



## **Renewable Energy Certificates (RECs) and Solar Renewable Energy Certificates (SRECs)**

As a Massachusetts firm specializing in solar electricity, BVPS is required and wants to inform our customers of the RECs and SRECs incentives. They are a unique economic instrument and unfortunately take six pages to describe properly. RECs & SRECs use the same metrics as electricity, kWh (kilowatt hour), and MWh (megawatt hour). One REC/SREC is 1,000 kWhs or 1 MWh. This is slightly less than the average yearly output of a 1 kW photovoltaic system in our region<sup>1</sup>(see Endnotes). While traded as if they were real electricity, a REC or SREC is just the associated clean energy attributes or grace, if you will, separated from the energy. There is a market for these certificates of environmental goodness managed by the New England Power Pool Generational Information System (NE-GIS). Utilities and electricity suppliers must meet a Renewable Portfolio Standard (RPS). RPS compliance allows the purchase of RECs or SRECS in lieu of real renewable electricity. While utilities are the primary buyers of RECs and SRECs, there are also voluntary purchasers who wish to lighten their carbon imprint.

## **Net Metering**

It is important to understand how solar kWh production works with utility “net metering.” Keep in mind that the real solar electricity is used within your building as it is generated and this defers you buying its equivalent from the utility. Sometimes, the power generated from the PV system can exceed your needs and the extra is automatically exported to the grid<sup>2</sup>. Since January 1st 2010 every exported kWh you send to the utility grid is compensated at almost the same retail rate you pay for electricity<sup>3</sup>. As part of the PV interconnection application and agreement with the utility, we will explain and help you fill out their Schedule Z Form. This form allows you to designate how you want exported kWhs credited; most of our customers carry the credit over from the sunny summer months and bank them to reduce their winter month’s electric bills, others apply their credits to separate utility accounts. All the solar electricity you generate has a dollar value whether used on site or exported to the grid. That value is different than the revenue from the sale of the clean energy certificates known as RECs or SRECs.

## **Reasons for the SRECS Program**

Because Photovoltaic or solar electricity is both clean and expensive generation, incentives have been created for its adoption<sup>4</sup>. Rebate amounts have diminished in recent years and the object of Massachusetts policy is to wean the technology from rebates. RECs were introduced as an additional incentive in the early years of this decade however their value has consistently diminished. The Green Communities Act of 2008 established a special category of Massachusetts Solar RECs, SRECs, which utilities and eventually all suppliers of conventional electricity must carry in their Renewable Portfolio Standard. The Massachusetts Department of Energy Resources (DOER) has developed a program which attempts to guarantee a floor value for SRECs for a ten year period commencing January 1, 2010 or until 400 MW of new PV capacity is installed in the state. The Massachusetts SRECs incentive along with the federal 30% tax credit for investing in PV makes for an attractive return and will lead to increased solar capacity in the state.

DOER is building informational pages on the program, go to: [www.mass.gov/DOER](http://www.mass.gov/DOER) and search for “SOLAR RPS Carve out” or “SRECs” for the latest policy pronouncements and program updates. There are many stakeholders in this policy to nurture clean energy in Massachusetts; their conflicting interests contribute to its complexity.

## **SREC Eligibility Requirements & Price Projections**

What follows is a simple summary of SREC rules and price projections. Key policy nuances and the history of Massachusetts PV Incentive policy are commented on in bulleted paragraphs so that all our customers going back to 1985 understand the process and implications.

1. Only PV systems which come on-line after 2010, until the program cap of 400 MW is reached, are eligible for SRECs. Certain PV systems which were installed in 2008 & 2009 may be eligible if those system owners did not receive rebates or grants from the Commonwealth Solar I program or its predecessors funded by the Massachusetts Renewable Energy Trust (MRET). Pre -2008 installed photovoltaic generation systems are not eligible for the SRECS program. All post 1997 PV systems are still eligible to produce and trade their RECs.
  - Rules for the Commonwealth Solar Stimulus Rebate Program privilege eligibility to the SRECs program if the grant comprises less than 67 % of total system cost. Most Stimulus projects thus are eligible. Commonwealth Solar II participants can receive as much as 28% of the total system cost as a rebate and so are eligible for the SREC program.
  - This is an unfortunate exclusion of the early adopters from the SRECs program.
  - There are many owners of pre -2010 installed PV systems that are ineligible for the SREC program who meet these same criteria of grant percentage to total cost , particularly in the residential sector which led the market in the first half of the decade and did not receive the present 30% federal tax credit until 2008.
  - Class I RECS were part of these programs and policy. Class I simply means the REC was generated by a renewable energy source such as wind or solar. Starting out at ~\$55.00 per REC in 2001, projections then were they would reach \$200.00; they are now at~ \$30.00. The introduction of higher valued SRECS has not helped the market for Class I RECs; for small producers, there is no market. Some aggregators will take your name and put you on a waiting list for contact should they decide to purchase RECS in the future.
  - Pre 2010 PV owners who wish to increase their PV capacity now face unnecessary complications. Expansion capacity has to be separately metered so REC and SREC tallies are isolated which involves greater expense in power conditioning units, switchgear and solar kWh reporting.

The DOER website FAQ on the solar RPS Carve Out reads:

Q. "What happens to the people who installed a project under Commonwealth I or another program and are ineligible for SRECS? What do they do with their RECS?"

A. Projects that were built under previous incentive programs presumably went forward based on the economics at that time. They will continue to be eligible for Class I RECs, just not for SRECs."

2. The number of SRECs which can be minted each year is based on the percentage of utility load which must be in compliance with the solar portion of their renewable portfolio. In 2010, that was 30 Megawatts (MW) of new PV ~34,164 SRECs. DOER can adjust the SRECS cap for subsequent years consistent with promoting 400 MW of new PV capacity in Massachusetts by 2020. As of 9/27/2010, the DOER website lists almost 10 MW reserving the 2010 SRECs. The 2011 percentage amounts to another 39 MW. Subsequent year caps have yet to be determined. Once total capacity reaches 400 MW, the SREC eligible project qualification ends. This is certain to occur before the year 2020.
3. DOER will manage a SREC auction clearing market on the NE-GIS and provide a limited guarantee to owners of new PV systems installed in 2010 that their **SRECs will have a minimum value of \$285.00 and a maximum value of \$600.00** (\$0.285-\$0.60 per kWh), for the next ten years. This is the initial opt in term of 40 quarters. Systems installed in subsequent years through 2020 may see adjustments in duration of opt in term and SREC floor or ceiling prices. One provision cites a minimum opt in term of 20 quarters for projects on line before 2016. The auction account is open the last 30 days of the trading year around the end of July. The expectation is that owners will be able to sell their SRECs for more than \$285.00 each on the open market and DOER will not have to offer a clearing auction.  
As of March, 2011, aggregators are selling SRECS on the NE-GIS at ~\$500.00 per SREC.
  - It is not worthwhile for small renewable generators to go to the administrative effort to open an account with the NE-GIS. For them, REC/SREC Aggregators come in and act like brokers. The Aggregator contracts with small PV system owners and buys their RECs/SRECs, can bundle them with those of other small PV system owners and sell or trade the certificates on the NE-GIS. The aggregator lists the small PV owner's name and system characteristics on their blanket "Statement of Qualification" for the SRECs program and NE-GIS account.
  - Massachusetts has also established a special Renewable Energy Production Tracking System or PTS. Commonwealth Solar Rebate recipients on their applications can choose to participate in the PTS if their system is 10 kW or less, but

have to participate if their PV system is over that capacity. For small system owners to sell their RECs/SRECs to an aggregator, the PTS is the best way to participate. We'll explain this in more detail when we fill in your application. Systems less than 10 kW are allowed to report manually to the PTS, which means entering your solar kWh tally via computer through a password protected form on the PTS website every month. The PTS system sends you reminders when your reading is due.

<http://www.masstech-pts.org/>

- For system capacities exceeding 10 kW the PTS requires automatic reporting which involves BPVS installing an internet connected data logger.
- Every photovoltaic system we install includes a new "revenue grade" solar kWh meter which is required to sell RECs or SRECs.
- For automatic reporting, the data logger is tied to this meter and automatically sends a report via the internet at least once each month. Your computer (or network) must be on and internet ready so the data logger can feed data .
- Automatic reporting hardware and subscription fees are costed into your 10 kW + PV system. BPVS utilizes cost effective, efficient, and reliable products and services.
- If you choose to sell your RECs /SRECs to an aggregator, you may give them permission to access your production tally on the PTS. This offers aggregators a degree of fraud protection since the PTS software can identify outliers and request clarification if you report more production than is possible or likely given the weather and the tally from comparable PV systems in any given month. Whether you manually or automatically report your tally to the PTS each month, you too have access to the PTS production tally page on their website.

#### **How can I sell my SRECs? What are they worth?**

- The DOER has compiled a list of aggregators you can contact for detailed offers.  
[www.mass.gov/?pageID=eoeeterminal&L=5&L0=Home&L1=Energy%2c+Utilities+%26+Clean+Technologies&L2=Renewable+Energy&L3=Solar&L4=RPS+Solar+Carve-Out&sid=Eoeea&b=terminalcontent&f=doer\\_renewables\\_solar\\_market-resources&csid=Eoeea](http://www.mass.gov/?pageID=eoeeterminal&L=5&L0=Home&L1=Energy%2c+Utilities+%26+Clean+Technologies&L2=Renewable+Energy&L3=Solar&L4=RPS+Solar+Carve-Out&sid=Eoeea&b=terminalcontent&f=doer_renewables_solar_market-resources&csid=Eoeea)
- For our customers, if this link has changed on the DOER website or you cannot download it in a readable form or please call or e-mail BPVS for a copy.

We estimate the price for SRECs at \$250.00 each in the financial analysis we provide with PV system quotes. We expect this will be the average value of an SREC over the next ten years. Aggregators are just now setting contract values and language. The PV system has to be installed and usually at least one months' tally registered on the PTS before you can contract. The aggregator you choose will assist you in registration; all of the technical details you and they need are included in our contract and system design documentation.

#### **Can BPVS recommend an aggregator?**

BPVS does not advise our system owners on aggregators or their offers. We do supply and install only new, sealed and calibrated solar kWh revenue grade meters with our PV system so you can sell RECs/SRECs. If your aggregator requires a specific automatic reporting system, we can install those too. BPVS is happy to walk you through setting up your PTS account and advising on manual reporting to the PTS.

Some PV design and installation firms are also aggregators with their own NE-GIS account. BPVS is not- we do not take RECs or SRECs as a form of compensation in any way and certainly not through any vague clauses in our contract with you. We do not and will not overtly or secretly represent any aggregator(s). It is common practice for aggregators to pay commissions to PV firms who supply them clients. Neither the PV firm nor the aggregator are required to disclose such arrangements to you. BPVS does not offer non-ownership PV financing schemes which charge you for on-site generation of solar electricity and retain ownership of the RECs /SRECs. We do not represent financial product firms that provide these long term contracts or leases.

#### **Important Disclosures**

1. We certainly understand that PV is expensive<sup>4</sup> and are glad there are incentives for its adoption in our energy mix. If you choose to sell the clean energy attributes of your PV system, the Commonwealth Solar II rebate application forms have a

couple of options we will explain to assure your eligibility to sell SRECs and/or RECs. We will also let you know when the SRECs cap is reached. The Commonwealth Solar Stimulus program (now closed) had similar options.

2. The contract with an aggregator to sell your RECs or SRECs should have a clause in it that prohibits you from making any formal claim as to the “greenness” of your PV system production. You cannot say the electricity from the PV system you use in your building is clean energy, or that any exports to the grid of your PV generation are green electricity. You can say you are “hosting” solar energy, not that you are using it. In effect you are being paid to take on the negative environmental effects of fossil fuel generated electricity from the buyer. You can say that by selling your RECs or SRECs you are enabling others to reduce their pollution penalties or to “green up” their energy mix. There is an overall societal benefit from the transaction

### **You don’t have to sell your RECs/SRECs.**

3. By not selling their RECs or their SRECs, the PV owner effectively retires them. The financial sacrifice of retiring their clean energy attributes means they can indeed take credit for reducing the environmental detriments of their personal and “on site” energy use. Most of our customers retire their RECs or SRECs.

For them, virtue is its own reward.

4. There is a major valuation disconnect by now inaugurating SRECs designed to trade ten times higher than RECs. Whether a PV system was installed pre -2010 or after, the clean energy attributes produced are equivalent in their constituent character as deferred lbs. of CO<sub>2</sub>, NO<sub>x</sub> and SO<sub>x</sub>, grams of mercury and a host of other heavy metals and particulates. Early adopters of PV have seen the value of their RECs fall and now cannot renew contracts for their sale. Separating green attributes from the commodity of solar electricity was bound to become messy but it is in place in several states, a *fait accompli*. Policy directives to restore value to RECS will make it more intricate but should be pursued. In some ways aggregators and electricity suppliers can help by marketing lower priced RECS to those PV owners selling their SRECS. Some institutions are pursuing this convoluted transfer to assure their stakeholders of sincere action on environmental responsibilities and still earn a return on investment in their PV system.

An effort to balance out dollar value and encourage attribute retention is not apparent in this market at this writing. The valuation connection between the certificate and detailed reports of emissions deferred is ignored in aggregators’ literature. We have in the past compared RECs/SRECs certificates to the indulgences sold in medieval times by which persons could purchase a sort of saving grace. Excesses of the Church prompted the Reformation and its excesses. Imagine if organic farmers could sell the attribute of “organicness” separately from their produce. There are other examples of how our society could monetize attributes that might spark reflections on how economic shell games disrupt values and hollow out purposeful action.

### **Isn’t there a better way to value clean energy from PV?**

There are multiple smart ways to institute a production incentive and they all rely on not separating the clean character of the generation resource from the energy. Since the RECS /SRECS market is financed by all electric ratepayers and the regulated utilities both distribute and measure electricity, the exchange of value for new renewable energy ought to be between the utility and the PV owner, without the muddle of unregulated solar kWh meter readings, middlemen aggregators and the inevitable “greenwashing” with vapor watts.

BPVS has long been an advocate of a policy whereby utilities supply and read the solar kWh “revenue grade meter” under the same strict inspection and calibration regulations enforced by the Department of Public Utilities for all electricity metering. In fact, with a “smart grid”, one meter will suffice and the physical interconnection of the PV source can be made at the utilities smart meter, simplifying installations, code inspections and overall safety.

PV generation owners should be compensated directly by the utility for all their solar kWh generation with a bonus value to a site’s exported solar kWhs. Long term assurance of reasonable compensation from the utility and thus from all ratepayers can steady the adoption of renewables from the boom and bust cycles that follow short term policy directives and opportunistic market responses. Singling out exported solar kWhs would encourage conservation and recognize the unique value of PV power, a generation method that produces peak electricity during grid peak demand periods, when conventional electricity is most expensive and most polluting.

**If you have comments or criticisms on our policy please write to us at [info@bpvs.com](mailto:info@bpvs.com)**

**Endnotes:**

1. Between 11:30 AM and 12:30 PM on a bright sunny day, a 1 kW (kilowatt) system will generate 1,000 watt-hours or 1 kWh (kilowatt hour). The average New England home without an electric hot water heater uses 650 kWhs per month. In twelve months, it will use 7,800 kWhs, or 7.8 MWh's and need a 7 kW PV system to offset utility purchases of electricity.

2. The PV system is in automatic parallel generation with the utility grid. It is utility interactive, which means it is a unitary flow to a load mixed seamlessly with that from all other power plants on the grid. If your building account is not asking for power, some account down the line is, and your extra PV power generation decrements your utility meter as it flows out. If the grid goes out, the PV system shuts off unless it is of a bi-modal design which first automatically isolates you from the grid and then powers standby loads on site during an outage. Bi-modal designs require battery storage and are more expensive than simple grid connect systems.

3. Formerly, exported power was compensated at the utilities wholesale rate, approx. \$0.03-\$0.06 per kWh. Now in MA the value of your exported kWh is at the retail rate (approx. \$0.15 per kWh) minus two small system benefit per kWh charges of ~ \$0.000500 to the Massachusetts Renewable Energy Trust administered by the Massachusetts Clean Energy Center of the Department of Energy Resources & ~ \$0.002500 to the Energy Conservation fund administered by the various utilities. The compensation rate is changing as utilities de-couple electricity pricing. Consider \$0.12 a safe export kWh value for 2011.

4. "Expensive" refers to the economical value under present regulations. The externalities, meaning the clean energy and local benefits of solar electricity not valued under present law, are calculable through categories as varied as reduced health care costs, environmental cleanup, defense appropriations and more. Properly analyzed, PV generation is a bargain.