



Balancing Solar Development and Farmland Protection

A Solar Siting Guide
for Maine Towns

June 2022

This resource is part of the Second Edition of *Cultivating Maine's Agricultural Future*,
a policy and planning guide for Maine municipalities.

Acknowledgments

Balancing Solar Development and Farmland Protection: A Solar Siting Guide for Maine Towns was produced by Maine Farmland Trust in collaboration with the Maine Department of Agriculture, Conservation and Forestry as part of the Second Edition of *Cultivating Maine's Agricultural Future*.

This guide was made possible through generous support from the Mudge Family Foundation and Farm Credit Northeast AgEnhancement.



Cultivating Maine's Agricultural Future: A Guide for Towns, Land Trusts, and Farm Supporters was originally produced in 2011 by Maine Farmland Trust, American Farmland Trust and the Mainewatch Institute, with research, writing and editing contributions from the Maine Department of Agriculture, Conservation and Forestry; Kent Associates; Land Forms; and Wright Pierce; and with additional contributions from numerous advising individuals and organizations. See Acknowledgments, *Cultivating Maine's Agricultural Future: A Guide for Towns, Land Trusts, and Farm Supporters* (Sept 2011).

Photography

Cover	Emily Cole, American Farmland Trust
Page 5	Zara Dowling, UMass Clean Energy Extension
Page 6	Garrett Linck, Maine Farmland Trust
Page 8, 18	Michael Dennett, Crescent Run Farm
Page 8	Jessica Forcello, BlueWave
Page 9	River Strong, UMass Clean Energy Extension
Page 14	Joe Gray, Auburn Agriculture Committee
Page 19	Lily Piel, Lily Piel Photography

Special thanks to the following individuals for their participation, insight and contributions to this *Solar Siting Guide for Maine Towns*:

David Asmussen (Blue Bell Farm)
Daisy Beale (Belfast Planning Board and Daisychain Farm)
Jerry Bley (Readfield Conservation Commission)
Jon Boynton (City of Belfast)
Dr. Lily Calderwood (University of Maine Cooperative Extension)
Henry Clauson (Readfield Planning Board)
Emily Cole (American Farmland Trust)
Eric Cousens (City of Auburn)
Andrew Deci (formerly Town of Topsham)
Michael Dennett (Crescent Run Farm)
Matthew Drost (Town of Monmouth)
Eric Dyer (Town of Readfield)
Jessica Forcello (BlueWave Solar)
Bub Fournier (City of Belfast)
Mary Ann Gendron (Town of Barre)
Sarah Haggerty (Maine Audubon)
Victor Langelo (Topsham Solar Advocates and Topsham Conservation Commission)
Rod Melanson (Town of Topsham)
Yvette Meunier (Topsham Solar Advocates)
Megan Norwood (formerly City of Auburn)
Steve O'Donnell (Monmouth Planning Board)
Kathy Shaw (Auburn Agriculture Committee and Valley View Farm)
Andy Smith (The Milkhouse)
Chip Stephens (Town of Readfield)
Ryan Walker (BlueWave Solar)
Nick Whatley (Topsham Solar Advocates and Whatley Farm)

Maine Farmland Trust also wishes to thank Kristen Bell and Christian Rowe for their research and writing contributions.

For more information, contact:

Abby Farnham
Maine Farmland Trust
abby@mainefarmlandtrust.org

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Why it Matters

Balancing Solar Development and Farmland Protection

Solar energy generation and agriculture can co-exist in Maine in a mutually beneficial manner as long as solar development is sited in ways that minimize impacts to agricultural resources.

Issue:

Permitting solar energy development in ways that minimize impacts to agricultural resources

Who is Involved:

Planning boards crafting ordinance language, town committees or agricultural commissions

Why it Matters:

A number of recent policy changes have opened the door for rapid increases in commercial solar development across the state, including on undeveloped agricultural lands. Solar energy generation and agriculture can co-exist in Maine in a mutually beneficial manner as long as solar siting is structured to balance these important interests.

Solar energy production is an important strategy for addressing climate change, and can create opportunities for farmers to diversify their income, reduce energy expenses, and meet on-farm energy needs. However, it is important that solar development does not also result in the loss of critical agricultural resources, displace agricultural production, or impede the ability of farmers to access the land base needed for their operations now and in the future.

According to an analysis conducted by Maine Audubon, 90 percent of the 185 solar development proposals that were reviewed and approved by the Maine Department of Environmental Protection as of June 2021 intersected with prime farmland soils and soils of statewide importance.^{1,2} While only 34 percent of the acreage proposed for development would actually cover these soils, this analysis helps to illustrate the extent to which solar development is being proposed on farmland in Maine. These high-value agricultural soils³ are a precious and limited resource, making up only 14 percent of the state's total land area.⁴ Farmland was also threatened before solar development intensified. The 2017 United States Department of Agriculture Census of Agriculture showed that between 2012 and 2017, Maine lost 10 percent of its farmland, over 146,000 acres.

Through thoughtful planning and policy development, towns can play a critical role in balancing support for solar energy generation with support for agricultural production and resilience

Take Action

General Agricultural Solar Siting Guidelines*

If solar installations are being developed on farmland, the following general guidelines, developed by a group of Maine-based agricultural and environmental organizations,⁵ may be helpful guiding principles for towns looking to balance these two important interests:

1. Where possible, **avoid land identified by the Natural Resources Conservation Service as “Prime Farmland” or “Farmland of Statewide Importance,”** or otherwise causing productive farmland to be taken out of production, including land leased for agricultural uses.
2. Preferentially use **previously-developed, disturbed, degraded, or marginally productive portions of the farm property.** This includes rooftops, land within and around farmstead areas, sand and gravel pits, and other areas with low utility for agricultural production.
3. **Encourage dual-use projects,** where agricultural production and electricity production from solar installations occur together on the same piece of land.
4. Build, operate, and decommission projects in ways that **preserve the ability for the land to be farmed in the future** and that do not inhibit access to or the productivity of farmland surrounding the solar installation.
5. **Minimize the impacts of grid connection** on the agricultural resources of the property.
6. Where applicable, **projects should benefit the farm business directly** by providing electricity to meet the energy needs (in whole or in part) of the farm.



* Farmland that has been permanently protected by Maine Farmland Trust or another entity may be subject to additional restrictions and guidelines surrounding solar development.

Municipal Ordinance Provisions to Support Balanced Solar Siting

There are a variety of ways in which municipalities can integrate these general agricultural solar siting guidelines into the land use tools they are crafting or amending to permit solar development in their community.

The following are summaries of provisions from ordinances that have been adopted by towns in Maine and other New England states to support balanced solar siting at the local level.* How local planning officials apply these and other ordinance provisions is a determining factor in how effective they are at minimizing impacts to agriculture. See ‘[Town Case Studies](#)’ later in this guide for a more in-depth review of the approaches that some of these towns took to develop a solar ordinance.

Supporting On-Farm Energy Production

- **Applicability Section:** Exempting solar energy systems that are intended to solely satisfy the electricity needs of the farm operation from being subject to the municipal review procedure and ordinance standards.

([City of Auburn, ME](#))⁶

* It is recommended that any language adapted from these summaries be reviewed by municipal counsel prior to adoption.



Siting Solar Development Away from Prime Soils and Productive Lands

- **Purpose Statement:** Including within the purpose statement of the ordinance that the Planning Board may recommend that the solar facility be located on a portion of the site where the soil does not have prime agricultural use potential.

([Town of Barre, MA](#))⁷

- **Mitigation Fee:** Disincentivizing the siting of solar development on and partially mitigating impacts to important natural and working lands by collecting funds from solar developers to support natural resource conservation.

([Town of Topsham, ME](#))⁸

- **Prime Soils Analysis:** Requiring solar developers to demonstrate if the proposed site contains prime farmland soils and requiring that the least productive agricultural soils are considered for siting first.

([City of Auburn, ME](#))

- **Siting and Impact Performance Standards:** Prioritizing solar siting on previously developed, degraded, or marginally productive portions of the property restricting the removal of prime farmland soils from the site during installation; and requiring weekly third-party inspections during the solar installation phase (not included in the ordinance but required as a condition of approval).

([Town of Topsham, ME](#))

- **Siting and Agricultural Impact Standard:** Discouraging the siting of projects on prime agricultural soils or soils of statewide importance to the extent practicable.

([Town of Monmouth, ME](#))⁹

- **Design Standard:** Incentivizing siting away from land that is in active or potentially active agricultural use by providing the Planning Board with flexibility to reduce some of the setback requirements for applicants that exclude such land from the proposed site.

([Town of Barre, MA](#))

Municipal Ordinance Provisions to Support Balanced Solar Siting (continued)

Minimizing Impacts to Current and Future Agricultural Production

- **Purpose Statement:** Reinforcing in the ordinance purpose statement the intention to support the goals and policies of the Comprehensive Plan, including protection of agricultural resources.
([Town of Readfield, ME](#))¹⁰
- **Installation Method Requirement:** Restricting acceptable installation methods to pile driven or ballast block footing so as to minimize the disturbance of soils during installation.
([City of Auburn, ME](#))
- **Review by an Agriculture Committee:** Requiring the Planning Board to consult with a municipal committee focused on agricultural issues to ensure that additional proposed solar energy projects would not diminish the potential for agriculture.
([City of Auburn, ME](#))
- **Lot Coverage Approval Standard:** Limiting the amount of a lot that can be covered by large and medium-scale ground-mounted solar installations to 20 percent, calculated by airspace projected over the ground.
([Town of Readfield, ME](#))
- **Alternatives Assessment Approval Standard:** Requiring the applicant to re-evaluate the proposed site if, as determined by the Planning Board, the site does not meet the goals and objectives established in the Town Comprehensive Plan and associated Town planning documents.
([Town of Readfield, ME](#))
- **Preservation of Town Character Approval Standard:** Ensuring that, as determined by the Planning Board, solar energy development is consistent with the character of the community, including via maintenance of open space lands and farms, the Town Comprehensive Plan, and associated Town planning documents.
([Town of Readfield, ME](#))

Promoting Dual-Use and Co-Location Projects

- **Purpose Statement:** Including within the purpose statement of the ordinance that, in the event the proposed site is presently in agricultural use, the continued agricultural use shall be encouraged.
([Town of Barre, MA](#))
- **Operations and Maintenance Plan:** Requiring applicants to submit an operations and maintenance plan that prioritizes the ability to co-mingle agricultural and energy generation land uses, such as apiaries, grazing or handpicked crops.
([City of Auburn, ME](#))
- **Vegetation Management Plan:** Including the grazing of farm animals as a suggested vegetation management method for proposed large-scale solar energy systems.
([City of Belfast, ME](#))¹¹
- **Siting and Agricultural Impact Standard:** Requesting that efforts be made to minimize the impact on existing agricultural uses by developing dual-use solar projects where possible.
([Town of Monmouth, ME](#))

Integrating Agricultural Production and Solar Generation

The recently-convened Agricultural Solar Siting Stakeholder Group defined dual-use projects as solar installations that allow for agricultural activities to be maintained simultaneously on the farmland, and co-location projects as solar arrays that have not been modified to accommodate agriculture and either host plantings with environmental benefits or are sited on a portion of farmland while retaining other farmland for agricultural use. More information on this stakeholder group's recommendations for balanced solar siting can be found in the Appendix.



Solar grazing with Crescent Run Farm

Crescent Run Farm is a solar grazing operation based in Jefferson. Solar developers contract with farmer Michael Dennett to provide needed mowing services for solar installations by grazing sheep underneath the solar arrays. This arrangement not only offers an important source of compensation for the farm, but also creates access to additional land that is needed to support the grazing operation.¹²



Solar energy generation and wild blueberry production

In 2021, BlueWave Solar and Navisun LLC developed a solar installation over 12 acres of south-facing wild blueberry fields in Rockport. The project was designed in three distinct areas using different construction methods, and new farming equipment was designed to accommodate access under the panels for harvesting.¹³ The University of Maine Cooperative Extension is collaborating with the farmer, landowner and project partners to study the impacts of construction on crop production, and identify costs and management changes that will be needed in order to continue commercial wild blueberry production on fields that host solar arrays.¹⁴

Maine Solar Decommissioning Law

Ensuring Solar Development Decommissioning

In 2021 Maine enacted a Solar Decommissioning Law¹⁵ requiring developers of solar installations occupying more than three acres to have an approved decommissioning plan and sufficient financial assurance to cover decommissioning costs. Some of the requirements of the new law include:

- All components of solar energy developments must be physically removed to a depth of at least 24 inches, and any portion on farmland must be removed to a depth of 48 inches.
- The decommissioning plan must provide for restoration of farmland sufficient to support resumption of agricultural activities.
- When there is a transfer of ownership of the solar development, the person that transfers ownership remains responsible for implementation of the decommissioning plan until transfer of the plan to the new owner is approved.
- The financial assurance must be updated 15 years after approval of the plan and at least every 5 years thereafter.

Towns can use the decommissioning standards provided by this law as guidance when drafting or amending solar decommissioning requirements at the local level.



Town Case Studies

Towns are permitting solar development in different ways depending on their local conditions and circumstances, as well as their community's established goals and planning resources. The case studies below document the approaches of three Maine communities in developing a solar ordinance, including their process and goals, how and why they selected certain components, lessons learned so far, and what the implications might be for current and future agricultural production.

Farmland Profile

Agricultural lands in Topsham primarily consist of cropland, orchards, and pasture

Approach

Disincentivizing solar development on valued natural and working lands

Spotlight Ordinance Provisions

Habitat Mitigation Fee; Siting and Impact Performance Standards

Town of Topsham¹⁶

Background and Key Players

The Town of Topsham's Solar Energy Conversion Systems Ordinance was adopted at the June 2020 Town Meeting. The ordinance was championed by the Topsham Solar Advocates (TSA), a group of community members and local business owners working to advocate for solar energy generation in their community. Members of the TSA worked closely with the Topsham Department of Planning and Development and the Planning Board to develop an ordinance amendment that would enable solar energy generation in Topsham, while also managing threats to natural and working lands. The organizers gathered insights from commercial solar installers to understand the on-the-ground implications of some of the model ordinance provisions that were being considered.

Ordinance Overview

Topsham categorizes ground-mounted solar installations as small, large or utility scale based on their square footage.¹⁷ These size categories are then permitted in certain zoning districts, but all principal-use, ground-mounted developments are required to obtain site plan approval.^{18, 19} Solar projects that serve as an accessory use are permitted by-right.

Town Case Studies / Town of Topsham

Spotlight Ordinance Provision:

Habitat Mitigation Fee

Topsham's solar ordinance contains a Habitat Mitigation Fee to disincentivize solar siting on priority open spaces, working lands and contiguous habitat tracts. A weighted map that was created through Topsham's 2010 Natural Areas Plan provides the basis for the mitigation fee. Farmland was identified by parcels enrolled in the Farmland Current Use Taxation Program²⁰ and by mapping active farmland known by the community.

The Habitat Mitigation Fee establishes a tiered fee system, requiring *"solar energy conversion systems located within the low-medium and medium [or medium-high and high] rated areas of the [weighted map] to pay a mitigation fee of 15% [or 25%] of the average value per acre of disturbed area or facility size (whichever is greater)...Such funds shall be deposited into*

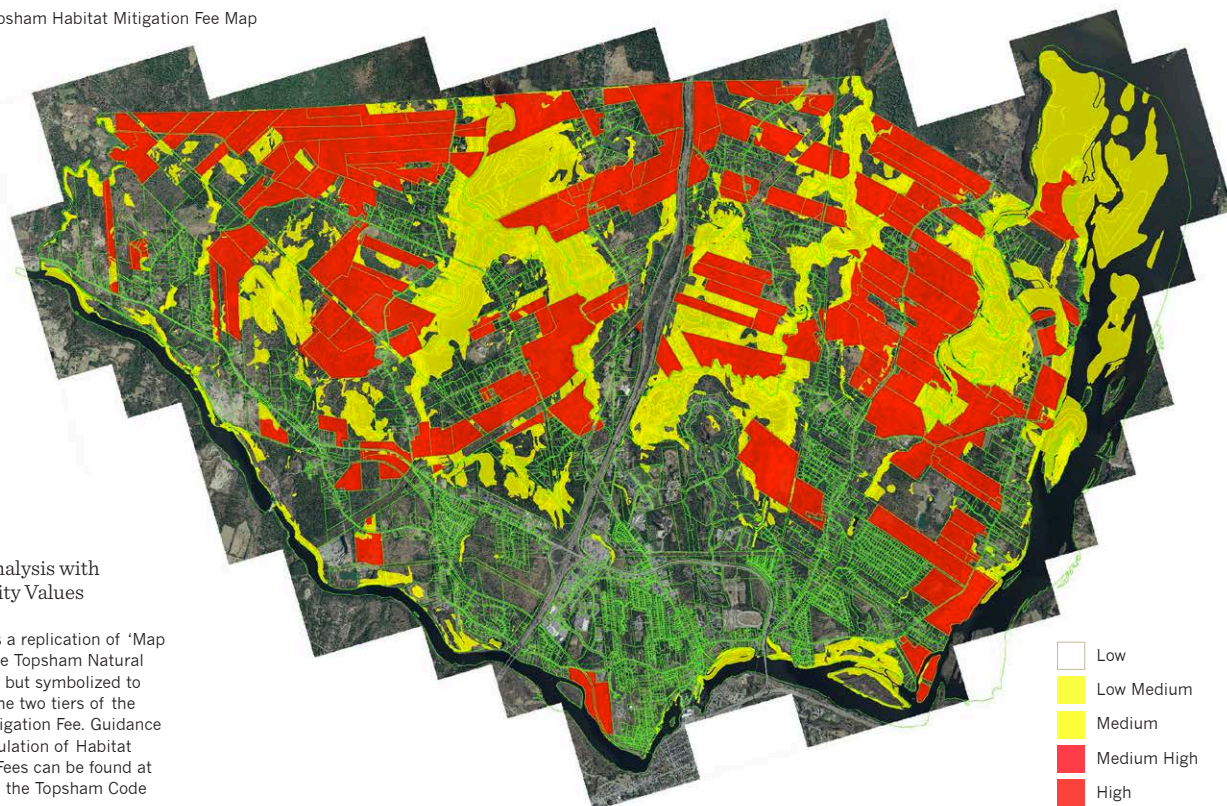
*an account for the purposes of natural resource conservation."*²¹ This fee was modeled after Topsham's Development Transfer Fee ordinance. The Habitat Mitigation Fee not only disincentivizes solar siting on valued natural and working lands, but also partially offsets the impact of development by collecting funds for the conservation of other lands. Topsham's Conservation Commission makes recommendations to the Select Board for how the collected funds should be spent.

Lessons learned so far: All four projects approved so far through Topsham's ordinance have triggered mitigation fees, which Topsham officials anticipate may generate a significant amount of funding for land conservation. More research is needed to learn about how the mitigation fee is factoring into site selection considerations for solar developers.

Town of Topsham Habitat Mitigation Fee Map

Matrix Analysis with Community Values

This map is a replication of 'Map 12' from the Topsham Natural Areas Plan, but symbolized to represent the two tiers of the Habitat Mitigation Fee. Guidance on the calculation of Habitat Mitigation Fees can be found at 8225-16 of the Topsham Code



Town Case Studies / Town of Topsham

Spotlight Ordinance Provision:

Siting and Impact Performance Standards

The ordinance aims to manage impacts to agricultural resources through its siting and impact performance standards. Those standards provide that *“preference should be given to locating the system on previously developed, degraded, or marginally productive portions of the property,”*²² and it would be up to the Planning Board and/or municipal staff to request the applicant to provide an alternatives analysis demonstrating that the project avoids productive portions of the property. Additionally, the performance standards state that *“no topsoil or prime agricultural soil shall be removed from the site for the installation of the system...”*

Lessons learned so far: Topsham officials have learned that the permitting plan may not account for impacts to soils that can take place during the construction process, so they have begun the practice of requiring weekly third-party inspections during the solar installation phase as a condition of approval.

Implications for Current and Future Agricultural Production

Topsham’s ordinance strikes a balance between allowing for solar projects to support farm viability while also minimizing and mitigating some of the potential impacts to farmland. The ordinance creates the option for farmers to lease portions of their land to a solar developer for principal-use solar projects (where more energy is generated than what is required to operate the farm operation, allowing it to be sold back to the grid), a use that was not permitted under existing zoning regulations. Most of the farmland in Topsham is located within its Rural Residential Zone (R-3), where large and utility-scale solar projects are permitted (with site plan approval). The R-3 Zone is also where most of the priority properties included in the Habitat Mitigation Fee are located,²³ so the mitigation fee may play a role in minimizing the placement of solar development on some of Topsham’s agricultural lands. For solar projects that are sited on farmland, the ordinance’s siting and impact performance standards and

additional inspection practices may help to minimize impacts to current and future agricultural productivity.

Members of the TSA are interested in exploring the potential of dual-use projects in Topsham, where farmland is primarily used for hay and pasture, but they also note that the current increased costs associated with further elevating and spacing out panels to construct dual-use projects, combined with the Habitat Mitigation Fee, may limit the development of these types of projects in Topsham for the foreseeable future.

Other future considerations for Topsham planning staff include trying to anticipate how many additional solar development proposals they might receive and determining if Topsham may want to consider limiting the total amount of land that can be converted to solar development through zoning regulations.

Town Case Studies / City of Auburn

Farmland Profile

Agricultural land in Auburn primarily consists of corn, hay, orchards, tree farms and pasture²⁴

Approach

Establishing special standards for the Agriculture and Resource Protection Zone

Spotlight Ordinance Provisions

Total Land Area Standard and Agriculture Committee Review; Prime Soils Analysis; Operations and maintenance plan prioritizing agricultural activities

City of Auburn²⁵**Background and Key Players**

The City of Auburn approved its Solar Energy Generating Systems Ordinance for its Industrial Zone in February of 2020, and passed an amended ordinance in June of that year to permit solar development in the city's Agriculture and Resource Protection (AGRP) Zone. The Planning Board wanted to have a baseline ordinance established before expanding it to permit solar development on farmland, which would require additional performance standards to protect agriculture. Auburn's unique AGRP Zone was implemented in 1964 to allow for the conservation of natural resources and open space, and to encourage agriculture, forestry, and certain types of recreational uses. The AGRP Zone is comprised of nearly 19,000 acres – almost half of the city's total land area. Approximately 75 percent of the AGRP Zone is currently forested.²⁶

The key players involved in the creation of Auburn's ordinance included the Planning Board, Planning Department staff, and many of the community members who ultimately were appointed to the Auburn Agriculture Committee, a group that was being formed at the same time to advise the City on needs related to farming and forestry. City officials also sought input from commercial solar developers to learn what factors make an agricultural site desirable, and what types of soil protection mechanisms are available to developers.

Town Case Studies / City of Auburn

**Ordinance Overview**

Auburn's solar ordinance provides that ground-mounted solar projects occupying less than one acre in total land area are permitted by right, and projects occupying greater than one acre are permitted by special exception, which reverts back to Auburn's site plan review process. However, ground-mounted projects intended to satisfy the electricity needs of the principal use of the lot are exempt, regardless of their size, in an effort to simplify the process for solar projects that support on-site energy production for the farm operation. Projects permitted by special exception in the AGRP Zone are subject to a number of conditions and performance standards that are focused on agricultural resources.

Spotlight Ordinance Provision:**Total Land Area Standard and Agriculture Committee Review**

The Auburn Agriculture Committee was formed during the same timeframe that the solar ordinance was developed for the AGRP Zone. Although the intention was for the Agriculture Committee, once formed, to play an important role in guiding how solar development would impact farmland, the City wanted the ability to permit some projects to move forward in the interim. The solution was to establish a Total Land Area standard, which set a cap on the amount of land that could be developed for solar energy generation in the AGRP Zone at one percent of the Zone's total land area, or 200 acres. Once this cap is reached, the Planning Board must consult with the Agriculture Committee²⁷ to "*find that any additional proposed solar energy generating systems will not materially alter the stability of the overall land use pattern of the [AGRP Zone]*" or make it more difficult for existing farms to expand, purchase or lease farmland.²⁸

Lessons learned so far: Four solar development projects covering approximately 90 acres have been approved in the AGRP Zone to-date, so the Agriculture Committee review has not yet been triggered.

Town Case Studies / City of Auburn

Spotlight Ordinance Provision:

Prime Soils Analysis

Proposed solar developments located in the AGRP Zone must provide a soils analysis to “*demonstrate if the site proposed for development contains prime farmland as defined by the United States Department of Agriculture. Least productive agricultural soils shall be considered first for development*” unless it can be demonstrated that non-prime farmland is not reasonably available.²⁹ This prime soils analysis enables Auburn planning officials to request a different location that does not contain as much prime soils within an applicant’s proposed site.

Lessons learned so far: All four of the approved projects in the AGRP Zone have intersected with prime soils in some way, but for planning staff, this provision has been effective in reducing the extent to which these soils are impacted by site selection.

Spotlight Ordinance Provision:

Operations and maintenance plan prioritizing agricultural activities

All operations and maintenance plans for proposals in Auburn’s AGRP Zone must include a plan that prioritizes the “*ability to co-mingle agricultural and energy generation land uses including but not limited to: apiaries, grazing or handpicked crops.*”³⁰ This provision intends for solar developers to incorporate a commitment to working with farmers in some way. It does not include specific parameters or require applicants to consider dual-use in the design of the project.

Lessons learned so far: During a tour of a solar project in the AGRP Zone, one farmer expressed concerns about grazing their sheep at the site due to the low height of the panels and concern that the sheep may cause damage. Auburn planning officials are interested in learning about industry standards that are developed for dual-use projects, including minimum panel height to accommodate agricultural activities, and would consider making changes to the solar ordinance to reflect these standards in the future. Local farmers also note that it will be important to continue to revise this component of the ordinance as more information is gained about dual-use solar projects.

Implications for Current and Future Agricultural Production

Auburn’s ordinance contains provisions that aim to protect agricultural production and encourage developers to integrate agricultural activities, while also enabling farmers’ access to lease payments from developers by permitting solar development in the AGRP Zone. Looking ahead, Auburn planning

officials view Auburn’s solar ordinance as a working document that should be amended as they go through the process of applying the ordinance standards and learning what impacts they have on the AGRP Zone.

Town Case Studies / Town of Readfield

Farmland Profile

Agricultural land in Readfield primarily consists of pasture and hay production, dairy, orchards, mixed vegetables, and berries³¹

Approach

Leveraging the Town Comprehensive Plan to help guide solar siting

Spotlight Ordinance Provisions

Purpose Statement; Alternatives Assessment and Preservation of Town Character Approval Standards; Lot Coverage Approval Standard

Town of Readfield³²**Background and Key Players**

The Town of Readfield's Solar Ordinance was adopted by Town Meeting in June 2021. The ordinance development process was a year-long effort conducted primarily by members of the Readfield Planning Board, the Town Manager, and the Code Enforcement Officer. The Planning Board reviewed numerous solar ordinances that had been enacted by other towns, consulted with commercial solar developers on certain concepts and definitions, and leaned heavily on Readfield's existing planning resources to ensure that the ordinance would support the community's established goals.

Ordinance Overview

Readfield's ordinance applies to all solar energy systems, and defines projects as small, medium or large-scale based on both the physical size of the system and its megawatt potential. The ordinance also differentiates between ground-mounted and roof-mounted installations. Ground-mounted systems of all scales are permitted in certain zoning districts, with Planning Board approval, and are subject to additional submission requirements and approval standards.

At the time of publication, no solar development project has been approved through Readfield's ordinance.

Town Case Studies / Town of Readfield

Spotlight Ordinance Provision:

Purpose Statement

Included in the ordinance's purpose statement is the intention to *"support the goals and policies of the Comprehensive Plan, including orderly development, efficient use of infrastructure, and protection of natural, scenic, and agricultural resources."*³³ Members of the Readfield Planning Board felt that rather than reinvent visions and goals for the community, it made sense to reference the existing philosophy of the Town Comprehensive Plan. The aim was for the ordinance to communicate upfront that this is a community that values its natural, scenic and agricultural resources, and that support for the goals of the Comprehensive Plan would be reflected throughout as a condition of approval.

Spotlight Ordinance Provision:

Alternatives Assessment and Preservation of Town Character Approval Standards

The ordinance ties back to the Comprehensive Plan in two other provisions, including the Alternatives Assessment, which provides that if a proposed large or medium-scale ground-mounted project does not meet the goals and objectives of the Comprehensive Plan, *"then other potential suitable alternative area(s), on the lot(s) included in the application, where a [solar energy system] can meet the Town's standards, goals, and objectives needs to be evaluated by the applicant."*³⁴ The intention of this approval standard is to provide a mechanism by which the Planning Board can question the placement of a proposed solar development and have more flexibility in the review process.

Additionally, the ordinance contains a Preservation of Town Character approval standard, which states that *"all reasonable efforts, as determined by the Planning Board, shall be made to ensure any [solar energy system] is consistent with the character of the community via visual consistency with local neighborhood area, maintenance of scenic views, maintenance of open space land and farms, and the Town Comprehensive Plan, and associated Town planning documents."*³⁵ The Planning Board intends for this provision to reinforce to developers that significant infrastructure change that is not consistent with the community's identified planning goals and rural living character will not be permitted.

Spotlight Ordinance Provision:

Lot Coverage Approval Standard

Proposed large and medium-scale ground-mounted projects in Readfield *"shall not exceed 20% coverage of a lot area. Lot coverage shall be calculated based on the total [solar energy system] airspace projected over the ground."*³⁶ The intention of this standard is to allow enough coverage to support a viable commercial solar project on a large enough lot, while also preventing the property from becoming fully encompassed by a solar installation. When crafting the ordinance, the Planning Board reviewed a parcel map of Readfield and combined this investigation with their local knowledge to determine the extent to which there were properties, namely open agricultural lands, that might be at risk for large-scale solar development. Although Readfield officials view this standard as a land conservation provision since it would protect a significant portion of a site from development, they also note that directing solar siting to larger lots could potentially put these properties at greater risk for development.

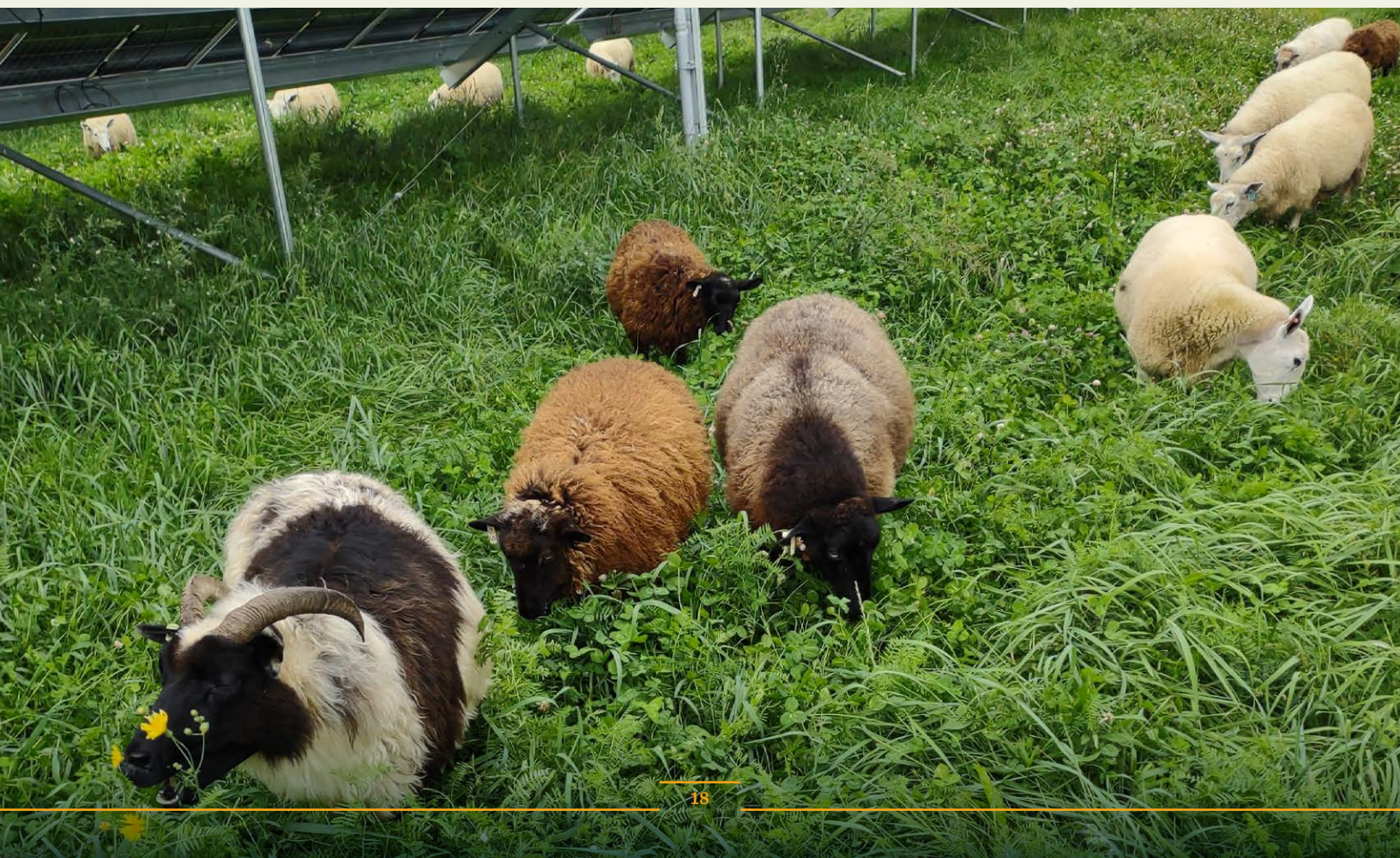
Implications for Current and Future Agricultural Production

Readfield's ordinance permits solar development (with Planning Board approval) in the Rural Zone where most of the farmland in town is located, while emphasizing the community's goals and values around protection of natural and agricultural resources. The ordinance does not contain specific solar siting standards; rather, it guides siting through references to the goals and objectives of the Town Comprehensive Plan, and creates opportunities for the Planning Board to address relevant issues with developers on a case-by-case basis. Therefore, the onus will be on the Planning Board to apply the values-based standards of the ordinance in ways that protect natural and agricultural resources and advance the objectives of the Town Comprehensive Plan. The Comprehensive Plan is also currently being updated, so the goals, objectives and strategies that

are established in the revised plan will play an important role in guiding solar siting in the future.

While the ordinance does not specifically encourage dual-use projects, Readfield officials are interested in those types of projects, and believe that the ordinance contains enough language related to maintenance of open space and farms to be able to address this topic with solar developers.

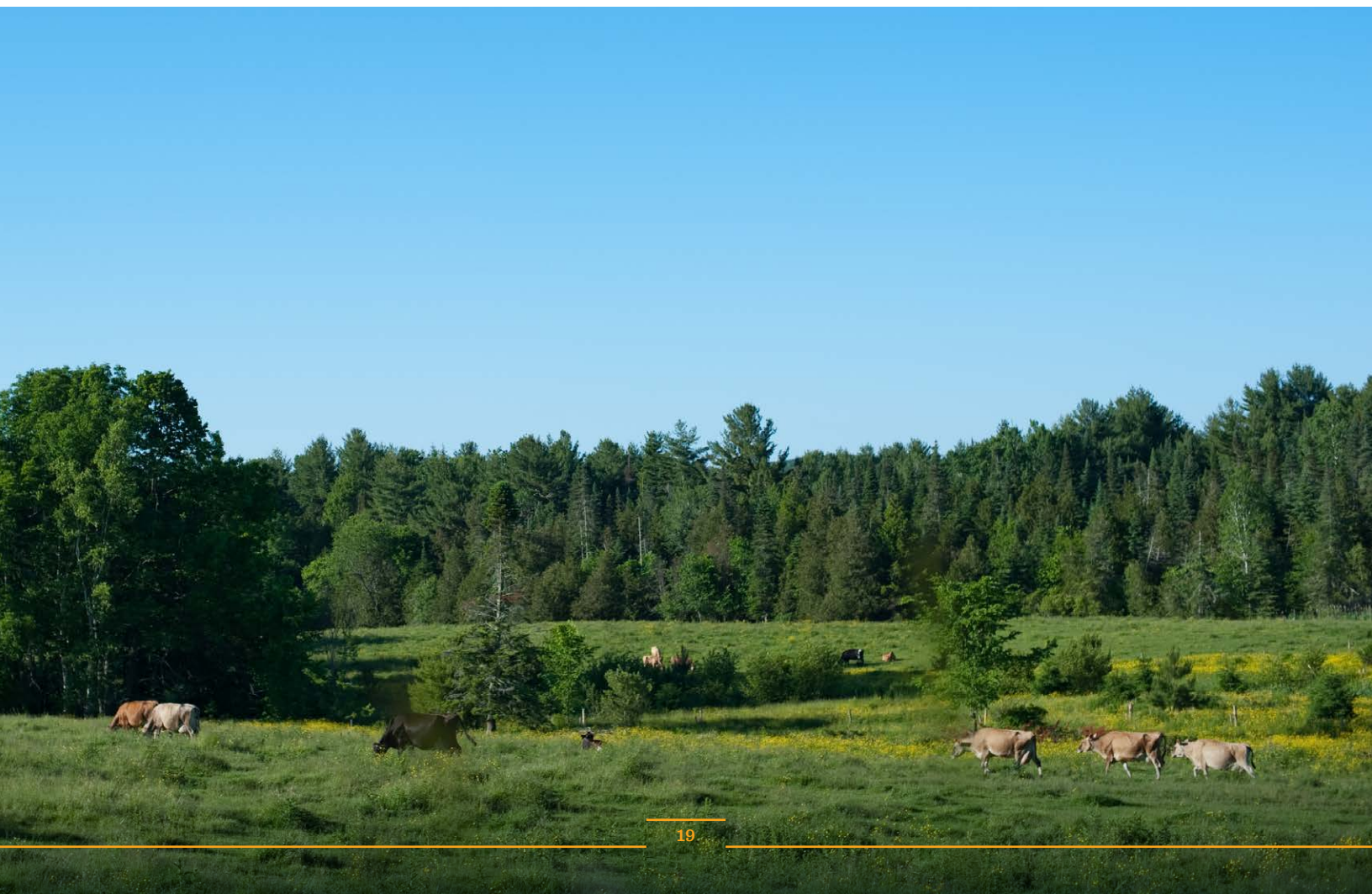
Other future considerations for Readfield officials include how it could be beneficial for towns to be able to communicate their goals and priorities for solar siting before solar developers conduct site searches in their community. This would provide an opportunity for towns to help to guide balanced siting before developers come to them with a proposed project site.



Conclusion

The solar ordinance provisions and case studies described above are based on newly-adopted ordinances, so it will take time and further investigation to determine the extent to which they are effective in supporting renewable energy development while minimizing impacts to important agricultural resources. Towns can consider whether the tools and approaches outlined here might help to inform efforts to support balanced solar siting in their community.

Towns can also refer to the complete *Cultivating Maine's Agricultural Future* guide and Second Edition of that guide once it is released for information on a broad range of municipal policy tools and planning strategies to support local agriculture.





Appendix

Stakeholder Recommendations for Balanced Solar Siting

In response to both a recommendation included in the updated climate action plan, *Maine Won't Wait*,³⁷ and legislation adopted by the Maine Legislature in 2021,³⁸ Maine's Department of Agriculture, Conservation and Forestry and the Governor's Energy Office convened an Agricultural Solar Stakeholder Group in 2021 to make policy recommendations to balance the need to protect the state's farmland with the need to increase solar energy generation.

The Stakeholder Group's final report includes several [recommendations](#)³⁹ that will be important to achieving a balance between these important needs, such as:

- Creating **greater regulatory efficiency** for well-sited solar projects through the permit-by-rule process;
- Supporting the creation of a **dual-use pilot program** to allow for the collection of data on how dual-use could be a viable model for agricultural operations and solar production;
- Creating a **centralized database** of information and impact trends related to approved and constructed projects;
- Providing more **technical assistance to municipalities** as they work to evaluate solar projects; and
- Ensuring the **involvement of agricultural stakeholders** in the creation of siting policy so that impacts to important agricultural and natural resources are considered and that well-sited projects are given a leg up in renewable energy programs.

The Stakeholder Group also developed the following definitions to describe dual-use and co-location solar projects:⁴⁰

- **Dual-use projects** are solar installations on farmland that allow for primary agricultural activities (such as animal grazing and crop/vegetable production) to be maintained simultaneously on the farmland. Dual-use designs may (but are not required to) include increased panel height or expanded panel row spacing to improve compatibility with farming operations and crop production.
- **Co-location projects** generally involve conventional ground-mounted solar installations (designs that have not been modified to accommodate agricultural use) that either host non-agricultural plantings with additional environmental benefits or involve siting a more conventional solar installation on a portion of farmland, while retaining other farmland for agricultural use.

Appendix

Resources for Towns

Maine

Final Report of the Agricultural Solar Stakeholder Group, (January, 2022)	https://www.maine.gov/energy/studies-reports-working-groups/current-studies-working-groups/agricultural-solar-stakeholder-group
Maine Department of Agriculture, Conservation and Forestry, <i>LD 820 Report to the Legislature</i> (February 8, 2022)	https://www1.maine.gov/DACF/ard/resources/docs/soalar-report-ld820.pdf
Maine Department of Agriculture, Conservation and Forestry, Agricultural Solar Siting Resources	https://www.maine.gov/dacf/ard/resources/solar.shtml
Maine Audubon, <i>Best Practices for Low Impact Solar Siting, Design, and Maintenance: Avoiding and Minimizing Impacts to Natural and Agricultural Resources</i> , (November, 2019)	https://maineaudubon.org/wp-content/uploads/2020/09/Best-Practices-Nov-2019-singl-pgsLR.pdf
Maine Audubon Renewable Energy Siting Tool	https://audubon.maps.arcgis.com/apps/webappviewer/index.html?id=28bece227ab04c0e9c148cddba7f0b5c
Maine Audubon, <i>Model Site Plan Regulations and Conditional Use Permits to Support Solar Energy Systems in Maine Municipalities</i> (February, 2020)	https://maineaudubon.org/wp-content/uploads/2020/03/ModelSolarOrdinance-Feb2020-FINAL.pdf
Maine's Soil and Water Conservation Districts	https://www.maine.gov/dacf/about/commissioners/soil-water/index.shtml

National

American Farmland Trust's Farmland Information Center Solar Siting Resources	https://farmlandinfo.org/solar-siting/
Vermont Law School's Farm and Energy Initiative's Farmland Solar Policy Design Toolkit	https://farmandenergyinitiative.org/projects/farmland-solar-policy/policy-design-toolkit/
Bill Penerson and Brooks Lamb, <i>Agrivoltaics: Producing Solar Energy While Protecting Farmland</i> , New Haven, CT: Yale Center for Business and the Environment (October, 2021)	https://farmlandinfo.org/publications/agrivoltaics-producing-solar-energy-while-protecting-farmland/

Appendix

References by Section

Why It Matters

- 1 Sarah Haggerty, Maine Audubon, “Solar Siting: Encouraging Thoughtfully Sited Renewable Energy Development,” Presentation to the Agricultural Solar Stakeholder Group, (June 3, 2021).
- 2 Caveats about the solar project dataset used in this analysis: The Maine DEP Solar Site Permit Polygon dataset is a representation of the solar sites that have been reviewed and approved by the Maine DEP. This dataset is not a representation of all the solar sites in Maine, just those that the Maine DEP has reviewed (many smaller sites don’t require DEP review). Polygons are based on the best available map and/or dataset which is often a detailed site plan but sometimes may be a parcel or multiple parcel boundaries. For this reason, the user cannot assume that the acreage represented by the polygon is an accurate representation of the acreage of the final solar site (Sarah Haggerty, Maine Audubon, email March 11, 2022).
- 3 “Prime farmland” and “soils of statewide importance” possess the most desirable attributes for agricultural production and are designated by the U.S. Department of Agriculture Natural Resources Conservation Service. See: U.S. Code of Federal Regulations Title 7 Subsection 657.5 “Identification of important farmlands:” <https://www.ecfr.gov/current/title-7/subtitle-B/chapter-VI/subchapter-F/part-657>, and Maine Instruction 430-380 – Prime, Statewide, Unique and Locally Important Designation: https://www.nrcs.usda.gov/wps/PA_NRCSCConsumption/download?cid=nrcseprd1585016&ext=pdf.
- 4 *Final Report of the Agricultural Solar Stakeholder Group*, p. 17 (Jan 2022), Available at: <https://www.maine.gov/energy/studies-reports-working-groups/current-studies-working-groups/agricultural-solar-stakeholder-group>.

General Agricultural Solar Siting Guidelines

- 5 Maine Audubon, *Best Practices for Low Impact Solar Siting, Design, and Maintenance: Avoiding and Minimizing Impacts to Natural and Agricultural Resources*, (November 2019). Available at: <https://maineaudubon.org/advocacy/solar/>.

Municipal Ordinance Provisions to Support Balanced Solar Siting

- 6 City of Auburn, Chapter 60, Article XVIII, Solar Energy Generating Systems, available at: https://library.municode.com/me/auburn/codes/code_of_ordinances?nodeId=PTIICQOR_CH60ZO_ARTXVIIIISOENGESY. For City of Auburn’s use regulations for solar energy generating systems in the Agriculture and Resource Protection Zone: https://library.municode.com/me/auburn/codes/code_of_ordinances?nodeId=PTIICQOR_CH60ZO_ARTIVDIRE_DIV2AGREPRDI_S60-145USRE.
- 7 Town of Barre, Solar energy facilities special permit and site plan review, Section 140-10.1, available at: <https://ecode360.com/31873652>.
- 8 Town of Topsham, Solar energy conversion systems, Chapter 225-60.19, available at: <https://ecode360.com/36530347>.
- 9 Town of Monmouth, Comprehensive Development Ordinance, Last Amended July 14, 2020, “Solar Energy Systems,” Section 6.8.9, p. 63, available at: <https://monmouthmaine.gov/?SEC=8D406595-C7AF-4F90-9568-A5B2BC53914A>.

- 10 Town of Readfield Solar Ordinance, 6-8-2021, available at: <https://www.readfieldmaine.org/town-ordinances-policies-permits/pages/ordinances>.

- 11 City of Belfast, Chapter 102, Zoning Amendments Regarding Solar Energy Systems, available at: <https://www.cityofbelfast.org/443/Solar-Ordinance>.

Integrating Agricultural Production and Solar Generation

- 12 Michael Dennett, Crescent Run Farm, interview March 24, 2022.
- 13 Jessica Forcello, BlueWave, email June 1, 2022.
- 14 Dr. Lily Calderwood, Mara Scallion and Brogan Tooley, University of Maine Cooperative Extension, “Investigating the Impact of Solar Installation Methods on Wild Blueberry Production” in *2021 Wild Blueberry Research and Extension Reports*, p. 149 (Jan 2022).

Maine Solar Decommissioning Law

- 15 LD 802, *An Act To Ensure Decommissioning of Solar Energy Developments*. The law applies to projects that began construction on or after October 1, 2021, as well as to projects that undergo an ownership transfer after October 1, 2021.

Town of Topsham Case Study

- 16 This case study was developed in part from input and information provided by the following individuals: Rod Melanson (Director of Planning, Development and Codes, Town of Topsham); Andrew Deci (former Assistant Town Planner, Town of Topsham); Yvette Meunier (Topsham Solar Advocates); Victor Langelo (Topsham Solar Advocates; Topsham Conservation Commission); and Nick Whatley (Topsham Solar Advocates; Whatley Farm).
- 17 Town of Topsham, Zoning Definitions, Chapter 225-6 “Solar Energy Conversion System (Ground-Mounted)”.
- 18 Town of Topsham, Table of Use Regulations, 225 Attachment, last amended July 2, 2020.
- 19 Town of Topsham, Solar energy conversion systems, Chapter 225-60.19.B, Accessed Nov 11, 2021.
- 20 *Topsham Natural Areas Plan*, p. 21.
- 21 Town of Topsham, Solar energy conversion systems, Chapter 225-60.19.F, Accessed Nov 11, 2021.
- 22 Town of Topsham, Solar energy conversion systems, Chapter 225-60.19.E(1)(b), Accessed Nov 11, 2021.
- 23 Town of Topsham, Solar Energy Conversion Systems Habitat Mitigation Fee Map, available at: <https://ecode360.com/documents/TO1615/public/575918716.pdf>.

Appendix

References by Section (continued)

City of Auburn Case Study


- 24 Auburn Agriculture Committee, Auburn's Ag Zone Land Use Inventory, (Jan 20, 2022). Available at: <https://storymaps.arcgis.com/stories/4b6f2bfb15d247e3a370cb7abd9f9a26>.
- 25 This case study was developed in part from input and information provided by the following individuals: Eric Cousens (Director of Planning and Permitting, City of Auburn); Megan Norwood (former City Planner, City of Auburn); Kathy Shaw (Owner, Valley View Farm in Auburn; Chair, Auburn Agriculture Committee).
- 26 City of Auburn Ad Hoc Committee, *Final Report: Study to Support and Enhance Auburn's Agricultural and Resource Sector*, p. 3 (July, 2018).
- 27 At the time of writing, the Auburn Agriculture Committee is being restructured as a working group that will focus on issues related to agriculture, conservation and sustainability (Eric Cousens, Director of Planning and Permitting, City of Auburn; interview March 2, 2022).
- 28 City of Auburn, Agriculture Resource and Protection District Sec. 60-145(b) (19)(d), Accessed Oct 20, 2021.
- 29 City of Auburn, Agriculture Resource and Protection District Sec. 60-145(b) (19)(g), Accessed Oct 20, 2021.
- 30 City of Auburn, Agriculture Resource and Protection District Sec. 60-145(b) (19)(i)(1), Accessed Oct 20, 2021.

Town of Readfield Case Study

- 31 Town of Readfield Comprehensive Plan, p. 91 (Adopted June 11, 2009).
- 32 This case study was developed in part from input and information provided by the following individuals: Henry Clauson (Readfield Planning Board); Eric Dyer (Readfield Town Manager); Chip Stephens (Code Enforcement Officer, Town of Readfield); and Jerry Bley (Readfield Conservation Commission).
- 33 Town of Readfield Solar Ordinance, Section 2.e, Accessed Jan 27, 2022.
- 34 Town of Readfield Solar Ordinance, Section 7.19 (Large and Medium-Scaled Ground-Mounted Solar Energy Systems), Accessed Jan 27, 2022.
- 35 Town of Readfield Solar Ordinance, Section 7.20 (Large and Medium-Scaled Ground-Mounted Solar Energy Systems), Accessed Jan 27, 2022.
- 36 Town of Readfield Solar Ordinance, Section 7.1 (Large and Medium-Scaled Ground-Mounted Solar Energy Systems), Accessed Jan 27, 2022.

Stakeholder Recommendations for Balanced Solar Siting

- 37 Maine Climate Council, *Maine Won't Wait: A Four-Year Plan for Climate Action*, p. 76 (Dec 2020). <https://www.maine.gov/climateplan/the-plan>. Recommendation: "Develop 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."
- 38 LD 820, Resolve, *To Convene a Working Group To Develop Plans To Protect Maine's Agricultural Lands When Siting Solar Arrays*, https://legislature.maine.gov/bills/display_ps.asp?PID=1456&snum=130&paper=SP0206. This bill directed Maine's DACF to convene a working group of stakeholders to develop plans to discourage the use of land of higher agricultural value and encourage the use of more marginal agricultural lands when siting a solar array.
- 39 *Final Report of the Agricultural Solar Stakeholder Group*, p. 4 (Jan 2022). A more detailed summary of these recommendations can be found at: www.maine-farmland-trust.org/stakeholder-group-recommendations-for-creating-balanced-solar-energy-development/.
- 40 *Final Report of the Agricultural Solar Stakeholder Group*, p. 27 (Jan 2022).



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