Feb 12, 2021 Meeting of the Monmouth Planning Board: Answers to questions posed by members of the public

Introduction

At the July, 2020 Town Election, residents of Monmouth passed solar-specific amendments to the Monmouth Comprehensive Development Ordinance (CDO) with overwhelming support. The Select Board's recommendation at that time was "pass". These solar-specific permitting standards address the following:

Safety: The Fire Chief will review the application and recommend approval or denial.

Visual impacts: The Planning Board must find that the Project has minimized visual impacts and adequately screened abutting properties.

Glare: Solar panels must be placed to minimize glare onto nearby properties and roads.

Farmland preservation: The Project cannot be sited on prime agricultural soils to the extent practicable.

Clearing and vegetation maintenance: Natural vegetation must be maintained to the extent possible, vegetation management shall be done by livestock grazing to the extent practicable, native, pollinator-friendly seed mixtures shall be planted, etc.

Decommissioning: The Project must be removed and the site restored within 150 days of the end of the Project's life. The Project must post a bond or other financial guarantee that will cover decommissioning costs.

In addition to these solar-specific standards, the generally applicable standards under the CDO regulate the following potential Project impacts:

Aesthetic, cultural and natural values: The Project must not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, significant wildlife habitat, or rare and irreplaceable natural areas.

Visual Resources: The Project must be planned, sited, and constructed to minimize negative impacts upon scenic views and prominent landmarks identified in the Monmouth Comprehensive Plan.

Screening: All commercial development must be effectively screened, for example by coniferous vegetation, from the view of adjoining residential properties.

Noise: No development shall be permitted to produce noise which, by character of its loudness or frequency, constitutes an irritant to neighboring uses or the general public.

And many more: The CDO also requires compliance with standards governing stormwater, ground water, surface water, wetlands, erosion and sedimentation, technical and financial ability of the applicant, transportation impacts, fencing, lighting, signage, wildlife habitat, archeological and historic features, air quality, public safety, landscape integration, and more.

Accordingly, Monmouth's existing CDO, including the recently enacted solar-specific amendments, contains stringent standards that address every conceivable impact that the Project may have.

In addition, the project must meet an even higher set of standards through a Site Location of Development (SLODA) permit with the Maine DEP. Our SLODA permit application contains 26 chapters and hundreds of pages of analysis of the project's impacts from wetlands to wildlife.

Q: What are panels made of and how will they be disposed of?

A: The panels are made of heat strengthened glass, aluminum, and a very thin semiconductor layer that is thinner than a human hair. This semiconductor layer is made of cadmium telluride (CdTe), a highly stable, non-water-soluble molecule with a melting point of more than 1000 degrees celcius. The CdTe is encapsulated within laminate layers, then sandwiched between two heat-strengthened glass sheets. Should a panel crack, the internal materials are encapsulated within the laminated layers. The fate of CdTe in broken solar module pieces subjected to rainfall was tested by Steinberger*, who found no critical increase in soil cadmium concentrations after 1 year of leaching in an outdoor experiment with actual rainwater. Of course a cracked panel would never remain in the field for nearly that long given Longroad's around the clock monitoring and schedule of regular inspections.

For comparison, cadmium is an element that is found in soils in Maine and is taken up into the crops grown on agricultural lands. The rate of breakage (cracking, not panels breaking apart) at a typical 5 MW site ranges from 0-5 panels per year.

Attached is a 2019 study prepared by The Virginia Center for Coal and Energy Research evaluating the environmental and health risks associated with CdTe solar panels that concludes that panels utilizing this technology pose little to no risk under normal operations conditions and foreseeable accidents such as fire, breakage, and extreme weather events (e.g., hurricanes, tornadoes).

All non-functioning panels will be promptly replaced during the operational period and recycled at a facility that provides a certificate as proof that the entirety of each panel is recycled. All hazardous materials, including CdTe and lead will be reclaimed for re-use.

*Steinberger, Hartmut, "Health, safety and environmental risks from the operation of CdTe and CIS thin-firm modules," *Progress in Photovoltaics: Research and Applications*, vol. 6, no. 2, pp. 99-103, 1998.

Q: What happens at project end of life?

A: Decommissioning will consist of:

- Physical removal of all Project components including panels, associated racking, inverters, tracker foundations, perimeter fencing, Collector, and POI.
- Disposal of solid and hazardous waste in accordance with local, state, and federal waste disposal regulations.
- Stabilization or re-vegetation of the site as necessary to minimize erosion. Native, pollinator-friendly seed mixtures will be used to the maximum extent possible. Areas that were previously used for agricultural activity will be seeded with a cover crop or perennial forage mix.

- As a condition of our permit, Longroad must post a bond in the amount of $900,700 for the life of the project to cover the full cost of decommissioning and returning the site to its original state. Bonding is revisited every five years to account for any changes in cost (e.g. labor, material, and inflation).

Q: Why can't sheep be used?

A: Currently there are constraints set by the Maine DEP related to stormwater runoff and phosphorus export that prevent grazing sheep. Longroad is working to develop guidelines with the DEP that would permit the use of sheep at solar sites in Maine in the future.

In the meantime, Longroad is committed to the following measures to retain agricultural uses.

- Native vegetation and pollinator species will be utilized under and around the solar photovoltaic area. Some of the plantings will be selected to support butterflies and other insects that rely on specific host plants for their survival.
- The long-term vegetation at the Monmouth Solar site will stabilize soil, decrease run-off, reduce the potential for erosion. This will improve overall soil and water health compared to current uses and ensure conditions are suitable for agriculture upon decommissioning of the project.
- The project has been designed to encourage dual use. Outside of the fenced portion of the site, the landowner will continue to farm the land

Q: How does the Operation and Maintenance (O&M) plan address the following:

- Cameras
- Tree maintenance for trees higher than 20 feet
- Herbicide/pesticide use
- Panel damage

A: The O&M plan has been refined to confirm the following details:

- No video cameras will be used
- Vegetation management will ensure trees will not grow higher than 20 feet
- No pesticides or herbicides will be utilized for vegetation abatement
- All panels that are damaged or cease to function during the operational period will be recycled at a facility that provides a certificate as proof that the entirety of each panel is recycled. All hazardous materials, including CdTe and lead will be reclaimed for re-use