Maine Agricultural Solar Stakeholder Group

October 21, 2021 Meeting Materials

Agricultural Solar Stakeholder Group Meeting
Thursday, October 21, 2021; 9:00 am - 12:00 pm

Meeting Registration Link:

https://mainestate.zoom.us/webinar/register/WN_Sj7iq73NSx2NRrGNcYPFqQ

Desired Outcomes

By the end of this meeting we will have:

- Learned about dual use solar siting considerations specific to Maine
- Agreed on a functional matrix to distinguish approaches to siting solar projects on different types of farmland
- Further refined priority policy tools that could be applied to solar siting to protect prime farmland and soils of statewide importance
- Agreed on a final report framework

Agenda

What	When
Welcome and Agenda Review – Jo D.	9:00 - 9:05
Dual Use Siting Considerations - Drew Pierson, BlueWave Solar	9:05 - 9:40
Farmer Perspective - Rick Dyer, Clemedow Farm, Monmouth	9:40 - 9:55
Matrix Refinement and Discussion - Kaitlin, Eliza, Matt, Emily, Jeremy, Ellen	9:55 - 10:25
Public Comment	10:25 - 10:30
Break	10:30 - 10:35

Policy Tool Priorities Discussion - Ellen, Eliza, Kaitlin, Emily	10:35 - 11:35
Report Framework	11:35 - 11:45
Further Public Comment	11:45 - 11:50
Follow-up and Next Meeting: Thurs., Nov. 18, 9:00 am – 12:00 pm	11:50 - 12:00

Note: Agenda item times are subject to change based on the progress of the group.

Agricultural Solar Stakeholder Group Ground Rules

1. Meetings start and end on time.
2. Come prepared, having read all meeting materials in advance.
3. Be present and engaged.
4. Strive for equal air time, enabling everyone to participate fully.
5. Listen with curiosity and an openness to learning and understanding.
6. Adopt a creative problem solving orientation.
7. Commit to working toward consensus.
8. Meetings and materials are public, and comments are on the record.
9. Humor is welcome; it's OK to laugh while addressing a serious topic.

Decision-making: Decisions by the Stakeholder Group are advisory and represent recommendations to the Department of Agriculture, Conservation & Forestry and the Governor's Energy Office. The Stakeholder Group will strive to make decisions by consensus. Where not possible, recommendations supported by the majority will be advanced and other perspectives will be noted.

Meeting Schedule:

Th. 10/21	https://mainestate.zoom.us/webinar/register/WN_Sj7iq73NSx2NRrGNc-YPFqQ
Th. 11/18	https://mainestate.zoom.us/webinar/register/WN_MCVJo2bzRO2tj-Hvr0pqrhg
Th. 12/16	https://mainestate.zoom.us/webinar/register/WN_5I5XIFfPTZuzYx-PZGGraYA

Bluewave is Coming to Benton!

FARMING OPPORTUNITY

BlueWave Solar is offering a stipend to farmers interested in cultivating a 5-acre array in Benton, Maine. Take this short survey by Friday, July 16, 2021, to tell us how you would like to be involved in this project.

MORE DETAILS

BlueWave Solar develops solar installations that complement active farmland. Pairing solar with agriculture, called agrivoltaics, allows landowners to both host a solar array and maintain land under arrays in agricultural production. Partnering with researchers to help implement this project, we plan to harvest both solar power and crops together by the 2022 growing season. However, to do so, we need your help!

We are currently recruiting farming partners interested in receiving a stipend for cultivating fruits and vegetables using agriculturally sustainable practices. Of the 32 total acres, a 5-acre plot will be reserved for cropland and the 27 remaining acres will be grazed by sheep. Farming infrastructure provided as part of this project includes a well, perimeter fencing, vehicular circulation and ample spacing between rows for sunlight and farm logistics to accommodate a wide variety of crop plans.

From crop trials to sheep rearing, our efforts to demonstrate research-backed sustainable land use practices help foster a new philosophy for solar development in the Northeast – one that seeks to grow and support a more vibrant and robust farming economy. While agrivoltaics have demonstrated globally that squash, blueberries, garlic, oats, leafy greens, peppers, tomatoes, Swiss chard, kale, herbs and many other crops are well suited for this growing environment, we need your help to demonstrate what this looks like for Maine.

We believe this agrivoltaic model can apply to the broader solar industry in Maine, allowing for everyone to benefit. If you are a current fruit or vegetable producer and would like to learn more about how you can join this exciting new endeavor, please fill out the survey by July 16, 2021.

PROJECT DESCRIPTION

Acreage Available

5-acre plot within larger 32-acre pastured solar array.

Design Overview

Bottom edge of panels a minimum of 4’ off the ground. Up to 24’ wide aisles between panel rows intended to promote mobility. Top edge height ranges up to 9’ high.

Operations Overview

Single axis tracker panels are in rows running from north to south and track the sun in the east to west direction throughout the day.

Farm Logistics Overview

Receive a stipend to farm between and under panels to practical extent.

Farm Infrastructure

Well, fencing, access roads.

Contact
Drew Pierson | 330.715.1579 | dpierson@bluewavesolar.com
Iain Ward | 774.766.0329 | iain@neconsultingservices.com

Photo credit
1. LaborElec.com, 2. SolarImpulse.com,
3. PV-Magazine.com, and 4. PV-Magazine.com.

Purpose

Develop a list of siting attributes, with as much specificity as possible. Enumerate considerations with respect to siting to inform the broader group's discussion about prioritization of development.

Parcel	Farmland Meets definition of farmland established in Title 36, section 1102 subsection 41 and/or affidavit from farmer.			
	Actively farmed	*Other farmland*	*Inactive farmland*	*Woodlot on farms*
Prime soils - Pursuant to Maine Instruction 430-3803	- **Encourage/incentivize dual use** - Encourage non-dual use siting elsewhere	- Encourage development	- **Encourage/incentivize dual use**	- Encourage co-location
Soils of Statewide Importance - Pursuant to Maine Instruction 430-3804	- **Encourage/incentivize dual use** - Encourage non-dual use siting elsewhere	- Encourage development	- **Encourage/incentivize dual use**	- Encourage co-location
Marginal farmland - Areas within farmland parcel not classified in the preceding categories	- Encourage development	- Encourage development	- Encourage development	- Encourage development
Non-agricultural land and farm infrastructure Encourage development on landfills, brownfields, rooftops, carports, gravel pits, mining sites, and other previously developed parcels.				

Definitions

Actively farmed: generates a gross income of at least $2,000 per year from the sale of agricultural products in one of two or three of five previous calendar years. Definition from Maine Title 36. Includes cropland used for cover crops or soil improvement, cropland on which all crops failed or were abandoned, and cropland in summer fallow.

Co-location: involves traditional ground-mounted solar installations (designs that have not been modified to increase flexibility and compatibility for agricultural use) that host non-agricultural plantings with additional environmental benefits.

Dual-use: projects that involve the installation of solar photovoltaic panels on farmland in such a manner that primary agricultural activities (such as animal grazing and crop/vegetable production) are maintained simultaneously on the farmland.

Inactive farmland: all cropland other than harvested cropland or other pasture and grazing land that could have been used for crops without additional improvements. Definition from the USDA Agricultural Census.

Other farmland: land that does not otherwise fall into the actively farmed category that is part of a farm producer's total operation (primarily wasteland or other marginal land, but may include land used for pasture, grazing, or crops). Definition from the USDA Agricultural Census.

Woodlot on farms: woodland that is part of a farm producer's total operation.

Agricultural Solar Siting Policy Tools

Tool & Tool Description *Including suitability for DG and/or utility-scale development.*	**How Tool Could Encourage Co-Located[1] Development**	**How Tool Could Encourage Dual-Use[2] Development** *<u>Note</u>: Conversation about whether dual-use development is economically or logistically feasible in Maine is ongoing.*	**Land Use Considerations** *How could the tool encourage solar development in particular locations?*	**Implementation Mechanism** *Including implementation opportunities and obstacles.*	**Tool Pros**	**Tool Cons**
Dual-Use Pilot Program - Establish fixed-length and capacity pilot program for the siting of projects that meet program criteria for dual-use.	Potentially provides an opportunity for DACF to work with PUC and other agencies to define co-location in Maine. Projects meeting co-location criteria may be provided with financial incentive, location-based waiver, or other benefit as determined by the	Potentially provides an opportunity for DACF to work with PUC and other agencies to define dual-use in Maine. Projects meeting dual-use criteria may be provided with financial incentive, location-based waiver, or other benefit as determined by the program.	Can dictate specific siting criteria that limits project size or siting on selected land-use categories unless it is a dual-use project, or could incentivise the siting of projects as dual-use when on farmland.	Legislation with agency rulemaking regarding program criteria.	Provides opportunity to conduct necessary research on compatible crops and other co-location systems to determine best practices for dual-use within a defined pilot program timeframe or capacity limit. Also lays the foundation for a	This may cause questions around how to determine the program criteria with the limited research data available. Projects considered for the dual-use program will require greater review of added project requirements and could also require on-

[1] "Co-location" involves traditional ground-mounted solar installations (designs that have not been modified to increase flexibility and compatibility for agricultural use) that host non-agricultural plantings with additional environmental benefits. For example, co-location could include the grazing of animals as part of planned vegetation management, planting pollinator habitat, or planting ground cover or other plant species to benefit the surrounding ecosystems. Co-location could also involve siting a more traditional solar installation on a portion of farmland, while retaining other portions of the farm property for agricultural use. This may prove to be one way to help support the continued viability of farm operations; but it is not dual-use solar. *The stakeholder group agreed upon this definition at their July 22, 2021 meeting.*

[2] "Dual-use" projects involve the installation of solar photovoltaic panels on farmland in such a manner that primary agricultural activities (such as animal grazing and crop/vegetable production) are maintained simultaneously on the farmland. To qualify as dual-use, the solar installation must (1) retain or enhance the potential for the land's agricultural productivity, both during operation of the array and after its decommissioning, (2) be built, maintained, and have provisions for decommissioning to protect the land's agricultural resources and utility, and (3) support the viability of the farming operation. *The stakeholder group agreed upon this definition at their July 22, 2021 meeting.*

	program.				permanent dual-use solar energy program, if successful.	going verification of compliance.
Current Use Taxation Treat land enrolled in the farmland current use taxation program that is housing a dual-use project as not subject to the withdrawal penalty as long as the farming operations continue to meet the farmland current use taxation requirements. There could also be a carve out for smaller solar projects that are primarily used to create energy for on-farm use. (VT) In both cases, the solar array would be treated as agricultural infrastructure or equipment. The size of the project and the corresponding acreage would influence the size of the withdrawal penalty and therefore how	*Not applicable.*	This type of treatment would remove the added cost of the withdrawal penalty, thereby creating an incentive for developers to install a dual-use project if they are looking to site a solar project on land enrolled in the farmland current use taxation program.	This tool could encourage dual-use projects on land enrolled in farmland current use taxation that also falls within a land use category where dual-use projects are preferential.	Legislation	This would provide an economic incentive for developers to install dual-use projects on enrolled land without creating additional costs for ratepayers. Since the requirements for the farmland current use taxation program would still need to be met and agricultural production would still need to occur on the land, the removal of the withdrawal penalty does not change the nature of the current use taxation program or expand the property tax reductions to other circumstances. This would create consistency across municipalities with respect to how dual-use projects are treated on land enrolled in the farmland current use taxation program.	There could be confusion as to whether the removal of the withdrawal penalty is creating another/separate exemption from property taxes. The removal of the withdrawal penalty would not address the pressure being placed on municipal budgets by current use taxation programs, and could be seen as a reduction in municipal revenue that would otherwise be coming to the town.

much of an economic incentive the removal of the penalty is for developers.						
Permit By Rule A Permit By Rule (PBR) would be administered by the Maine DEP and would grant Site Law permits in a streamlined manner to projects that meet particular standards. This tool is a good fit for larger DG and smaller utility-scale projects (20 to ~50 acres). Arguably, larger projects should receive full Site Law review.	A PBR could encourage co-located projects by including co-location as a standard.	A PBR could encourage dual-use projects by including dual-use as a standard.	Particular land areas, such as brownfields or other developed areas, could be included in the standards. Projects that locate on or away from these areas would then meet those standards.	Rulemaking.	This tool is already being contemplated by the DEP. PBRs support regulatory efficiency, which is attractive to both the regulator and the regulated. A PBR can include several standards that serve to achieve many land use and development type goals.	A Site Law PBR would not capture projects smaller than 20 acres. This tool is arguably not appropriate for large utility-scale projects. It may be difficult to craft a PBR that is both attractive to developers and that serves the stakeholder group's goals.
Substation Hosting Capacity Mapping Detailed hosting capacity maps that include analysis from the utility perspective could help developers become more efficient at targeted site selection for all sizes of projects.	Additional information can help developers minimize interconnection costs, increasing the ability to choose higher-cost co-location sites.	Additional information can help developers minimize interconnection costs, increasing the ability to choose higher-cost dual-use sites.	Comprehensive data that indicates which areas of the grid are saturated and which have capacity for additional interconnections can minimize land use stress in any one location.	Regulatory approval of interconnection tariff changes (Chapter 324). Tariff changes could be preceded by a legislative process. Implementation	Encourages developers to consider sites by likelihood of a successful and cost-effective interconnection, thereby bringing more clean energy projects online faster and decentralizing the number of interconnection	Utilities have objected in the past to providing detailed hosting capacity maps, citing cost concerns and grid security risks. Not always effective to rely on utilities to provide accurate and timely data.

				would need to be actively monitored and managed by PUC staff.	applications from saturated locations. Minimizing interconnection costs provides significant incentive for developers to pursue desired siting outcomes. Comprehensively mapping and updating the grid increases reliability, increases resiliency, and often brings needed three-phase power to rural locations.	Any future tariff changes would likely not impact current queue of projects and associated grid upgrades.
"Adder" Tariff Program	Provides financial incentive for developers to design on-farm arrays as co-location. Because co-location may not have significantly higher construction costs, the adder for co-location activities, such as pollinator habitat, may not need to be as high as those for dual-use. Conversely, a subtractor will provide	Provides financial incentive for developers to design on-farm arrays as dual-use. The adder may need to be large enough to compensate for the added construction costs associated with dual-use solar. Conversely, a subtractor will provide a financial disincentive for siting on farmland.	An adder could be a significant financial incentive to site dual-use on categories that provide a market-based incentive to choose dual-use. Using a subtractor for projects sited on prime, SI, and active farmland may also incentivise siting of solar on marginal or Other farmland.	Legislative / Rulemaking (a far less likely pathway)	If adders are significant enough, dual-use may be more profitable on farmland, vs traditional design.	Risks added costs being passed onto the ratepayers. Projects of utility scale may be less influenced by adders, due to the significant increase in construction costs associated with utility scale dual-use. Will require greater review of added project requirements

	a financial disincentive for siting on farmland.					and on-going verification of compliance to maintain adder.
Increase Municipal Planning Capacity Planning and/or technical assistance capacity and/or financial support could be added to natural resource agencies or directly to municipalities, COGs, or other networks to help municipalities welcome solar development.	Resources could include information about co-located projects.	Resources could include information about dual-use projects.	Resources could include information about land use considerations.	It depends. Possibilities include legislation to create a new position(s) or funding to support a grant program.	This could help towns avoid moratoriums or otherwise not welcome solar.	Does not address cost considerations.
Mitigation Fund / In-Lieu-Fee Program Require solar developers to submit a Permitting Plan (similar to NY's) in which the developer describes the steps that will be taken to avoid, minimize, remediate, and offset impacts to agricultural and natural resources (and potentially conserved land and open spaces).	The mitigation fund payment could be structured to encourage co-location by reducing or eliminating the payment for that type of project.	The mitigation fund payment could be structured, as it is in NY, to encourage the producer to retain or introduce agricultural activity in the solar facility area. Dual-use projects could be encouraged through the reduction or elimination of a mitigation payment for that type of project.	The program could include tiered fees based on different land use categories and related siting preferences.	Legislation to establish the program. Implementation of the program would require determining the monetary amounts tied to different components of the mitigation/ILF payment. And that determination would in turn need to be based on both the	The mitigation fund/ILF structure provides an economic incentive for developers to minimize impacts on important agricultural and natural resources. It provides a mechanism for potentially protecting other important resources or making needed system upgrades when impacts cannot be minimized with	Additional research or analysis would be needed to determine the appropriate factors for calculating the mitigation fee. There are not yet many examples of the criteria that could be used to guide the allocation of the mitigation funds.

Awarded solar projects are responsible for making an agricultural mitigation payment to a designated fund based on the extent to which the solar project footprint overlaps with important agricultural soils or resources. The scale of the project could relate to the scope of the impact and therefore influence the mitigation fund payment.				monetary amounts needed to support mitigation fund uses (i.e. how much money is needed to support land conservation and transmission upgrades) as well as what mitigation/ILF payments are sufficient to influence development.	respect to a particular project.	
State Procurement Evaluation / Scoring The Maine Public Utilities Commission (PUC) would evaluate and score proposed projects' agricultural and natural resource impacts (w/ support from natural resource agencies) when selecting projects for future procurements. This tool could be used for both DG and	Scoring could give favorable treatment to co-located projects. Procurements could also include a tranche specifically for co-located projects.	Scoring could give favorable treatment to dual-use projects. Procurements could also include a tranche specifically for dual-use projects.	Scoring could give favorable treatment to projects that are located on or away from particular land areas.	Legislation, followed by an RFP from the PUC that includes scoring metrics.	This could capture all projects that supply energy to ratepayers. Scoring metrics could also include cost, workforce development, and other values held by ratepayers. The PUC has already created a scoring system that captures many of the values held by the stakeholder group for	This would not capture net-energy billing projects. Scoring systems are inherently coarse and may not capture the nuances of preferred projects.

utility-scale projects.					the failed DG procurement. The procurement failed for reasons separate from the scoring system.	

Agricultural Solar Stakeholder Group Meeting
Tuesday, September 23, 2021; 9:00 am - 12:00 pm
Held virtually

Meeting Recording https://www.youtube.com/watch?v=CfHrjvWRCrY

- **Stakeholder Member Attendance:** Nick Armentrout (Spring Creek Farm), Emily Cole (American Farmland Trust), Ellen Griswold (Maine Farmland Trust), Eliza Donoghue (Maine Audubon), Kaitlin Hollinger (BlueWave Solar), Patrick Wynne (City of Hallowell), Celina Cunningham (Governor's Energy Office), Nancy McBrady (Department of Agriculture, Conservation and Forestry), Jeremy Payne (Maine Renewable Energy Association), Matt Kearns (Longroad Energy), and Julie Ann Smith (Maine Farm Bureau).

On September 23, 2021 the Maine Department of Agriculture, Conservation and Forestry (DACF) and the Governor's Energy Office (GEO) virtually hosted the sixth meeting of the Agricultural Solar Stakeholder Group. At this meeting, the following were discussed:

- Siting attributes matrix
- Policy tools for encouraging appropriate siting/co-location/dual use
- Pollinator habitat scorecards
- Review of emerging areas of consensus and further defined deliverables

Siting attributes matrix
The Siting Attributes Subgroup presented its revised matrix, which adds woodlots on farms, non-agricultural lands, and definitions of farmland from tax law and the USDA Census of Agriculture. Consideration of cover crops as active or inactive farmland was not decided. Treatment of wild blueberry fields requires more expert input.

The group discussed the cost and feasibility of encouraging dual use projects. There may not be a sufficient ratepayer base in Maine to subsidize dual use projects. The group discussed the appropriateness of encouraging solar development on farm woodlots, which may run counter to the Maine Forest Carbon Taskforce's recommendations to keep forests as forests. It was noted that farmers need to make site-specific choices regarding the best use of their lands and that State policies shouldn't limit their options.

The Subgroup was asked to further refine "other farmland", remove "rooftops and carports", and not include greenfields and open space in the matrix. The full group agreed that cover crops should be considered as active agriculture.The full group agreed that dual use needed further discussion to consider existing and potential incentives. Pilot projects for dual use facilities might be useful before developing a full State policy on dual use. It was agreed that the Stakeholder Group should hear from someone with experience in developing dual use in solar projects. Regional research on dual use projects should be supported.

Policy tools for encouraging appropriate siting/co-location/dual use

The Policy Tools Subgroup analyzed a variety of State regulatory policies and practices that could influence the siting of solar projects. Use of several of these tools may be needed to impact siting in a meaningful way.
Permit-by-rule was suggested for projects under 50 acres to reduce the likelihood of projects being squeezed into areas of the less than the current threshold of 20 acres.

It was noted that State procurements could include scoring for dual use or co-location; however, PUC would benefit from detailed guidance related to siting. This tool could be shared with an upcoming stakeholder process on distributed generation because [why?]. Detailed hosting capacity maps and set-aside capacity at preferred substation sites could be useful, although security concerns with providing detailed system plans would need to be addressed. Who pays for system upgrades is an important discussion and an equity issue. Municipalities would be benefit from additional technical support to strengthen local planning capabilities; DACF and GEO could coordinate on municipal support.

In-lieu fees for agricultural mitigation need to have a defined fee structure to ensure meaningful results. NYSERDA has not developed details for its program. Again, use of pilot projects and local research on farm economics would be useful. The Group generally agreed that adders were preferable to subtractors and must be substantial to affect siting.

Current use taxation policies could recognize solar arrays in dual use projects as part of the agricultural equipment. On-farm use of solar should be encouraged. Any change in current use taxation policy will have implications on the State's constitutional responsibility to reimburse municipalities for lost property tax revenues.

After review of all the potential policy tools, the Stakeholder Group identified as its top priority policy interests: 8 - Dual Use Pilot; 8 - Current Use Taxation; 6 - Permit by Rule; 3 – Adders, and 3 - Interconnection (the first point).

The Stakeholder Group reviewed a compilation of pollinator scorecards from 5 states. Maine Audubon is working on Maine-specific guidance on pollinator habitat, which could be used in a permit-by-rule process or a tariff concept, but not as a stand-alone practice. The Group agreed to table the pollinator scorecard concept for further review at another meeting.

Consensus summary

The Group reviewed the latest summary of points of consensus and discussed the general framework for its final report. It was noted that working forests have not been discussed in this process. The relationship of soil biodiversity to prime farmland was mentioned. The Subgroups will continue to work on refining their work; materials for the October 21st meeting will be due by October 11th.