April 8, 2013

Mr. Michael Judge
Department of Energy Resources
100 Cambridge Street, Suite 1020
Boston, MA 02114

Dear Michael:

Avid Solar LLC ("Avid") notes that the pace of solar PV development in MA continues to accelerate thanks to the decreasing supply costs of solar installations and the supportive incentives and policies offered by DOER, CEC, the Electric Distribution Utilities (EDCs), and other entities both within and beyond the MA government and agencies. Avid believes that the 400 MW cap of the initial solar carve-out program will be reached within 9-18 months, depending primarily on the pace of utility interconnection studies and the outcome of this summer's clearinghouse auction. Avid is already seeing large projects that might take 9+ months for permitting and approvals deferring any additional development work until after the next carve-out production-based incentive program is determined. In other words, the pace of development of solar PV is already being throttled because the next SREC program has yet to be defined.

Avid believes that the most important goal in the development of the next production-based incentive program for solar PV must be the speed with which it can be defined and introduced into the market. As a result, Avid suggests not defining a program that will require additional legislative authority to put the program into effect. The urgent need for speed eliminates many of the most significantly different—and potentially beneficial options—that have been proposed by either DOER or other stakeholders. There is opportunity, however, with current legislative authority to improve on the carve-out program design initially implemented for the first 400 MW of photovoltaic capacity installed.

At the same time, Avid believes that DOER does need additional legislative authority to implement a program (and some optional components of the following proposals) to address key unmet needs in the MA SREC market in the most cost-effective manner for ratepayers and to achieve the greatest benefits for the Commonwealth of Massachusetts. Given the urgent need to define and implement a solar carve-out program to succeed the initial 400 MW program, Avid Solar will reserve its comments on what could be achieved with additional legislative authority for a later discussion and comment period.

Separate Carve Out Program Required

An expansion of the existing Solar Carve-out Program may seem like an expedient, interim solution. Avid Solar sees believes that such a proposal would introduce too many complications and challenges for the investors in the initial 400 MW Carve-out program. Avid Solar also does not believe that many of the market-stabilizing mechanisms are sufficient to perform their required functions in such a fast-moving market. Instead, Avid advocates for a different approach.

Critical Need to Improve SREC Market Equilibrium and Pricing Certainty

The market price for SRECs is volatile because there is not an equilibrium of supply and demand. DOER has broad authority to determine the required demand of SRECs (i.e., the Compliance Obligation), but its current approach to defining the demand levels is not able to effectively respond to market supply conditions—especially rapidly changing ones—in order to bring supply and demand into balance. When supply and demand are significantly out of balance, as has been recently observed in the initial Carve-out program, it introduces extreme price levels, price volatility, market illiquidity and a collective pause in new solar investments. In short, it causes risk that throttles the market and makes solar more expensive for everyone. Avid believes that an improved approach to setting demand levels could help to significantly reduce price volatility and lower costs to ratepayers (e.g., reduced ACP payments and lower average price of SRECs). Reduced price volatility and uncertainty about future prices also lowers the cost of financing for PV systems investors, enabling more and broader growth in the development of PV in Massachusetts.

Avid believes that DOER also has the authority to affect supply levels through direct market intervention (i.e., through buying and/or selling SRECs), but it has not used it to date (e.g., using ACP or other funds to purchase SRECs for either retirement or for sale back into the market at a later date). DOER has proposed to use this authority on a limited basis in the 2013 compliance year.

The current use of a Clearinghouse Auction to annually attempt to clear the market of excess SREC supply is not fulfilling its initial expectation of establishing a floor price for SRECs. It has also resulted in very illiquid markets for SRECs during compliance years when there is an oversupply of SRECs being generated. Rather than suggesting methods for improving the effectiveness of the auction, Avid Solar is proposing a different and more active approach to managing the equilibrium of SREC supply and demand.

Improved Method for Determining Compliance Obligation

DOER must improve its projections of the market supply of SRECs and set demand levels to match them to the best of its efforts. The current formulaic approach to

determining future compliance obligations has failed to accurately project future SREC generation, resulting in extreme pricing volatility due to either an under- or over-supplied market vs. the demand levels determined by the compliance obligation formula. On one hand, by making the formula explicit and transparent, DOER hoped to provide guidance to both sides of the market regarding the future requirement for SRECs. On the other hand, SRECs are only one part of the economic equation that drives the investment in solar PV installations, and DOER cannot control most of the economic equation. Rather than trying to control the market, Avid believes that DOER should strive to use its intervention to support its steady growth and minimize market discontinuities while gradually withdrawing any required financial support needed to motivate investment.

Rather than being constrained by a formula, Avid Solar believes that DOER should, instead, do its best to project the CY+1 generation of SRECs given the best available data regarding the installed base, capacity factors being achieved and the pace of market growth—which may be affected as much by non-DOER factors (e.g., the availability of certain tax incentives) as the SREC program. DOER should continue to make its projections in July of each calendar year regarding the compliance obligation for the next calendar year.

Avid Solar also observes that the projections for the first few years of the program will be most prone to error because there is no installed base (for this tranche of the carve-out) of generation to help smooth the projection. For any amount of installed capacity, DOER can reasonably accurately predict the annual generation of MWh over the course of a year. For this next solar carve-out program, however, there will be no installed base, initially. There is little that DOER can do about it. Avid Solar suggests that some intervention by DOER in the SREC trading market may help. This could be accomplished using the new trading role that Avid Solar is proposing.

DOER SREC Market Participation to Better Maintain Equilibrium

Avid Solar proposes that DOER utilize a substantial amount of the available ACP funds collected to deeply capitalize an SREC trading account. Over time, DOER's market intervention would be neutral (purchases = sales of SRECs). In the short-term, however, DOER could wield consider market influence on the supply and demand of SRECs to help stabilize the pricing of SRECs around a targeted pricing band. This market intervention role would substitute for the current auction-approach to maintain supply and demand equilibrium around a target price, and would help to better maintain a narrower price range for SRECs.

DOER would be assuming very little risk given that it defines the future demand of SRECs through its determination of compliance obligations. If the DOER compliance obligation was its best attempt to project future market generation (as suggested above by Avid Solar) vs. a formulaic determination (i.e., how it is being one in the

initial 400 MW program), then most market intervention activity would involve positions held for a relatively short period of time (a few compliance periods).

DOER would be able to absorb excess supply during periods of unexpected growth or during years with above-average solar resource, and also tamper the price during periods of SREC shortages to help LSEs avoid paying ACP penalties. Potentially, DOER's market participation could be triggered when the market price for SRECs moved outside of a specific range (e.g., +/- 10% of a target price), acting as a limited collar on prices. Initially, Avid Solar recommends that DOER restrict its trading to market conditions where it can only purchase SRECs for 90% or less of the target price, and sell only for 10% of more of the market price. The margin that DOER makes could be used to fund its trading operations, and possibly, to fund a larger capital account for additional buying power as the market grows in size.

Avid proposes that the SRECs which DOER acquires never expire. Instead, they would inherit the vintage of the current compliance year into which they are sold, and DOER would only be able to sell into the most current compliance year. This offers DOER the ability to smooth disequilibrium in supply and demand across compliance years. This could be especially valuable during the first few years of the program. DOER would also have the option of retiring SRECs in its account if conditions warranted (TBD).

DOER's purchases would be limited to the amount of its capital. In the 2011 ACP Proposed Spending Plan, DOER proposed to use in excess of $20,000,000 to fund various Class I Pre-Buy programs. Avid Solar recommends using those funds to establish the initial DOER trading position for SRECs.

Require Quarterly Compliance

To help ensure an active and liquid market for SRECs, DOER should require the LSEs to meet quarterly compliance obligations. Similar to making estimated tax payments each quarter, LSEs would be required to demonstrate that they are meeting their compliance obligation each quarter. If the quarterly compliance obligation is not met, then the ACP penalty would apply to the shortfall. Requiring quarterly purchases will greatly enhance the ability of solar investors to obtain financing, and will require lower debt service reserves, and, thus total capital costs for an equivalent amount of PV installed.

Use an SREC Factor to Adjust to Market Conditions

Avid Solar believes that neither the target price for SRECs nor the "opt-in" term of the program should change. Rather, Avid Solar supports using DOER's SREC factor to adjust the SREC incentive value for future solar investments.

As DOER proposed, Avid supports using an SREC factor that would essentially split each MWh of solar electricity generation into a partial SREC and a partial Class I REC, where the SREC portion would never exceed 1 (i.e., 100% SREC + 0% REC). Over time, the SREC portion, which has a premium price relative to the Class I REC, would decrease for new investments in solar PV as installation costs declined. The SREC factor could also be increased to offset the loss of other incentive factors (e.g., the federal tax credits) if needed to support the continued development of solar resources in Massachusetts.

To prevent market discontinuities and to assuage concerns about future incentive levels, Avid recommends that DOER limit the change of the SREC factor by no more than 10% of the initial "base factor" (defined later) over a 12-month period.

Provide a 2-year Investor Planning Horizon

Given the time it takes the Electric Distribution Companies (EDCs) to perform their interconnection studies for larger projects, as well as the time it can take to obtain various other necessary permits, variances and approvals (sometimes requiring town meetings), and eventually the added time needed to secure financing, PPA and PILOT agreements, Avid Solar recommends that DOER offer a 2-year advance notice on any intended changes in the SREC factor.

Avid Solar also notes that on December 31, 2016, the 30% federal tax credit incentives expire. Until that time, the U.S. Treasury effectively contributes 30 cents of every dollar that MA invests in solar, and Avid recommends that DOER assist MA ratepayers to take advantage of that federal largesse while it is available. While Avid is otherwise arguing for an incentive program and DOER role that help to support the smooth growth of the market, Avid also suggests erring on a more generous investment environment before the tax credit programs expire, encouraging as much solar development as possible before 2017. Specifically, Avid Solar recommends that DOER not announce a change in the SREC incentive before 12/31/2014 such that the initial incentives last through the end of 2016.

A Single Program Term of Fixed Length and Minimum SREC Factor

If an SREC factor is adopted, Avid Solar recommends using a single "Program Term" of 40 quarters (10 years). During the Program Term, the initial SREC factor and adders would apply to the generation of SRECs and RECs for each MWh of generation.

At the end of the Program Term, the generator would receive a Minimum SREC Factor that would apply to all generators operating beyond their initial Program Term. This Minimum SREC Factor would represent the premium value of solar PV relative to other forms of renewable generation. Avid Solar recommends that DOER invest in a thorough, fact-based analysis regarding the value of each solar MWh

generated. Initially, based on studies that have been conducted in the PJM market, Avid Solar suggests a Minimum SREC Factor of 0.20 (20%) SRECs for each solar MWh generated. Avid would be happy to share its reasoning behind this calculation in a separate discussion.

Similarly, as DOER adjusts the Base SREC factor downward, the Base SREC factor should never be less than the Minimum SREC factor.

Adjusting the SREC Factor with Adders for Different Market Segments

Avid Solar also supports DOER's proposal to use an Adjustment Factor to differentiate the incentive level available to different market segments. Avid notes that, as an incentive, the current single-price SREC program heavily favors the development of utility scale systems. Utility-scale systems can be installed at a much lower cost per watt than a small, residential rooftop installation. The production incentive does not distinguish, however, the potential added value of a behind-the-meter, load-side system. Nor does it value the use of low-value real estate like a rooftop, or a landfill or a contaminated site. Nor does it take into consideration, as a complementary investment incentive, the difference in other financial incentives, especially tax incentives, that might be available. Avid Solar believes that all of these factors should be taken into consideration as DOER determines the appropriate SREC factor + Adders that should apply to a project.

Avid Solar has modeled the net investment costs, including all available incentives, including the present value of expected production incentives, for many different segments of the market (including markets beyond Massachusetts). As Massachusetts moves toward an overall incentive scheme that primarily relies on production incentives, Avid recommends that DOER strive to both recognize and complement the other available incentives so that it does not tilt the development of solar in MA towards one market segment through the implementation of its production incentive.

Currently, the most significant difference across market segments is caused by the ability of commercial systems to recover a portion of their investments through depreciation tax expensing. Neither residents nor tax-exempt organizations can deduct depreciation expense from their taxes. Depending on their combined tax rates (i.e., state + federal), for-profit businesses can offset in excess of 30% of their solar investment through reduced tax payments due to depreciation. This is in addition to the 30% investment tax credit that they can also claim. Avid Solar believes that the SREC Factor Adders can be used to offset this economic disadvantage due to the tax code.

Avid Solar also supports DOER's suggestion that additional value be attributed to installations that use space that is otherwise difficult to develop: rooftops, landfills, parking lots and contaminated sites. Installing solar above these sites makes great

use of area that has limited alternatives for value creation within the Commonwealth.

Additionally, Avid notes that there are still significant fixed and soft costs associated with developing solar that weigh most heavily on smaller systems from a $/watt or $/kWh perspective. The economies of scale for large systems, again, put them at a cost advantage, and Avid Solar believes that it is appropriate to motivate investment in other segments of the market by using an Adder for small systems.

Using an Adjusted SREC Factor also allows DOER to fairly compensate existing PV generators in the Commonwealth who own systems that are not otherwise qualified for the Solar Carve-out. Avid Solar would argue that current net-metering rates and Class I RECs do not fully compensate PV generators for the value of a solar watt-hour. Avid suggests that DOER address this shortcoming of the net-metering and RPS programs by introducing an adjusted SREC factor (at least the Minimum SREC Factor) for the generation of these systems, effectively grandfathering them into the next Carve-out program.

Suggested SREC Factor Model and Target SREC Pricing

Avid proposes, for simplicity, that DOER maintain a target price per SREC of $300, noting that by using both an SREC factor and a target price, the specific target price is a bit arbitrary.

Avid Solar has modeled various SREC prices and factors, and their effects on the economic returns for different market segments. Avid would be glad to share its modeling with DOER (and the Commonwealth Solar staff at CEC), and suggests that DOER invite interested parties to a technical session on the matter before it makes its final decisions on the program design.

Avid Solar prefers its model where the initial SREC Base Factor is 0.50 (50%). This would be the SREC factor for large, ground-mounted systems in excess of 100 kW. Using an SREC target price of $300 and a Class I REC price of $60 would yield the following revenue per MWh generated: [(0.5 x $300) + (0.5 x $60)] = $180.

Avid Solar would then adjust the Base SREC factor by adding the following, noting that the SREC factor can never exceed 1.0:

- 0.35 – for residential and tax-exempt organization system ***owners*** (i.e., this does not apply to 3rd-party owners of systems hosted by residential and tax-exempt customers; it is meant to offset depreciation expense advantages by system owners that cannot claim that tax benefit)
- 0.10 – for systems up to 25 kWdc in size
- .05 – for systems over 25 kWdc, but under 100 kW in size

- .05 – for systems installed on rooftops, over parking lots, on landfills or on contaminated sites (can only be counted once)

For example, a 6kW residential system installed on the roof of a home would have an SREC factor of 1.0 = 0.5 Base SREC Factor + 0.35 Residential Adder + .10 Under 25 kW Adder + .05 Rooftop Adder.

Avid Solar does not propose any changes to the revised ACP schedule that DOER is currently proposing, although it would encourage DOER not to reduce the ACP to the point where it is within the +/- 10% pricing range of the SREC target price (i.e., above $300+10% = $330). Currently, the ACP schedule projects an ACP rate of $347 in 2022; perhaps DOER should limit the ACP rate to no less than $340 for the year 2023 and thereafter.

For grandfathered PV systems, Avid Solar proposals an SREC factor of 0.25, with the possibility of adjusting the factor upward for small systems, etc. Avid Solar believes that a broader discussion and deeper analysis is required regarding the value of solar energy generation in the Commonwealth. The best SREC Factor for grandfathered systems would be based upon the outcome of that analysis. Until then, Avid Solar suggests a factor of 0.25 for all grandfathered PV systems.

SRECs Have 3-year Lives; Significant Benefit of a Guarantee (if possible)

While there will not be any clearing auction to facilitate the sales of SRECs in years with over-supply, DOER will have limited funding to purchase SRECs in the open market through its trading account to help maintain the price of SRECs within a proposed target range of +/- 10% of the proposed $300 target price.

Additionally, to build confidence in the market equilibrium DOER seeks to provide, Avid Solar proposes that DOER mint all SRECs with 3-year lives so that, in the event that there is an oversupplied current year, generators will have the chance to sell their SRECs in the two subsequent years. Noting that DOER will have more flexibility in defining the compliance obligations in subsequent years, DOER can take into consideration any banked SRECs or over-supply conditions to ensure that there is enough demand in subsequent years to clear the market.

Avid Solar understands that there could not, however, be a guarantee unless DOER is able to obtain additional legislative authority to either purchase the SRECs with a deeper pool of funds or to require the EDCs to fund the purchase of excess market supply. Avid Solar believes that it would improve the market conditions considerably if a guarantee were possible. The guarantee would ensure sufficient SREC demand to clear any compliance year—perhaps through DOER offering a 90% of Target Price minimum offer rate backed by a funding requirement from the EDCs. Avid Solar would support a much lower ACP schedule proposal from the LSEs in exchange for a guarantee.

Solar Pre-Buy or Standard Offer for Small DG

DOER has already considered the option of using more than $20,000,000 ACP funds to finance various small distributed generation (S)REC Pre-Buy or Subsidized Loan programs. Avid Solar suggests that DOER use these funds to finance its SREC trading position, and to also restrict DOER trading activity to purchases that are no higher than 90% of the Target Price, and to sales that are no less than 110% of the Target Price. Recognizing that DOER can set the compliance obligation (i.e., demand for SRECs) in subsequent years, DOER takes on little long-term risk by assuming long positions in SRECs. Avid Solar also proposes that DOER further reduce its risk by allowing DOER's attributes in inventory to never expire.

Avid Solar also suggests that DOER provide a Standard Offer for small solar generators that is equal to 90% of the Target Price. This Standard Offer would apply to PV systems with a capacity up to 100 kWdc-stc. This Standard Offer would not expire at the end of the Program Term; the Standard Offer would last until LSEs were no longer required to purchase SRECs.

Initially, the Standard Offer would be limited to the depth of the ACP funds that DOER uses to capitalize its trading position. Avid Solar urges DOER and the legislature to further enhance this offer through additional legislative authority to back this position with support from EDCs if needed to help clear all SRECs tendered to the DOER in a compliance year.

Avid Solar believes that the proposed Standard Offer would substantially improve the availability of financing for solar PV investments, and that the financing would be available at a lower cost because of the perceived lower risk. With a potential guarantee backstop from the EDCs or another credit-worthy source, it would be very "bankable."

Complementary Proposal for Changes to CEC's Commonwealth Solar II

Even with the introduction of an SREC Factor with Adders, small residential and tax-exempt system owners are still at an economic disadvantage relative to systems owned by businesses, and relative to larger systems, in general. This leads to a relative under-investment in solar PV by the majority of ratepayers because the incentive system is less favorable to them. Avid Solar believes that DOER and CEC can and should address that bias against small system owners.

Currently, the worst return on investment for solar PV of any segment is for smaller systems owned by tax-exempt organizations. Periodically, there are limited grant funds available to this segment of the market for investment in PV, but the CS II and Carve-out program do not recognize and serve their economic needs. Avid Solar

proposes that DOER allow tax-exempt organizations to receive a cash rebate of $0.80/watt up to 15 kW (i.e., up to $12,000).

The next worst segment for solar PV investment is the residential market above 5kW that does not qualify for the doubling of the base incentive of $0.40/watt. Avid Solar recommends making the incentive $0.80/watt for ***all*** residential customers up to a maximum size of 15 kW. Eliminating the moderate-income and moderate home value adders reduces complexity and administrative costs. If CSII still prefers to offer a moderate income and moderate home value adder, then Avid Solar suggests a flat fee of $1,000-$2,000 *in addition* to offering them the $0.80/watt incentive.

Avid Solar does not recommend changing the CSII incentive for small commercial systems under 15 kW. Capping the incentive at $2,000 is appropriate.

In Summary: Risk is Expensive; Lower Uncertainty by Maintaining Balance

The volatility of SREC pricing to date in the initial Solar Carve Out program, as well as the uncertainty regarding how well the market stability mechanisms will work to re-establish supply-demand equilibrium, have created a confusing, complicated and risky environment for solar investments. As a result, there is a significant risk premium factored into the value of SRECs in the market. For 8-10 year strips on 100 kW systems with a municipal buyer of net-metering credits, there is a discount factor of 60% relative to the "floor price" of $300/SREC, and this does not include the time value of money (i.e., $120 is the future value being offered on long-term contracts). For a number of reasons, Avid Solar hopes that MA will reach the 400 MW cap sooner than later to put the initial Carve-out program behind us. Both the SREC risk and the economic bias towards larger system development have disproportionately affected the smaller system owners that Avid Solar primarily serves. Avid believes, however, that we can all learn a great deal from the initial carve-out program and use our collective experience to design and implement a superior successor.

The most important lesson, from Avid's perspective, is the need to minimize risk in the market—not shift it, but rather minimize the collective risk. Avid believes that this can best be accomplished through a better set of tools and a more active trading role for DOER to help it maintain an equilibrium between the supply and demand of SRECs while accommodating the smooth, continuous growth of solar PV generation capacity in MA.

Avid Solar also notes that DOER's proposed SREC Factor and System Adders can go a long way to addressing the varying needs of different market segments, while also rewarding the added value of certain types of installations. The SREC Factor also allows DOER to adjust the incentive levels for a Program Period as the costs of installing solar PV fluctuate.

In addition, Avid Solar recommends that CEC complement the proposed changes to the Solar Carve-out program with changes to the Commonwealth Solar II rebate program to better meet the needs of small generators.

Thank you for considering Avid Solar's comments and suggestions regarding the next Solar Carve-out program. We also offer our time to meet with DOER and CEC to share our models regarding the economics of solar PV for different market segments.

Best regards,

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