

Draft Report of the Agricultural Solar Stakeholder Group

Seeking Stakeholder Group and Public Feedback by
~~November 26, 2021~~

Deadline extended to December 1, 2021

Provide written comments to tom.gordon@maine.gov

November 12, 2021

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6 **List of acronyms and terms**

7 Unless noted or context indicates otherwise, the following acronyms and terms have these meanings
 8 when used in this report:

Term	Meaning
AAFM	Vermont Agency of Agriculture, Food and Markets
ADA	New Jersey agriculture development area
DACF	Maine Department of Agriculture, Conservation and Forestry
DEP	Maine Department of Environmental Protection
Departments	DACF and GEO jointly
GEO	Maine Governor’s Energy Office
kW	Kilowatts
MW	Megawatts
NEB	Net energy billing
NRPA	Natural Resources Protection Act
PBR	Permit-by-rule
PUC	Public Utilities Commission
REC	Renewable energy credit
Resolve	L.D. 820 – Resolve, To Convene a Working Group To Develop Plans To Protect Maine’s Agricultural Lands When Siting Solar Arrays
RPS	Renewable portfolio standard
Site Law	Site Location of Development Law
SLODA	Site Location of Development Law
Stakeholder Group	Agricultural Solar Stakeholder Group
USDA	United States Department of Agriculture

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- 1 1 – Executive Summary (to be included in final report)
- 2 Background/purpose
- 3 Process
- 4 Conclusions
- 5 Recommendations

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2 – Stakeholder Group Purpose

Prime farmland, and soils of statewide importance that could be used as farmland in the future, are critical natural resources for Maine's agricultural productivity, biodiversity, and food security. At the same time, solar energy development is key to achieving Maine's renewable energy goals, reducing greenhouse gas emissions, and growing Maine's clean energy sector.

To ensure responsible siting of solar energy on agricultural lands, the Governor's Energy Office (GEO) and the Maine Department of Agriculture, Conservation and Forestry (DACF) (jointly “the Departments”) convened the Agricultural Solar Stakeholder Group (the “Stakeholder Group”) to make policy recommendations to balance the need to protect Maine's current and future farmland with the need to develop sources of renewable solar energy.

Maine Won't Wait

The Agricultural Solar Stakeholder Group was recommended by *Maine Won't Wait*, Maine's four-year climate action plan from the Maine Climate Council.¹ *Maine Won't Wait*, released in December 2020, identifies data-driven strategies and recommendations to reduce Maine's greenhouse gas emissions, as required by law, to 45% below 1990 levels by 2030 and 80% by 2050.

Strategy E from *Maine Won't Wait* is to “protect Maine's environment and working lands and waters.” As part of this strategy, the plan calls for “develop[ing] policies by 2022 to ensure renewable energy project siting is streamlined and transparent while seeking to minimize impacts on natural and working lands and engaging key stakeholders” (*Maine Won't Wait*, p. 76).

Consistent with this recommendation and acknowledging the rapid growth of solar energy taking place in the wake of other recent policy changes, the Stakeholder Group is specifically focused on minimizing the potential impact of solar development on Maine's prime farmland and soils of statewide importance.

L.D. 820

The 130th Maine Legislature passed L.D. 820 – Resolve, To Convene a Working Group To Develop Plans To Protect Maine's Agricultural Lands When Siting Solar Arrays (the “Resolve”) on June 8, 2021. The Resolve directs DACF to “convene a working group of stakeholders to develop plans and consider ways to discourage the use of land of higher agricultural value and encourage the use of more marginal agricultural lands when siting a solar array.” DACF is further directed to “submit its report and recommendations, including any suggested legislation, to the Joint Standing Committee on Agriculture, Conservation and Forestry; the Joint Standing Committee on Energy, Utilities and Technology; and the Joint Standing Committee on Environment and Natural Resources no later than January 14, 2022.” The full text of the resolve is included in Appendix A of this report. DACF will submit this report, once final, to the relevant committees in response to the Resolve.

¹ For the full text of *Maine Won't Wait*, see https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/MaineWontWait_December2020.pdf

1 Purpose of this report

2 This report summarizes information provided to the Stakeholder Group and discussed at the group's
3 meetings. It outlines conclusions made by the Stakeholder Group based on that information as well as
4 on the expertise and experience of group members and information provided through comments from
5 interested members of the public. Finally, based on the conclusions, this report advances
6 recommendations made by the Stakeholder Group to the Department of Agriculture, Conservation and
7 Forestry and the Governor's Energy Office, pursuant to LD 820.

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1 **3 – Stakeholder Group Membership**

2 The following members of the Agricultural Solar Stakeholder Group were appointed jointly by the
3 Department of Agriculture, Conservation and Forestry and the Governor’s Energy Office. The co-chairs
4 on behalf of their departments wish to express sincere gratitude for the time, energy, expertise, and
5 thoughtful engagement contributed by every member of the group, as well as numerous members of
6 the public who attended meetings, participated in public comment sessions, and provided their input
7 through other channels.

8
9 **Co-Chairs**

10 Celina Cunningham, Governor’s Energy Office
11 Nancy McBrady, Department of Agriculture, Conservation and Forestry

12
13 **Stakeholders**

14 Nick Armentrout, Spring Creek Farm
15 Emily Cole, American Farmland Trust
16 Heather Donahue, Balfour Farm
17 Ellen Griswold, Maine Farmland Trust
18 Eliza Donoghue, Maine Audubon
19 Kaitlin Hollinger, BlueWave Solar
20 Matt Kearns, Longroad Energy
21 Fortunat Mueller, ReVision Energy
22 George O’Keefe, Town of Rumford
23 Jeremy Payne, Maine Renewable Energy Association
24 Andy Smith, The Milkhouse
25 Julie Ann Smith, Maine Farm Bureau
26 Patrick Wynne, City of Hallowell

27
28 **Staff**

29 Tom Gordon, Department of Agriculture, Conservation and Forestry
30 Yvette Meunier, Department of Agriculture, Conservation and Forestry
31 Ethan Tremblay, Governor’s Energy Office

32
33 **Facilitator**

34 Jo D. Saffair

1 4 – Stakeholder Group Process

2 Meetings

3 The Stakeholder Group met eight times from its formation in June 2021 through December 2021: June 3
4 and 24, July 22, August 24, September 23, October 21, November 18, and December 16. Agendas,
5 materials for discussion, and summaries of the immediate prior meeting were provided a week in
6 advance to the Stakeholder Group members as well as a list of interested parties maintained by the
7 departments. All meeting materials are included in their original form in Appendix C. Due to the ongoing
8 COVID-19 pandemic, all meetings were conducted using the Zoom virtual meeting platform and were
9 recorded.²

10 At several points during the Stakeholder Group’s work, some members of the Stakeholder Group
11 volunteered to form ad-hoc sub-groups to focus on specific topics of interest. Of particular note are the
12 sub-groups that formed to conduct additional information-gathering and draft discussion materials
13 related to the group’s definition of “dual-use” and “co-location,” the group’s discussion of a matrix of
14 solar siting considerations, and the group’s formulation of a set of policy options for consideration.

15 Consensus

16 The Stakeholder Group was presented with and agreed to the following ground rules for all of its
17 meetings:

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

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

31 Public engagement

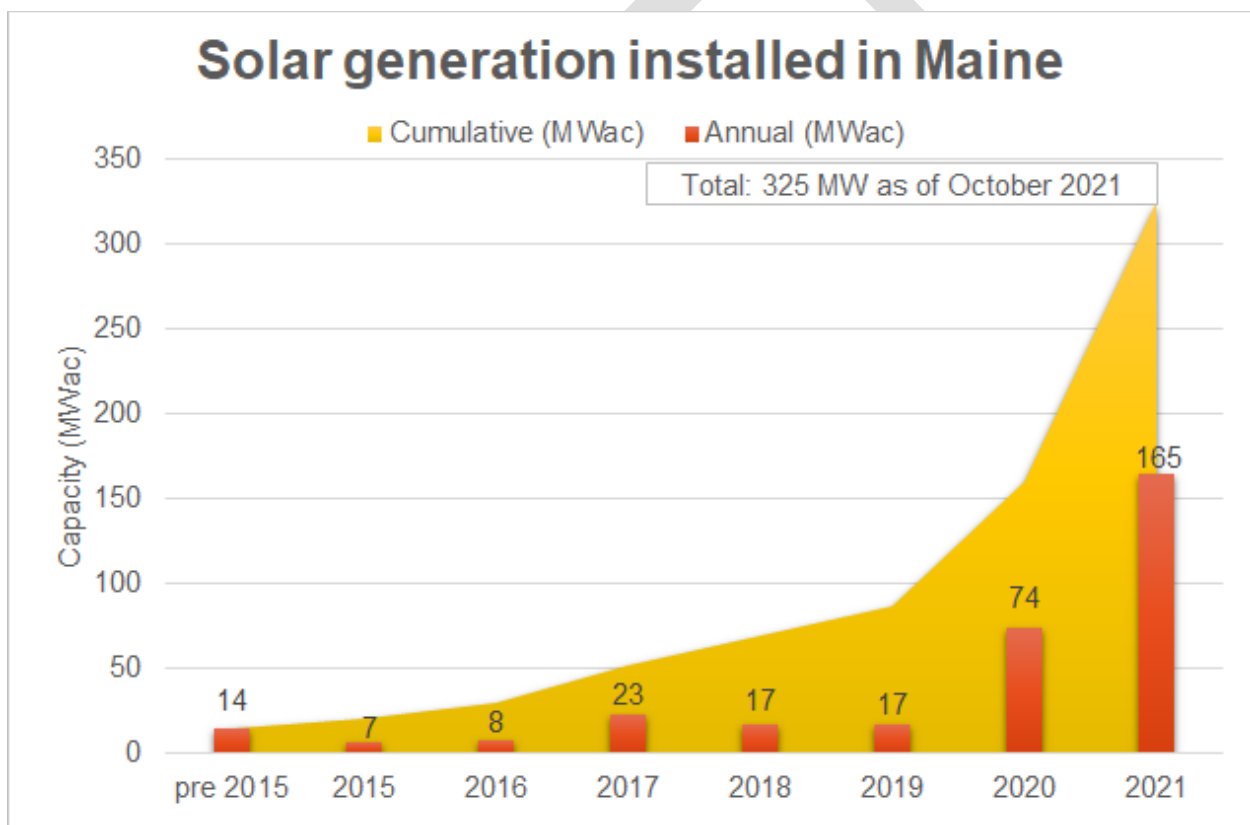
32 Meetings of the Stakeholder Group were open to attendance by the public. Each meeting reserved time
33 on the agenda for the public to comment on any aspect of the Stakeholder Group’s work. In addition,
34 written comments were provided periodically through the Stakeholder Group staff and facilitator. This
35 report was provided in draft form to the Stakeholder Group and interested parties as well as posted
36 publicly by the departments on November 12 for public comment. All comments received will be
37 summarized and provided to the Stakeholder Group to inform the final version of the report.

² All meeting recordings are available on YouTube here:
<https://www.youtube.com/playlist?list=PLHmFAUsYQIxbA6L0Dr0XaEbVezxsTzDi0>

5 – Background overview of Maine solar energy policy and industry landscape

Solar electricity is a clean and renewable resource that can provide a variety of benefits to the electrical grid. Solar installed behind-the-meter, such as on a homeowner’s rooftop, lowers load on the distribution system and can offset the building’s energy bill, while larger utility-scale solar farms provide clean power to the grid throughout the course of the day. When paired with energy storage, solar can continue to provide clean, renewable power even after the sun sets.

Solar photovoltaic (PV) panels can be installed in arrays ranging from small, residential rooftop installations that power a home to many acres of solar farm that can power entire towns – thousands of homes, businesses, schools, and other buildings. Maine has established in law a specific goal of “ensuring that solar electricity generation, along with electricity generation from other renewable energy technologies, meaningfully contributes to the generation capacity of the State.”³



Maine’s renewable portfolio standard (RPS) establishes the portion of electricity sold in the state that must be supplied by renewable energy resources. In June 2019, Governor Mills signed legislation that increased Maine’s renewable portfolio standard (RPS) to 80% by 2030 and set a goal of 100% by 2050. In addition, the bill required the Maine Public Utilities Commission (PUC) to procure long-term contracts for new clean energy generation. In order to ensure this procurement creates significant economic benefits for Maine, the procurement weighs bids with a 70% consideration towards benefits to ratepayers (i.e. price) and 30% towards proven benefits to the economy. Through two rounds of

³ Title 35-A MRS § 3474

1 procurement announced in September 2020 and July 2021, the PUC selected a mix of qualified
2 renewable resources including solar, wind, and biomass equivalent to 14% of the state’s retail electric
3 load in 2018. Solar resources made up the largest share of the procurement results, with term sheets
4 awarded to twenty projects totaling 773 MW.

5 Net energy billing

6 Net energy billing (NEB) provides bill credits for excess generation from solar and other distributed
7 renewable resources that is not consumed on site, but instead provided to the grid. NEB is available for
8 residential, commercial, and industrial customers. These programs can provide energy savings by
9 lowering overall utility bills and offer the opportunity to support renewable energy generation at a local
10 level.

11 NEB participants may enroll solar generation they own themselves, such as rooftop panels, or may
12 choose to join a solar array shared with other customers and located elsewhere in their utility’s service
13 territory. This arrangement is commonly referred to as “community solar.”

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1 **6 – Background overview of Maine agriculture and solar development potential**
 2 Maine farmers are the stewards of 1.3 million acres throughout the state. In addition to active farming,
 3 the land provides the public benefits of open space, recreation, wildlife habitat, and natural resource
 4 preservation. Farms are also businesses, contributing to the economy and supporting local and often
 5 rural communities in all 16 Maine counties. The industry had a \$3.6 billion impact on the Maine
 6 economy in 2020. According to the USDA 2017 Farm Census, Maine has 7,600 farms.

MAINE ECONOMIC IMPACTS

SECTOR	DIRECT SALES	ECONOMIC IMPACT	EMPLOYMENT
	\$ Million	\$ Million	Jobs
AGRICULTURAL PRODUCTION			
Grain and Oilseed Farming	26.3	50.6	579
Vegetable Farming	231.9	438.8	5,552
Fruit Farming	63.9	125.1	3,075
Greenhouse, Nursery and Floriculture Production	72.3	125.2	1,731
Other Crop Farming	42.0	80.7	2,253
Cattle Production	23.5	35.0	849
Dairy Cattle and Milk Production	154.5	265.1	2,063
Poultry and Egg Production	15.4	25.8	258
Other Livestock Production	16.5	24.6	666
PROCESSING			
Grain and Oilseed Processing	89.8	151.2	450
Frozen and Canned Food Manufacturing	635.6	1,027.3	4,409
Milk, Yogurt, Butter and Cheese Manufacturing	336.4	640.5	2,473
Other Dairy Processing	56.4	86.2	296
Animal Slaughtering and Processing	262.7	381.7	1,904
Wineries	22.8	37.9	196
Ag Input Manufacturing	65.4	106.2	309
TOTAL FOR AG INDUSTRY	2,115.4	3,601.9	27,063

7
 8 Farm Credit East, "Northeast Economic Engine", 2020.

ANNUAL FARM SALES	NUMBER OF FARMS
<\$10,000	5,112
\$10,000 to \$24,999	976
\$25,000 to \$49,999	479
\$50,000 to \$99,999	334
\$100,000 to \$499,999	460
> \$500,000	239

Table 2. Maine 2017 individual farm sales volume. Data from U.S. Department of Agriculture, 2019.

9

1 As indicated in the USDA 2019 data above, the market value of products produced by farms is
2 concentrated among the largest operations, with 63% of the sales by 1.8% (134) of the farms. Almost
3 90% were by 7.6% (699 farms). The majority of farms did not have sales above \$10,000. Solar
4 development is a potential means for income diversification for farms.

5 Maine has a total landmass of 20,829,400 acres. Soils data from the Natural Resource Conservation
6 Service indicates 2,929,881 acres (14%) of Maine’s landmass can be designated as crop land or pasture.

7 Maine has 14% of its total landmass classified as prime farmland (794,320 acres) or soils of statewide
8 importance (2,106,549 acres). US Geological Survey Land Cover Database data indicate 2.5% (730,005
9 acres) of crop and pasture land is in active production. 73% of crops and pasture (529,241 ac) are grown
10 on prime soils or soils of statewide importance.

11 Maine agricultural producers own 577,561 acres of woodlot. When woodlots are included with crop and
12 pastureland Maine agricultural producers own 1,307,566 acres or 6% of the state according to the 2017
13 USDA National Agricultural Statistics Service Agricultural Census.

14 Between 2012 and 2017, the total land ownership reported by agricultural producers decreased by
15 146,491 acres (10%).

16 According to American Farmland Trust, Maine was in the top five states with declines in farmland
17 between 2012 and 2017.

18 According to Maine Audubon, approximately 43% of the state (9,003,304 acres) exists within five miles
19 of transmission lines or substations serving 69kV or greater. 604,935 acres (83%) of all active crop and
20 pasture land is found within this 5-mile buffer area. 23% of the 5-mile buffer area consists of prime
21 farmland or soils of statewide importance, compared to 14% across the state.

1 **7 – Primary areas of Stakeholder Group research**

2 **Other states’ solar and siting practices**

3 *Massachusetts*

4 Emily Cole, New England Deputy Director of American Farmland Trust, presented to the Stakeholder
5 Group on June 24, 2021, regarding the Solar Massachusetts Renewable Target (SMART) program. In
6 spring of 2017 the program procured 1,600MW of solar, including significant solar development on
7 farmland. As a result, changes in the policies were made to require any development on greenfields be
8 dual-use for the second 1,600 MW of procurement in the fall of 2020. The changes also included a
9 requirement that the value of agricultural production be documented with the Massachusetts
10 Cooperative Extension. While the group saw merits in aspects of the SMART program that may be
11 replicated in Maine, there was also a recognition that Maine is different from Massachusetts in a
12 number of ways that should be considered if pursuing a similar program.

13 *New Jersey*

14 Ethan Winter, Northeast Solar Specialist for American Farmland Trust, presented to the Stakeholder
15 Group on July 22, 2021, regarding New Jersey’s landscape of farmland protection in relation to the
16 state’s solar legislation. Like Maine, New Jersey is facing farmland loss for a number of reasons; both
17 states lost approximately 10% since the last ag census. However, in comparison, Maine is four times the
18 size of New Jersey. New Jersey’s solar market is much larger and more mature than Maine’s and is set to
19 grow substantially in the coming years. New Jersey’s solar development goals are 5.2 GW by 2025, 17
20 GW by 2035 and 32 GW by 2050. Of New Jersey’s 779,000 acres, all but 101,000 acres would be
21 protected given their soil quality, farmland protection status or recognition at the county level as an
22 agriculture development area (ADA).

23 New Jersey has created a 3-year Dual-Use Pilot Program to develop 200MW of solar with projects not to
24 exceed 50 acres. Projects must be sited on unprotected farmland, continue to be actively devoted to
25 agricultural production and vetted through the NJ Department of Agriculture. The only installations
26 allowed for dual-use on prime farmland soil are for research purposes with Rutgers University. Enrolled
27 land is permitted to be eligible for farmland assessment. This program can be extended and is
28 authorized to become a permanent program with standards for dual-use including capacity limits,
29 continued agricultural/horticultural use and decommissioning bonds.

30 In addition, a utility scale solar bill was passed for the development of 3.75 GW of solar by 2026. These
31 installations would include community solar projects, net metered projects, and procurement
32 solicitations, with a limit of up to 8,000 acres of ADA land to be developed. ADA sites would require a
33 waiver from the NJ Department of Agriculture to encourage more development off farmland. Details of
34 these policies are currently being drafted through a stakeholder process, keeping solar development on
35 pause for dual-use projects until more information is available.

36 *Vermont*

37 Genevieve Byrne, assistant professor and staff attorney at the Farm and Energy Initiative at the Vermont
38 Law School, presented to the Stakeholder Group on July 22, 2021 and gave an overview of Vermont’s
39 Certificate of Public Good (CPG) regulatory process for solar projects. Vermont’s Public Utilities

1 Commission (PUC) issues Certificates of Public Good for roof-mounted arrays up to 500kW and ground-
2 mounted arrays up to 2.2MW. Certification criteria and application complexity increase with array
3 capacity. All roof-mounted systems up to 500kW and smaller ground-mounted systems up to 15kW are
4 fast-tracked through a registration process. An application for ground-mounted systems up to 50kW
5 must be submitted with accompanying evidence of meeting compliance criteria. Anything above 50kW
6 undergoes a formal petition process with the PUC, which can allow for fast-tracking if projects are within
7 size and scope limitations.

8 In relation to agricultural resources, the PUC must consider impacts to prime agricultural soils for all
9 ground-mounted projects over 15kW. For projects over 50kW, Vermont's Agency of Food and Markets
10 (AAFM) receives notification of the proposed project. AAFM has the right to appear at PUC hearings and
11 is required to appear for systems over 500kW that are located on agricultural soils. Conditions for the
12 protection of agricultural soils may be included in the project's CPG.

13 The policy includes siting adjusters and rate adjusters. Siting adjusters initially included adders for the
14 construction of smaller arrays under 16kW and/or on preferred sites such as parking lots, brownfields,
15 and landfills. Moving forward the program will continue with the existing subtractors which are applied
16 only to projects 15kW and larger not located on preferred sites.

17 Subtractors will be increasing to 5 cents/kwh for projects between 15-150kW and 4 cents/kwh for larger
18 projects. Rate adders for projects whose renewable energy credits (RECs) would be applied to Vermont's
19 renewable energy portfolio will no longer be continued. However, subtractor for projects which keep
20 their RECs will increase to 4 cents/kwh. Changes in the policy were a result of a variety of factors,
21 including the cost and rate of solar development.

22 Of note, taxation laws in Vermont allow farms in the open use taxation program to have solar
23 installations of 50 kw or less and up to 500 kw if they are deemed as a farm improvement, where 50% of
24 the energy is used on the farm.

25 **Maine's solar programs and results**

26 *Perspective and data from Maine Audubon*

27 On June 3, 2021, Sarah Haggerty, Conservation Biologist and GIS Manager for Maine Audubon presented
28 the Maine Renewable Energy Siting Tool. The GIS-tool aggregates Maine's mapped natural resources,
29 developed/previously impacted land (such as landfills and Brownfields), as well as solar siting constraints
30 (such as proximity to transmission lines) to aid in identifying areas with lower wildlife and habitat
31 impacts.

32 Using this tool, Maine Audubon has mapped all 180 solar projects submitted to DEP for review, noting
33 that there are many smaller projects not triggering a DEP review and that not all projects reviewed will
34 be built. Of the 180 projects: 43% intersect high value plant and animal habitat and 49% intersect with
35 large forest blocks. Fifty-eight percent intersect with large agricultural land (5 acres of continuous crop
36 land or 10 acres of pasture) and 89% intersect with high value agricultural blocks. More information was
37 requested about the intersection of prime ag land versus ag land of statewide significance. Only 6% of

1 the projects intersect with gravel pits and 3% with capped landfills. The utilization of these sites tend to
2 be limited by the lack of transmission lines nearby.

3 *Perspective from Maine Municipal Association*

4 Rebecca Graham, Legislative Advocate with Maine Municipal Association (MMA), presented to the
5 Stakeholder Group on August 24, 2021, covering multiple policy areas including agriculture,
6 conservation, and forestry, and gave a presentation covering interests and concerns of solar
7 development for municipalities. In Maine, most of the services municipalities provide are paid through
8 property tax revenue. The current use tax programs utilized for agricultural production offer no state
9 reimbursement to municipalities for the loss of tax revenues for sheltering this land use. Allowing
10 agricultural land that has been altered by solar development to remain in these programs is of concern
11 for municipal revenue streams. It is MMA’s perspective that farmland developed for solar should be
12 removed from current use tax programs.

13 Recent changes to energy laws have rapidly increased solar development in Maine. As a result,
14 municipalities have had to vet a new industry and have often responded by creating ordinances and
15 assurances for decommissioning projects. Such work has fallen to volunteer boards that often lack the
16 appropriate expertise and has caused concern for comprehensive land use planning. Further, many
17 projects being proposed are just under the 20-acre threshold which eliminates the requirement of Site
18 Law review by the State, although other oversight including stormwater permitting and Natural
19 Resource Protection Act provisions may apply.

20 To support municipalities' desire for more solar, MMA suggests these measures:

- 21 • Incentivize development in marginal and contaminated or unusable spaces first (such as PFAS-
22 contaminated soils).
- 23 • Incentivize more structurally challenging, built environment-focused projects (e.g., Brownfields,
24 gravel pits).
- 25 • Fully fund the municipal reimbursement portion of the “current use” program.
- 26 • Strengthen local planning capacity with solar-specific technical assistance.
- 27 • Provide PUC, DEP and DACF with enforcement powers, and adequate staffing resources to
28 oversee projects, reducing the burden on code enforcement.
- 29 • Close loopholes that may allow land in one current use program to roll to another with no
30 penalties for the purpose of solar farms.
- 31 • Create a list of trusted development partners for any co-location project by establishing a robust
32 licensing or certification program like shoreland zone-certified contractors.
- 33 • Revisit the farmland current use program with an eye towards greater accountability/penalties
34 for productivity.

35 A discussion of the future obsolescence of projects brought up the value of project locations near grid
36 infrastructure as being a driver to keep a site in future power production. Further, the lack of solar panel
37 recycling facilities in Maine was noted, although some companies utilize recycling facilities in
38 neighboring states.

1 *Perspective from Nexamp*

2 Palmer Moore, Vice President of Business Development at Nexamp, presented to the Stakeholder Group
3 on August 24, 2021 with an overview of Nexamp’s experience developing solar in states across the
4 country and how policy has influenced its work. Nexamp is a solar development company based in
5 Massachusetts with over 300 MW installed across ten states from Maine to California. While utilities
6 nationwide are using new tools, equipment, and safety protocols to better manage interconnections,
7 tracking interconnection is difficult as the roster of proposed projects lined up for interconnection is
8 constantly changing. With so many projects in flux, interconnection costs that may include significant
9 upgrades can swing from \$5,000 to \$5 million making development costs unpredictable. Local
10 ordinances or moratoria can add to this uncertainty. Given the interest in solar development, land leases
11 are becoming more competitive, further increasing project costs.

12 Nexamp has been exposed to a variety of policies focused on balancing the impact of solar development
13 on agricultural land. In New York, the Department of Agriculture and Markets created a notice of intent
14 process which incorporates a mitigation fee. The fee is determined by a calculation that incorporates a
15 value to agricultural soil. These policies put the onus on the developers to verify the quality of the soil
16 through site evaluation. According to Palmer, when such a policy is implemented, this approach is
17 welcomed by developers as spatial soil data is lacking. Several other states have implemented the use of
18 pollinator scorecards (see Siting Scorecards section below). In many cases these are voluntary, while in
19 others a minimum score is required to develop a project. Alternatively, an analysis as to why the
20 location for the development was chosen by the farmer and developer may be presented to the
21 permitting authority. Nexamp typically installs pollinator habitat as a best practice, implementing the
22 National Wildlife Federation certification for habitat and ecological diversity. It also installs livestock
23 fencing instead of chain link fences to create less industrial looking sites and to allow wildlife to pass
24 through sites.

25 *Perspective from BlueWave*

26 Drew Pierson, Senior Director of Sustainability at BlueWave Solar discussed dual use solar projects which
27 focus on ecosystem services and holistic community development with the Stakeholder Group on
28 October 21, 2021. He noted that Maine was unlikely to provide a rate-based incentive but could
29 demonstrate how to have an effective voluntary market for dual use projects. Planning dual use
30 requires convening all interest sectors, defining shared goals, and creating shared value. BlueWave’s
31 siting process involves farmland preservation, soil vitality, and flexibility in maintaining ongoing farming
32 activities. The Massachusetts SMART Program is demonstrating that agrivoltaics can minimally impact
33 soil and moderate microclimate to improve farm resilience. BlueWave’s Rockport, Maine project is sited
34 on wild blueberry fields and involves five years of crop trials by the University of Maine. BlueWave is
35 developing an agrivoltaic project in Benton, Maine which involves grazing sheep and providing land for
36 crop trials. The group discussed current use taxation policy as an incentive for agrivoltaic projects.

37 *Perspective from Clemeadow Farm*

38 Rick Dyer, a fourth-generation owner of Clemeadow Farm in Monmouth, discussed the farm’s
39 consideration of solar energy development of some of its farm acreage as a means of conserving
40 additional agricultural land use with the Stakeholder Group at its October 21, 2021, meeting. The project

1 will involve 45 acres of orchard, cornfield and forest out of the farm’s 1,000 acres. Local permitting has
2 been challenging. He commented that most farmers might not have the time to analyze legal
3 protections and tax implications of solar projects on their land. The group discussed the
4 decommissioning bonds required by state and local permitting authorities.

5 Other topics

6 *Maine Department of Environmental Protection land use regulations*

7 Nick Livesay and Jim Beyer from the Maine Department of Environmental Protection (DEP) presented to
8 the Stakeholder Group on the statutory and regulatory programs that apply to solar projects on June 24,
9 2021. These include: Site Location of Development (SLODA, or Site Law),⁴ the Natural Resource
10 Protection Act (NRPA),⁵ Stormwater Management Law,⁶ and Decommissioning.⁷

11 Projects that occupy more than 20 acres trigger Site Law review. DEP is undertaking rulemaking to allow
12 projects up to 50 acres in size that meet certain citing criteria to obtain a Permit by Rule (PBR), as
13 opposed to going through the traditional permitting process. Through June 2021, DEP has seen between
14 20-30 projects in the 20-50 acre range. The goal of the PBR process is to make the permitting process
15 more efficient and incentivize siting projects in areas with minimal potential environmental impact.

16 All projects one acre or greater fall under Stormwater Management Law. Maine has jurisdiction in this
17 area of law where many other states rely on federal oversight. DEP is working with solar developers on
18 pilot projects to allow solar grazing at solar sites as a means for vegetative management. Best
19 management practices have been developed by DACF, Cooperative Extension, and USDA Natural
20 Resource Conservation Service (NRDS) for solar grazing, which includes guidance on rotational grazing
21 plans, soil considerations, and seed mixes. A new law on decommissioning will require projects three
22 acres or larger to provide DEP a decommissioning plan and financial assurance for decommissioning.⁸
23 The law offers additional protections for agricultural land requiring removal of inground components to
24 depths of 48 inches.

25 *Maine Revenue Services current use taxation*

26 Peter Lacy, Director of the Property Tax Division of Maine Revenue Services, presented to the
27 Stakeholder Group on July 22, 2021. In Maine property tax is assessed at its best and highest value use
28 of the property. Land used for agriculture generally is not determined to be its best and highest value
29 use, for example in most of Maine, land is more valuable as housing. To remedy this, the Farmland Tax
30 Program exists to protect farmland from being converted into a higher value use⁹. However, fair market
31 value can differ across Maine, where an acre of potato field in Aroostook County may be more valuable

⁴ <https://www.maine.gov/dep/land/sitelaw/index.html>

⁵ <https://www.maine.gov/dep/land/nrpa/index.html>

⁶ <https://www.maine.gov/dep/land/stormwater/index.html>

⁷ <https://www.maine.gov/dep/land/solar-decommissioning/index.html>

⁸ The new law, P.L. 2021 ch. 151 (LD 802), is included in Appendix B.

⁹ <https://www.maine.gov/revenue/taxes/tax-relief-credits-programs/property-tax-relief-programs/land-use-programs>

1 as farmland than as a one-acre home lot. This leads to geographic differences in farmland tax program
2 enrollment across the state.

3 Farmland value has been established for 6 different types of farmland. However, municipal assessors
4 have discretion when applying these values. Currently there are 134,000 acres enrolled in the program
5 which requires farm income verification and minimum acreage requirements.

6 If land is converted to another use, like solar energy generation, the land is removed from the program
7 and a tax penalty is assessed. However, in 2020 the legislature passed an exemption for solar
8 development under 5 MW which provides net energy billing credits solely to the farm. In this case the
9 solar equipment would be tax exempt and the town would be reimbursed by the state for 50% of the
10 taxes lost on the equipment but not the land. As for dual-use projects not enrolled in net energy billing
11 this would trigger removal from the farmland tax program. For a project that supports a farm's energy
12 use through net energy billing as well as provides excess energy, it is unclear at this time if a portion of
13 the project could continue to be covered by the farmland tax program.

14 *Additional policy considerations*

15 *Siting scorecards*

16 The Stakeholder Group reviewed a compilation of pollinator scorecards from five states at its meeting
17 September 23, 2021. Maine Audubon is working on Maine-specific guidance on pollinator habitat, which
18 could be used in a permit-by-rule process or a tariff concept, but not as a stand-alone practice. The
19 Stakeholder Group agreed to table the pollinator scorecard concept for further review in the future.¹⁰

20 *In-lieu fee*

21 The Stakeholder Group considered a range of policy options, many of which led to specific conclusions
22 and/or recommendations summarized later in this report. Other policy tools that the group discussed
23 but did not reach conclusions or decide to issue recommendations for included creation of a mitigation
24 program or in-lieu fee model through which solar development would trigger compensation when it
25 occurred on agricultural soils or other areas of interest. New York is currently developing an in-lieu fee
26 program relative to solar development but the nascency of the effort did not provide particular
27 guidance to the Stakeholder Group at this time. The group did not advance this concept due to some
28 stakeholders' concerns including restrictive treatment of solar relative to other forms of development,
29 particularly those that may be equally or even more impactful on the landscape.

¹⁰ Solar siting scorecard information and examples reviewed by the Stakeholder Group are available on pages 18-31 here: <https://www.maine.gov/energy/sites/maine.gov.energy/files/inline-files/ASSG%20092321%20briefing%20materials.pdf>

1 8 – Conclusions and Recommendations

2 Conclusions

3 *Definitions of dual-use and co-location*

4 The group discussed and agreed to the following definitions for the terms “dual-use” and “co-location.”

5 These definitions distinguish between two related but separate concepts that the Stakeholder Group
6 discussed extensively. These definitions could serve as a conceptual starting point for more refined
7 definitions as needed to implement the Stakeholder Group’s recommendations.

8 “Dual-use” projects involve the installation of solar photovoltaic panels on farmland in such a manner
9 that primary agricultural activities (such as animal grazing and crop/vegetable production) are
10 maintained simultaneously on the farmland. To qualify as dual-use, the solar installation must

- 11 1. retain or enhance the land’s agricultural productivity, both short term and long term,
- 12 2. be built, maintained, and have provisions for decommissioning to protect the land’s agricultural
13 resources and utility, and
- 14 3. support the viability of a farming operation.

15 In contrast, “co-location” generally involves traditional ground-mounted solar installations that host
16 non-agricultural plantings with additional environmental benefits. For example, co-location can include
17 grazing of animals as part of planned vegetation management, planting pollinator habitat, or planting
18 ground cover or other plant species to benefit the surrounding ecosystems. Co-location may also involve
19 siting a more traditional solar installation on a portion of farmland, while retaining other farmland for
20 agricultural use. This may prove to be one way to help support the continued viability of farm
21 operations; but it is not dual-use solar.

22 *Matrix of Agricultural Siting Considerations*

23 *Purpose*

24 Maine agriculture is diverse, reflecting the variety of Maine’s landscapes and the economic
25 opportunities that they may present. Site planning for agricultural activities and solar development must
26 reflect the unique circumstances of each location in terms of soils, topography, microclimate, and the
27 goals of the landowner. Any rubric for approaching siting considerations should be understood as
28 general guidance only. The ultimate planning and design for specific projects and activities should be
29 based on the site-specific evaluation of environmental conditions and economic goals of the landowner.

30 ***The following table should not be interpreted as preferring one type of activity over any other for
31 policy purposes, or be included as part of any regulatory agency’s permitting decisions, without
32 further analysis and stakeholder input.***

33 The Stakeholder Group’s goals were to develop a list of siting attributes, with as much specificity as
34 possible, and to enumerate considerations with respect to solar siting.

35

Parcel	Farmland			
	Meets definition of farmland established in Title 36, section 1102 subsection 41 and/or affidavit from farmer			
	<i>Actively farmed</i>	<i>Other farmland</i>	<i>Inactive farmland</i>	<i>Woodlot on farms</i>
Prime soils Pursuant to Maine Instruction 430-3803	Encourage/incentivize dual use Encourage/incentivize 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/incentivize 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				
Encourage development on landfills, brownfields, rooftops, carports, gravel pits, mining sites, and other previously developed parcels.				

1

2 **Definitions**

3 For the purposes of this evaluation tool, definitions were derived from Maine law and the USDA
4 National Agricultural Statistical Service’s Census of Agriculture.

5 Actively farmed: generates a gross income of at least \$2,000 per year from the sale of agricultural
6 products in one of two or three of five previous calendar years.¹¹ This may include the following:

7 **Harvested cropland.** This category includes land from which crops were harvested and hay was cut, land
8 used to grow short rotation woody crops, Christmas trees, and land in orchards, groves, vineyards,
9 berries, nurseries, and greenhouses.¹²

10 **Permanent pasture and rangeland,** other than cropland and woodland pastured. This land use category
11 encompasses grazable land that does not qualify as woodland pasture or cropland pasture. It may be
12 irrigated or dry land.¹³

¹¹ Definition from Maine Title 36: <http://legislature.maine.gov/statutes/36/title36sec1102.html>

¹² Definition from the USDA Agricultural Census:
https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_US/usappxb.pdf

¹³ Definition from the USDA Agricultural Census:
https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_US/usappxb.pdf

- 1 Inactive farmland:
- 2 **Other cropland** that includes all cropland other than harvested cropland or other pasture and grazing
- 3 land that could have been used for crops without additional improvements. It includes cropland idle or
- 4 used for cover crops or soil improvement, cropland on which all crops failed or were abandoned, and
- 5 cropland in summer fallow.¹⁴
- 6 **Other pasture and grazing land** that could have been used for crops without additional improvements.
- 7 This category includes land used only for pasture or grazing that could have been used for crops without
- 8 additional improvement.¹⁵
- 9 Other land in farms: land that does not otherwise fall into the above farmland categories.
- 10 This category includes land in house lots, barn lots, ponds, roads, ditches, wasteland, etc. It includes
- 11 those acres in the farm operation not classified as cropland, pastureland, or woodland.¹⁶
- 12 Woodlot on farms: woodland that is part of a farm producer's total operation or woodland used for
- 13 pasture or grazing.
- 14 Dual-use and co-location are defined earlier in this section.

¹⁴ Definition from the USDA Agricultural Census:

https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_US/usappxb.pdf

¹⁵ Definition from the USDA Agricultural Census:

https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_US/usappxb.pdf

¹⁶ Definition from the USDA Agricultural Census:

https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_US/usappxb.pdf

1 Recommendations

2 Based on its research, discussions, and additional input received from the public, the Stakeholder Group
3 advances the following recommendations. Recommendations are numbered for reference only, and not
4 to indicate prioritization of any given recommendation over any other.

5 *Recommendation 1: Creation of a centralized clearinghouse of information*

6 The Stakeholder Group recommends the creation of a centralized clearinghouse of information related
7 to approved and constructed solar projects. This clearinghouse should include information related to
8 key siting characteristics, including but not limited to the amount of agricultural land and the types of
9 soils that are impacted by deployed projects. This recommendation should be implemented by DACF
10 using permitting data from DEP overlaid with NRCS soil maps on an annual basis.

11 *Recommendation 2: Dual-use pilot program*

12 The Stakeholder Group recommends establishment of a pilot program for dual-use projects. The pilot
13 could provide an opportunity for DACF to work with GEO, the PUC and other agencies to further explore
14 the potential for dual-use in Maine using New Jersey’s dual use program as a model. Projects meeting
15 dual-use criteria could be supported with a financial incentive, location-based waiver, or other benefit as
16 determined by the program. The pilot would provide opportunities to conduct necessary research on
17 compatible crops and other dual-use systems to determine best practices for dual-use within a defined
18 timeframe or capacity limit. The pilot program should be developed by DACF and GEO in collaboration
19 with other agencies and research institutions and should include innovation and data collection as
20 priorities and be financially supported by the legislature.

21 *Recommendation 2A: Consideration of current use taxation*

22 Contingent on completion of the dual-use pilot program described in recommendation 2, the
23 Stakeholder Group recommends further consideration of treatment of land enrolled in the
24 farmland current use taxation program when such land is housing a dual-use project. For
25 example, such land could be treated as not subject to the withdrawal penalty if the farming
26 operations continue to meet the farmland current use taxation requirements. Notwithstanding
27 further consideration around current use taxation, the Stakeholder Group further recommends
28 solar equipment located on land enrolled in the farmland current use taxation program that
29 primarily serves the farm’s electrical load be classified as agricultural infrastructure or
30 equipment.

31 *Recommendation 2B: Consideration of standards for co-location in permit-by-rule review*

32 Contingent on completion of the dual-use pilot program described in recommendation 2, the
33 Stakeholder Group recommends that dual-use and/or co-location standards be considered for
34 inclusion as permitting criteria in future development of permit-by-rule processes by the
35 Department of Environmental Protection and other relevant permitting agencies.

36 *Recommendation 3: Development of hosting capacity maps*

37 The Stakeholder Group recommends development of detailed hosting capacity maps that include
38 analysis from the utility perspective and that can help developers become more efficient at targeted site
39 selection for all sizes of solar projects. Comprehensive data that indicates which areas of the grid have

1 capacity for additional interconnections can minimize land use stress in any one location.
2 Comprehensively mapping and updating the grid could increase reliability, resiliency, and support
3 bringing three-phase power to rural locations. The Stakeholder Group views the Distributed Generation
4 Stakeholder Group led by GEO consistent with legislative direction to be the appropriate venue for
5 consideration of this recommendation.

6 *Recommendation 4: Increased support for municipal planning capacity*

7 The Stakeholder Group recommends more robust technical assistance capacity and/or financial support
8 for planning be provided by natural resource agencies directly to municipalities, COGs, or other
9 networks to help municipalities welcome solar development. The Stakeholder Group views DACF and
10 GEO as well-suited to provide such assistance.

11 *Recommendation 5: Consideration of program preference based on agricultural site characteristics*

12 The Stakeholder Group recommends that future state-sponsored programs to support the development
13 of solar resources through long-term contracts or other compensation mechanisms include
14 consideration of agricultural siting characteristics consistent with the program's design. For example, if
15 the Public Utilities Commission were directed to procure solar resources, evaluation and scoring of
16 proposed projects' agricultural and natural resource impacts (with support from natural resource
17 agencies) when selecting projects could be incorporated. Alternatively, if a tariff program were
18 developed, including an adder could be a significant market-based financial incentive to site dual-use
19 solar. The Stakeholder Group views the Distributed Generation Stakeholder Group led by GEO consistent
20 with legislative direction to be the appropriate venue for consideration of this recommendation.

- 1 9 – Appendices
- 2 Appendix A – LD 820 – Resolve, To Convene a Working Group To Develop Plans To Protect
- 3 Maine's Agricultural Lands When Siting Solar Arrays
- 4 Appendix B – LD 802 – An Act To Ensure Decommissioning of Solar Energy Developments
- 5 Appendix C – Meeting materials, presentations and summaries (to be included in final
- 6 version)¹⁷

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¹⁷ All materials to be included in Appendix C are available at <https://www.maine.gov/energy/studies-reports-working-groups/current-studies-working-groups/agricultural-solar-stakeholder-group/past-meetings>