

Guidance on Reviewing Solar Panel Projects for Wetland Conservation Act (WCA) Compliance

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This document provides a suggested approach for evaluating projects for WCA compliance when they involve the installation of solar panels on posts/pilings.

Solar Projects vs Other Project Types

In many respects solar projects are evaluated for wetland compliance like other land development projects. Wetlands are identified and delineated, any wetland impacts (fill, drain, excavate) are quantified (square footage or acreage), and wetland replacement is required for any unavoidable impacts that do not qualify for a WCA exemption or no-loss provision. Fill placed in wetlands for access/maintenance roads, structures, etc. is a wetland impact.

Solar projects differ from many other projects in that they typically involve the installation of extensive solar panel arrays on posts/pilings. For linear projects (bridges, elevated walkways, powerline structures) or structures traditionally built on pilings (docks and boathouses), posts and pilings are not considered as wetland fill for WCA. However, posts and pilings are considered as wetland fill if they result in bringing a wetland into a nonaquatic use or they significantly alter the wetland's function and value (e.g. office and industrial developments, parking structures, housing projects, and similar structures). Solar projects constructed in wetlands generally bring the wetland into a commercial power generating use (non-aquatic use). Wetland functions could be significantly altered if solar panels result in shading and subsequent vegetation alteration, plus disturbance of the surrounding buffer/watershed may negatively affect wildlife use, negatively alter surface water sources for wetland hydrology, etc.

Rather than simply treat all solar panel installations on posts/pilings that encroach into wetlands as a wetland impact, the WCA program focus on whether or not the panel arrays result in a significant alteration of a wetland's function and value. This approach recognizes that not all projects negatively impact wetlands. This determination is made by the local WCA Technical Evaluation Panel (TEP) based in part on information supplied by the applicant. The TEP must evaluate the functioning of the wetland prior to the project and anticipated functioning after project completion and under long term operation.

Outline of TEP Evaluation of Potential Impacts of Solar Panels on Posts/Pilings

The following is an outline of a suggested approach that the TEP use to evaluate whether or not a project results in wetland impacts that require replacement under WCA. Additional detail on various aspects of this outline are provided in the next section. TEP findings related to project reviews can be drafted using this structural outline.

1. Evaluate Wetland's condition
 - a. Ecological integrity of plant community
 - b. Presence/absence of disturbance
2. Determine Current Wetland Functioning
 - a. Landscape setting
 - b. Surrounding land use
 - c. Proximity to important resources
3. Evaluate the Effect of the Project on the Condition and Function of the Wetland
 - a. Amount of wetland covered
 - b. Changes in watershed/buffer
 - c. Sensitivity of plant community
 - d. Post-project disturbance factors
 - e. Revegetation and management plan

Evaluating Wetland Condition

The wetland's condition and the relative value of the functions it provides are important considerations when determining if posts/pilings supporting solar panels significantly alter wetland functions. A quick and practical evaluation involves looking at the ecological integrity of the plant community and the presence/absence of disturbance. These two factors go hand and hand in that a wetland that has been highly altered/disturbed (ditched, tiled, plowed, grazed, etc.) will usually have a degraded plant community (invasive/nonnative species, lack of diversity, etc.). The TEP should note and consider present and past disturbances and their probable effect on the condition of the wetland. It is often helpful to compare the wetland to a similar reference wetland in a least or lesser disturbed setting.

Evaluating Wetland Function

A key consideration in evaluating the wetland's current functions is its landscape setting and surrounding land use. Some reasonable assumptions can be made about wetlands in certain landscape settings. For example, a wetland in a floodplain setting will likely have important floodwater attenuation functions. A depressional wetland that outlets to a nearby stream or lake may have important water quality protection functions. It is important to consider the wetland's proximity to and effect on important resources such as streams, lakes, nearby residences, parks, wildlife management areas, etc. Using MnRAM and HGM (available for prairie potholes only) functional assessment methods can be useful. However, conducting a complete MnRAM analysis can be misleading as it is often not sensitive enough to detect meaningful differences among wetlands in a specific geographic area. A review of the explanation and questions related to specific functions can help the TEP identify the type of characteristics that relate to a particular wetland function.

Evaluating Project Effects

After characterizing the existing condition and functions of the wetland, the next step is to evaluate the effect of the solar project on its condition and functioning. The effect will depend in part on the amount of wetland covered by the solar panels (% of total wetland area) with higher coverage increasing the probability of detrimental effects on vegetation. The sensitivity of the plant community to changes in light is important as well. Native species adapted to full sunlight will be more negatively affected than highly adaptive non-native species such as reed canary grass.

Changes in watershed/buffer should be considered when they affect surface water runoff to the wetland and/or habitat continuity and connections for wildlife. A wetland that is contiguous with adjacent habitats may be disrupted by the solar project installation where fences and other barriers impede wildlife use. The hydrology of surface water driven wetlands may be negatively affected by changes in watershed. In some instances, existing disturbance factors (e.g. ditches, tile) may be eliminated as a result of the project, thereby potentially increasing wetland function.

The project re-vegetation and management plan should be considered. Wetlands with a diverse native species assemblage replaced by mowed turf grasses are more likely to have decreased function. In contrast, highly altered wetlands (e.g. tilled, invasive species) that are re-vegetated and managed in accordance with BWSR's Habitat Friendly Solar Program are less likely to be negatively affected.

Decision and Replacement

If the TEP determines that the solar panels will impact the wetland, they must determine if the impacts require replacement at standard wetland replacement ratios or at a reduced ratio similar to partial drainage impacts (i.e. half the ratio otherwise required). BWSR staff has some specific examples of replacement ratio determinations made for solar projects that can be used as a template/source of information.

There is no quantitative method or score that results in a specific decision. There are too many variables and situations that could exist. The TEP is charged with making determinations related to function and value. Following the steps outlined here and documenting them will facilitate the determination of wetland impact from solar panels on posts/pilings. The applicant is expected to provide relevant information regarding the wetland and the project. The default is to consider the post/pilings and associated solar panels as a wetland impact because of the change to a non-aquatic use. The TEP is encouraged to look more closely at effects of the project on the wetland and make an informed decision based on wetland functions and values.