Creating A Greener Energy Future For the Commonwealth

DOER

Massachusetts Department of Energy Resources

Massachusetts Solar Carve-Out (SRECs):

Overview & Program Basics

December 18, 2012

Outline

- Learn how the solar PV market has grown in MA since 2007
- Understand the policy design of the MA Solar Carve-Out
- Update on the current status of the market
- Frequently asked questions
- Contacts

MA RPS Program

- Established in 1997, first year of compliance in 2003
- Eligible technologies include solar PV, solar thermal electric, wind, ocean thermal, wave or tidal energy, fuel cells, landfill methane gas, small hydro, low-emission biomass, marine or hydrokinetic energy, and geothermal electric
- Generation Units from New England and adjacent control areas (New York, Quebec, and maritime Canadian provinces) may qualify
- Minimum Standard of 7% in 2012
- Minimum Standard rises by 1% each year

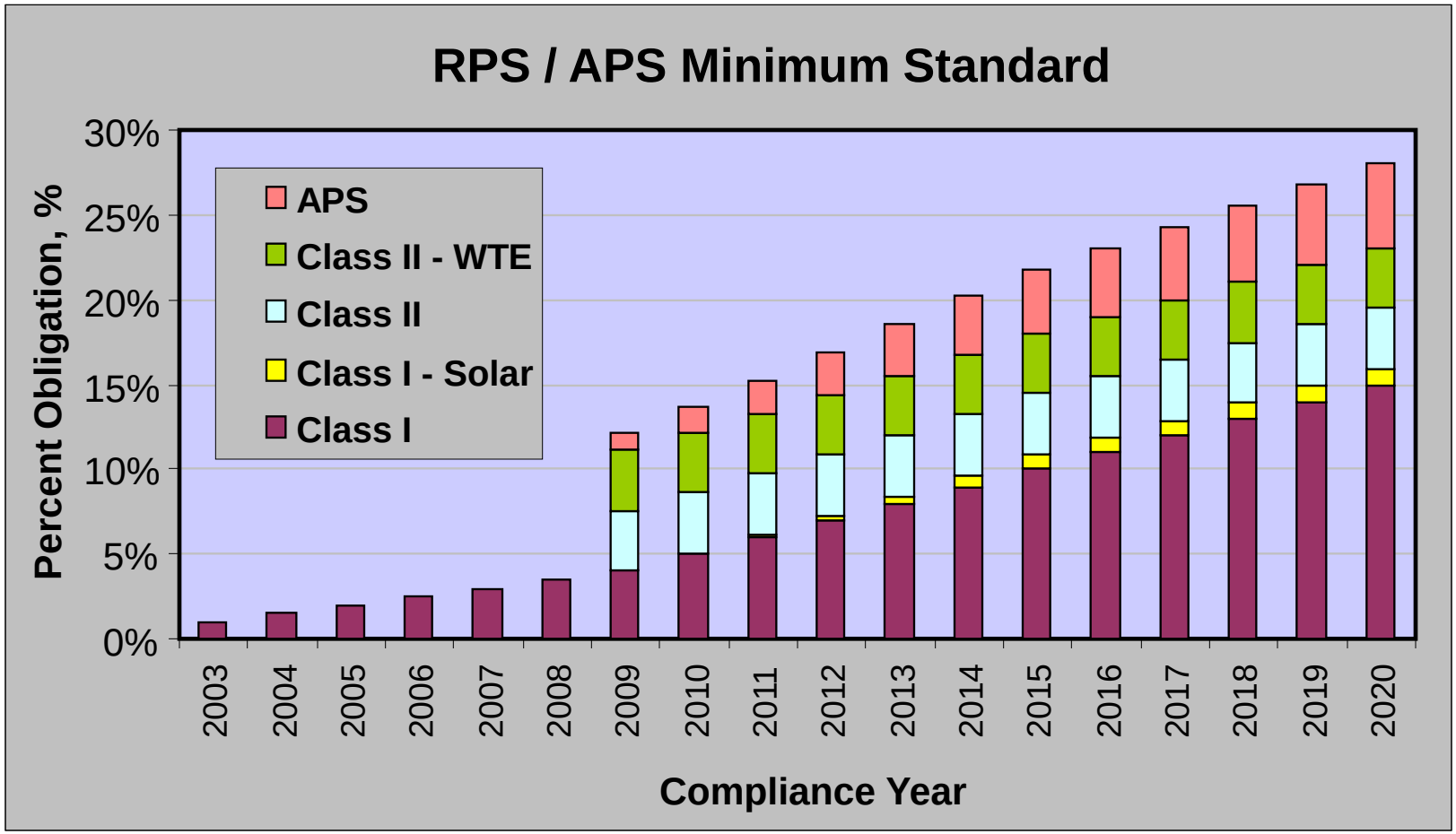
MA Renewable & Alternative Energy Portfolio Programs

- In 2008, RPS was renamed RPS Class I, and 3 new classes of Portfolio Standards were added:
  - RPS Class II Renewable Energy for facilities in operation prior to 1998 (mostly small hydro, LFG, and biomass)
  - RPS Class II Waste Energy for waste-to-energy facilities located in MA
  - Alternative Energy Portfolio Standard, APS (mostly CHP, also flywheel storage & other technologies)
- In 2010, a Solar Carve-Out was added within Class I
- Solar Carve-Out obligation is part of the Class I total, but has different market parameters and qualification process

Summary of MA Renewable Energy Portfolio Standard (RPS) Programs

RPS Class	Sub Class	Technology	Minimum Standard	2012 ACP Rate, $/MWh
Class I		Wind, LFG, Biomass, Solar, Small Hydro, etc.	7% in 2012, increases 1%/year	$64.02; increases with CPI
	Solar Carve-Out	Solar PV; 6 MW or less, in MA	set by formula to grow installed capacity to 400 MW	$550; reduced annually according to 10-year schedule
Class II	Renewable	Same as Class I	3.6%, stays constant	$26.28; increases with CPI
	Waste Energy	Waste to Energy Plants, in MA	3.5%, stays constant	$10.51; increases with CPI
APS		CHP in MA, flywheels, storage, etc.	2.5% in 2012; increases to 5% in 2020	$21.02; increases with CPI

Cumulative Obligations of RPS / APS* Programs



*Alternative Energy Portfolio Standard (APS)

Massachusetts Solar Development Strategies (Pre Solar Carve-out)

- Governor Patrick's goal – 250 MW by 2017
- Commonwealth Solar (Rebates) – initiated Dec. 2007
  - Rebate Program: $68 million, 27 MW
  - Successfully achieved and completed Oct. 2009
  - Created robust PV development sector in MA
- Commonwealth Solar II (Rebates) for small (<15kW) systems has maintained residential PV market managed by the MassCEC
- Federal Stimulus/ARRA funds used by DOER to support more than 10 MW of PV at state/municipal facilities.
- Green Communities Act allowed for construction more than 10 MW of PV at sites owned by Distribution Utilities.
  - National Grid approved for 5 MW
  - WMECO approved for 6 MW

Solar Carve-Out Program Design Basics: Generation and Minting

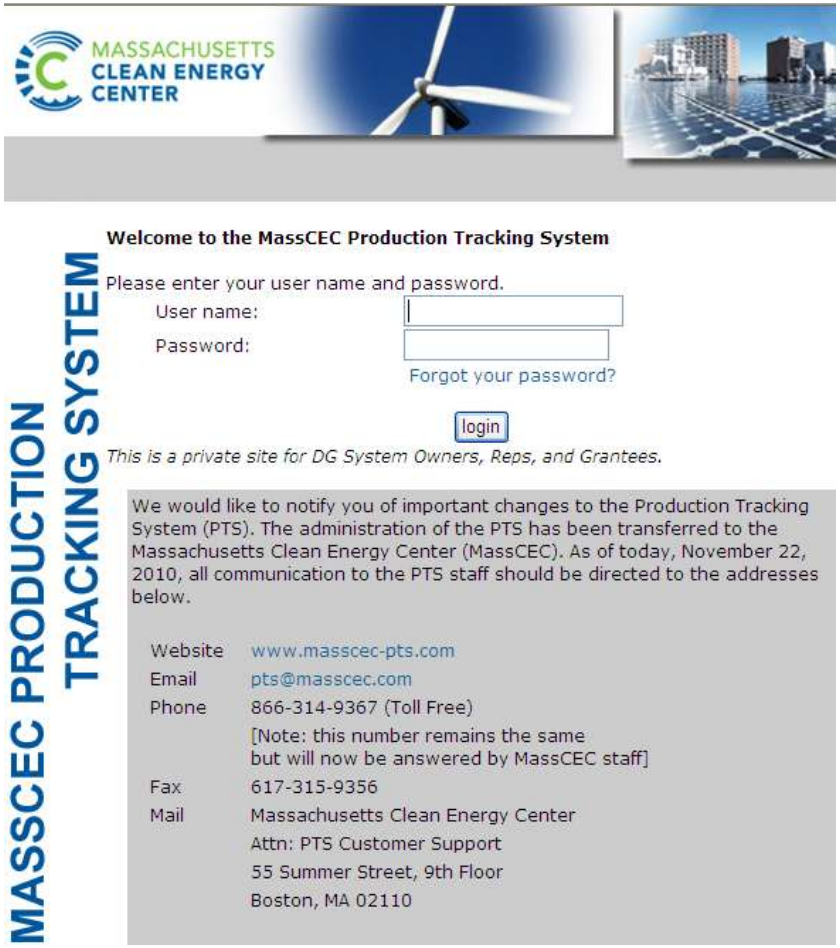
- Market-based incentive, part of the broader RPS Program
- 1 SREC (Solar Renewable Energy Certificate) represents the attributes associated with 1 MWh of qualified generation
- Units must be qualified by DOER before they can begin generating SRECs
- All generation is metered and reported to MassCEC's Production Tracking System (PTS)
- MassCEC reports generation to NEPOOL GIS where SRECs are minted on a quarterly basis

Qualification Process

- Eligibility criteria
  - Have a capacity of 6 MW (DC) or less per parcel of land
  - Be located in the Commonwealth of Massachusetts, which includes municipal light district territories
  - Use some of its generation on-site and be interconnected to the utility grid
  - Have a Commercial Operation Date of January 1, 2008, or later
  - Cannot have received certain levels and types of funding
- Online application
- PV Detail Form
- Need *Authorization to Interconnect* from local utility before SRECs can be generated
- Review process is quick and straightforward (typically 30 days or less)

Reporting Process

- Registered system owners report production monthly to PTS account
- MassCEC performs QA on data collected
- Follows up with any systems with issues
- Uploads production totals to corresponding generator accounts at NEPOOL GIS (quarterly)
- MassCEC will conduct audits on SREC eligible systems to ensure accuracy of data



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SREC Program Design Features

Program design features help ensure market stability and balance

- Adjustable Minimum Standard

  maintains SREC demand/supply in reasonable balance

- Forward ACP Rate Schedule

  provides investor certainty

- Solar Credit Clearinghouse Auction Account

  essential price support mechanism to assure SREC floor price

- Opt-In Term

  provides right to use Auction, adjusted to throttle installation growth rate

- Program Cap of 400 MW

  Enables sufficient market growth opportunity (exceeds Governor's goal of 250 MW by 2017)

- These features work together to ensure the market will remain in balance as more PV is built

Minimum Standard Adjustment

Compliance Year	Compliance Obligation (MWh)	Minimum Standard Percentage	Equivalent Full-Year Solar Capacity (MW)
2010	34,164	0.0679%	30
2011	78,577	0.1627%	69
2012	81,559	0.1630%	72
2013	135,495	0.2744%	119

For 2012 and beyond, the Minimum Standard (Compliance Obligation) is adjusted each August according to a formula set in the program regulation.

2013 Min. Stand = 2012 Min. Stand

+ [Projected 2012 SRECs – Actual 2011 SRECs] x 1.3

– 2011 ACP Volume + 2011 Banked Volume + 2011 Auction Volume

2013 Calculation Based on Current Formula

135,495 MWh = 81,559 MWh + [109,465 – 26,598] x 1.3 – 53,802 + 11 + 0

2012 Rulemaking Process

- DOER announced intention to begin formal rulemaking process on August 30, 2012
- Primary reason for rulemaking is to make two changes to RPS Class I Regulation:
  - Insert 10-year forward ACP Rate schedule into regulation
  - Remove the subtraction of ACP Volume from Minimum Standard formula
- DOER plans to retroactively apply change to 2013 Minimum Standard, thereby increasing the demand in 2013
- Rulemaking expected to begin before end of year

Example Calculation – CY 2013	Current Formula	Proposed Formula
Compliance Obligation	**135,495 MWh**	**189,297 MWh**
	= 81,559 MWh + [109,465 - 26,598] x 1.3 - 53,802 + 11 + 0	= 81,559 MWh + [109,465 - 26,598] x 1.3 + 11 + 0
Minimum Standard	**0.2744%**	**0.3833%**
	= 135,495 MWh / 49,386,169 MWh x 100	= 189,297 MWh / 49,386,169 MWh x 100

10-year Forward ACP Rate Schedule

- DOER released an RPS Guideline for a 10-year ACP Rate Schedule in December
- Done to reduce market risk and uncertainty
- Maintains current ACP Rate through 2013 before reducing 5% annually
- DOER announced intention to insert schedule into the MA RPS Class I Regulation during upcoming rulemaking process

Compliance Year	ACP Rate per MWh
2012	$550
2013	$550
2014	$523
2015	$496
2016	$472
2017	$448
2018	$426
2019	$404
2020	$384
2021	$365
2022	$347
2023 and after	added no later than January 31, 2013 (and annually thereafter) following stakeholder review

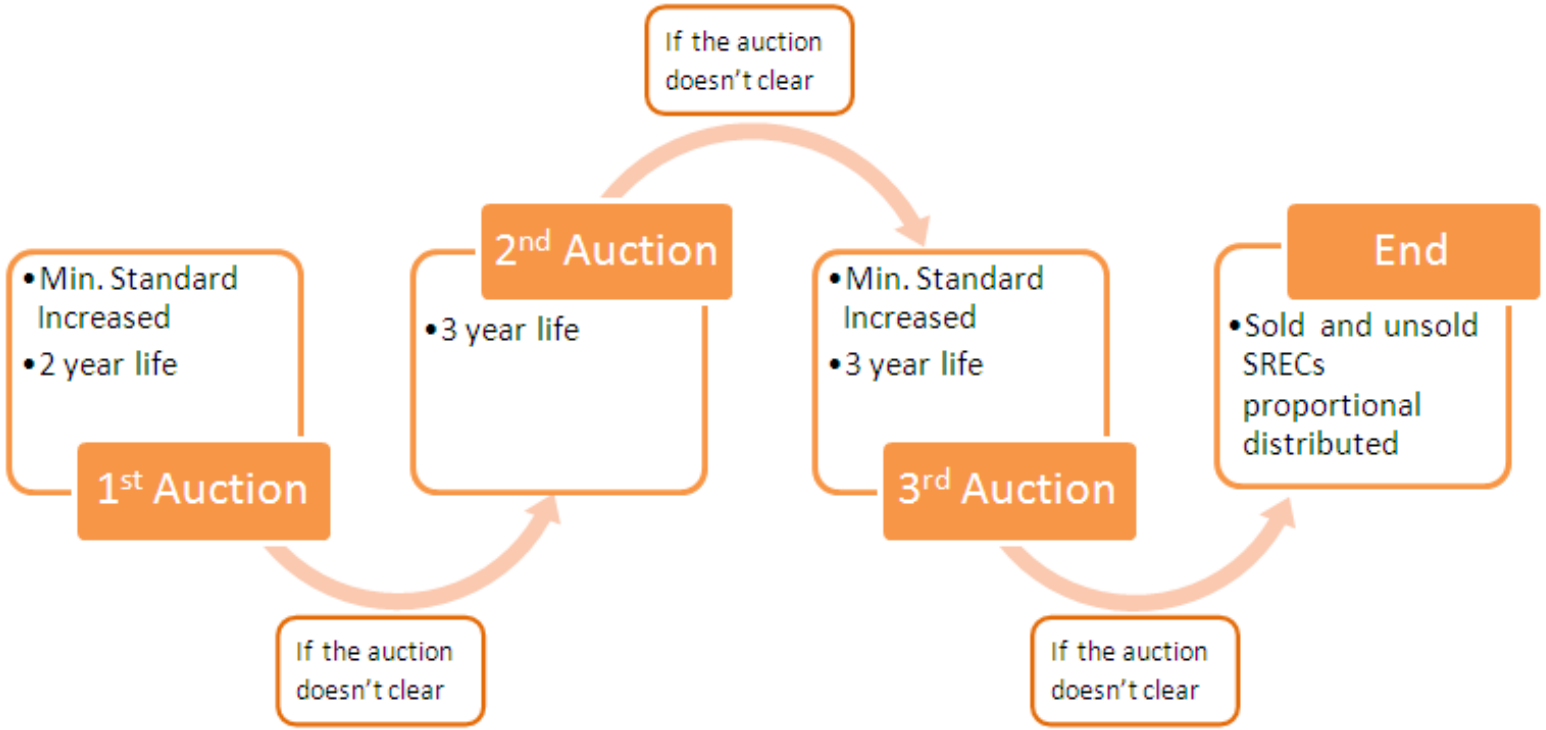
Program Design: Opt-in Term

- The Opt-In Term is the number of quarters a qualified project has the right to deposit SRECs into the Auction Account (to be assured floor price). The Opt-In Term is currently 10 years (40 quarters), but can be adjusted each July for subsequent qualified projects.
- Opt-In Term Adjustments
  - **Long Market**: Opt-In Term reduced by 4 quarters for each 10% of Compliance Obligation deposited into the Auction Account
  - **Short Market**: Opt-In Term increased by 4 quarters for each 10% of Compliance Obligation met through ACP Payments
  - Opt-In Term may not increase or decrease more than two years as a result of an annual adjustment, nor can it exceed 10 years.

Price Support – Auction Mechanism

- Solar Credit Clearinghouse Auction Account
  - Open every year from May 16th – June 15th
  - Any unsold SRECs may be deposited into the Account
- Auction will be held no later than July 31st, but after the Minimum Standard adjustment is announced
- Deposited SRECs are re-minted as "extended life" SRECs (good for compliance in either of the following two Compliance Years)
- SRECs are offered to bidders for a fixed price of $300/MWh before being assessed a $15/MWh auction fee by DOER. Bidders bid on volume willing to buy at the fixed price
- SREC owners will be paid $285/MWh for each SREC sold through the Auction

Price Support – Auction Mechanism



Important Dates

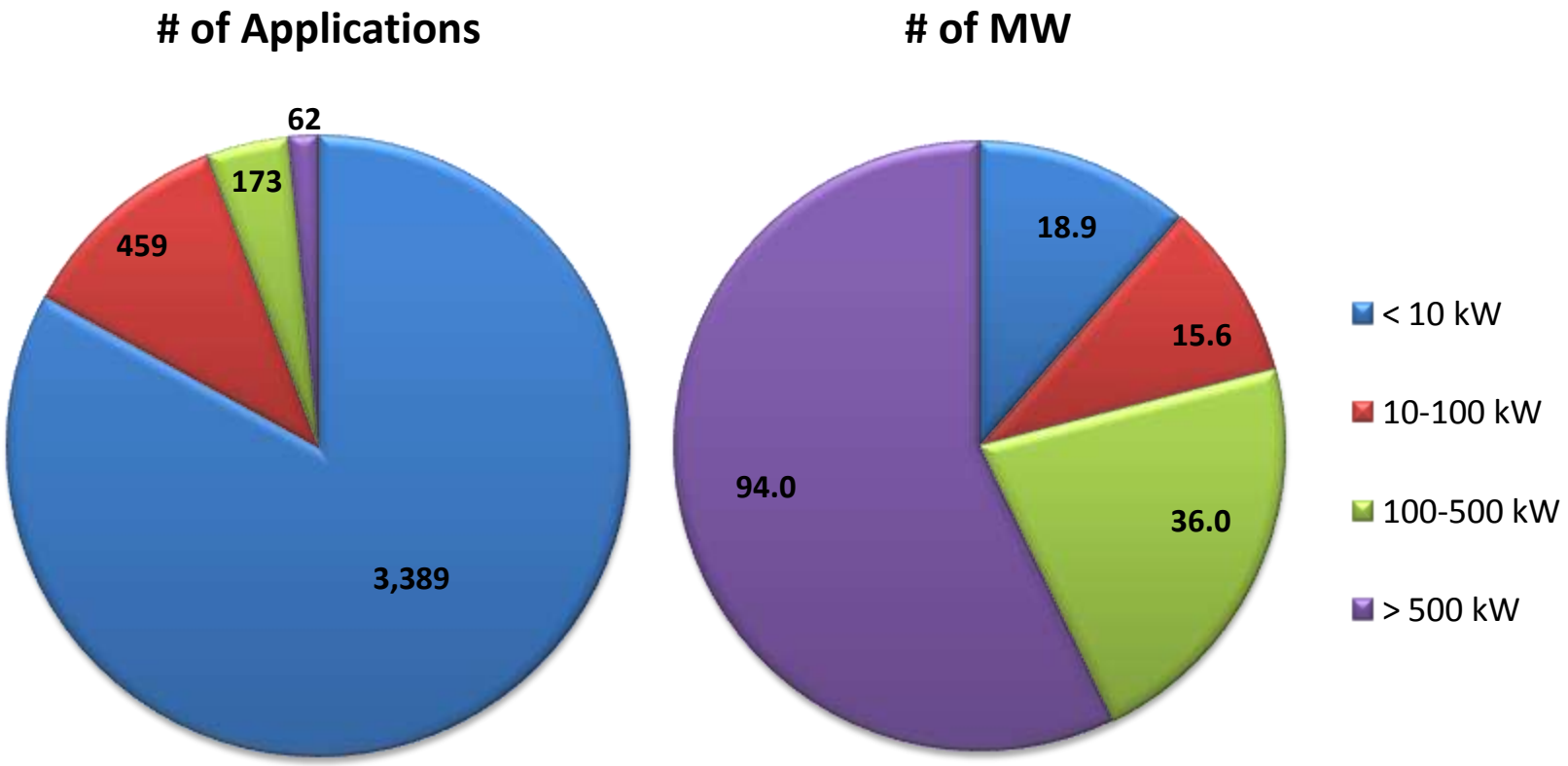
Date	Event
January 15	SRECs from Quarter 3 of the previous calendar year are minted at the NEPOOL GIS
January 31	Any change in the ACP rate announced by this date
April 15	SRECs from Quarter 4 of previous calendar year are minted at NEPOOL GIS
May 16 - June 15	Solar Credit Clearinghouse auction account available for deposit of SRECs
July 1	Compliance Filings due from Retail Electric Suppliers (Load Serving Entities)
July 15	SRECs from Quarter 1 of current calendar year are minted at NEPOOL GIS
July 20	Opt-in term announced, effective immediately for subsequently qualified units
July 31	Auction held no later than this date, if the auction does not clear, DOER shall conduct a new auction within three business days
Cleared auction date + 10	Each successful bidder is required to submit payment for the awarded volume of SRECs within 10 business days
August 30	The final Minimum Standard shall be announced by DOER not later than this day
October 15	SRECs from Quarter 2 of the current calendar year are minted at NEPOOL GIS

Current SREC Program Statistics – 12/1/12

- Over 4,000 applications received
- Over 3,700 qualified units
- 155 MW qualified
- Nearly 138 MW of qualified projects installed
- 2,741 SRECs created in 2010
- 26,598 SRECs created in 2011
- More than 100,000 SRECs expected to be created in 2012

	Number of Systems	Capacity (MW)
Applications Received	**4,086**	**164.4**
Applications under Review	**299**	**9.5**
Applications Qualified	**3,787**	**154.9**
Qualified but Installation Incomplete	**19**	**17.3**
Qualified and Installed	**3,768**	**137.6**

Current SREC Program Statistics – 12/1/12
Activity by System Size



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Frequently Asked Questions

- How long are SRECs good for?
  - SRECs must be sold by the end of the Compliance year. For example 2012 SRECs minted at NEPOOL GIS on 7/15/12, 10/15/12, 1/15/13, or 4/15/13 must be sold by June 15, 2013, the end of the 2012 trading year at NEPOOL GIS. 2012 SRECs also may be deposited into the auction between May 16 and June 15, 2013.
  - Extended Life SRECs bought from the auction are valid for compliance for either two or three years, depending on the round of the auction in which they were bought.
- Why would someone buy at the Auction?
  - Purchasing SRECs in the auction gives a buyer flexibility to use the SRECs in any one of the following two or three Compliance Years. Thus, it is a useful way to either hedge against or speculate on potential increases in SREC prices that may be seen in one of these years.
- What is the difference between the MA market and the other SREC markets in the USA?
  - The Massachusetts market is unique from other markets because of the many design features that take into consideration market conditions and maintain a reasonable balance between supply and demand of SRECs. These features include the formula to appropriately adjust the minimum standard, the ability of projects owners to deposit unsold SRECs into the Auction and assurance of the auction price, the opt-in term and its ability to throttle project development, a 10 year forward ACP schedule, and the 400 MW program cap.

F.A.Q. continued…

- Why are SREC prices currently (December 2012) less than $285 on the spot market?
  - It appears the 2012 SREC market will be oversupplied. In an oversupplied market, prices will fall; in a short market, prices will tend towards the ACP rate. Early in the 2012 trading season, some project owners may opt to sell their SRECs at prices being offered by buyers below the auction price, rather than waiting for the end of the trading season to have recourse of the auction and the auction price.
- How long will my project generate SRECs?
  - Your project will generate SRECs from the time it is qualified until the program ends.
- When does the program end?
  - After we have reached the program cap of 400 MW of qualified projects installed, DOER will determine and announce the remaining duration of the program, which will be equal to the longest remaining opt-in term. After the end of the Solar Carve-Out program, the qualified units will be merged into the RPS Class I program and thereby continue to generate Class I RECs.
- What happens after we reach 400 MW?
  - Subsequently built projects cannot qualify for the Solar Carve-out (but can qualify for Class I), while already-qualified projects will continue to generate SRECs until the Solar Carve-Out program ends.

Questions

DOER Solar Carve-out Website: www.mass.gov/energy/rps then click on “RPS Solar Carve-out”

Contact: DOER.SREC@state.ma.us

or 617-626-7300