American Farmland Trust
SAVING THE LAND THAT SUSTAINS US

December 13, 2023

Sherri L. Golden
44 South Clinton Avenue
Trenton, NJ 08625-0350

American Farmland Trust Recommendations RE: Docket No. QO23090679 In the Matter of the Dual-Use Solar Energy Pilot Program

Dear Secretary Golden,

American Farmland Trust (AFT) appreciates the opportunity to provide comment on the straw proposal for the Dual-Use Solar Energy Pilot Program. This program reflects a nationally significant step in creating space for applied research, industry innovation, standard setting and replication in the rapidly emerging area of agricultural dual-use solar (referred by AFT as *agrivoltaics*).

Founded in 1980, American Farmland Trust's (AFT) mission is to save the land that sustains us by protecting farmland, promoting sound farming practices, and keeping farmers on the land. AFT recognizes that fulfilling this mission depends on America's farmers and ranchers, and their ability to operate viable farm businesses. In addition to being a leader in federal agricultural policy, AFT works across the nation at the state and local level to advance policies to achieve its mission.

AFT is actively engaged in regional and national work to develop best practices, standards, and policies related to the development of solar energy facilities on agricultural lands. According to the Department of Energy's 2022 Solar Futures Study, the U.S. is projected to need 10 million acres of solar to achieve the goal of decarbonizing the electric grid by 2050 with 90% of this installed capacity constructed in rural areas. AFT estimates that, without policy changes, 83% of expected future solar development will take place on farmland – with nearly half of that on our country's most productive, versatile, and resilient farmland. New Jersey anticipates approximately 30,000 MW of solar capacity to meet state clean energy targets, likely requiring 150,000 – 300,000 acres (based on industry estimate of 5-10 acres per MW).

Anticipating this challenge, AFT's New York/New Jersey Regional program has established a formal collaboration with Rutgers University to develop an agrivoltaics training program for New Jersey farmers. Funding for this partnership comes from the US Department of Energy's Foundational Agrivoltaics Research at Megawatt Scale (FARMS) program. This training program is premised upon the development of a robust dual-use solar program that will require significant education, engagement and technical assistance and involvement of extension professionals, farmers, service providers and solar experts across New Jersey in coming years.

With this context in mind, AFT applauds New Jersey for being a trail blazer in passing the Dual-Use Solar Energy Act of 2021 (P.L. 2021, c. 170, "Dual-Use Act" or "Act") which directed the New Jersey Board of Public Utilities (BPU), in consultation with the Secretary of Agriculture, to adopt rules establishing a Dual-Use Solar Energy Pilot Program. AFT is invested in helping BPU and stakeholders develop a successful Pilot Program.

In our view, such a program should encourage a portfolio of commercially viable dual-use solar projects representing a diversity of designs, nameplate capacities, farmer backgrounds, and agricultural plans. Ideally, the dual-use projects will be distributed in different regions of the state and on a variety of soil types to demonstrate a range of project configurations and farm plans reflective of farmer interests and agricultural markets. Importantly, the pilot program should initiate opportunities for producers, agrivoltaics specialists and service providers to serve across New Jersey's farm-energy-water nexus.

AFT has developed a comprehensive set of policy recommendations for Smart Solar, released on December 13th. (https://farmland.org/aft-releases-smart-solar-recommendations-to-help-policymakers-advance-solar-and-strengthen-farm-viability/). We invite BPU and other Pilot Program participants and stakeholders to review AFT's recommendations. The following includes general and specific recommendations related to the Pilot Program and straw proposal.

General Recommendations

AFT defines agricultural dual-use solar (*agrivoltaics*) as the integration of agricultural production and solar energy generation on the same piece of land throughout the life of the solar array. The outcome of the Pilot Program should be to keep land in farming as solar deployment expands to meet the New Jersey's Renewable Portfolio Standard and implement the state Energy Master Plan. Advancements in applied research and policy will enable application of dual-use production systems beyond sheep grazing, currently the most common option.

With regard to the state Pilot Programs, our general recommendations include the following:

Invest in Market Relevant Research and Demonstration.

- The Pilot Program should cover added costs of research and demonstration projects to determine the economic viability of agrivoltaics for different crop and livestock systems (and associated conservation management) in different climates with varying scales of arrays as well as farmer interest in agrivoltaics.

- Research should explore how agrivoltaic projects can improve water usage, soil health, and land access—especially for historically marginalized and limited-resource producers. In addition, research should assess what is needed to scale up agrivoltaic arrays in different communities and for various production systems (e.g., workforce development, market access, supply chain investments).

- The Pilot Program should encourage and facilitate standardized data collection (including from third party qualified contractors or research institutions) in order to aggregate and share data from current agrivoltaic arrays with state and federal agencies, researchers, and other stakeholders. The goal should be to inform and advance the viability of future agrivoltaic projects, not merely data collection. Importantly, data collection, including costs of sensors and other research related equipment, should not create undue burden on farmers without compensation.

Incentivize Agrivoltaic Projects.

State and local governments have a key role in supporting incentives for development of agrivoltaic solar arrays. For an effective financial incentive, government agencies and permitting authorities need the authority to require periodic verification to ensure that farming continues throughout the life of the array. The straw proposal includes several provisions that AFT also recommends for state programs including:

- A clear but not overly prescriptive definition for array heights and types of projects that qualify for the dual-use incentive(s). However, in the absence of a defined adder it is impossible to weigh the relative costs and benefits of different dual-use design options. AFT's understanding is that BPU is planning to have a customized, project-specific incentive adder. This may create a lot of additional complexity across the portfolio of different projects with different adders. AFT recommends a verifiable performance standard and a standardized adder incentive structure.

- Consideration of a control area to support analysis of different project designs, applications and practices. AFT recommends that BPU carefully consider the pros and cons of a fixed or pre-determined control area requirement. The goal of the Pilot Program should be to demonstrate how on farm practices can improve and optimize production across a diverse set of agrivoltaics applications and project designs. If a control area is deemed necessary for data analysis and scientific rigor, it should be sized for the proposed research so as to not overburden the farmer or undermine ongoing farming operations.

- Periodic verification and field visits to ensure farming activities continue and to assess changes in agricultural practices as circumstances may be warranted over the 20-30 year project life. AFT supports BPU's recommendation that a preferred project would enable access to the site and provide data and documentation about the design as to enable replicability and applicability to support a robust permanent dual-use program. AFT also agrees that farmers should be allowed to change their agricultural or horticultural practices (e.g., crop rotation, switching from grazing animals to hay production, or switching to a different production system).

- Provisions for auditing compliance and, if necessary, enforceable financial mechanisms for noncompliance if active agricultural or horticultural use of the land is impaired or discontinued beyond a reasonable probation and cure period.

- AFT also recommends transparency in how data will be shared to increase knowledge of agricultural and energy production and overall project performance during the Pilot Program and beyond. AFT recommends that BPU explore partnerships with DOE and other state energy offices to share research findings, lessons learned and case studies to increase understanding of agrivoltaic viability and scalability. BPU may be interested in the recent agrivoltaics RFI and report on agrivoltaics in New York from NYSERDA, which AFT also provided comment on.

- The stated intention of the Pilot Program is to demonstrate and study the compatibility of active agricultural or horticultural production and solar photovoltaic infrastructure on the same land. The Pilot Program should explicitly encourage experimentation and incorporation of regenerative practices, and allow for iteration. The Pilot Program should anticipate good-faith errors and make space for remedies and onsite corrections. Insights will come from failures as much as from managed success. In this way, the Pilot Program can truly inform, shape and provide a foundation for a robust permanent dual-use program that supports resilience and ensures the viability of New Jersey's diversified agriculture sector. This will be important in gaining farmer interest and building acceptance of agrivoltaics in the face of shifting weather patterns, conventional land conversion pressures, high costs and barriers for new and beginning farmers and aging demographic of producers and farm owners.

Based on input from other agricultural and solar sector stakeholders, AFT also offers these additional recommendations specific to the straw proposal:

Prioritize farmer centered dual-use

Pilot Program applicants should be able to demonstrate that they are actively engaging with a farmer who has a viable farm business plan that considers soils, infrastructure, support services, water access, farm succession, and market access/customer segments for the farm product(s) that will be produced following installation.

Developers should demonstrate how the specific solar array is designed to meet the farmer's needs in supporting a viable farm operation (e.g. water wells for grazing animals, water supply and infrastructure for irrigation, and panel height and row spacing to accommodate farm machinery). Critically, the Pilot Program should favor projects designed for flexibility in order to respond to changes in market demand over the 20-30 year life of the project.

AFT also encourages BPU to make it explicitly clear that "force majeure" such as crop loss or failure, extreme weather, or other similar events beyond the control of farmer, landowner, or project developer are exceptions to the non-compliance recourse. Clarity on force majeure, remedy terms and non-compliance requirements is essential for the developer to secure financing and insurance for agrivoltaic projects.

Define a feasible control area appropriate to the research

Requiring a 1:1 control to field trial area is likely to render many potential Pilot Program projects economically and practically infeasible – from both the energy generation perspective, and the viability of the farming activities. We urge the Board to consider other methods for evidence-based comparative analysis. While the research intention in the Pilot Program is laudable, this is not primarily a research program. Rather, the real innovation in this Pilot Program is that projects are commercial scale on real farms committed to maintaining active agricultural or horticultural use. Projects of a more experimental, research purpose have a place in the Pilot Program and may deserve separate consideration. Certain research may benefit from a large control area. It should be noted that a 1:2 control to field trial area is employed by the Rutgers University Agrivoltaics Program for its new state-funded test arrays.

In any event, the practical impact of control requirements should be carefully considered with a farm viability lens. A 3-year research project that compares dual-use array vs. non-array conditions is operationally difficult, potentially expensive to implement, with little practical research value. For example, the proposed control areas would need to isolate the array variables in the early years due to the impacts of construction which is unlikely to be possible in a 3-5 year research project.

AFT appreciates the legislative intent of research, particularly for any dual-use project sited on prime farmland in an Agricultural Development Area (ADA). Rather than onerous control requirements, the research should focus on determining which practices and applications are most likely to work for farmers under different array designs and using different equipment. A successful Pilot Program will be seen as attractive and feasible to both farmers and developers, generating crop yield data that can be normalized and extrapolated to other locations and soil types.

With the need for solar deployment at a massive scale, AFT and many other stakeholders are more interested in understanding how to design agrivoltaic arrays to best support farms, and the farm viability, soil health, and farmland access benefits of agrivoltaics over traditional ground mount arrays.

In sum, control areas have their place for certain experimental applications such as a direct on-farm comparison of crop production. However, AFT encourages BPU to be more expansive about the research that needs to be done. Encouraging different practices under and around the installations will also be important for future agricultural production.

Encourage flexibility in research design and clarify research objectives

An important lesson from the MA-SMART dual-use program in Massachusetts is that New Jersey's more expansive 200-300 MW Pilot Program should avoid narrow focus on crop yield comparison between array and non-array conditions. Rather, we encourage research that focuses on real-world production outcomes that demonstrate how farmers change their practices in an agrivoltaic array, how those practices influence farm income, soil conditions, crop yields and climate resilience, and how different array designs can best support the most productive shifts.

In addition to supporting a portfolio of projects having a diversity of crops, we encourage BPU to support project research on different soil types, land contours/slopes, conservation practices, and irrigation

practices. AFT encourages research that assesses the benefits of regenerative soil health practices integrated into overall dual-use project design.

AFT also encourages research looking at battery energy storage and beneficial electrification of on-farm practices that support and coincide with dual use agricultural or horticultural operations.

AFT recommends that the 3-year Pilot Program research clock should commence once a project has achieved substantial completion milestones.

Clarify dual-use permitting language

The straw proposal states that approved dual-use projects will be considered a permitted use within every municipality. The final program rules should further define that dual-use projects do not require a special use or conditional use permit in accordance with statute. However, it should also be understood that these projects, especially those located in the ADA, may be subject to a higher level of community scrutiny. AFT encourages the Pilot Program to strive for a high standard of dual-use particularly for locations in the ADA. For example, strict crop production standards of 65-70% of baseline crop production are included in dual use programs in the European Union and may be a useful guide for Pilot Program adder incentives and permitted use provisions in the ADA.

Allow dual-use projects to serve community solar and low-income customers

New Jersey's Energy Master Plan prioritizes access for marginalized and underserved communities. Dual-use projects up to 10 MW should be able to provide savings to residential and low-income customers through the community solar permanent program. BPU can leverage the additional capacity created for the dual-use program to expand the equity benefits of community solar, all while preserving farmland and efficiently using ratepayer funds. Larger dual-use projects could also create expanded applied research opportunities. AFT recommends that for purposes of the Pilot Program, Dual Use projects up to 10 MW be considered for both the ADI and CSI programs.

Pass-through incentives for farmers

Adder incentives should be a mechanism for both supporting additional capital expenses (Cap Ex) and compensating farmers who participate in the research or have additional costs to integrate the dual-use. In other words, there should be a mechanism for enabling developers to pass incentive adders to farmers instead of retaining the incentive only for project Cap Ex. Incentive sharing will build farmer interest in the Pilot Program and offset additional costs farmers may face while accommodating research required during the pilot. AFT recommends that incentive funding allow for purchase or lease of farm equipment or farm infrastructure (eg. irrigation, livestock shelters, moveable paddock fencing) as necessary to implement the dual-use farm plan if such equipment and infrastructure is not currently available or owned by the farmer.

Allocate capacity quickly and efficiently

It is anticipated that there will be significant pent-up market demand for the Dual Use program, given that the legislation was passed 2½ years ago. AFT recommends a more ambitious allocation than 30 MW in Program Year 1. AFT does not have a position on whether there should be two or three annual solicitations for the first tranche of 200 MW. However, it is essential that BPU and Rutgers be prepared for strong interest in the program and support as many well qualified and viable Dual-Use projects as possible in the first Program Year. It is important to build early momentum for the Pilot Program and stimulate farmer interest, particularly in consideration of the Rutgers-AFT collaboration to develop the Technical Assistance Program for Agrivoltaics Systems (TAPAS), funded under the DOE FARMS program.

Factor farmer interests and farmland threat

AFT recognizes that the Dual Use program could provide a financial lifeline to small and mid-sized farms. AFT recommends that BPU specifically encourage Pilot Program projects that increase the viability of, or provide new or enhanced farming opportunities for, operations owned by historically marginalized farmers. In addition, AFT recommends the BPU take into consideration the relative risk of conversion of project area to non-agricultural uses and encourages reference to AFT's Farms Under Threat 2040 projections for county-level farmland loss. BPU and the Department of Agriculture can access AFT's Farms Under Theat - New Jersey profile and spatial data by contacting AFT or going to the website at https://csp-fut.appspot.com/.

Research Process and Data Collection Requirements

AFT understands the need for data collection on crop and animal production for approved projects located in Agricultural Development Areas. If an expanded set of data collection requirements is truly necessary for tracking performance of projects in the ADA, there should be additional consideration of any cost burdens to farmer and agricultural operations. AFT encourages a centralized approach to data collection to ensure consistent methodologies and to reduce burden on individual landowners and project managers.

AFT would recommend a working group be convened to evaluate specifically what data collection will be most useful for purposes of evaluating different dual-use applications, solar array and agricultural performance, and equipment utilization. Agronomic data collected from projects both in and outside ADA research can prove valuable to farmers going forward.

Community Support

AFT invites and encourages participation of community stakeholders in the development of dual-use projects in the Pilot Program. Additional scoring or preference points for dual-use projects that demonstrate farmer commitment, land access benefits to tenant farmers and other evidence of community engagement should be considered. Successful dual-use projects and development processes require ongoing and more intensive relationships between developer and farmer/landowner. A

farmer/landowner statement of support for the project should be included in the information collected for proposed projects.

AFT would also encourage a series of virtual open houses, perhaps in coordination with Rutgers Agrivoltaics Program, to educate farmers, local officials and other interested stakeholders about the Pilot Program when it is formally announced. Relatively few constituents are familiar with the BPU and the formal process of releasing energy program details.

AFT commends BPU and the Department of Agriculture for the detailed straw proposal and substantial effort in developing the Dual Use program. We look forward to working with stakeholders to make this a nation-leading program that delivers real benefits to New Jersey's agricultural community.

Thank you for considering our comments and recommendations.

Ethan Winter, National Smart Solar Director

ewinter@farmland.org

Linda Garrett, New York/New Jersey Regional Director

lgarrett@farmland.org