

11 July 2017

Judith Judson, Commissioner
Massachusetts Department of Energy Resources
100 Cambridge Street 10th Floor
Boston, MA 02116

**RE: Comments on Proposed Solar Massachusetts Renewable Target (SMART);
225 CMR 20.00**

Dear Commissioner Judson:

SunPower is a global technology company involved in every step of the solar system supply chain. SunPower has over 7000 employees worldwide, the world's highest efficiency solar photovoltaic panel technology, and an extensive national dealer network mostly consisting of locally-owned small businesses. In addition to our headquarters in California and offices around the world, SunPower has a strong Massachusetts presence. Our Massachusetts office is located in the Fort Point neighborhood of Boston, and 24 independently-owned small businesses in our residential and commercial dealer networks are based in Massachusetts. Between our direct business and dealer networks, SunPower is active in the residential, commercial, and canopy solar market segments in the Commonwealth.

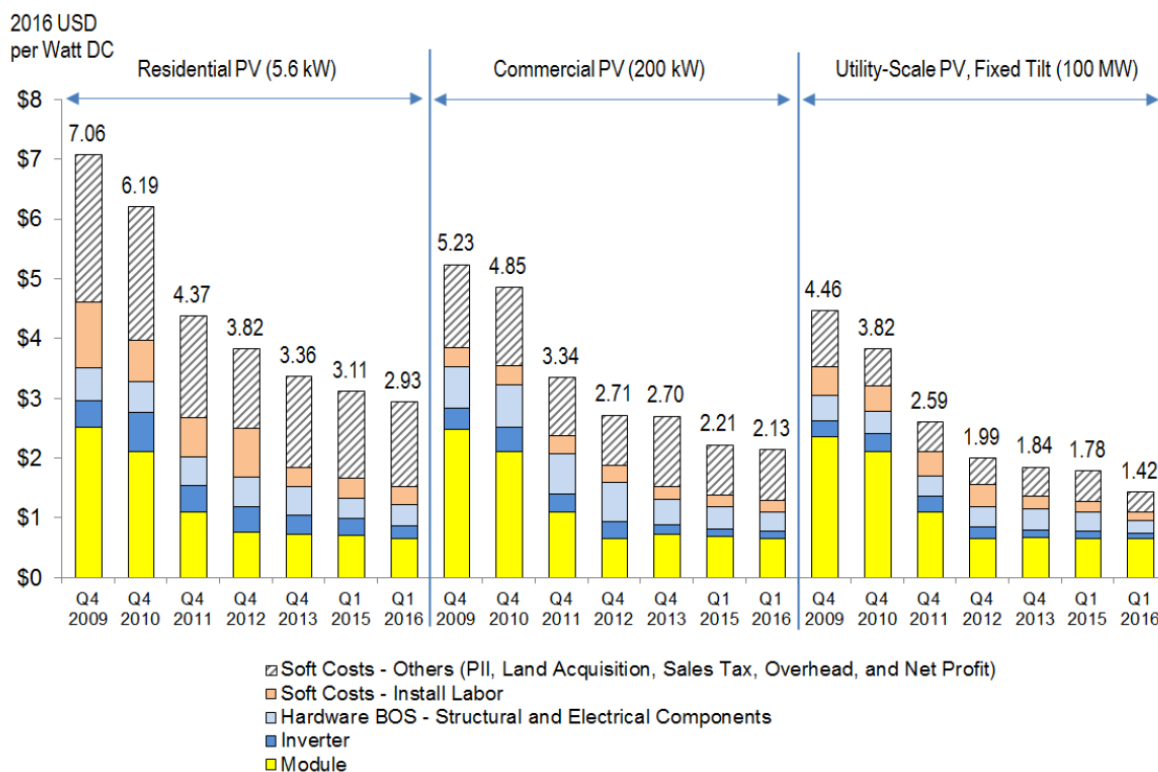
SunPower appreciates the opportunity to comment to the Department of Energy Resources (DOER) on the proposed regulations 225 CMR 20.00, the Solar Massachusetts Renewable Target (SMART) program. Through the public stakeholder process around the solar tariff concept, SunPower has been actively engaged, either directly or through our memberships in the Solar Energy Industries Association (SEIA) and the Northeast Clean Energy Council (NECEC). In addition, SunPower's dealers are active in those associations as well as the Solar Energy Business Association of New England (SEBANE). SunPower believes that the SMART program has a lot of potential to successfully facilitate the development of an additional 1600 MW of solar projects in Massachusetts. However, there are certain details in the proposed program design that we believe should be amended or clarified.

SunPower supports in full the positions established in the joint comments submitted by SEIA, NECEC, SEBANE, et al, and offers our own views on several key issues.

This Auction is No Ordinary Procurement

The solar industry includes a diverse range of project types, from residential rooftop systems, to commercial ground-mounted arrays, to solar canopies over parking lots. Each of these project types

have their own distinct project economics, not only represented by the final installation cost, but also in the breakdown of those costs.



“NREL PV System Cost Benchmark Summary” from “US Solar Photovoltaic System Cost Benchmark: Q1 2016” September 2016. <http://www.nrel.gov/docs/fy16osti/66532.pdf>

The National Renewable Energy Laboratory (NREL) has conducted a number of studies on the solar industry, and solar markets. Their September 2016 technical report, “NREL PV System Cost Benchmark Summary” is a national review of the industry’s cost breakdowns. It is not reflective of the solar project economics in the Massachusetts market, but it is illustrative of the differences in different project economics in the Commonwealth across market segments. When compared to installation cost data from DOER’s own analysis and the project data in the MA Clean Energy Center, it suggests Commonwealth’s solar market exists in a high cost environment relative to national data. This data shows that different market segments have different project economics, but more importantly, it shows that different solar market segments’ cost breakdowns are different as well.

The clearinghouse auction will be the foundation for setting the base tariffs, however not all system types will be a part of the auction. As currently proposed, the clearinghouse auction will only accept project bids for projects 1 Megawatt (MW) or greater in capacity, be non-net metered, and not be eligible for any of the compensation adders. The Weighted Average Clearing Price will be established statewide and then applied to smaller system types. From an administrative standpoint,

the auction must be limited in order to be organized. SunPower does not recommend that project eligibility be any different than proposed. But, it does serve as a highlight that while the auction will set compensation rates for all solar market segments, its bidding process will only involve one market segment.

SunPower does recommend that the auction bid parameters be modified to better reflect the project economics of commercial solar bids, while also being mindful of the need to for SMART to support smaller project types and different system designs. The various adders cannot align tariff values for different project types if the base tariff is set at an insufficient compensation level. The competitive process to set these levels should be allowed a higher ceiling, \$0.175 per kilowatt-hour, to insure the entire program will work in the years to come.

The purpose of this auction is to launch an entire solar program for Massachusetts. Part of the formula for a successful program will be transparency and predictability of program rules in the lead up to the SMART program launch. The auction must add to the certainty of the SMART program design. Most importantly, there cannot be uncertainty around how or if the DOER would invalidate the auction results. SunPower strongly urges the Department to define ahead of time a set of narrow criteria, in conjunction with stakeholders, where the auction would be deemed “uncompetitive”. The proposed language is overly broad, and could give solar developers pause if they felt there would be indefinite delay in the setting of compensation rates.

SMART Supporting Small Systems

The SMART program must be able to facilitate development of solar systems across all market segments, for public and private off-takers. However, SunPower believes that small systems, those under 25 kW but specifically residential rooftop systems, are particularly sensitive to the SMART compensation-setting process. For this small system segment, we continue to support the 10-year tariff term for projects as DOER has proposed. Depending on the results of the initial procurement, however, and considering the indexing of the procurement results to each sector, most customer payback periods are greater than 10 years under the current program design.¹

Residential systems must deal with a different set of installation costs, both soft and hard costs, compared to various commercial system types. Soft costs include permitting fees, engineering costs, local taxes, and resources devoted to customer acquisition, and represent an increasingly large percentage of total installation costs. NREL has measured cost data in solar installations and estimates that about 58 percent of residential installation costs are made up of those soft costs². And, because residential installation costs decline less rapidly than larger projects, these results become more acute as the capacity blocks are filled and compensation declines. In the end, these results reinforce the need for a higher ceiling price, but also the need for an additional backstop mechanism.

¹ Please see comments of SunBug Solar et al.

² NREL, “US Photovoltaic System Cost Benchmark”. September 2016. vii.

To ensure that residential project economics can meet customer payback-period requirements for the duration of the SMART program, SunPower recommends that the base tariff compensation rates be set by an additional mechanism to the Rate Factor. We propose a price floor of \$0.34/kWh be set for small systems less than or equal to 25 kW, and \$0.40/kWh for low-income systems less than or equal to 25 kW, in Block 1. This backstop for the residential sector not only allows continued small system development throughout the blocks, but also recognizes the different economic realities for small systems.

In order for SMART to facilitate system deployment across all solar market segments, small systems must be supported. They have made up a significant part of the MA solar industry. According to the Production Tracking System published by the Massachusetts Clean Energy Center, over 40 percent of all solar capacity that was placed in service in 2015 and 2016 came from systems no greater than 25 kW (DC).³ And, according to The Solar Foundation's 2016 Jobs Census, 75 percent of the MA solar workforce is involved in the residential sector. Therefore, it is critical to properly calibrate SMART for small systems as part of supporting the entire solar industry.

Energy Storage in SMART

SunPower supports the inclusion of the energy storage adder in SMART, but is concerned that proposed rules would severely limit the number of solar plus storage systems' eligibility. The 320 MW limit for capacity to be applied to any one compensation adder would undermine the DOER's broader goals to promote energy storage deployment. As proposed, only 320 MW of solar capacity could be paired with energy storage capacity. If those projects averaged storage capacity at 25% of solar capacity, that would mean that SMART could only support 80 MW of storage deployment. The Department's own report makes a compelling argument for why energy storage should have a larger role in SMART⁴. SunPower proposes a solution to improve storage participation in the SMART program.

First, SunPower suggests that the storage adder cap be eliminated in order to maximize participation of energy storage in SMART. Alternatively, we recommend that the cap be converted into a trigger for stepping down the tariff adder value. As it is designed to taper guaranteed compensation for solar projects, the storage adder should taper as storage deployment in Massachusetts scales up. The trigger should be tied to energy storage capacity deployed, and not solar capacity of applicable projects. The solar plus storage market segment requires policy support to increase the pace of deployment. That cannot happen with an adder cap, nor with a rapid decline in compensation rates.

Second, SunPower suggests that the maximum possible tariff compensation, as defined in 20.07(4)(e)(2), may restrict the capacity of storage paired with solar. This scenario is more likely if

³ "Solar PV Systems in MA Report" <http://www.masscec.com/get-clean-energy/production-tracking-system>. Visited 29 June 2017.

⁴ State of Charge report, p. xxi, prepared for the Massachusetts Executive Office of Energy and Environmental Affairs. 2016. <http://www.mass.gov/eea/docs/doer/state-of-charge-report.pdf>.

the clearinghouse auction produces a low tariff base rate, as opposed to a tariff rate closer to the proposed ceiling price, or the Joint Industry proposed ceiling price of \$.175/kWh. The maximum tariff compensation affects storage as opposed to other aspects of project development due to the question of storage inclusion coming later in the project development process.

Consider a hypothetical scenario where the clearing price on the auction was \$0.12/kWh. A 150 kW project on a low-income multi-family building rooftop would be eligible for a \$0.23/kWh total compensation. The low-income adder and the building-mounted adder are intrinsic to the project. However, the customer and the solar developer have the option to add storage, but the SMART rules would limit the project to a total compensation of \$0.276/kWh. If storage were added to the project design, it's capacity would be constrained to the upper left segment of the adder table in the DOER Energy Storage Guidelines⁵.

SMART should provide maximum flexibility for solar plus storage deployment, in order for customer needs and the best possible customer value proposition to be available. Capping the maximum total tariff compensation would inhibit early adopters by limiting how storage tariff adder could cover the marginal costs of paired energy storage capacity. SunPower recommends that the storage adder be exempted from the calculation in 20.07(4)(e)(2).

Project Segmentation Restrictions

SunPower questions the rationale for the proposed project segmentation restrictions outlined in 20.05(5)(f). This section would disallow many types of campus or creative on-site commercial solar projects that attempt to maximize solar potential and off-set electricity load for customers. This often requires a mix of rooftop and ground-mount systems on constrained land. However, due to the restrictions, these types of projects would be disallowed from participating in SMART. A hypothetical project that consists of 1.8 MW of solar canopy, and 200 kW of building-mounted solar on two structures would not be allowed to apply together under SMART. This system would be accepted under the SREC-II program eligibility rules.

The exemptions to the project segmentation restrictions stated in 20.05(5)(g) are wholly inadequate. Just as with residential customers benefiting from a reasonable payback period, or benefiting from immediate, tangible savings, commercial customers need their electric load off-set to an extent where they see significant energy cost savings over time. If an office campus of three buildings were only able to deploy solar on one building, that could easily dissuade the property owner from signing any contract for on-site solar energy. And, the one-year building moratorium reflects a lack of knowledge for the realities of commercial customer acquisition. A key part of commercial solar soft costs is customer acquisition, which consists of contract negotiations and general transaction costs. This moratorium would effectively double the transaction costs for on-site commercial projects coming into conflict with the segmentation restrictions.

⁵ <http://www.mass.gov/eea/docs/doer/rps-aps/energy-storage-guideline-draft.xlsx>

The DOER has proposed greenfield subtractors for solar ground-mounted projects that meet certain land siting criteria, but essentially that are standalone projects. Then, the DOER places these severe project segmentation restrictions for on-site commercial solar that would depress the commercial solar market. Coupled with the proposed capacity caps on compensation adders, SunPower is left to question the multitude of restrictions in the SMART program, if its goal is to facilitate responsible installation of solar projects in Massachusetts.

SunPower recommends that the project segmentation restrictions in 20.05(5)(f) are removed for building-mounted projects. Solar projects are already restricted by net metering siting restrictions (ie. single parcel rule), and by the physical limitations (available rooftop and land) of on-site solar development.

Clarity in Application Process

SunPower would like to ask for clarification on the application process. The proposed regulations present an outline of the process, as it should. However, it prompts certain questions that we would like to pose here.

First, the regulations do not name a deadline by which the SMART program administrator would need to inform an applicant that their Statement of Qualification is completed. A clear timeline adds to the predictability of the overall program, and smooths solar developers' project timelines. This is also not addressed in the proposed SOQ Application Guidelines available on the DOER website⁶. SunPower asks that SMART application rules mirror those of the SREC-II program in this respect.

Second, there is an issue of how a solar developer would apply to SMART if their commercial customer had different kinds of solar installation types (ie. ground-mount, building-mounted, canopy) tied to one meter and one interconnection point. For the moment, let's apply the hypothetical system in the previous section, and ignore the project segmentation restrictions that would negate the two building-mounted arrays. The solar canopy adder would apply to the 1.8 MW installation. The building-mounted adder would apply to the remaining 200 kW. SunPower recommends that this project be eligible to apply under one application, and the project would receive a blended tariff rate, weighted by capacity.

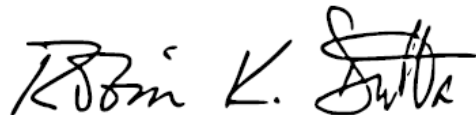
This issue becomes most important when adding energy storage into the project design equation. If this 2 MW project had to submit separate applications, and it had 500 kW in energy storage, the storage adder would be calculated based on the partial solar capacity of the project. That would skew the storage adder value up, and it would not accurately represent the project parameters. It is important that SMART allow on-site projects with multiple installation types and the same customer to apply to the program in one application.

⁶ <http://www.mass.gov/eea/docs/doer/rps-aps/sq-reservation-period-guideline-draft.pdf>

Conclusion

SunPower appreciates the hard work by DOER, EEA, and MDAR to design an innovative successor solar incentive program. We strongly recommend that DOER make these essential changes to the program. Without the proposed relief suggested here and in the joint industry comments, the SMART program will fail to realize its potential and facilitate deployment of 1600 MW of new solar projects. Thank you for the opportunity to provide comment.

Sincerely,

A handwritten signature in black ink that reads "Robin K. Dutta". The signature is fluid and cursive, with the first name "Robin" being more prominent than the last name "Dutta".

Robin K. Dutta
Market Development & Policy – Eastern US
1342 Florida Avenue NW
Washington, DC 20009
Email: robin.dutta@sunpower.com
Phone: 202.341.9513

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