



# HEARTWOOD SOLAR II

Alternatives

Fayette Township, Hillsdale County, Michigan

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## Heartwood Solar II Project Alternatives

Ranger Power is a developer of large utility-scale solar farms, with projects typically ranging from 75 MW to 400 MW and seeks solar development opportunities throughout Michigan and the Midwest. The Heartwood Solar II Project was identified through a structured, multi-phase site selection process that Ranger Power uses to evaluate potential project locations. While the specific approach may vary by market, the fundamental elements include assessment of grid access, land suitability, environmental constraints, constructability, infrastructure compatibility, and community receptiveness. Initial screening focused on proximity to robust transmission infrastructure and the availability of large, contiguous tracts of land. Subsequent evaluation included environmental and cultural resource review, land use compatibility, road access, and landowner interest. The selected site, encompassing approximately 1,388 acres near the existing METC-owned Moore-Dowling 138kV transmission line, was determined to best satisfy the Project's core siting principles: sufficient contiguous acreage, immediate proximity to a viable interconnection point, environmental suitability, and willing landowner participation.

The site selection process was conducted in three phases, each designed to progressively refine potential locations based on feasibility, suitability, and development considerations. The phases described below outline how potential areas were screened, evaluated, and ultimately selected for the Project.

### Phase I

The first phase of assessment eliminates areas of poor resources or other siting flaws as described below.

- Transmission and Injection Capacity – Nearby electric transmission infrastructure is necessary to connect a project to the power grid. A project substation and additional transmission lines are often necessary, however the cost required to connect a project to the grid increases with the distance over which project-specific transmission must be built.
- Land availability – Large open areas are necessary for utility-scale solar facilities. Areas of high residential density are eliminated in the first phase of the search for an eventual project site.

### Phase II

The second phase of assessment is a more focused evaluation of areas identified as feasible in Phase I.

- Land use – Large tracts of open land must be available to support the responsible siting of solar panels. Solar Projects are an agrivoltaic use that is naturally compatible with agricultural land and can be returned to agricultural.
- Community – Heartwood Solar II values working with communities that welcome responsible economic development opportunities.
- Potential host landowners – Prospective landowners are visited to gauge interest in hosting project facilities.

- Environmental Assessment – A site suitability tool was run to screen for environmental factors including, but not limited to, wetlands, waterways, trees, critical habitat, endangered species and animals, and hydric soils. The project areas selected show few environmental factors, and those factors identified can be avoided by placement of the solar PV array.
- Cultural and Historic Resources - Archaeological, cultural, and historical resources were considered during the site selection and project design. The areas selected will not impact known archaeological, cultural, or historical resources.
- Constructability – Topography (elevation and slope), as well as soils and subsurface geology are reviewed at a desktop level. Detailed field analyses are performed later in the development process.
- Road infrastructure – Highways and roads within the proposed project area are reviewed for compatibility with large construction vehicles and delivery trucks. Main highways feeding into the area from major ports or rails are also considered for delivery of panels and other components.

The evaluation that led to the final site selection was a mix of both quantitative and qualitative functions described above and did not include a weighting of different factors.

### **Phase III**

The final phase of preliminary site assessment often overlaps with the tasks outlined in Phase II. Leases, Easements, and Purchase Option agreements are signed. Resource assessments, feasibility, suitability and environmental reviews are performed in the field.

Ranger Power identified the Midwestern United States as a promising potential market for solar farms in 2017, due to the low penetration of such facilities. One of the most significant factors enabling solar development in this region has been the dramatic decline in the cost of utility-scale ground-mounted solar systems due to a combination of improving technology, equipment, and installation methods. Economies of scale make Michigan-based projects cost competitive with traditional forms of energy generation.

The Heartwood Solar II Project was identified following a rigorous analysis of three key factors: the existing transmission grid in Michigan, the suitability of available land, and the receptiveness of the community.

With respect to the grid analysis, Ranger Power looks for injection points where the existing electrical infrastructure is robust. This minimizes the interconnection facility costs and network upgrades frequently attributed to new generating facilities. In addition, Ranger Power prioritizes projects where land is available adjacent to the point of interconnection to minimize the length of high voltage transmission generation tie lines and the number of structures that support them. For the Heartwood Solar II Project, the projected network upgrade costs are anticipated to be manageable, and the project substation will be located directly adjacent to the METC-owned Dowling-Moor 138kV transmission line, minimizing the need for additional high voltage infrastructure.

With respect to suitability of available land, solar farms are best sited on tracts that are relatively flat. The use of cleared land minimizes impacts from shading and the need to remove trees. It also significantly reduces the likelihood that sensitive flora or fauna inhabit the area.

With respect to receptiveness of the community, Ranger Power places great importance on community-supported projects. In order to be a good neighbor, it is important that the project start on the right foot by being transparent and being in constant communication with the public. The Ranger Power team engages local landowners, neighboring landowners, municipal leaders, and state legislators early on in its development process.

The area ultimately selected and evaluated for the Heartwood Solar II Project encompassed approximately 1,388 acres within proximity to the proposed point of interconnection to the grid. The Project will include an approximately 355-foot-long gen-tie line from the proposed substation to the proposed switchyard, which is to be permitted and constructed separately from the Project. The total acreage of the facility proposed within this application was evaluated based on topography, environmental concerns, land rights, proximity to the point of interconnection, and willing landowner participation.

Ranger Power, as a private developer, sought and evaluated prospective areas for solar energy development in Michigan and the Midwest. Ranger Power considered brownfield as well as greenfield sites. However, the proposed Project requires approximately 1,400 acres of nearly contiguous developable land in close proximity to existing transmission facilities. There were no brownfield sites identified in Michigan that meet these siting requirements.

Heartwood Solar II reviewed the brownfield site mapper through EGLE, which identified three brownfield sites all located within the City of Hillsdale. Two of the overriding siting principles that limit the practicable locations for utility scale solar developments are 1) having enough contiguous land to support a large-scale project (in the case of the Project, approximately 1,400 acres), and 2) immediate proximity to a viable grid interconnection point for the power. The brownfield sites Heartwood Solar II evaluated all fail to meet these two overriding siting principles.