jump-start solar investment, they need look no further than New Jersey's solar program for a blueprint for success.

<sup>20</sup> See [http://docs.cpuc.ca.gov/word\\_pdf/FINAL\\_DECISION/129517.pdf](http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/129517.pdf).

<sup>21</sup> Assembly Bill 5713; see <http://e-lobbyist.com/gaits/NY/A05713>.

<sup>22</sup> See Puerto Rico Act No. 82 (July 19, 2010), Article 2.3; see also <http://www.gobierno.pr/NR/rdonlyres/71AF1CB4-397B-4CB6-9206-FFBF2094A373/38576/Act82EnergyDiversificationAct.pdf>.

<sup>19</sup> The PJM-serviced territory includes all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and the District of Columbia. See <http://pjm.com/about-pjm/who-we-are.aspx>.