



October 27, 2021

Commissioner Patrick Woodcock
Massachusetts Department of Energy Resources
100 Cambridge Street, Suite 1020
Boston, MA 02114

BlueWave Solar Public Comment in Response to the Revised Guideline Regarding the Definition of Agricultural Solar Tariff Generation Units

Dear Commissioner Woodcock,

Thank you for the opportunity to comment on the Baker administration's continuing efforts to design a dual-use agrivoltaics program for the Commonwealth that will achieve the dual benefits of agricultural land preservation and carbon-free energy generation. The Department of Energy Resources (DOER) and the Department of Agricultural Resources (MDAR) have made progress towards a dual-use program that can achieve the full measure of the economic, land protection, and clean energy ambitions the Baker administration has established. Under your leadership, agrivoltaic innovation has been positioned for success as a nation-leading program.

Extensive research of dual-use projects around the globe already demonstrates their viability when well-planned and properly-executed. In Japan, for example, the national government has been annually compiling agricultural productivity and environmental monitoring data for almost two decades in support of ongoing learning and experimentation. Their commitment has grown to successfully produce over 2000 projects and over 120 crop varieties nationwide.¹ In that spirit and with the hope that we can turn project renderings and farm plans into living, breathing partnerships across the Commonwealth, BlueWave Solar (BlueWave) submits the following comments in response to the most recently revised *Guideline Regarding the Definition of Agricultural Solar Tariff Generation Units* (the Guideline) issued on October 6, 2021, with technical corrections dated October 12, 2021.

BlueWave appreciates that DOER and MDAR have been working in tandem to respond to feedback on previous iterations of this Guideline from the solar industry, farmers, conservation groups, and concerned citizens. While an updated Guideline has been under development, many of these stakeholders have responded to DOER's signal that dual-use is an approved and encouraged project design within the Solar Massachusetts Renewable Target Program (SMART). Farmers and developers across the state have invested in projects that now span various stages of completion – devoting time and significant financial resources to develop viable farm plans and project designs that comply with existing regulations and guidance from DOER.

If these investments come to fruition, we can collectively reap the benefits of healthy soils, local food, climate change resiliency, sustained jobs, preserved agricultural lands, empowered

¹ [Solar Sharing in Japan](#), Institute for Sustainable Energy Policies (2020).

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farmers, and clean, renewable energy. Other states in the region and across the country have recognized the potential of dual-use, and are beginning to catch up to Massachusetts' lead.² In order to maintain our reputation as innovators, we must ensure that a final Guideline does not stifle the livelihoods of present and future farmers that are being built around current dual-use standards and best practices. We cannot meet the Commonwealth's ambitious climate, clean energy, and agricultural goals by imposing unfounded constraints on those farmers' expertise and innovation.

The SMART program is a tool that can bring new farmland into production and create opportunities for new farmers.

Massachusetts, like many states in the Northeast, is losing farmland and its farmers at an alarming rate.³ Market pressures, changing climates, and sprawling developments threaten enterprises that have been successful for generations. Meanwhile, experts caution that the region will need three times more farmland to sustain our local food supply in the years to come.⁴ Due to these mounting pressures, the New England Food Vision established a goal of creating four million acres of new farmland in New England by 2060. However, several of the proposed updates to the ASTGU Guideline would restrict the ability of ASTGUs to be sited on newly created farmland, removing an important tool for bringing much-needed farmland into production. Instead of imposing new restrictions on the ability of these projects to contribute to the expansion of farmland in the Commonwealth, the SMART program should enable ASTGUs to fully realize the dual benefits of preserving our state's agricultural economy and generating renewable energy.

DOER and MDAR have recognized the role that dual-use can play in addressing these challenges by establishing the SMART program's Agricultural Solar Tariff Generation Unit (ASTGU). ASTGUs and their associated adder can provide a lifeline to farmers that need steady income in order to keep their land and sustain it in agricultural production. Predictable, long-term solar payments empower farmers to make the best decisions for their enterprises. Additional income allows them to expand into an otherwise fallow field, diversify or rotate crops for optimal soil health, invest in new infrastructure, shore up succession plans, and attract and train the next generation of the Commonwealth's farmers and agricultural stewards.

ASTGUs and their associated financial benefits incentivize new farmers to participate in the agricultural economy by lowering barriers of entry and minimizing risks during what can otherwise be an uncertain career path. The more we foster a pipeline of new farmers, the more we can put new land into agricultural production. In order to create three times more farmland by 2060,⁵ we must use every tool available to expand the agricultural workforce and revitalize

² While [Jack's Solar Garden](#) in Colorado celebrated its first agrivoltaics crop this year, New Jersey enacted [legislation](#) to kick off a 200MW dual-use pilot program. Demonstration projects in [Arizona](#) and [Illinois](#) are being built out with research support from public institutions and financial backing from the U.S. Department of Energy.

³ [Farms Under Threat: State of the States](#), American Farmland Trust (2020).

⁴ [New England Food Vision](#), University of New Hampshire Sustainability Institute (2014).

⁵ See footnote 4.

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the agricultural economy. Creating more opportunities also allows us to cultivate equity and access for Black, Indigenous, and People of Color (BIPOC) who are ready to contribute their expertise to this work.

For example, at BlueWave's SMART-qualified project in Dighton, our approved ASTGU business plan sets aside funds for apprenticeships with young, aspiring farmers. As the project site is one mile down the street from Bristol County Agricultural High School, this will be a particularly important tool to attract a steady pipeline of farmers. Initial conversations with the school superintendent suggest ample opportunity to design curriculum that codifies this practice over the life of the project. Bolstered by UMass agrivoltaic research funded by BlueWave and the U.S. Department of Energy, holistic educational and vocational partnerships such as these will be critical to advance the Commonwealth's goal of cultivating the next generation of farmers.⁶

The SMART program is successful because it incentivizes developers to make decisions in alignment with broader policy goals. DOER, MDAR, and many of the stakeholders who have weighed in on the Guideline thus far agree that financially and holistically supporting farmers, while preserving and expanding their valuable farmland, is a worthwhile policy objective.⁷ Dual-use presents a unique opportunity to accomplish all of these goals – but both developers and farmers require clear and actionable guidance to act.

The SMART regulations do not provide a basis for limiting the types of farmlands or farming practices that can participate in dual-use beyond the existing definitions in Chapter 61A or soils classified as Important Agricultural Farmlands.⁸ The Guideline should not impose additional language prohibiting the creation of new farmland for the purpose of establishing a dual-use project. Rather, the Guideline should serve to clarify the SMART regulations and provide a line of sight for developers and farmers to remain in compliance with dual-use standards and best practices.

The Guideline wrongfully proposes a new requirement that new farmland must be in active agricultural use and managed as a commercial enterprise for not less than 3 consecutive years prior to submitting an ASTGU application in the SMART program.

The Guideline describes ASTGU-eligible farmland as that which “is owned or leased by a farmer that is at a minimum currently enrolled in M.G.L. Ch. 61A or has been enrolled in Chapter 61A in

⁶ MDAR's [Beginning Farmer Resources](#) are one example of Massachusetts' commitment to ensuring we “maintain a safe and secure source of local food and that the agricultural economy of the Commonwealth continues to thrive.”

⁷ MDAR recently [announced](#) over \$2.9M in grants to “help local farms across the Commonwealth implement climate change mitigation strategies and solutions.” In addition, the Executive Office of Energy and the Environment's [2050 Decarbonization Roadmap](#) recognizes that improving and expanding healthy agricultural soils through regenerative practices will be an important part of Massachusetts' overall decarbonization strategy.

⁸ 225 CMR 20.02. *Definitions*, Agricultural Solar Tariff Generation Unit; Land in Agricultural Use; Important Agricultural Farmlands.

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the past five years OR is classified as Important Agricultural Farmland, e.g., prime farmland, unique farmland, or additional land of statewide importance.”⁹ This description is not only consistent with other state agricultural programs, but is sufficient for ensuring adherence to the purposes of the SMART program.

Imposing the Guideline’s new requirement that farmland should be in active agricultural use and managed as a commercial enterprise for three consecutive years prior to its eligibility as an ASTGU would prevent farmers from starting a new business or working a new field. Moreover, requiring new farmland to be previously farmed creates a circular and confusing set of standards that does not make practical sense for many real use cases. The Guideline also does not define the types or characteristics of commercial enterprises that would qualify projects under the new requirement, leaving room for additional confusion. BlueWave urges DOER to remove this new requirement and maintain the current practice of qualifying ASTGUs through Chapter 61A or soil classification.

DOER and MDAR have established that Chapter 61A and soil classification are sufficient measures to prove ASTGU eligibility. In addition, both measures fulfill the statewide policy objectives of empowering new farmers and creating new farmland. The SMART program has not only created a pathway to fund new farms, but also defined verification measures to ensure their continued success and preservation. Therefore, DOER should continue using these measures, and these measures alone, to qualify dual-use projects for participation and monitor their ongoing compliance.

The Guideline wrongfully proposes a new requirement that projects on Important Agricultural Farmland must demonstrate a history of production of their proposed agricultural commodity on the site for not less than 3 years immediately prior to submitting an ASTGU application in the SMART program.

Not unlike the above requirement, this proposed change imposes undue and unnecessary restrictions on farmers who are otherwise in compliance with state agricultural standards as well as the SMART regulations. It is rare that a farmer would commit to the same crop on the same land for extended periods of time, and similarly rare that a state-sanctioned program would require a farmer to do so. In fact, crop diversification and rotation are important components of the innovative, regenerative agricultural practices that Massachusetts needs to meet demand for local food in the face of a changing climate. Diversification and regenerative practices are also fundamental to ensuring continued farm viability.

DOER and MDAR have thus far recognized that farmers, especially when given flexibility and funding, make the best decisions for their own land and farming enterprises. BlueWave encourages them to continue doing so and remove this new requirement from the Guideline. The SMART regulations do not provide a basis for restricting diversification of crops in order to qualify an ASTGU, but rather allow for the “optimization” and “compatibility” of crops under

⁹ See footnote 8.

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and around a dual-use array.¹⁰ Artificially imposing crop type or yield requirements would prevent developers and farmers from doing just that.

Solar developers like BlueWave often work with farmers that don't own land to design dual-use projects and their associated farm plans. These farmers lease land that may or may not have been utilized for growing crops prior to their involvement. For example, at BlueWave's ASTGU in Northfield, a new subtenant farmer will manage fields located along the Connecticut River through a holistic sheep grazing and breeding program designed to rebuild soil, replenish hydrology, and diversify surface ecology. Located on some of the most agriculturally productive soils in the Commonwealth, this new farm plan should be viewed as a welcome change over the prior agricultural use of turf grass, which resulted in years of net soil exports.

Similarly, at BlueWave's proposed ASTGU in Haverhill, two subtenant farmers (one, a leasing sheep grazer seeking more acreage and the other, a farmer-agronomist) will introduce higher-value products – value-added dairy and vegetables – to the property over what is currently grown – hay – while reactivating long-overgrown fields. In both cases, the newly proposed ASTGU Guideline would stop these projects from occurring on the basis that farm product diversification is somehow an undesirable outcome or runs contrary to the Commonwealth's stated goal of improving its agricultural economy.¹¹

While BlueWave recognizes DOER's interest in ensuring "the continued use of the land for agriculture"¹² on dual-use sites, we posit that crop type and yield requirements realistically hamstring the optimal uses of Massachusetts' best farmland. For example, if this requirement were to be adopted, grazing or otherwise marginal land could not be converted to active crop production for the purposes of dual-use. Regenerative agricultural practices may integrate both crops and livestock grazing on the same fields, while allowing for crop rotations and fallow seasons. If DOER wishes to prevent ASTGUs from qualifying under farm plans that *only* implement livestock grazing, they should propose plain and clear language stipulating this rather than stacking unnecessary and unrealistic requirements on top of sufficiently robust qualification measures that already exist.

The proposed Waiver for Decreased Yield imposes a new requirement above and beyond the intent of the SMART regulations.

¹⁰ 225 CMR 20.06(1)(d). *Special Provisions for Agricultural Solar Tariff Generation Units*.

¹¹ MDAR has partnered with the American Farmland Trust on a [comprehensive soil health program](#) with the goal of incentivizing farmers throughout Massachusetts to adopt regenerative agriculture practices and improve resilience to climate change and farm viability. Together with other programs like the [Farm Energy Program](#), the [Climate Smart Agriculture Program](#), and [Matching Enterprise Grants for Agriculture](#), MDAR has underscored its mission to "keep Massachusetts agriculture economically and environmentally sound."

¹² See footnote 8.

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In order to qualify an ASTGU for participation in the SMART program, developers and farmers must provide detailed farm plans and yield projections for specific types of crops to be grown and animals to be grazed. These plans undergo a shading analysis, demonstrate sunlight needs and availability, and justify the compatibility of a farmer's agricultural practices with the solar project design. Likewise, qualified ASTGUs must provide DOER with annual reports detailing the "productivity of the crop(s) and herd, including pounds harvested and/or grazed, herd size growth, success of the crop, potential changes, *etc.*"¹³

Such reporting is essential to maintaining an ASTGU's compliance with the adder as well as recording important data about the successes and challenges of agrivoltaics. The SMART regulations do not, however, stipulate that a specific level of productivity is required for continued compliance with the adder, nor that a specific level of productivity would disqualify an ASTGU from participating. The proposed Waiver for Decreased Yield (the Waiver) implies that specific levels of productivity will, in fact, disqualify otherwise compliant dual-use projects despite the fact that annual productivity changes – including decreases – are the norm in agriculture.

In practice, the proposed Waiver as well as the limitation that a project may not apply for a Waiver in two consecutive years would unjustly punish farmers who experience unforeseen circumstances outside of their control. Farmers already face a risky endeavor, made more unpredictable by climate change. Weather events and pests may lead to decreased yield in one or more consecutive years, exacerbating the natural variability of crop production from year to year. Holding an ASTGU's adder in doubt during unforeseen circumstances – even those that impact a farm for more than one year – violates the intention and plain language of the SMART regulations. Moreover, in absence of any supporting examples or data to suggest these requirements are warranted, such changes would impose expectations on the Commonwealth's agricultural sector that are simply without precedent.

For example, farmers wishing to enroll their enterprise in Chapter 61A need only demonstrate a dollar amount of sales from agricultural activities over a two-year period.¹⁴ This familiar and simple burden of proof has been proven effective for monitoring agricultural production across the Commonwealth. At the federal level, farmers submit IRS Schedule F to report taxable income earned from farming or agricultural activities.¹⁵ Farmers may also apply for federal crop insurance every year that they experience a loss event. Under this program, administered by the U.S. Department of Agriculture's Risk Management Agency, crop yields are measured against a three-year rolling average – even if significant loss events happen in multiple and consecutive years.¹⁶

¹³ 225 CMR 20.06(1)(d)(5).

¹⁴ [MGL Chapter 61A](#) – Assessment and Taxation of Agricultural and Horticultural Land.

¹⁵ [IRS Schedule F](#) (Form 1040), Profit or Loss from Farming.

¹⁶ [General Standards Handbook](#), USDA Federal Crop Insurance Corporation (2021).

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In Massachusetts, MDAR has responded to significant crop loss events with similar assistance, recognizing the greater unpredictability of year-over-year yields during extreme weather exacerbated by climate change. Its Food Security Infrastructure Grant program has been mobilized multiple times in recent years to respond to abnormal drought conditions as well as to provide relief during the COVID-19 pandemic.¹⁷ Both state and federally established programs underscore the need to measure agricultural production using simple and consistent metrics, with built-in flexibility for the yearly fluctuations that are common and out of any farmer's control. These existing programs provide a sufficient basis for maintaining compliance with the ASTGU adder.

Designing guidelines that impose unrealistic expectations on farmers while leaving no room for normal fluctuations in agricultural yield stands to actively increase the financial and compliance risk participating farmers assume while undermining the overall viability of agrivoltaics under the SMART program. As climate change poses ever more daunting challenges and unpredictable weather patterns, the Commonwealth should contemplate programs that help farmers adapt to ever-changing growing conditions and diversify their product base to improve farm viability – not impose requirements that exacerbate the risks of these challenges. Practically, these proposed changes would render dual-use projects unpredictable and unfinanceable for both farmers and investors. BlueWave strongly urges DOER to reconsider imposing this additional qualification measure.

DOER should enable third-party verification measures to qualify projects for participation in the SMART program and monitor their ongoing compliance.

BlueWave was disappointed to see the removal of pathways for third-party verification of ASTGU qualification and compliance from the Guideline. DOER, in agreement with stakeholders, had previously endorsed an alternative yet parallel pathway to the current MDAR process for evaluating farm plans and annual data. Allowing qualified, expert partners to play this administrative role and add privately-funded resources to ensure program integrity and compliance not only provides multiple avenues of certainty for projects seeking to qualify for the ASTGU adder, but also relieves the administrative pressure on MDAR staff to review and approve every single project that is waiting to come online.

The Commonwealth's highly respected and successful Chapter 21E hazardous waste site cleanup program, established more than 30 years ago and now a model for state-administered hazardous waste programs across the country, provides an excellent example for how verification and ongoing compliance of dual-use projects can be managed by a third-party administrator. Under the 21E program, the Massachusetts Department of Environmental Protection relies on state-certified, licensed professionals to certify clean-up plans, determine whether those plans are properly executed, and monitor compliance with the terms and conditions of the plans to ensure the sustained benefits of those remediation actions.¹⁸ Similar

¹⁷ [Food Security Infrastructure Grant Program](#), MA EEA.

¹⁸ [MGL Chapter 21E](#) – Massachusetts Oil and Hazardous Material Release Prevention and Response Act.

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roles for third-party agrivoltaic professionals could enhance the integrity and efficiency of the ASTGU approval and compliance assurance protocols. In addition, a third-party administrator could provide both audit and technical assistance services to provide farmers with support and flexibility to maintain their economic and agricultural success. If the cost of those services were borne by solar developers and long-term asset owners, DOER could further minimize costs to Massachusetts taxpayers.

The SMART program has created a pathway for agrivoltaic innovation to prove its part in the clean energy transition. Let's not miss this opportunity to lead.

BlueWave thanks DOER for responding to stakeholder feedback and increasing the dual-use project size cap from 2MW_{AC} to 5MW_{AC} . We are also encouraged that DOER has implemented a 7.5MW_{DC} size cap in place of a site coverage restriction. These two measures are consistent with other project size restrictions in the SMART program and provide enough flexibility to optimize project design alongside farm plans. As a result, BlueWave recommends eliminating the DC:AC ratio restriction as a duplicative requirement to the overall DC size cap. If DOER wishes to maintain the DC:AC ratio restriction, 2:1 is a marked improvement over the previously proposed DC cap of 125% AC size. BlueWave appreciates DOER's responsiveness to stakeholder concern, feedback, and practical experience on this issue.

By implementing clear, reasonable, and consistent standards for ASTGUs to qualify and demonstrate continued compliance with the SMART regulations, DOER and MDAR can help Massachusetts leverage agrivoltaics to achieve greater levels of agricultural productivity, diversification, and farmland preservation. In Japan, agrivoltaics have existed since 2004, and have now become so successful at harmoniously co-locating solar and agriculture that the national government has made it the preferred solar siting policy on prime farmland.¹⁹ In Massachusetts, many outside forces – real estate development, increasing costs and risks – remove land from agricultural production every year. If DOER does not allow farming to be started on additional land, it will only slow the rate of decline. The only way to reverse the decline in agricultural land is by enabling additional land to be added to agricultural production – such as via the ASTGU adder.

Once the myriad of proposed project designs in Massachusetts are allowed to reach commercial operation, stakeholders will have an opportunity to dig into the data that they produce. BlueWave looks forward to engaging in DOER and MDAR's review of the ASTGU adder once the state reaches 80MW_{AC} , but cautions that many of the proposed changes to the Guideline would render existing project plans unfeasible and likely result in far fewer than 80MW_{AC} being developed. We should not make limiting decisions about farmers' ability to innovate and adapt before having on-the-ground experience that will ultimately inform the future of dual-use in Massachusetts.

¹⁹ See footnote 1.

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BlueWave believes that this future is bright. With willing partners and engaged stakeholders; with high, results-based standards for approval of projects; with practical, common sense guidelines; and with rigorous compliance assurance, dual-use can be the backbone of a thriving, climate-resilient agricultural economy. Dual-use can also deliver renewable electricity and infrastructure upgrades to communities across the Commonwealth that have thus far been left out of the clean energy transition. While other forms of solar development – and development pressures in general – threaten our most precious soils and agricultural lands, dual-use provides us an opportunity to conserve the highest and best uses of these lands. All the while, we can shore up support for Massachusetts’ farming community to expertly steward that land for years to come.

The recommendations in these public comments can set Massachusetts on a path towards achieving the Baker administration’s economic, land protection, and clean energy ambitions. BlueWave has collaborated with the agricultural community and other solar stakeholders to make farmer-centric recommendations that will help expand farming across the Commonwealth while re-establishing the state as a leader in agrivoltaic innovation. We look forward to continued discussion with DOER, MDAR, and other stakeholders towards making our shared vision a reality.

Sincerely,

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