



MAINE CDC DRINKING WATER PROGRAM

Department of Health & Human Services

286 Water Street, Augusta ME 04333
www.medwp.com • (207) 287-2070 • TTY: 711



Guidance for Solar Energy Projects *In or Adjacent-to a Wellhead Protection Area*

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To promote safe drinking water, the Maine CDC Drinking Water Program (DWP) advocates for as little development as possible in a Wellhead Protection Area (WHPA). Generally, a mature forest is the most protective land use for drinking water quality. Due to the recent increase in solar energy project development, the DWP worked with stakeholders to develop the following guidance. The guidance is intended to help public water systems (PWSs) and the public promote drinking water source protection when a solar energy project is located near a public water supply well. The guidance can also be applied to the protection of surface water resources. Contact the DWP Water Resources Team at (207) 287-2070 with any questions or comments.



The PWS should be involved in the planning, design, construction, operations, maintenance, and decommissioning phases of a solar energy project. Considerations for each of these project phases follow below. This guidance is based on current knowledge of frequently used materials and best practices, which may change over time. The guidance does not replace any applicable local or State approvals or permits.

I. Planning and Design

- The PWS should work closely with the solar developer and the town code enforcement officer in the planning phase to help ensure that the project will not have any adverse impact on water quality or the ability to provide safe drinking water. The project should be designed to avoid disturbing water supply infrastructure including test wells and provide adequate working clearance for PWS operations.
- Limit grading and use existing topography of the site as much as possible. Design access roads to limit impervious areas while also providing adequate access for construction and maintenance of the site.
- The DWP recommends an undisturbed buffer of at least 300' around a public water supply well, including back-up, redundant, and emergency wells, and any other type of well that is or may be used to supply drinking water. The DWP also recommends keeping Zone 1 of a WHPA free of all structures and appurtenances that are not essential to public water supply operations.
- If tree clearing occurs within the WHPA, stumps should be ground/chipped, not grubbed/removed. If necessary for stability, and with source protection in mind, exceptions can be made for stump removal and grubbing where

racks and posts will be installed (“inside the fence”). The chips can be used for erosion control as needed and spread over the soil. The area should be stabilized per an Erosion and Sedimentation Control Plan (ESC Plan) consistent with the most recent version of the Maine Department of Environmental Protection (DEP) *Maine Erosion and Sediment Control Practices Field Guide for Contractors* (<https://tinyurl.com/MeDEP-Erosion-Control-Guide>).

- If possible, limit heavy traffic and equipment on roads within Zone 1 of a WHPA during the construction phase of the project.
- A solar array facility is considered non-impervious by DEP, although the solar panels themselves are impervious. Solar projects must not increase stormwater leaving the site when compared to pre-construction conditions. The groundcover under the completed solar array must function as a self-treating meadow buffer, meaning that it provides for adequate treatment and infiltration of storm water. Native, perennial grass seed should be specified.
- Screw pile or driven pile foundations are preferred over ballasted foundations, due to the increased ground disturbance and impervious area created by ballasted foundations.
- Some solar panels may contain per- and polyfluoroalkyl substances (PFAS), a group of chemical contaminants that are regulated in Maine drinking water. Only documented PFAS-free panels should be used within or near a WHPA. Other materials used to create a waterproof surface on the panels should be avoided unless carefully researched and shown to not contaminate groundwater.
- Use high density plastic components for tracker-type racking rather than petroleum-based lubricants.
- Batteries, battery storage housing (trailers, buildings, etc.), or other means of energy storage should be prohibited from WHPAs because they may present a fire hazard.
- Equip transformers with non-toxic vegetable-based oil instead of a petroleum-based mineral oil. As an added precaution, secondary containment may be constructed under the transformer.
- Identify one or more safe refueling areas during the planning phase that are outside the WHPA, and on an impervious surface with secondary containment. Any refueling during the construction, operations, maintenance, and decommissioning phases should be done at the identified refueling location(s).
- The following plans should be developed and implemented with drinking water source protection in mind: a Spill Prevention, Control, and Countermeasure (SPCC) Plan, and an ESC Plan.
- Ensure that the local Fire Department (FD) is aware of the WHPA to inform preplanning, incident action planning and other potential response protocols. Keep in mind that some firefighting foams contain PFAS. PFAS-containing materials that are used outside the WHPA but within the capture zone of the well may also impact the well.
- Request Safety Data Sheets (SDSs) for any fuel, lubricants, cleaning products and other potential contaminants associated with construction and maintenance of the solar array facility. There should be no petroleum-based oil, hazardous materials, cleansers, or other potential contaminants stored in the WHPA.

II. Construction

- Require a pre-construction meeting with all construction personnel and the PWS management team to review protocols for spill response and other potential emergencies. All PWS infrastructure should be clearly marked by a location services company, and equipment operators should use only approved pathways for equipment access.
- A 24/7 emergency contact from the construction team should be available to the PWS management team.
- The construction phase poses elevated risks to a drinking water source due to the potential for accidental spills from contractor vehicles and heavy equipment. Ensure that any vehicle and equipment refueling, maintenance

and cleaning take place in a designated area outside the WHPA. Park heavy equipment overnight outside the WHPA. Have secondary containment for hazardous materials.

- From this phase forward, the PWS should conduct routine inspections of the project within the WHPA. Damage should be reported to DWP, DEP, the FD, and the solar array owner.
- Spill kits and copies of the SPCC and ESC Plans should be onsite. Construction operations should be consistent with these plans and any other applicable regulations and best practices. Copies of emergency response procedures should be kept onsite, and include contact information for PWS personnel, contractors, etc.
- When construction is complete, the site should have an established stable and grassy meadow surface around and under the solar panels. This helps promote groundwater recharge and protects groundwater quality.

III. Operations and Maintenance

- Maintenance of the solar facility should consist primarily of mowing the grassy meadow no more than twice per year. The groundcover at the facility should be inspected for erosion after intense rainfall events, and any needed re-stabilization completed as soon as practicable. All maintenance staff should be trained onsite in protocols unique to drinking water source protection including equipment refueling and spill response. Vegetation management should be limited only to mowing or other mechanical means. This should be specified in the maintenance contract. There should be no use of pesticides/herbicides or fertilizers in the WHPA except that the control of poison ivy should be allowed as needed with review and approval from the DEP and the PWS.
- Refueling of maintenance equipment should be at a designated location outside the WHPA.
- Develop a notification system to ensure that the PWS is aware at least 48 hours in advance of any contractor activity including maintenance, inspections, and grass cutting.
- If there is a fire at the facility, the PWS should notify the DWP to enable a joint assessment of the situation and any necessary response and recovery steps.
- Coordinate with the FD once the project is complete to conduct an onsite review of the emergency response plan and identify important disconnect switch locations.

IV. Decommissioning

- The facility should have a current decommissioning plan that has been reviewed and approved by the PWS, and a form of surety that the plan is updated per DEP Rules. When the useful life of the project is over, it should be decommissioned per any applicable local and DEP decommissioning requirements (<https://tinyurl.com/MeDEP-Solar-Decommissioning>), regulations and best practices.
- Decommissioning operations should be conducted with updated SPCC and ESC Plans that consider drinking water source protection and are consistent with any new applicable regulations and best practices.
- The decommissioning plan should have a goal of returning the site to its natural state, without any permanent impact or alteration to the land from the solar energy facility. The PWS should approve the final condition of the site prior to the site being declared decommissioned.

Note that the land area contributing water to a well can shift over time due to variables including changes in pumping rate and hydrologic conditions. An increased pumping rate or drought may cause the boundary to move farther from the well. Under these conditions, the solar array may be effectively closer to a well than shown on a map overlay with the official wellhead protection area delineation. Other conditions may cause this as well. This should be considered during all phases of the solar energy project.