



February 2, 2024

Samantha Meserve
Director
Massachusetts Department of Energy Resources
100 Cambridge Street, 9th Floor
Boston, MA 02114

Dear Director Meserve:

On behalf of American Farmland Trust, we are pleased to submit the following comments to the Stakeholder Questions issued by the Department of Energy Resources (DOER) on December 21, 2023, in regard to the Solar Massachusetts Renewable Target (SMART) Program.

American Farmland Trust (AFT) is the only national conservation organization dedicated to protecting farmland, promoting sound farming practices, and keeping farmers on the land. AFT is a national leader in promoting Smart Solar on farmland to support clean energy capacity while protecting our most viable agricultural lands from development pressures. AFT has a long history of working on farmland protection and agricultural viability in New England and Massachusetts. AFT was founded by a former Commissioner of Agriculture from Massachusetts, Grant Winthrop, among others. Since that founding in 1980, AFT has been instrumental in supporting and improving the nation's oldest state-administered farmland easement program (the Massachusetts Agricultural Preservation Program) and the nation's first Farm Viability Program, supporting and revising the Commonwealth's current use taxation program (commonly referred to as the Chapter 61A Program), advancing Smart Solar, and more.

In 2022, American Farmland Trust developed a set of Smart Solar SM Principles to guide best practices and policies to ensure that solar development strengthens farm economies and builds resilience in agriculture. Getting this right will be critical to reducing land use and siting tensions and facilitating a pathway for Massachusetts and other states to reach ambitious carbon emissions reduction targets. We believe the SMART program, if properly calibrated and efficiently administered, can set a national standard by aligning with AFT's four Smart Solar principles:

1. **Siting** - Prioritize non-agrivoltaic solar on the built environment and land not well suited for farming. Concentrate solar development on rooftops, irrigation ditches, brownfields, and marginal lands.
2. **Soil and Water** - Safeguard the ability for land to be used for agriculture. Policies and practices should protect soil health and productivity, especially during construction and decommissioning.
3. **Agrivoltaics** - Grow agrivoltaics for agricultural production and solar energy, especially when solar is sited on high quality farmland. Agrivoltaic projects allow for farming underneath and/or between rows of solar panels throughout the life of the project.
4. **Shared Benefits** - Promote equity and farm viability. Require inclusive stakeholder engagement, including farmers and underserved communities, to ensure widespread benefits from solar energy development.¹

¹ <https://farmland.org/solar/>

Furthermore, the goals of the SMART program should align with the recently released [Massachusetts Department of Agricultural Resources Farmland Action Plan](#). The Massachusetts Farmland Action Plan is visionary in centering on three pillars: 1) farmland protection; 2) next generation and affordable land access; and 3) farm viability. The plan was drafted with expert input from AFT's New England staff - we are invested in helping the state's energy and climate goals work in harmony with the SMART program. At its core, this means the Commonwealth's SMART program needs to be designed to work for farmers, enabling access and enterprise opportunities for the next generation of farmers and avoiding further displacement of farming due to residential, urban and industrial development.

We appreciate the opportunity to provide additional comment in response to the DOER Stakeholder Questions:

1. *The SMART program currently provides added incentives for certain project types, including building mounted, canopy mounted, landfill, brownfield, agricultural, floating, community solar, and projects serving low income or public entities, projects with energy storage, and axis tracking. DOER seeks additional feedback on changes or improvements that will advance achievement of the Commonwealth's 2050 GWSA mandates while balancing land use, equity, and economic considerations. A) What project type incentive changes could improve program outcomes? B) Should other project types also be prioritized?*

While AFT does not at this time provide specific technical design recommendations, our observation is that minimum panel height requirements should refer to evidence-based irradiance modeling and agricultural production goals, along with equipment, farm labor, and capital cost considerations. At this time, the SMART program agricultural adder requires an arbitrary leading edge height of 8' for a fixed tilt ground mounted solar array and horizontal height of 10' for single axis tracking arrays. We recognize that there is a waiver request process. However, the process for administering waivers is cumbersome, seems less than transparent, and introduces additional uncertainty to farmers and developers pursuing dual use. Furthermore, solar energy technologies are ever changing, with new innovations in solar modules, racking and design configurations released annually.

For the SMART program to be successful for farmers, there needs to be more flexibility in the height requirements for the Agricultural Solar Tariff Generation Unit (ASTGU) to enable farmers to install innovative technologies that are necessary to achieve agricultural goals, improve viability and productivity.

In discussing barriers with developers committed to rigorous agricultural dual use solar applications, we hear a common concern: a one size fits all approach to panel height, particularly 10' for tracking arrays, can impose substantial capital costs (racking and installation cost) without a commensurate or clear gain in terms of agricultural benefit. For example, more shade tolerant specialty crops, forage, and livestock can grow well with tracking arrays under 10' in height. For more specificity, we encourage MDAR and DOER to refer to comments from agrivoltaics/dual use developers operating in the Commonwealth as well as in other states and in Europe.

AFT would also encourage an impact evaluation of the SMART program to assess how benefits have been distributed to low and moderate income (LMI) customers. If necessary, we encourage additional incentives to improve program outcomes by enhancing the value of the low-income adders to encourage greater LMI participation. Ultimately, this means more MW of solar, including ASTGU qualifying projects being deployed in the Commonwealth for the benefit of LMI customers.

- B) In terms of other project types, AFT encourages standalone energy storage systems (ESS). These projects can have significant benefits to grid reliability while still supporting greenhouse gas emission reduction targets. Echoing feedback from other commenters, we believe the Commonwealth can more effectively facilitate essential ESS deployment by using procurement strategies and reconfiguration of existing standards than by requiring ESS pairing under the SMART program. AFT recommends reconsideration of the ESS requirement for all SMART projects above 500kW. Landowners and developers should have the autonomy to decide whether energy storage is technically and financially feasible for their project.

Removing the ESS requirement will enable certain ASTGU projects to advance that might not otherwise be feasible, furthering benefits to participating farmers.

2. *The current SMART program structure includes a declining block model. Is a structure with fewer blocks and a greater decline between blocks preferable to a greater number of blocks with a smaller decline between blocks? Are there any other modifications to the declining block model structure that could more effectively support solar development?*

AFT does not have comment to share at this time.

3. *Are any eligibility criteria in the SMART program a barrier to participation? What are they, and how would you address these barriers? How would you streamline these eligibility criteria?*

AFT believes the SMART program eligibility criteria are reasonable and generally do not create barriers to participation. However, the provision that a facility can only qualify as category one agricultural if electrical production is less than or equal to 200% of the farm's annual operation load can significantly limit ASTGU project sizes. This criterion presents a barrier to scalability, effectively capping the solar related income that the agricultural landowner and farm operator may generate (via lease rates and/or profit-sharing mechanisms) and indirectly limits the potential agricultural production enabled by the agrivoltaics system.

A farm growing specialty crops on dozens or even hundreds of acres may lack equipment and infrastructure to process and package their products on site (much of MA agricultural products are handled in CT). In this example, the MA farm will have limited behind the meter energy use and is unable to realize the benefits of a more significantly oversized solar array. In this way, the 200% generation cap can present a limitation to farms that don't have on-site processing or cold storage equipment.

4. *Is the current SMART reservation period (excluding any blanket extensions) adequate given current development and construction timelines? If possible, please provide a representative project timeline inclusive of key project milestones, such as permitting, procurement, and interconnection, to help inform DOER's understanding of the development process and current project timelines.*

AFT does not have comment to share at this time.

5. *Are there any emerging technologies or project types that are not currently eligible for SMART that DOER should consider making eligible for the program? Please describe potential project applications, any suggestions for eligibility requirements, and what level of incentives if any would be needed spur project development of the project type.*

AFT encourages a technical assessment and, if feasible, inclusion of vertical bifacial (VBF) solar arrays in the ASTGU adder. A growing body of research and applications in Europe indicate grid benefits due to VBF bimodal energy generation. Additionally, there are promising applications of VBF compatible with livestock grazing, hay production and crop systems, as well as with greenhouse facilities.² Farmers and developers should be encouraged to use all available PV technologies to incorporate solar energy generation that is compatible with sustained agricultural production.

Another promising technology is semi-transparent modules, which are beginning to be used on demonstration projects in Europe involving high value specialty crops. Semi-transparent arrays will impact how ASTGU projects in the SMART program are deployed. Rather than casting substantial shade directly below single axis tracker projects and behind fixed tilt projects, semi-transparent modules would provide a fraction of that shade.

We recommend the DOER shading analysis tool be updated to include a design input for semi-transparent modules as well as VBF. Additionally, an overarching comment is for the shading tool developed for the ASTGU to be used as a design guide rather than a binary test of project qualifications. A 50% per square foot shading limit is not based on specific crop light (PAR) demands, micro-climate impact or agronomic factors and thus should be a guide more than a go-no-go project design requirement.

6. *Are program compliance requirements clear prior to program enrollment? What are the key challenges with satisfying the data and/or documentation requirements for various program compliance checks, such as compliance with the energy storage, low-income, or community solar requirements? Are there any modifications you would suggest to DOER's compliance processes, or alternative data/documentation you believe could satisfy the requirements?*

In general, AFT's understanding is that program enrollment and compliance requirements are clear. Specifically to the ASTGU, there are layers of administration and oversight by DOER and MDAR to largely eliminate greenwashing or potential for abuse by developers seeking to short cut the intended dual use purpose. AFT is interested in seeing continued rigor behind dual use policies as well as a level of flexibility and innovation that attracts a broad spectrum of farmer interest and participation.

Echoing other commenters, AFT recommends continued collaboration between DOER and MDAR to ensure that reporting requirements are both rigorous and reasonable for farmers who are good faith participants in the ASTGU program. The current ASTGU qualifications are focused on a range of detailed, ongoing requirements regarding crop yield, shading, and spacing for farm equipment. While well intended, these requirements tend to overlook farm viability and impose a real burden on farmers who wish to participate. Farmers are reluctant to agree to a pre-determined guarantee of crop production - the variable impacts of climate change in recent years, ranging from late frosts and drought to extreme rain events, have only created more uncertainty.

While AFT and other commenters appreciate the intention to insulate farmers from the possibility of adverse outcomes resulting from an ASTGU project, the current requirements impede best practices that many farmers employ with respect to crop rotation and season to season management decisions. The current requirements lock farmers into a farm plan, which may run counter to a more dynamic approach necessitated by extreme weather, unpredictable markets, and evolving farming practices such as regenerative agriculture. We recommend DOER, in collaboration with MDAR, continue to solicit

² <https://www.pv-magazine.com/2023/07/31/vertical-bifacial-solar-seeking-greenhouse-albedo-deployment-space/>

feedback from ASTGU participants, including landowners and farmers, on the most appropriate and efficient level of oversight, reporting and scrutiny of these agricultural dual use projects.

Maintaining land eligibility for Chapter 61A should be sufficient to establish continued use of the land for agricultural purposes. AFT recognizes too that Chapter 61A was amended by the legislature in 2022 specifically to incorporate agrivoltaic (ASTGU) solar projects that allow for the continued agricultural use of the land as a basis for retaining the land in 61A.

7. *Are SMART application processes and requirements clear? Is communication between applicants, the Solar Program Administrator, and DOER clear and effective? Please describe any improvements you believe could be made to the SMART application process.*

AFT does not have comment to share at this time.

8. *Are there solar canopy project types that currently fall outside the SMART program's definition of Solar Canopy that you believe should be eligible for the Canopy adder? Please provide example project types and describe their benefits.*

AFT strongly supports deployment of solar on buildings and on land not well suited for farming. The Canopy adder is an important incentive and should be further encouraged to maximize the use of land that can be utilized for multiple purposes. Schools, malls, and other large venue parking lots should be required to be solar canopy covered. For example, new requirements in France will reduce pressure on farmland for solar, enhance distributed generation close to (and within) urban load centers, and provide shading benefits to parked vehicles and occupants. In total, the French requirements could generate 8% of the country's power supply, equivalent to 10 nuclear plants, at a fraction of the cost.³

9. *Are there examples of dual use agrivoltaics policies in other jurisdictions that align with Massachusetts' solar and agricultural objectives? Please provide citations and summaries of those policies.*

AFT continues to track innovative policies at the state and federal level, as well as examples from other countries adopting agrivoltaics programs.

A number of states including ME, NY, MD, IL, CO and CA have instituted agrivoltaics policy or are exploring state funding for research and development. AFT encourages MDAR and DOER to consult the AgriSolar Policy Guide (2023) from the Colorado Agrivoltaics Learning Center – this resource will be updated with new measures as they are enacted.

AgriSolar Policy Guide (2023) - <https://www.agrisolarclearinghouse.org/agrisolar-policy-guide-2>

New Jersey recently issued a straw proposal for a 200 MW dual use pilot program that will inform a permanent program for the Garden State. To date, only a straw proposal for New Jersey's Dual-Use Solar Pilot Program⁴ has been released. Stakeholders are encouraging the NJ Board of Public Utilities to economize on agrivoltaics research requirements and to focus on agricultural benefits instead of one size fits all panel height and shade requirements.

³ <https://www.washingtonpost.com/climate-solutions/2023/02/06/france-solar-parking-lots/>

⁴ <https://www.nj.gov/bpu/library/Dual%20Use%20Solar%20Energy%20Pilot%20Straw%20Proposal.pdf>

With an award from the Department of Energy's Foundational Agrivoltaics Research at the Megawatt Scale (FARMS) funding opportunity, AFT is partnering with the Rutgers University Agrivoltaics Program to develop, pilot and implement a farmer training and technical assistance program for agrivoltaics. We encourage MDAR and DOER to explore funding and partnerships to support and expand similar efforts with the University of Massachusetts clean energy extension.

We encourage MDAR and DOER to monitor the New Jersey dual use pilot program and to track advancements in Europe where agrivoltaics is being instituted into national energy standards in France, Italy, and Germany. Promoting agrivoltaics is part of the European Commission's Solar Energy Strategy, which calls on member states to encourage agrivoltaics and implement favorable policies for agrivoltaics.⁵

At the federal level, AFT is encouraging inclusion of bipartisan proposals introduced in 2023 in the US Senate that focus on agrivoltaics and solar siting on farmland to be included in the upcoming Farm Bill. For additional background, please see:

Baldwin, Grassley Introduce Bill to Protect and Invest in Farmland Used for Renewable Energy Developments (September 2023) ⁶

Heinrich, Braun Introduce bipartisan bill to support agrivoltaics research and development (May 2023) ⁷

In addition, AFT encourages MDAR and DOER to actively participate in upcoming forums to discuss the state of the art in agrivoltaics research, demonstration and deployment.

2024 Solar Farm Summit – North American Agrivoltaics Expo – July 8-10, Chicago

<https://solarfarmsummit.com/> {AFT is lead sponsor}

Agrivoltaics World Conference – June 11-13, Denver

<https://www.agrivoltaics-conference.org/> {NREL is co-hosting}

10. *What modifications to SMART incentive payment calculations, as currently set forth in 225 CMR 20.08, if any, are needed? Please provide examples formulas or calculations for DOER review.*

AFT does not have comment to share at this time.

11. *How could the program be designed to insulate projects and participants from unforeseen market circumstances that materially impact the value of the SMART program incentive? For example, global events impact supply chain and energy costs.*

AFT does not have comment to share at this time.

⁵ https://energy.ec.europa.eu/topics/renewable-energy/solar-energy_en

⁶ <https://www.baldwin.senate.gov/news/press-releases/baldwin-grassley-introduce-bill-to-protect-and-invest-in-farmland-used-for-renewable-energy-developments>

⁷ <https://www.heinrich.senate.gov/newsroom/press-releases/heinrich-braun-introduce-bipartisan-bill-to-support-agrivoltaics-research-and-demonstration>

12. *What additional consumer protection measures or modifications to existing measures should the SMART program incorporate to ensure such protections are achieving their objectives, especially as they pertain to low-income customers?*

AFT does not have comment to share at this time.

13. *Are there any Commonwealth policies (e.g., renewable energy goals, land use priorities, housing policy) that you believe the SMART program inadvertently conflicts with? Please describe any potential modifications to SMART that would alleviate these conflicts.*

Echoing other commenters, AFT encourages reconsideration of current interpretation of tree cutting prohibitions for the purposes of re-establishing or expanding farmland. The way this is being implemented today, as we understand it, Massachusetts farmers may freely cut trees to re-establish or expand agricultural areas but may not cut any tree to enable a project that qualifies for the ASTGU, the nation's most rigorous dual use adder. This is overly restrictive and has the unintended consequence of adding further economic hardship for farmers interested utilizing their land to capitalize on the ASTGU.

The result is that some farms miss the financial opportunity intended under the ASTGU, making permanent conversion and loss of agricultural land the more viable option. Such an arbitrary restriction on cutting any trees for agriculture-compatible solar limits farmer participation in the ASTGU and undercuts farm viability, an underlying purpose of the Massachusetts Farmland Action Plan.

14. *Is there any additional feedback you wish to provide to DOER?*

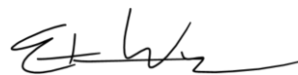
On behalf of American Farmland Trust, we appreciate you taking the time to request public comments on the SMART program. AFT's New England regional program and Smart Solar team would be pleased to meet with your office to discuss our comment.

If you have any questions, please feel free to reach out to Chelsea Gazillo at cgazillo@farmland.org or Ethan Winter at ewinter@farmland.org.

With sincere regards,



Chelsea Gazillo
New England Policy Manager



Ethan Winter
National Smart Solar Director

American Farmland Trust is an agricultural non-profit organization with a mission to save the land that sustains us by protecting farmland, promoting sound farming practices, and keeping farmers on the land. AFT is the only national agricultural organization that approaches its work in this comprehensive, holistic manner. We recognize the connection between the land, forward-looking farming practices, and the farmers who do the work.