

Massachusetts Solar Market

RPS Solar Carve-Out II Updated Proposed Design

Stakeholder Meeting

August 12, 2013

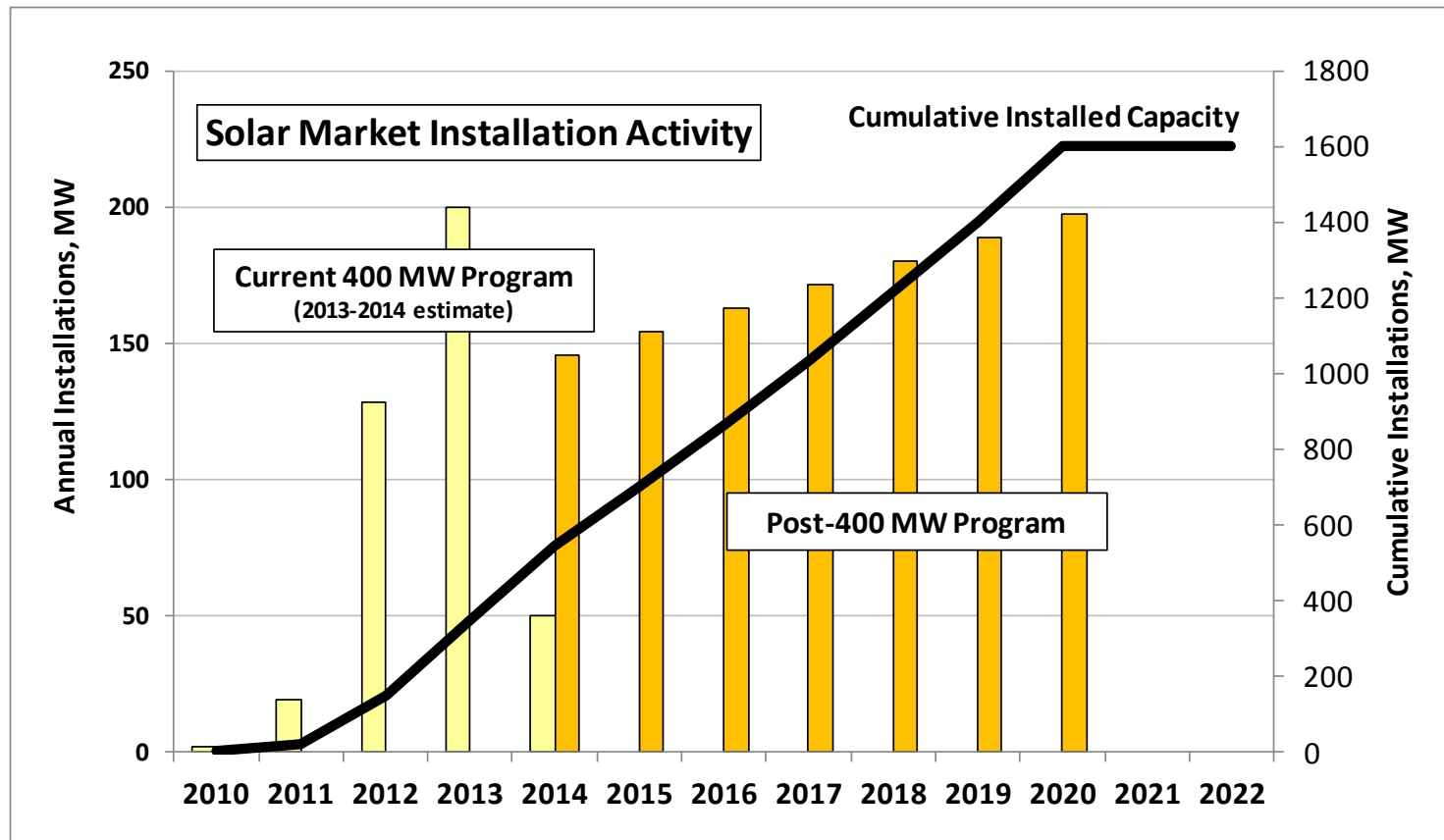
DISCLOSURE

The information provided in these slides are part of a deliberative policy making process for which public input is valued. DOER has not finalized any decisions nor committed to any policy design or values presented in this presentation.

POLICY OBJECTIVES

- Provide economic support and market conditions to maintain and expand PV installations in MA.
 - Maintain steady growth of market towards when the technology reaches cost parity with RPS Class I.
 - Meet the Governor's goal of 1600 MW installed by 2020.
- Control ratepayer costs.
- Maintain robust growth across installation sectors.
- Manage market growth to meet 2020 goal and until the market is better prepared for Class I RECs.
- Maintain competitive market of diverse PV developers, without undue burdens of entry.
- Address financing barriers limiting direct ownership, without compromising third-party ownership model.
- Minimize regulatory complexity and maintain flexibilities to respond to changing conditions.

CURRENT / PROJECTED MARKET INSTALLATIONS TO MEET GOVERNOR'S GOAL



- To meet Governor's Goal, market needs to install 140 to 200 MW per year between 2014 and 2020 (adjusted for final SREC-I Capacity).
- This installation rate maintains growth from 2012 installation rate, but does not sustain the accelerated market growth experienced in 2013.

CURRENT MARKET TRENDS

SYSTEM SIZE

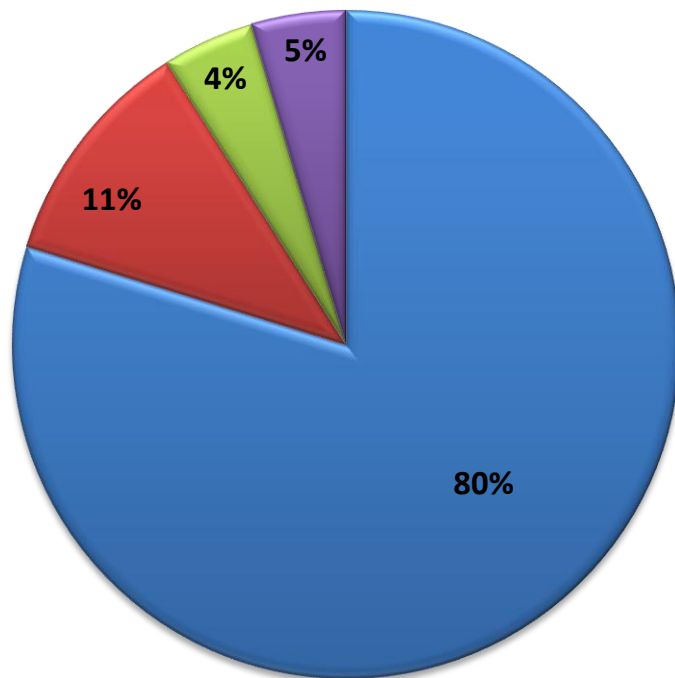
UPDATED DATA

SREC-I Program

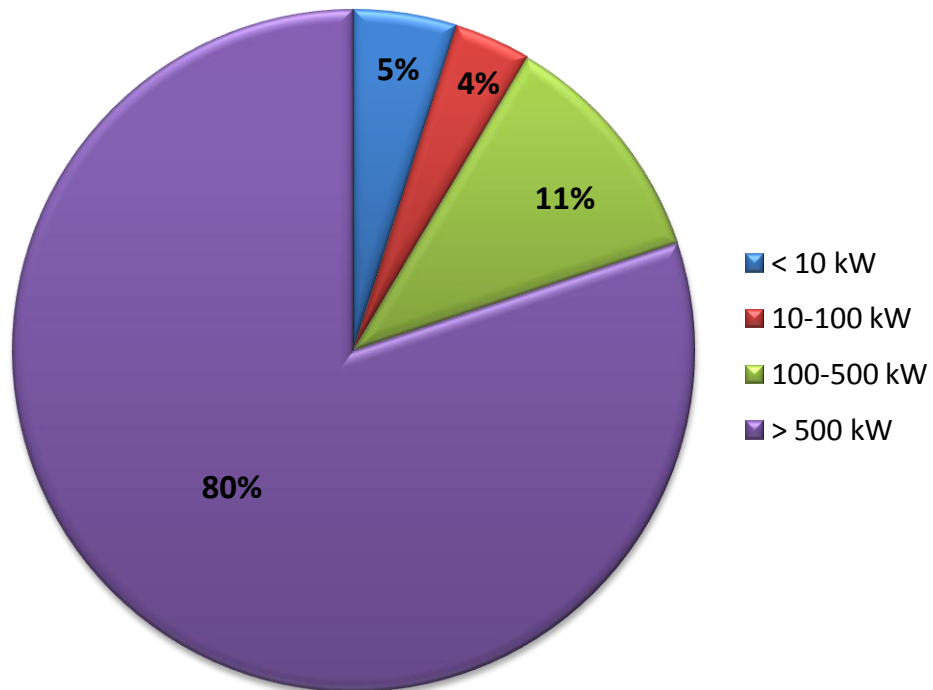
Installations by System Size

(based on all units qualified or pending)

% of Applications by System Size

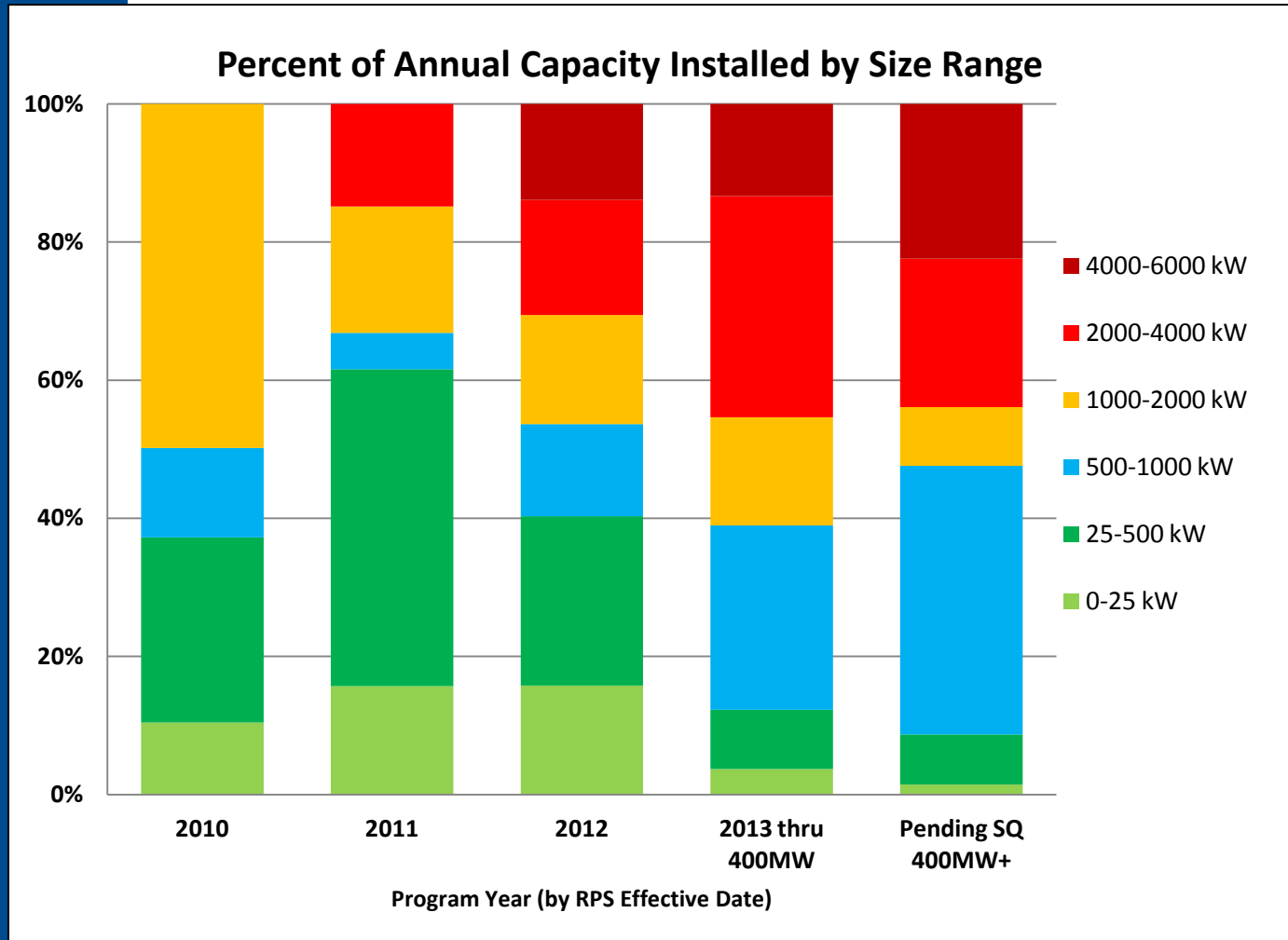


% of MW by System Size



- < 10 kW
- 10-100 kW
- 100-500 kW
- > 500 kW

SREC-I MARKET TREND – BY SYSTEM SIZE



Large systems represent a growing portion of the market each year and are currently a dominate contributor to installed capacity.

DESIGN FEATURES AND REGULATORY STRUCTURE

KEY DESIGN FEATURES

- Post 400-MW program will create a new separate SREC market (SREC-II) with separate new compliance obligation on retail electricity suppliers.
- New Solar Carve-Out Program will set Program Cap of 1200 MW (or correspondingly less if SREC-I cap exceeds 400 MW).
- Financial incentive for solar projects will decline over time.
- Financial incentive will differentiate between market sectors.
- Carve-Out projects will be “term limited”, that is be eligible for SRECs for a fixed term (10 years), then moved over to Class I status.
- A separate but similar Solar Credit Clearinghouse Auction will provide a price support mechanism. All projects will have a fixed 10 year opt-in term.
- Compliance obligation will be set by formula to achieve 1200 MW by 2020 and to help maintain market balance.
- Managed growth and cost reductions achieved by competitive solicitations, no less frequently than semi-annually, for large-scale ground mounted projects to fill available supply .
- Forward Minting for direct-owned small/residential projects to reduce SREC transaction costs and financing burden.

IMPORTANT DESIGN REVISION

Design Change from June 7th Stakeholder Briefing

Stakeholder comments reflected on complications of the Adjusted SREC Factor. Key complication was the requirement for solar market to engage in two REC markets – SREC-II and RPS Class I.

DOER will instead go forward with a declining SREC-II Auction Floor Price and ACP Rate, with constant SREC Factor for each market sector used as SREC multiplier.

REDUCING INCENTIVE VALUE OVER TIME

Auction Floor Price and ACP Rate Schedules

Auction Floor Prices in this Table are prices returned to depositor, after 5% Auction Fee is levied from fixed Auction Bid Prices.

Year	\$/MWh	
	Auction Floor Price	ACP Rate
2014	285	375
2015	285	375
2016	285	350
2017	271	350
2018	257	350
2019	244	333
2020	232	316
2021	221	300
2022	210	285
2023	199	271
2024	189	257
2025	Values announced by DOER each year to maintain 10-year forward schedule.	
2026		
2027		
2028		
2029		
2030		

Generation is provided RPS Class I RECs after 10 year SREC-II eligibility (except for units opting for Forward Minting).

Price gap between Auction and ACP Rate (2-3 years forward) maintains auction bid motivation.

DIFFERENTIATING MARKET SECTORS

Market Sector	SREC Factor
Residential*, Solar Parking Canopies, Emergency Power for Public Safety, all projects <= 25 kW	0.9
All Roof Mounted Projects; and Ground Mounted Projects > 25 kW with over 67% on-site electric use annually	0.9
Projects on Landfills and Brownfields	0.8
Ground Mounted project <= 500 kW, with less than 67% on-site electric use annually.	0.7
Managed Growth Sector - Ground Mounted projects over 500 kW with less than 67% on-site electric use annually.	competitively bid

Each MWh of Generation is minted 1*SREC Factor MWhs of SRECs.

Remainder of Generation is minted as zero-emissions System Mix on NEPOOL-GIS. This generation will be ineligible for other REC markets.

*Comm Solar II Rebates will continue through end of SREC-I Program. MassCEC will consider its role to support the residential solar market under SREC-II. Stakeholders are asked to comment on these incentive levels assuming no Comm Solar rebates are available.

SREC FACTORS

LIMITED DISCRETION TO MAKE ADJUSTMENTS

- SREC Factors will be provided in a Guideline, referenced in regulation.
- Regulation prescribes limited discretion for DOER to adjust the SREC Factors, as follows. In no case shall a project already qualified have its SREC Factor adjusted.
 - Substantial external changes in policy or market conditions. For example, but not limited to or inclusive of, changes in federal policy, changes to MA net metering market, substantial or unexpected solar module cost shifts, etc.
 - Growth of installed capacity (across the non-managed growth sectors) threatens to exceed the Targeted Cumulative Installed Capacities available in the program.
- Any downward adjustment to an SREC Factor will be implemented as a gradual change from the old to new value, over a period of 3 months.

MANAGED GROWTH PROCEDURES

- No less frequently than semi-annual solicitations for MW of capacity announced by DOER.
- Capacity offered shall be determined by DOER, after consideration of other market sector installation projections, to enable the market to meet the Targeted Cumulative Installed Capacity for the ensuing compliance years.
- Model Solicitation prepared as Guideline. DOER will prepare model solicitation during rulemaking process.
- Evaluation Criteria:
 - Price Criterion: SREC Factor,
 - Non-Price Criteria: benefits to landowner, benefits to public good, diversity of project developers in market, likelihood of success, benefits to distribution grid, geographic diversity.
- Evaluation and Awards to be determined by DOER, with input from associated state agencies (EEA, MDAR, MassDEP, MassCEC).
- Awarded Projects have 18 months to complete project and must demonstrate progress. DOER will establish milestones, payment schedule, and criteria for culling projects that do not demonstrate viability to succeed.

FORWARD MINTING

- Forward Minting is available as opt-in offer to mint 10 years of estimated SRECs production upon Commercial Operation Date. DOER may establish discount of 10 year production.
- Available to residential projects that are owned directly by the property or building owner. Availability extended to Community Shared Solar projects meeting “residential criteria”.
- Restriction of Forward Minting to direct ownership sector will boost relatively low market penetration of direct ownership, which provides greater benefits to homeowners and to the local economy, as demonstrated by policy consultants. DOER seeks comment on whether Forward Minting should be made available to 3rd-Party Ownership.
- Performance estimation based on PV Watts analysis. Metering must be reported by and independently verified. Projects which fall 80% below estimated generation are reported to DOER and face penalties.
- Forward Minted SRECs have 3-year shelf life. Allows owner to hold or sell, subject to market conditions.
- DOER will report quarterly on amount of unsettled Forward Minted SRECs available in the market.

SREC-II COMPLIANCE OBLIGATION SCHEDULE

Compliance Year	Target Solar End-of-Year Installed MW	SREC-II Compliance Obligation	Notes
2014	143	129,338	<u>Set in Regulation.</u> Values based on DOER assumption of quarterly installations, weighted average Solar Factors, and Forward Minting volume.
2015	295	256,686	
2016	456	<i>393,509</i>	<u>Compliance Obligation and Minimum Standard to be announced by DOER by August 30 of CY-1.</u> Methodology for determining the Compliance Obligation is established in regulation. DOER shall annually update the estimated forward Compliance Obligations for the remaining years of the program based on refined projections of installation capacity by sector, SREC Factors, and Forward Minting volume.
2017	625	<i>540,312</i>	
2018	803	<i>697,680</i>	
2019	990	<i>866,284</i>	
2020	1185	<i>1,046,897</i>	
2021	1200	<i>1,022,251</i>	
2022	1200	<i>981,377</i>	
2023	1200	<i>981,377</i>	
2024	1200	<i>913,725</i>	
2025	1200	<i>796,163</i>	
2026	1200	<i>670,680</i>	
2027	1200	<i>537,015</i>	
2028	1200	<i>394,870</i>	
2029	1200	<i>243,904</i>	
2030	1200	<i>83,726</i>	

ANNUAL DETERMINATION OF COMPLIANCE OBLIGATION AND MINIMUM STANDARD

- Each year, not later than August 30 (CY-1), DOER will establish the Compliance Obligation and Minimum Standard for the Compliance Year (CY).
- **Compliance Obligation** for CY will be determined by a methodology prescribed in regulation to match the expected supply of SRECs in CY. The compliance obligation shall be the sum of the following components:
 - Installed SREC Supply: For all units installed at the time of the determination, DOER shall project the CY generation of SRECs based on assigned SREC Factors.
 - Qualified but not Installed SREC Supply: For all units that have been qualified but not installed, DOER shall project the CY generation of SRECs based on assigned SREC Factors and expected commercial operation date.
 - Projected New Supply: DOER shall provide a projection of SREC supply in CY from new installations based on prior growth trends by market sectors and managed growth solicitation capacities, such that the installed capacity does not exceed the Targeted Cumulative Installed Capacity for the end of CY.
 - Rollover Volumes: The volume of SRECs generated in prior years that remain unsettled, including Forward Minted SRECs, Auction Volume, and Banked Volume.
- **Minimum Standard** for CY will be determined as the Compliance Obligation for CY divided by the total electrical energy sales by Retail Electricity Suppliers for CY-2.

SREC-II SUPPLY AND DEMAND TRANSPARENCY

- DOER will create public, monthly updated, database of qualified projects with capacities, SREC Factors, Forward Minting status, and actual or estimated commercial operation dates.
- In establishing the capacity of Managed Growth solicitations, DOER will make public its analysis leading to the determination of the capacity that it is offering.
- In determining the Compliance Obligation and Minimum Standard each year, DOER shall make public its analysis and assumptions leading to the calculation of each component of the determination.

SOLAR POLICY ANALYSIS – CONSULTANT SUPPORT

- DOER has contracted with a consulting team* to provide technical policy support, divided into four tasks:
 - Task 1: Evaluation of Solar Costs and Needed Incentive Levels Across Market Segments
 - Task 2: Comparative Evaluation of Carve-out Policy with Other Policy Alternatives
 - Task 3: Analysis of Economic Costs and Benefits of Solar Program
 - Task 4: Comparative Regional Economic Impacts of Solar Ownership/ Financing Alternatives
- DOER was responsible for evaluating Task 1 results and transforming them into the program incentive values (Auction Price and ACP Rate schedules and SREC Factors) that we believe will best move the market forward while containing costs to ratepayers.
- The full reports from the consultants will be available on DOER's website when they are finalized for publication. DOER may hold a stakeholder technical session with the consultants if helpful.

* Cadmus Group, Sustainable Energy Advantage, Meister Consulting Group, and LaCapra Associates

STAKEHOLDER INPUT – TOPICS OF INTEREST (1 OF 2)

DOER would like to hear general comments from Stakeholders on the final proposed design. Specific issues of importance are as follows.

- Incentive Levels: Are the incentive levels offered to the solar market sectors sufficient to maintain project development but low enough to minimize ratepayer impact? Is the design of the incentive with declining forward schedules conducive for project financing? Please provide specific information and any suggestions for modifications that are consistent with the principles and constraints of the policy design.
- Managed Growth Sector and Solicitation: Are there any other market sectors that should be included in the non-managed, non-competitive sector? What are recommended improvements or details to competitive solicitation process? Is DOER's plan to provide a model solicitation document for comment during the rulemaking helpful?
- DOER Discretion to Modify SREC Factors: Does the regulatory uncertainty of DOER's ability to revise the SREC Factors overshadow the benefits of revisions that might be helpful to the industry or ratepayers as external policy or market conditions change? How specifically would you suggest this issue be better addressed?

STAKEHOLDER INPUT – TOPICS OF INTEREST (2 OF 2)

- Forward Minting: DOER recognizes that the residential third-party owned business model might also benefit from Forward Minting. What are the arguments for and against extending this provision to 3rd Party Owned projects? How, specifically, would extending Forward Minting to 3rd Party Owned projects benefit MA homeowners? What alternatives, or differentiation, to Forward Minting between Direct Owned and 3rd Party Owned sectors would be appropriate and acceptable?
- Technical Policy Analysis by Consultants: DOER will post the final reports of the Solar Policy Analysis over the next few weeks as they become available. Would stakeholders be interested in a “technical session” led by the Consultants to review their analyses?

STAKEHOLDER COMMENTS

This presentation will be posted on DOER's web page pertaining to the *SREC-II Solar Carve-Out Policy Development*.

<http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/solar/rps-solar-carve-out/post-400-mw-solar-policy-development.html>

DOER is interested in receiving public comments on the final proposed design. Please send your comments by August 26th.

Send your comments electronically to DOER.SREC@state.ma.us. In the Subject line, please put "Comments: SREC-II Final Proposed Design".

We thank you for your continued input.



Massachusetts Department
of Energy Resources