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Trends in Restoration: Vegetation Issues at Utility-Scale Solar Facilities

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I. Trends in Vegetation Requirements for Utility-Scale Solar Projects

Another trend in solar project restoration is tied to the vegetation under and surrounding the solar panels, which is typically installed during the construction process and maintained for the life of the project. The baseline requirements for vegetation at solar facilities are driven by compliance with stormwater permitting during construction, typically under a National Pollutant Discharge Elimination System (NPDES) permit. Any construction project with ground disturbance greater than one (1) acre are required to obtain a NPDES permit for construction (40 CFR 123.25(a)(9), 122.26(a), 122.26(b)(14)(x) and 122.26(b)(15)), and one of the critical steps in receiving that permit is preparation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP must include proactive measures to prevent water pollution. See *Developing Your Stormwater Pollution Prevention Plan*, EPA-833-R096-004 (May 2007), available at: https://www3.epa.gov/npdes/pubs/sw_swppp_guide.pdf. On construction sites like utility-scale solar projects, these SWPPP measures typically include temporary vegetation, silt fences, straw, sand bags, and other measures to limit overland flow and sediment loss.

In many states, closing out the NPDES permit after construction requires demonstrating that vegetation has been re-established to at least 70% perennial vegetation. For solar sites that required complete or partial grading across the majority of the project area, meeting the SWPPP requires planting vegetation across the project to reach the 70% perennial vegetation threshold. Further, any solar project that encompasses former row crop agricultural land will need to plant perennial vegetation to avoid pervasive weed growth. As a result, the majority of projects, particularly in the Midwest and Eastern US, have to plant the entire site with some type of perennial vegetation. Certain states have stricter requirements for native species over simply perennial, but enforcement also varies significantly by state.

As the pace of solar development has advanced significantly in the last two years, increasing attention has been directed at the vegetation planned for the array area and surrounding area. This attention has come from a few sources: i) the local farming community which may have an objection to the aesthetics of solar panels and associated loss of agricultural attributes; ii) NIMBY groups which may or may not have a local presence but are looking to challenge solar projects wherever possible; iii) agricultural extension offices, universities, and environmental groups that have identified this opportunity to increase habitat for native plants and pollinators. This has led to a major trend of county ordinances and state-approved pollinator scorecards. Not all of these requirements are mandatory, but they have been leading to increased stakeholder pressure to incorporate certain types of vegetation in the project and landscape screening buffers surrounding the project exterior.

a. Vegetation Planning and Topsoil Management

A fairly common requirement in statewide siting processes is the inclusion of a vegetation plan, without necessarily specifying the type of vegetation. Oregon and Wisconsin are two examples of states that require a plan to manage soil erosion through revegetation following construction. In both states, the plan has to be developed prior to permit approval. Oregon Administrative Rule 345-021-0010(1) (a-dd); Wisconsin PSC Application Filing Requirements Solar Energy Projects; Sec. 5.6. (2021).

Many states and counties also require topsoil management to be addressed specifically in the plan. Illinois, for example, addresses topsoil management through the Renewable Energy Facilities Agricultural Impact Mitigation Act (505 ILCS 147), which requires all utility-scale facilities to have an Agricultural Impact Mitigation Agreement (AIMA). The AIMA defines standards and polices required by the Illinois Department of Agriculture to help maintain the integrity of agricultural lands used for solar energy generation. The AIMA outlines requirements for topsoil removal and replacement, including the following:

i. Any excavation shall be performed in a manner to preserve topsoil. Best efforts shall be made to store the topsoil near the excavation site in such a manner that it will not become intermixed with subsoil materials.
ii. Best efforts shall be made to store all disturbed subsoil material near the excavation site and separate from the topsoil.
iii. When backfilling an excavation site, best efforts shall be used to ensure the stockpiled subsoil material will be placed back into the excavation site before replacing the topsoil.
iv. Best efforts shall be made to place the topsoil in a manner so that after settling occurs, the topsoil's original depth and contour will be restored as close as reasonably practical. The same shall apply where excavations are made for road, stream, drainage ditch, or other crossings.
v. Excess soil material resulting from solar facility excavation shall either be removed or stored on the landowners' property and reseeded per the applicable NPDES permit or SWPPP...."

Developing a site-specific plan for topsoil management is generally considered a best practice; if overlooked, the lack of high quality topsoil under the solar array can lead to inadequate vegetation establishment and costly replanting requirements.

Two other fairly typical requirements are that a project must have a plan for noxious weed control and fire management. These are relatively easy to meet and would align with project best practices regardless of the ordinance requirements. These plans may need to be developed earlier in the project process if they are required for obtaining the permit itself.

b. Pollinator Scorecards and Pollinator-Friendly Vegetation Requirements

Pollinator scorecards define a set of minimum vegetation criteria for solar projects that can be scored to determine whether or not a project qualifies as "pollinator-friendly." The first pollinator scorecard was developed in Minnesota in 2016. According to Fresh Energy as of the date of this writing, sixteen states have a pollinator scorecard by a state agency or leading university. Many other states utilize a pollinator-friendly solar scorecard from a neighboring state or a state-neutral scorecard. An example of a pollinator scorecard is provided in Figure 1. The scored categories typically include such criteria as: percent of the vegetation that includes native species, the number of species planted, the presence of wildflowers with at least three blooming seasons within the array and/or perimeter of the site, whether or not pesticides will be used on site, the inclusion of educational signage about pollinator benefits and habitat, and whether the project has a detailed vegetation plan.

Some states, like Illinois, have passed legislation stating that any project claiming a status of "pollinator-friendly" must meet the minimum score on the Illinois Pollinator Scorecard (525 ILCS 55/15 Pollinator-Friendly Solar Site Act). Other states have tied this requirement to the presence of "prime farmland" in the project area. For example, the PA 116 program is a Michigan Department of

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