



Floating Solar Photovoltaic Projects Frequently Asked Questions – FAQs: Wetlands Protection

Answers to questions and more about wetland impacts from floating solar projects for applicants, conservation commissions, and the public.

Are Floating Solar Array Projects on Massachusetts natural lakes and ponds eligible for MA Department of Energy Resources (DOER) Solar MA Renewable Target (SMART) tariff subsidies?

No. The DOER SMART Program only provides Floating Solar Tariff Generating Units for floating solar arrays located on man-made waterbodies. 225 CMR 20.00.

What are considered man-made waterbodies and are they jurisdictional under the Wetlands Protection Act regulations?

The Wetlands Protection Act protects wetland resource areas including lakes (defined as greater than 10 acres in 310 CMR 10.04) and ponds that are not “human-made.” Human-made open bodies of water that are not considered ponds are described in 310 CMR 10.04 (Definitions - Pond (Inland)) and include: a) basins or lagoons which are part of wastewater treatment plants; b) swimming pools or other impervious human-made basins; and (c) individual gravel pits or quarries excavated from upland areas unless inactive for five or more consecutive years. Human-made open bodies of water as described here may represent good candidates for floating solar array projects. Additionally, certain agricultural ponds such as cranberry bog irrigation ponds developed from upland sites may be suitable as well.

Why are Floating Solar Arrays sited in a Wetland Resource Areas, as defined in 310 CMR 10.00, *not eligible* to qualify as Solar Tariff Generation Units?

Floating solar arrays are discouraged in wetland resource areas because of the likely ecological impact to freshwater ecosystems. An important wetland resource area that would be altered by floating solar arrays is *Land Under Water Bodies and Waterways*. Land Under Water Bodies and Waterways plays a role in the protection of public and private water supplies and groundwater, the prevention of pollution, and the protection of fisheries and wildlife habitat. The standards for Land Under Water Bodies and Waterways (310 CMR 10.56) prohibit the impairment of: the water carrying capacity provided by the land in conjunction with the banks; ground and surface water quality; the capacity of the land to provide breeding habitat, escape cover and food for fisheries; and the capacity of said land to provide important wildlife habitat functions.



Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

What constitutes an alteration to a resource area?

Wetland alteration means the destruction of vegetation, changing of water temperature or biochemical oxygen demand, and changes to other physical, biological, or chemical characteristics of the receiving waters.

How should alterations be assessed for Floating Solar Arrays proposed over Land Under Water Bodies and Waterways?

Lake and pond ecosystems are particularly sensitive to sunlight penetration. Shading impacts from floating solar arrays are likely to have significant impact on Massachusetts' predominantly shallow waterbodies and the fisheries and wildlife habitat they support. Submerged vascular plant communities are particularly light-dependent, help prevent resuspension of the lake's bottom sediments (and associated nutrients) and absorb nitrogen/phosphorus in sediments. Aquatic vegetation communities also provide essential ecological services as food, shelter, migratory, or overwintering areas or breeding areas for fish and zooplankton. The entirety of these services is critical to protect water quality, maintain balanced aquatic ecosystems, and avoid lake and pond degradation associated with algal blooms. Adverse effects on fisheries and wildlife habitat, including its ability to provide food, shelter, and breeding areas, would also need to be assessed.

Additionally, floating solar arrays on the water surface would likely alter ground and surface water quality by affecting the surface air flow, water column dissolved oxygen profiles and thermoclines, and light penetration. Excessive bird populations that may perch on floating solar arrays on waterbodies have been shown to generate increased fecal organic waste, inordinate nutrient loading, and *Euglena* algal blooms.

How is an alteration to a wetland resource area measured?

Alterations to resource areas are best measured by changes to baseline conditions. Baseline conditions include: the aerial extent (*i.e.*, acreage) of the water body; the water body bathymetry, the littoral submerged aquatic vegetation, water column light penetration, biological diversity (*i.e.*, fish, zooplankton, and phytoplankton population survey), seasonal lake temperature, dissolved oxygen levels, nitrogen and phosphorus levels, and pH/conductivity.

What is involved in Floating Solar Array wetland impact reviews?

Floating solar array review would need to meet the requirements of the Wetlands Protection Act Regulations, 310 CMR 10.00. Such projects require the filing of a Notice of Intent for review by the local conservation commission and the MassDEP-Wetlands Program. Floating solar arrays may also be subject to municipal protections of wetlands, adopted as a local by-law or ordinance.

An analysis of alternative sites that would avoid resource area alterations must be conducted and include, but not be limited to, available wooded upland of abutting parcels under common ownership or



Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

proximate man-made open bodies of water not subject to wetland jurisdiction. MassDEP's Guidance on Agriculture and Solar Energy Under the Wetlands Protection Act and the Solar Massachusetts Renewable Target (SMART) Program (<https://www.mass.gov/doc/guidance-on-agriculture-and-solar-energy-under-the-wetlands-protection-act-and-the-solar/download>) advises floating solar array proponents to seek manmade water bodies constructed in upland (non-wetland) areas such as manmade irrigation ponds.

What other wetland resources, besides Land Under Water Bodies and Waterways, are likely to be affected by Floating Solar Arrays?

Banks and Bordering Vegetated Wetlands (310 CMR 10.55, 10.54) are likely to be affected by floating solar arrays for access or other associated facilities.

What other components of Floating Solar Arrays are subject to Wetlands Protection Act jurisdiction?

Activities necessary for the development of the floating solar array such as construction staging areas, shoreline anchoring or cable systems, and the operation and maintenance of electric distribution or transmission lines are also subject to Act's jurisdiction. Any new shoreline access roadways are subject to stormwater management measures and the MA Stream Crossing Standards (as applicable)

<https://www.mass.gov/files/documents/2018/08/23/Stream%20Crossings%20booklet%20Web.pdf>

Does the MassDEP Wetlands Program have other guidance related to solar panel development projects?

Yes, the MassDEP Wetlands Program issued a policy that describes how MassDEP reviews land-based solar-array projects at: <https://www.mass.gov/guides/massdep-wetlands-program-policy-17-1-photovoltaic-system-solar-array-review#-statutory-and-regulatory-background->

MassDEP also has developed guidance for solar development on agricultural lands (described above): <https://www.mass.gov/doc/guidance-on-agriculture-and-solar-energy-under-the-wetlands-protection-act-and-the-solar/download>

Besides MassDEP and local conservation commission review under the Wetlands Protection Act, what other environmental regulations govern Floating Solar Array development in Massachusetts?

Depending on the scale and location of proposed floating solar arrays, projects will also be subject to review by the MassDEP c. 91 Waterways and Drinking Water Programs. Floating solar arrays may also be subject to review under the Massachusetts Environmental Policy Act, consultation with the Massachusetts Division of Fish and Game, the U.S. Army Corps of Engineers, the Massachusetts Historical Commission, and local Planning Board site plan review. Projects within the most recent Estimated Habitat Map of State-listed Rare Wetlands Wildlife, must comply with the Natural Heritage and Endangered Species Program and the Massachusetts Endangered Species Act.



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

<https://www.mass.gov/orgs/masswildlifes-natural-heritage-endangered-species-program>

Whom should I contact if I have further questions about floating solar projects and wetlands?

Refer to MassDEP's Wetland Circuit Rider Program staff at: <https://www.mass.gov/guides/massdeps-wetlands-circuit-rider-program>