



BY ELECTRONIC MAIL

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Re: Agriculture and Farmland in Next Solar Incentive

Dear Ms. Kelly,

Thank you for the opportunity to provide comments on the next solar incentive under Chapter 75 of the Acts of 2016. American Farmland Trust (AFT) is a national organization founded in 1980 and dedicated to protecting farmland, keeping farmers on the land, and promoting sound farming practices. The next solar incentive program represents an opportunity to innovate at the intersection of solar, agricultural and land conservation policy to achieve 1) enhanced renewable energy production; 2) additional permanent farmland protection; and 3) agricultural economic development.

First, AFT acknowledges that many respected colleagues in the conservation community have advocated for the elimination of solar incentives for generation units sited on prime and important farmland soils, wetlands, in large forest blocks, or which impact priority habitat, Article 97 lands and archaeological sites. American Farmland Trust shares their entirely-justified concern that Massachusetts' renewable energy policy appears, in at least some cases, to be incentivizing the conversion of farmland out of agriculture. While precise data on solar-related agricultural land conversion do not appear to be available, it seems likely that the acreage of farmland already converted to solar may number in the thousands of acres.¹ This trend runs at cross purposes to established state land use and conservation programs and policies.

AFT is further concerned that the SREC I & II incentives have been structured in a way that avoids triggering MEPA review of agricultural land conversion, despite the role of a state agency in authorizing the incentives that drive this industry. Regardless of the technical reasons for this outcome, it fails to uphold the spirit of MEPA. At the very least, EEA should be monitoring and

¹ Based on estimates of 70-80% of installed capacity >1 MW, and those large systems predominantly representing ground-mount facilities, even allowing for substantial capacity on landfills, brownfields and non-agricultural sites it seems likely that several hundred MW may have been built on farmland, potentially converting thousands of acres.

tracking data related to these conversions, but more broadly, renewable energy policy should not incentivize the conversion of prime and important farmland soils out of agricultural use, nor similarly impact the other important resources identified by the conservation community.

However, despite all these concerns, this issue is too complex and too important to simply say “No.” At the very least, there is the issue that some agricultural businesses will appropriately seek to utilize on-site photovoltaics to meet their own electricity needs, and in some cases may reasonably need to do so with ground-mounted systems sited on prime or important farmland soils. Indeed, the Agricultural Preservation Restriction program has adopted policies and procedures that can allow such systems even on permanently protected APR land. The Commonwealth’s solar incentive programs should not be withheld from such accessory farm systems based solely on siting on farmland soils.

But what about the large-scale, ground-mounted systems that have already converted so many acres out of agricultural use? There are compelling reasons why DOER might consider providing for continued commercial solar development on farmland within robustly-controlled, tightly-limited circumstances. The landowners who have decided install commercial solar on farmland—typically under long-term leases—were presumably at a decision point where they did not plan to continue farming and were seeking greater-than-agricultural financial returns. The alternatives they considered were likely to have been other, more-destructive forms of residential or commercial development. Solar was therefore not the worst possible outcome, and large-scale ground-mount solar has in effect secured 25-year+ restrictions on some unknown acreage of Massachusetts farmland. But those acres are not permanently protected, they have been lost to agriculture, and they are unlikely to come back unless we can leverage some additional incentives to achieve permanent protection and return them to agricultural use.

Precisely because of the impacts of solar on land use, DOER should try to proactively structure the next solar incentive to promote the Commonwealth’s land use goals, including permanent farmland protection and continued agricultural use of prime and important farmland soils. Toward that end, we need to identify some key principles:

- 1) existing permanently-protected lands should remain off-limits to new commercial solar development unless specifically allowed by the terms of the CR or APR;
- 2) commercial solar development should not displace agricultural uses on prime and important farmland soils, nor impair the capacity of the soil. Solar facilities on farmland should be designed, installed and decommissioned in a manner that protects the soils, while simultaneously accommodating continued agricultural use.
- 3) Commercial solar development on farmland should incorporate permanent protection of that farmland so that it doesn’t merely postpone future non-agricultural development.

These goals are not unattainable. In Europe and the UK it is common for sheep and other livestock to graze under solar panels and there are a few examples of cropping within solar photovoltaic

systems.² There are a handful of similar examples here in the United States, including a research project at UMass which has attracted the attention of the National Renewable Energy Laboratory.³ Reviewing the available research, it is clear that well-designed solar photovoltaic systems can in some cases be compatible with ongoing productive agricultural use.⁴ Not only that, but Massachusetts has an opportunity to become a national leader in this area.

At the same time, while there has been some good initial research into best practices, we do not know what the optimum system design looks like. We do not know precise cost of the redesigned solar infrastructure, but we do know that the cost of farmland protection will vary from site to site. We do not know how much marginal incentive will be necessary to entice solar developers and their financiers and insurers to accept the added cost and risk of innovation.

Within the limited scope of the solar incentive regulation, DOER will be challenged to adequately provide guidance and safeguards that simultaneously allow access to the solar incentive for facilities providing appropriate on-farm renewable energy while simultaneously de-incentivizing the conversion of land out of agriculture. Fortunately, DOER is co-located with MDAR in the Executive Office of Energy and Environmental Affairs, and can structure the incentive to leverage private sector expertise in Massachusetts' agricultural, conservation and solar communities.

Assuming that DOER might adopt a new incentive loosely modelled on the existing SREC II structure, Massachusetts could leverage these strengths by generally eliminating incentives for new commercial solar on "green field" sites except for solar facilities in two circumstances: behind-the-meter farm systems, and dual use solar farms incorporating perpetual farmland protection.

"Behind the meter" generation units in support of farm operations should be allowed. However, appropriate review of the system should be required to ensure that it is reasonably related to the needs of the farm business and associated electrical loads, and that detrimental impacts to the productivity of the soil during construction, operation and decommissioning are minimized. This review can be best undertaken by the Department of Agricultural Resources.

The second group of dual use solar farms would be generation units located on parcels subject to an approved solar-specific APR or CR with some specific additional requirements regarding solar. Approval of such a CR or APR could be accomplished within the existing processes by the

² http://www.pv-magazine.com/news/details/beitrag/solar-farms-increasingly-popular-with-uk-farmers_100016390/#axzz3meuEJS2S

³ "Agriculture and Solar Energy Dual Land Use," Stephen J. Herbert, Phaedra Ghazi, Kate Gervias, Emily Cole and Sara Weis, Stockbridge School of Agriculture, <http://ag.umass.edu/sites/ag.umass.edu/files/research-reports/Agriculture%20and%20Solar%20Energy%20Dual%20Land%20Use.pdf>

⁴ "Overview of Opportunities for Co-Location of Solar Energy Technologies and Vegetation," Jordan Macknick, Brenda Beatty, and Graham Hill, National Renewable Energy Laboratory, <http://www.nrel.gov/docs/fy14osti/60240.pdf>

Commissioner of Agriculture or Secretary of Energy and Environmental Affairs, and conditioned on the following characteristics:

- First, a solar-eligible APR or CR would have to specifically allow photovoltaic development while adequately protecting farmland soils during construction, operation and decommissioning of any such solar facility;
- Second, it would have to adequately control the photovoltaic system design and operation of the facility to ensure that the impacted land can be reasonably expected to remain actively devoted to Chapter 61A agricultural or horticultural uses in addition to electricity generation, perhaps at a level in excess of the Chapter 61A thresholds.
- Third, the solar APR or CR would have to identify and limit the area impacted by solar photovoltaic development to ensure that the majority of both the parcel and of the prime or important soil remains undiminished in its agricultural capacity. Rather than imposing a restriction based on kW capacity per acre, which may change with advances in technology, this limit should focus on the primary underlying land use goal: keeping the land in agricultural use.

These conditions are obviously not adequate in and of themselves, but they would allow DOER to extend the solar incentive to generation units located on farmland and approved under a specific process, while allowing for and incorporating additional review and perhaps the development of best practices by the relevant agencies.⁵ Because such a structure works within existing CR and APR approval procedures, it does not require any wholly new process on the part of any agency. And finally, because it conditions eligibility for the solar incentive on a perpetual commitment to keep the land in agricultural use, it would serve to protect farmland rather than convert it.

This proposal is not without challenges. Some in the conservation community feel that it is too complex, or could diminish support for other land protection tools and programs. The strength in this proposal is that it would work with and defer to the land conservation community and existing land protection programs to ensure careful, appropriate implementation on a case-by-case, site-by-site basis. Rather than steamrolling conservation concerns, this proposal offers an added incentive to help achieve compatible goals. And if it is successful in developing new hybrid agricultural/ photovoltaic production systems, it offers an opportunity to bring some the farmland that has already been converted to solar back to agricultural use.


One substantial challenge for this proposal may be that the costs of achieving farmland protection and continued agricultural use of land supporting photovoltaic generation may prove to simply be too high to achieve profitability and attract investment based solely on the value of the solar

⁵ Such best practices have been developed in the UK; see “Agricultural Good Practice Guidance for Solar Farms,” Ed. J Scurlock, BRE National Solar Centre (UK), http://www.bre.co.uk/filelibrary/nsc/Documents%20Library/NSC%20Publications/NSC_-Guid_Agricultural-good-practice-for-SFs_0914.pdf

incentive and operating revenue, particularly after the recent reductions in net metering value. The perpetual nature of the proposed outcomes would justify greater incentives than other projects, and could be supported with an extension of eligibility beyond the 10-year timeline available to other generation units under the existing incentive structure.

Thank you for the opportunity to provide comments on this important policy. American Farmland Trust will continue to engage with our colleagues in conservation and agriculture around this issue, and is eager to participate in the policy development process. We look forward to working together to support and protect Massachusetts' farms and farmland.

Sincerely,

A handwritten signature in black ink, appearing to read "Jesse Robertson-DuBois". The signature is written in a cursive, flowing style.

Jesse Robertson-DuBois
New England Director
American Farmland Trust

Cc: Commissioner John Lebeaux, MDAR