

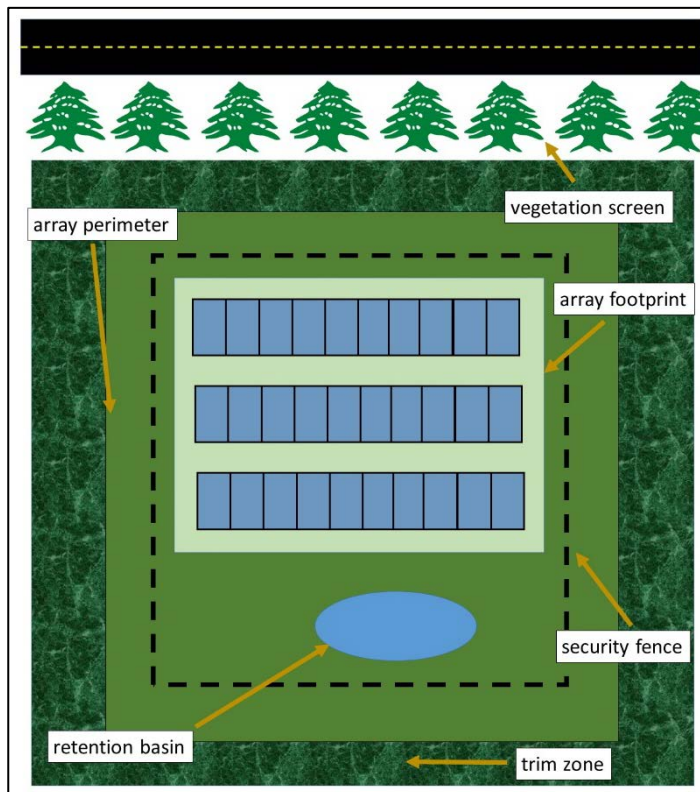
Pollinator-Friendly Solar PV

A number of states (including Maryland, Minnesota, and Vermont) have created “pollinator-friendly” designations to encourage establishment and management of pollinator-friendly plantings under and around large solar photovoltaic (PV) arrays. UMass Clean Energy Extension worked with pollinator experts and stakeholders to develop a pollinator-friendly certification program for Massachusetts.

Why pollinator-friendly solar?

- **It’s good for native wildlife and plants:** Native flowering herbs and shrubs provide habitat and food to pollinators and other species. Grassland habitats support over 70 animals and plants designated as Species of Greatest Conservation Need in Massachusetts.
- **It’s cost-effective:** Establishing native plants under solar PV arrays may require higher upfront costs, but these practices can result in lower maintenance costs over time, due to reduced mowing schedules, and reduced needs for watering and herbicide application.
- **It’s prettier:** Wildflower meadows and vegetation screens of native shrub species are aesthetically more appealing than grass or gravel. They may make solar PV facilities more acceptable to neighbors and visitors.

Parts of a solar array



Array footprint – The area beneath the solar PV panels, between adjacent rows of panels, and immediately surrounding the array is typically reduced to bare ground during facility construction. This area can be planted with low-growing (under 36” high) wildflowers and bunchgrasses to prevent shading of panels.

Array perimeter – The area surrounding the array footprint is also typically disturbed during facility construction. This area can be planted with wildflowers, bunchgrasses, and flowering shrubs of low to moderate height (e.g. 42-60”).

Trim zone – This area is typically not severely disturbed during facility construction. Where native vegetation is not already established, this area can be planted with tall wildflowers and flowering shrubs. It must be kept trimmed to 10-12’ to prevent shading of the panels by adjacent trees.

Vegetation screen – This line of vegetation can be planted with evergreen shrubs and small trees (such as cedar) to block or limit the view of the solar PV facility from the road or adjacent properties.

Stormwater retention basin – A stormwater retention basin may be required at some sites to slow water runoff during storm events. Depending on its size and anticipated hydrology, the basin can be planted with native obligate or facultative wetland species, and provide a perennial water source to pollinators and other wildlife.

What should be planted?

- **Native species** indigenous to New England. Invasive species must be avoided at all costs, and should be removed from the project site, even if they provide nectar or pollen resources to pollinators.
- **Local ecotypes**, grown from Northeast seed, and adapted to the local climate and conditions.
- **Common, widespread, or fairly widespread species.** Planting rare or uncommon species should only be done in consultation with state agencies or plant conservation organizations. For rare and uncommon plant species, it can be problematic to introduce different genetic variants and potentially contaminate the local gene pool.
- **A high diversity of species**, with variation in bloom times to support pollinators throughout the spring, summer, and fall.
- **Plants which provide nectar and pollen resources to specialist bees, or serve as host plants for native butterfly and moth caterpillars.**
- **A mix of wildflowers and flowering shrubs.** Native bunch grasses and sedges are also valuable, but should not comprise more than 10% of the seed mix per square foot.

How should a pollinator-friendly solar array site be managed?

- **Insecticides and fungicides should never be used on-site.** Seeds and seedlings coated or pre-treated with insecticides or fungicides must also be avoided.
- **Mowing should be conducted so as to limit effects on native species.** During site establishment (first 3-5 years), mowing will likely be necessary multiple times per year, to reduce weed pressure and prevent panel shading. As native plantings establish, mowing can be limited to once per year or less in the array footprint, perimeter, and trim zone, although spot mowing or weed-whacking of non-native weeds may continue. Mowing should be done at slow speeds, with the mower height set at 7-12" above ground level, in a pattern that allows wildlife to escape the tractor and mower.
- **Herbicides should only be used as a last resort**, for control of large invasive species infestations that threaten conservation goals, in cases where mechanical control will not prove effective.

How else can the site be managed to benefit wildlife?

- **Plant species with pithy stems, leave dead wood on-site, and maintain south-facing areas of bare ground**, to provide cavity and ground nesting habitat for bees.
- **Raise the security fence 6-12" above ground level, to allow wildlife passage through the site.** At existing arrays, holes (e.g. 6" x 18") can be cut at intervals of 100 yds, or at corners of the fence.
- **Mount bird boxes on security fencing poles**, to support kestrels and other uncommon species.
- **In rare species habitat, consider opportunities to provide additional habitat value**, such as creating nesting berms for rare turtles.

What can I do to support pollinator-friendly solar?

- If your state has no pollinator-friendly certification in place, consider starting a process to establish a program.
- Ask your town or city to adopt a by-law or ordinance, requiring pollinator-friendly plantings at new solar PV arrays.
- If you are leasing land to a solar developer, require pollinator-friendly plantings as part of the contract.
- If you are a solar developer, reach out to local conservation organizations for help in designing a pollinator-friendly establishment and management plan for your site.

FOR MORE INFORMATION ABOUT POLLINATOR-FRIENDLY SOLAR PV IN MASSACHUSETTS,

Contact Zara Dowling (zdowling@umass.edu, 413-545-8516), or

Visit the UMass Clean Energy Extension website (<https://ag.umass.edu/clean-energy/services/pollinator-friendly-solar-pv-for-massachusetts>)