



BEST PRACTICES

for Low Impact Solar Siting, Design, and Maintenance

Avoiding and Minimizing Impacts to Natural and Agricultural Resources

Increasing renewable energy production in Maine is critical to mitigating the impacts of climate change on Maine's natural resources and agricultural and natural resource based economies. Solar projects that follow these low-impact best practices will help Maine people, businesses, and communities realize solar's climate and economic benefits, while avoiding or significantly reducing undue impacts to wildlife, farming, and critical natural resources such as clean water.

The purpose of this document, authored by Maine-based environmental and agricultural nonprofit organizations, is to advise solar developers, municipalities, and the public about ways to avoid or minimize development conflicts. It is not meant to supercede required federal, state and municipal permitting; likewise, we recommend using these best practices regardless of permit requirements. It is also important to note that solar development is subject to other considerations, including interconnection, project economics, and other siting constraints.



photo: Carl Lender/FLCKR



photo: Michelle Callahan/FLCKR



Natural Resource Siting Best Practices

(1) **Preferentially use disturbed, developed, or degraded lands.** This includes landfills, brownfields¹, roadway medians and edges, parking lots, rooftops, idle or underutilized industrial or commercial sites, and sand and gravel pits. Utilizing disturbed lands avoids new forest clearing, minimizes soil disturbance, and takes advantage of unutilized or underutilized space.

(2) **Avoid where practical, and minimize as much as possible, impacts to sensitive wildlife habitats and high-value natural resources.** This includes all habitats identified as “Significant Wildlife Habitats” under Maine’s Natural Resources Protection Act, as well as additional areas and natural communities deemed to be rare or particularly sensitive to encroachment.² Other sensitive habitats include threatened and endangered species habitat, rare plant populations, cold-water fish habitat, wetlands, eelgrass beds, rare natural communities, Focus Areas of Statewide Ecological Significance, forested areas that have not previously been cleared for agriculture, and resilient and connected landscapes.³

There is no comprehensive statewide inventory that includes all Rare, Threatened, and Endangered species occurrences and habitats, Significant Wildlife Habitats, and important natural resources. Though many resources are included on data layers and resource maps, the completeness of such varies by habitat type, location, and previous survey efforts. Thus, such tools should be considered preliminary until otherwise noted by the appropriate resource agency.

A desktop evaluation of these resources should not take the place of detailed, site-specific investigations of any proposed site to identify any unmapped habitats, species, or resources present at the site. Likewise, it should be recognized that GIS mapping may not be accurate and site specific investigations may supercede GIS mapping.

In all circumstances, preference should be given to avoidance, with minimization and compensation utilized only where avoidance is not possible.

(3) **Avoid where practical, and minimize as much as possible, impacts to intact forest landscapes.** Intact forest landscapes are areas with no significant human development or long-term habitat fragmentation and that provide relatively undisturbed habitat conditions. They are critical for increasing carbon storage, harboring biodiversity, regulating hydrological regimes, and providing other essential ecosystem functions.

(4) **Allow for habitat connectivity by avoiding or minimizing impacts to wildlife corridors; locating projects near existing transmission and distribution infrastructure, highways and population centers; co-locating new transmission infrastructure; and using wildlife-friendly fencing.** Wildlife corridors include migration corridors for terrestrial wildlife, aquatic corridors, and climate corridors utilized by wildlife as habitats and home ranges shift in the face of climate change. Likely upland and wetland habitat connectors are depicted on Beginning with Habitat maps, but terrestrial migration corridors aren’t as thoroughly mapped. Site-specific information, as well as conversations with natural resource agencies and local nonprofit organizations, may be needed to properly avoid impacts.

Co-locate new transmission lines with existing man-made linear features, wherever possible. If co-location is not possible, utilize routes that have the least overlap with high value natural resources and habitats. Minimize use of fencing and where fencing is required, use designs that allow for wildlife passage.

(5) **Protect water quality and avoid erosion.** Utilize Stream Smart road/stream crossings, proper erosion control techniques, and minimize the number of stream and wetland crossings to the greatest degree possible. Provide adequate buffers around wetlands, vernal pools, and other aquatic systems to allow for the natural functioning of such systems, including retaining shade for streams and providing travel corridors for multiple fish and wildlife species. Adopt stream protection standards for buffers and cutting developed by the Maine Department of Inland Fisheries and Wildlife.

(6) **If development is proposed in a greenfield site⁴ or away from existing infrastructure, evaluate potential cumulative impacts, including existing development and potential future development for a site.** This includes the amount of impervious surface and amount of vegetation clearing in the area.

(7) **Restore or maintain native vegetation in the project area, including “pollinator friendly” species, and avoid where practical, and minimize as much as possible, the use of pesticides and/or herbicides.**

1. Brownfields are properties, that, if redeveloped or reused, may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.
2. Maps for these areas can be found through the statewide Beginning with Habitat program.
3. The location of these habitats can be obtained through the Maine Department of Inland Fisheries and Wildlife, Maine Department of Marine Resources, Maine Natural Areas Program, federal agencies, and local non-profit organizations.
4. A greenfield site is a site that has not been previously developed or otherwise degraded.

Agricultural Siting Best Practices

If it is determined that agricultural land is a responsible site for solar power, the following should be considered to mitigate impacts to the future productivity of the land:

- (1) **Where possible, avoid land identified by the Natural Resources Conservation Service as “Prime Farmland” or “Farmland of Statewide Importance,” or otherwise cause 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.**

Best Practices for All Solar Development

- (1) **Use a proactive approach to community engagement.**
In general, Maine people overwhelmingly support solar power. As specific solar projects are proposed in greater number, at larger scale, and in and around communities, it is important to educate and listen to community members about individual projects as early in the development process as feasible. Informal presentations or open houses are often more effective for genuine engagement than the processes required for local permitting.
- (2) **Provide municipalities and community members with information about the performance and beneficial outcomes of projects.** Project owners are encouraged to provide information about project performance or outcomes before, during, and after construction. Information can include: energy generation, financial savings, employment/spending, property tax payments, emission reductions or similar metrics. This information can be shared through signage at the project, newspaper articles, or updates to local government officials.



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