Appendix B
Prime Farmland Impact Assessment Memo

MEMO

Date:

June 20, 2025

To:

Lemon Hill Solar, LLC

From:

Merjent, Inc.

Subject:

Prime Farmland Impact Assessment
Lemon Hill Solar Project, Olmsted County, MN

1.0 INTRODUCTION

On behalf of and in coordination with Lemon Hill Solar, LLC (Lemon Hill Solar), Merjent, Inc. (Merjent) prepared this memorandum to address siting a utility-scale photovoltaic (PV) solar energy conversion facility in Minnesota on soils designated as prime farmland. The Lemon Hill Solar Project (Project) will generate up to 180 megawatts (MW) of reliable, renewable energy. The proposed Project will be located in Haverhill and Viola townships in Olmsted County, Minnesota. The Site includes approximately 1,945 acres in total. The Preliminary Development Area, which will include the solar panels and associated Project infrastructure, is approximately 966 acres (see Figure 1).

The Project requires a Site Permit from the Minnesota Public Utilities Commission (Commission). Lemon Hill Solar submitted an application to the Commission for a Site Permit in accordance with the Minnesota Power Plant Siting Act (Minnesota Statutes Chapter 216E) and Minnesota Administrative Rules Chapter 7850.

The applicant is Lemon Hill Solar, LLC. Ranger Power, a Delaware limited liability company specializing in the development of utility-scale renewable energy projects in the United States, is developing the Project on behalf of Lemon Hill Solar. Lemon Hill Solar's indirect parent company is DESRI Holdings, L.P. (DESRI). DESRI and its affiliates acquire, own, and manage long-term contracted renewable energy assets in North America.

Similar to other Minnesota solar projects, Lemon Hill Solar evaluated alternative sites within 5 miles of the chosen substation, and more broadly within the county in which the Project will be located and in a neighboring county. Other sites were ultimately ruled out because they were unable to meet the limit set in the Minnesota Rule 7850.4400, subpart 4 (the Rule) that an energy generation facility should not occupy more than 0.5 acre of prime farmland per MW of net generating capacity. The Rule goes on to state that the limit does not apply if no feasible and prudent alternative is available. Lemon Hill Solar determined that other sites within 5 miles of the proposed substation were not feasible or prudent.

This prime farmland impact assessment was completed in accordance with guidance issued by the Minnesota Department of Commerce, Energy Environmental Review and Analysis (EERA) unit in May 2020 (Guidance) as it relates to the Rule. The goal of the Guidance is to outline factors that developers should consider and describe steps that should be taken when developing a solar

site on prime farmland. This assessment supports pertinent sections of the Site Permit Application (Application) being prepared for the Project.

The assessment includes a summary of the Rule, Project description, the need for the Project, and permitting requirements. This is followed by an analysis of siting constraints listed in the Guidance, which addresses factors driving the applicant's choice of region where the Project is located and assessment of a suitable site for compliance with the Rule. The assessment indicates that Lemon Hill Solar was unable to identify a feasible and prudent alternative to the proposed Project location. Therefore, Lemon Hill Solar has complied with the Rule and the Project should be allowed to occupy more than 0.5 acre of prime farmland per MW.

2.0 PRIME FARMLAND EXCLUSION RULE

The Guidance indicates that "expansion of solar development frequently conflicts with the Public Utilities Commission (Commission) Rule to exclude energy generating installations from prime farmland (a federal designation of soil types). Specifically, no such installation may be permitted that includes more than 0.5 acre of prime farmland per MW of net generating capacity," unless the project qualifies for an exemption from the Rule, such as that there is no feasible and prudent alternative to the chosen location.

In its entirety, the Rule, states:

> No large electric power generating plant site may be permitted where the developed portion of the plant site, excluding water storage reservoirs and cooling ponds, includes more than 0.5 acres of prime farmland per megawatt of net generating capacity, or where makeup water storage reservoir or cooling pond facilities include more than 0.5 acres of prime farmland per megawatt of net generating capacity, unless there is no feasible and prudent alternative. Economic considerations alone do not justify the use of more prime farmland. "Prime farmland" means those soils that meet the specifications of Code of Federal Regulations 1980, title 7, section 657.5, paragraph (a). These provisions do not apply to areas located within home rule charter or statutory cities; areas located within two miles of home rule charter or statutory cities of the first, second, and third class; or areas designated for orderly annexation under Minnesota Statutes, section 414.0325.

The following assessment takes into account the above Rule, the Guidance, and the Commission's recent orders considering the Rule for other solar energy projects permitted by the Commission.

3.0 PROJECT DESCRIPTION

The Project is an up-to 180 MW PV solar energy generating facility planned for development in Haverhill and Viola townships in Olmsted County, Minnesota. The Site includes approximately 1,945 acres and the Preliminary Development Area is approximately 966 acres, which will include the Project's solar panels and other associated infrastructure (see Figures 1 and 3). The current site design and proposed equipment are preliminary and subject to change as the Project advances.

Lemon Hill Solar has secured site control for the entire Site via easement agreements or purchase option agreements for the generation interconnect (gen-tie) Project substation, operations and maintenance building, and solar arrays. The use of agricultural land for the Project is temporary and is reversible because the Project land agreements are for a finite term. Lemon Hill Solar has

developed a Decommissioning Plan to describe the process of solar facility removal and site restoration, with provisions for financial security to ensure the decommissioning work can be performed, at the end of the Project's useful life. The term of the solar easements for Project operation is up to 40 years. At the end of the Project's operation, the land will be restored to its original condition and will likely return to agricultural use, or any other use chosen by the applicable landowners. A Vegetation Management Plan (VMP) and an Agricultural Impact Mitigation Plan (AIMP) will be implemented during construction and operation of the Project.

The 966-acre Preliminary Development Area is shown on Figures 1 and 3. The excess acreage allows for planned buffers and flexibility in overall Project design. Lemon Hill Solar does not anticipate using more than the Preliminary Development Area to host 180 MW of solar generating facilities; however, because the Site includes the entirety of lands leased by Lemon Hill Solar, this assessment analyzed the 1,945 acres that make up the Site. The final footprint will be dependent on the permitting process, final pre-construction field surveys, engineering and geotechnical studies, and equipment selection. Lemon Hill Solar will optimize the Project to the highest degree practicable to minimize the overall impact of the Project. Certain portions of the Site that are not used for the Project and are located outside of the fenced infrastructure may be used by the landowner to continue farming operations or will be vegetated/revegetated in accordance with the VMP and landowner preference. The electrical collector lines between the solar arrays/inverters and Project Substation will be 34.5 kilovolt (kV) feeders that will be installed underground. Directional boring may be used to install collectors in some portions of the Project.

The proposed 161 kV gen-tie line will be less than 1,500 feet in length and will connect the new Project substation to Dairyland's substation (see Figure 3). A pad-mounted step-up transformer within the Project substation will increase the voltage to match the 161 kV of the Dairyland substation which will be developed, owned and operated by Dairyland Power Cooperative.

4.0 PROJECT NEED, PERMITTING, AND SCHEDULE

The Project will generate up to 180 MW annually of reliable, renewable energy. The Project is being sited and permitted to meet or exceed applicable local and state requirements, including the prime farmland exclusion rule to the extent practicable.

The Project will support the state's carbon-free standards (CFS), renewable energy standards (RES), and solar energy standards (SES) in Minn. Stat. § 216B.1691, which requires Minnesota utilities to provide 100 percent (%) of their retail energy sales from carbon-free energy sources by 2040, as well as setting other interim renewable energy and solar energy targets. As such, the Project will support the state's growing demand for renewable energy and for utilities, independent power purchasers, and corporations seeking to use renewable energy for business growth. In addition, the Project will diversify electricity sources, address environmental concerns, meet anticipated growth in electrification (e.g., vehicles, heating), and address CFS, RES, SES, and policy goals, as described above. The Project will also benefit the local community through investment in construction spending, operation of the Project, property and business taxes, and landowner lease payments.

Lemon Hill Solar is working to secure a Power Purchase Agreement or other enforceable mechanism to sell the electricity generated by the Project. The power generated by the Project will be offered for sale to wholesale customers, including Minnesota utilities and others who have identified a need for additional renewable energy and capacity.

Lemon Hill Solar filed a queue position with the Midcontinent Independent System Operator (MISO) in the MISO Definitive Planning Phase (DPP) 2021 West study cycle as J2219. It is anticipated that Lemon Hill Solar will execute a Generator Interconnection Agreement (GIA) with MISO for 180 MW; Lemon Hill Solar will notify the Commission when the GIA has been executed. This interconnection will provide sufficient outlet to accommodate all of the solar energy generation from the Project.

The anticipated Project construction schedule facilitates an in-service date by the end of the second quarter of 2028.

5.0 SITING CONSTRAINTS ANALYSIS – FACTORS DRIVING CHOICE OF REGION

Lemon Hill Solar will demonstrate that the Project has considered the factors in the Rule, minimized impacts to prime farmland to the extent possible, and that there are no feasible or prudent alternatives to the proposed Project. In addition, Lemon Hill Solar will describe how the proposed Project meets the requirements for siting and how other areas, evaluated near the current, proposed substation, are not compliant with the Rule.

Lemon Hill Solar specifically proposed building the Project in southeast Minnesota because of the high-quality solar resource, willing landowners, and a point of interconnection (POI). This area of southeast Minnesota contains both a high-quality solar resource and access to transmission infrastructure to deliver electricity to the grid (see Figures 7 through 9). The area is comprised mostly of prime farmland, with the exception of riparian areas, which leads to challenges in the identification of areas of sufficient size to support utility-scale solar facilities that would impact less and 0.5 acre of prime farmland per MW.

Minnesota contains approximately 25.5 million acres of farmland, including 17.3 million acres of prime farmland. As of September 2023, there were about 5,800 MW of planned solar in the MISO queue, which would require approximately 50,000 acres of land. If all 50,000 acres were on prime farmland, that would account for 0.3% of Minnesota's prime farmland (Clean Grid Alliance, 2023).

Lemon Hill Solar chose to develop the Project in Minnesota because Minnesota is a state that has renewable energy goals, is generally supportive of solar development, and has landowners who are willing to lease land for solar projects. Lemon Hill Solar considered several factors and land use characteristics to further identify economically and environmentally viable sites within Minnesota (see Sections 5.1 through 5.3). Large portions of the state are heavily wooded and were therefore determined unsuitable for solar development. Specifically, the northeastern and eastern-most portions of the State are more densely forested than the northwestern and southeastern parts of the state and provide habitat for state and federally listed wildlife and plants. These areas of the state were removed from further consideration.

The southeastern-most portion of Minnesota has a strong solar resource, a significant amount of transmission line infrastructure that allows access to the grid, and land that is typically flat, non-forested, agricultural land, with little to no habitat for state and federally protected species. The northwestern part of Minnesota also provides opportunities for solar development due to open land, larger tracts of land, somewhat less prime farmland than the southeast portion of the state and potential access to the grid. Based on this, Lemon Hill Solar continued to evaluate the southeastern region for the Project.

Similar to other Minesota proposed solar facilities, Lemon Hill Solar evaluated alternative sites within 5 miles of the chosen substation, and more broadly within the county in which the project

would be located and a neighboring county. The constrained electrical grid and availability of willing landowners played a significant role in determining potential Project locations and, ultimately, the final site for the Project. A multi-faceted approach factoring in numerous state, regional, and local characteristics was implemented to identify the Project site. The Project site in Olmsted County met all the site selection criteria necessary to advance development of the Project.

5.1 CHOOSING A REGION & DESCRIPTION OF SOLAR RESOURCES IN THE PROPOSED REGION V. OTHERWISE COMPLIANT AREAS

General Identification of Good Solar Resource Sites in Minnesota

Lemon Hill Solar's primary goal for siting the proposed Project was to identify an area with highly productive solar resources in Minnesota that would allow for economical operation of a high net-capacity-factor solar energy generation facility, optimize solar resources, allow for efficient and effective use of installed facilities, and minimize impacts to human settlement and natural resources.

Lemon Hill Solar used publicly available solar generation data in Minnesota to determine solar potential in southern Minnesota. According to data compiled by the Minnesota Solar Suitability Analysis (MSSA) program, southern Minnesota has some of the best locations in the state for exposure to the sun's incoming solar radiation (insolation), and thus, the highest net capacity factors (see Figure 7)[1]. Small areas of relatively high net capacity factors, but lower than southern Minnesota, exist in western Minnesota (see Figure 7).

With this data, Lemon Hill Solar focused on identifying a suitable Project site near an existing transmission line with available capacity to maximize solar generation in an area where it can be economically delivered to the electrical grid.

5.2 IDENTIFICATION OF SUBSTATIONS AND DETERMINATION OF AVAILABLE INTERCONNECTION POINTS

Available Interconnection Capacity and Likely Low Interconnection Costs

Identifying existing electrical infrastructure with available capacity was the largest driving factor in selecting a suitable Project location. Lemon Hill Solar conducted a search within southern Minnesota and looked for existing substations and transmission lines that had available capacity to support the proposed 180 MW interconnection capacity of the Project. Lemon Hill Solar identified Dairyland's 161kV line with capacity for this project to interconnect via a gen-tie line (see Figures 2 and 3).

Similar to other proposed Minnesota solar projects, Lemon Hill Solar evaluated alternative sites within 5 miles of the proposed site. Those alternative sites were ultimately ruled out because they were unable to meet the limit set in the Rule that an energy generation facility should not occupy more than 0.5 acre of prime farmland per MW of net generating capacity.

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[1] The MSSA is an ongoing project led by graduate students in the Masters of Geographic Information Science program at the University of Minnesota. The project aims to map solar potential on a large scale across Minnesota using Light Detecting And Ranging data and Geographic Information System (GIS) technology with the goal of providing free and open-source tools and data to the GIS community. See https://solar.maps.umn.edu/app/.

Lemon Hill Solar proposes to interconnect the Project, via a gen-tie line to Dairyland's 161kV Rochester to Wabaco line in Olmsted County, Minnesota (see Figure 2). Lemon Hill Solar filed a queue position with the MISO in the MISO DPP 2021 West study cycle as J2219. It is anticipated that Lemon Hill Solar will execute a GIA with MISO for 180 MW; Lemon Hill Solar will notify the Commission when the GIA has been executed. This interconnection will provide sufficient outlet to accommodate all of the solar energy generation from the Project.

5.2.1 Identification of Suitable Developable Sites Near Substations; Site Selection & Avoidance of Other Prohibited Areas; Good Faith Consideration of Alternative Site Configurations or Technologies

Lemon Hill Solar evaluated the area within 5 miles of the proposed POI to determine if land was available and suitable for construction of the Project. The 5-mile search radius was largely driven by the economics of solar construction. A solar project of this size, if it required more than 5 miles of new electrical transmission infrastructure to connect to existing grid infrastructure, is generally uneconomical due to the costs of the new transmission infrastructure and the line losses that would be realized over distances greater than 5 miles. Optional sites that would require longer transmission facilities to connect a project to the grid would result in higher costs for tasks such as design, permitting, and construction. These sites would also necessitate completing a routing study, identifying possible suitable land and willing landowners, potentially impacting significantly more natural and cultural resources, creating additional visual impacts, and requiring additional operation and maintenance needs.

In addition, the State of Minnesota requires the siting of transmission lines in a manner that "minimize[s] adverse human and environmental impact while ensuring continuing electric power system reliability and integrity and ensuring that electric energy needs are met and fulfilled in an orderly and timely fashion" (Minnesota Statutes Section 216E.02, Subd. 1 (2023)), and requires the efficient use of resources, especially if a viable, feasible and prudent alternative exists.

Within 5 miles of the proposed POI, Lemon Hill Solar evaluated Sites using the following characteristics:

- significant tracts of cleared land;
- overall distance to the potential POI and the cost of transmission to reach the POI;
- specific areas of the region that were determined suitably flat to allow for economical construction of solar energy generation equipment;
- community and landowner outreach indicated community support and acceptance of the Project in the proposed area;
- local landowners willing to enter into voluntary leases or easements; and
- avoidance of sensitive environmental resources and an attempt to minimize potential adverse environmental impacts.

Based on these analyses, the proposed Site was further evaluated. The analysis and results of the area within a 5-mile radius of the proposed POI is presented below. All factors were used in the evaluation and selection of the proposed Site.

The proposed Site is comprised of open land primarily used for row crop agriculture. The Site is located within the Rochester/Paleozoic Plateau Upland region of the Driftless Area Ecoregion (U.S. Environmental Protection Agency, 2023). Topography within the Site is relatively flat with elevations ranging from 1,160 to 1,300 feet above sea level. Two prominent unnamed waterbodies are located in the northeast portion of the Project boundary. The area is mostly devoid of permanent landcover and environmental constraints due to over a century of row crop agriculture. Lemon Hill Solar was able to secure sufficient easement agreements to allow it to design the Project around environmental features. In addition, Lemon Hill Solar will site solar infrastructure outside of delineated streams, including Public Waters and Ditches; however, collector lines will be bored beneath delineated waterbodies. No other significant environmental constraints were identified in or near the Site (see Figures 3, 4, 4a, and 9).

The area within 5 miles of the proposed POI was also evaluated. The Guidance indicates that "otherwise compliant areas" refers to areas not specifically prohibited (subpart 1) or generally excluded (subpart 3) for energy development as enumerated in the Rule, including subpart 1. Lemon Hill Solar began its search for sites by evaluating otherwise compliant areas near available transmission capacity that would require less than 0.5 acre per MW of prime farmland due to the general scarcity of prime farmland in this part of the State. Lemon Hill Solar was ultimately unable to find such a site within 5 miles of the proposed POI that met the Rule.

6.0 ASSESSMENT OF SUITABLE SITES FOR COMPLIANCE WITH PRIME FARMLAND EXCLUSION RULE

Nearly all land in Minnesota considered highly suitable for solar energy development is also classified as prime farmland. Willing landowner participation and transmission interconnection opportunities were more significant factors in Project siting than the use of prime versus non-prime farmland. Lemon Hill Solar relies on voluntary easements with landowners and these participants voluntarily decided that participation in the Project was a better and more economical use of their land than traditional agricultural uses.

Lemon Hill Solar followed the Guidance to demonstrate compliance with the Rule requirement that there is no "feasible and prudent" alternative site. Lemon Hill Solar considered each of the Guidance factors and determined that the proposed Site is the most feasible and prudent alternative site identified for the Project. Below, Lemon Hill Solar describes how they determined the proposed Site meets the Guidance requirements and how it was unable to find a reasonable and prudent alternative to the Lemon Hill Solar Site.

6.1 GOOD FAITH CONSIDERATION OF NON-PRIME FARMLAND SITES NEAR INTERCONNECTION SITES

The 1,945-acre Site contains approximately 1,179 acres of prime farmland (61%), 148 acres of prime farmland if drained (8%), and 365 acres of farmland of statewide importance (19%) (see Figure 4). Under the Rule (as applied to this proposed 180 MW Project), no more than 90 acres of prime farmland can be used without seeking an exemption or otherwise demonstrating an inability to find a feasible or prudent alternative (0.5 acre of prime farmland per MW of net generating capacity). Approximately 966 acres of the Site would be used for Project infrastructure as shown on the Preliminary Development Area map (see Figure 3). None of the Site is exempt

from the prime farmland exclusion rule due to proximity to applicable city designations. Therefore, Lemon Hill Solar has demonstrated an inability to find a feasible or prudent alternative.

The Preliminary Development Area contains 681 acres of prime farmland (75%), 54 acres of prime farmland if drained (6%), and 185 acres of other important farmlands (20%) for a total of 920 acres, which is 95% of the Preliminary Development Area. (see Figure 4a).[2]

Since the Project is planned to be up to 180 MW and the area required for Project development includes approximately 966 acres of prime farmland (amounting to 82% of the Site), it does not meet the 0.5 acre per MW limit in the Rule. The proposed Site does not contain acreage within the exempt home rule charter/statutory city areas. Lemon Hill Solar attempted to increase use of non-prime farmland to the maximum extent practicable at the Site; however, the only areas of non-prime farmland within Olmsted County are associated with riparian areas (see Figure 6). Lemon Hill Solar was unable to locate any otherwise suitable sites within 5 miles of the POI, or within Olmsted County generally, that would be compliant with the Rule. There are no large tracts of non-prime farmland in Olmsted County.

After applying the Guidance, Lemon Hill Solar determined that the proposed Site is justifiably located within southeastern Minnesota where a conflict may be present with the Rule. As noted herein, the best solar resource areas generally overlap with areas dominated by prime farmland and agricultural use in southern Minnesota. Similar to other Minnesota solar projects, Lemon Hill Solar evaluated alternative sites within 5 miles of the proposed POI; however, they were ultimately ruled out because they were unable to meet the limit set in the Rule that an energy generation facility should not occupy more than 0.5 acre of prime farmland per MW of net generating capacity.

7.0 AVOIDANCE AND MINIMIZATION CONSIDERATIONS

As discussed above, the Site is an optimal site for development of the proposed 180 MW solar generating facility for all primary development factors and is superior to the other evaluated sites considered for various reasons. Lemon Hill Solar has avoided and minimized impacts to prime farmland to the extent practicable given the amount of non-prime farmland in the developable Site at the site in comparison to the surrounding area. Lemon Hill Solar further minimized impacts to prime farmland and overall agricultural impacts within the Site by siting and designing Project facilities in non-prime farmland areas to the greatest extent possible, designing the Project around agricultural infrastructure (e.g., county drain tile and jurisdictional ditches), and allowing landowners to continue to farm buffer areas and other areas not used by the Project.

8.0 IMPACTS, MITIGATIVE MEASURES AND BENEFITS

In addition to this assessment, the Application provides a description of prime farmland at the Site and surrounding area and potential impacts to prime farmland from the Project. The Application, as well as an AIMP and a VMP prepared for the Project and attached to the Application as Appendices D and E (incorporated herein by reference), also discuss a number of mitigative actions and the numerous benefits the Project will provide to site soil and affected prime farmland area within the Site.

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[2] Note that the *prime farmland if drained* and *prime farmland if protected from flooding or not frequently flooded during the growing season* designations acreages are considered prime farmland and to be included in prime farmland acreage; farmland of statewide importance is not considered prime farmland and not included.

9.0 PROJECT BENEFITS

Lemon Hill Solar is committed to being a good neighbor to landowners and the broader community and a good steward to the environment during the development and operation of the Project. In addition to mitigative measures discussed above and in the Application, other Project benefits that would serve to offset the impacts to prime farmland are described in this section.

As introduced above, upon construction of the Project and implementation of the mitigative measures described in the Site Permit Application, AIMP, and VMP, the Project will directly and indirectly provide benefits within the Site. Those benefits include:

- decreasing the amount of nutrients (including phosphorous and nitrogen) applied to the Preliminary Development Area during the anticipated 40-year life of the Project (i.e., row crop agricultural operations would temporarily cease during Project construction and operation);

- managing nutrients at the Project site through incorporation, installation, establishment and maintenance of native plant species, as detailed in the VMP and AIMP that will be implemented for the life of the Project;

- designing, engineering, permitting, constructing, operating and maintaining a stormwater management system (i.e., stormwater ponds) in accordance with applicable Minnesota Pollution Control Agency (MPCA) rules and regulations to effectively address stormwater runoff from the Project site;

- obtaining and implementing a National Pollutant Discharge Elimination System construction stormwater runoff permit and Stormwater Pollution Prevention Plan from the MPCA during construction to address, manage and control erosion, stormwater runoff from construction activities, and re-establishment of vegetative cover post-construction; and

- maintaining county drain tile and jurisdictional drainage ditches across the Project site to ensure no impact to neighboring agricultural land uses and field drainage.

As the permitting process advances and the Project becomes more developed, additional offsetting benefits may be identified. Lemon Hill Solar is committed to identifying additional benefits and incorporating such benefits into Project plans as it deems practicable.

10.0 CONCLUSIONS AND RECOMMENDATIONS

For all of these reasons and as shown in the above analysis, Lemon Hill Solar believes it has met prime farmland Guidance and requirements of the Rule to determine that the Project qualifies for an exemption from the Rule, in that there is no feasible or prudent alternative site for the Project.

11.0 REFERENCES

Clean Grid Alliance. 2023. Minnesota Solar and Agriculture. Available online at: https://cleangridalliance.org/_uploads/_media_uploads/_source/MN_Solar_and_Ag_Rev_9.23.pdf#:~:text=Minnesota%20is%20home%20to%20about,stewards%20of%20their%20own%20land. Accessed November 2024.

Minnesota Department of Commerce Energy Environmental Review Analysis (EERA). 2020. *Solar Energy Production and Prime Farmland – Guidance for Evaluating Prudent and Feasible Alternatives*. Available online at https://mn.gov/eera/web/doc/13929/. Accessed November 2024.

U. S. Environmental Protection Agency. 2023. Ecoregions. Available online at: https://www.epa.gov/eco-research/ecoregions#:~:text=Ecoregions%20are%20areas%20where%20ecosystems,environmental%20resources)%20are%20generally%20similar. Accessed January 2025.

Attachments

Attachment A MSSA Report - Site (Olmsted County)

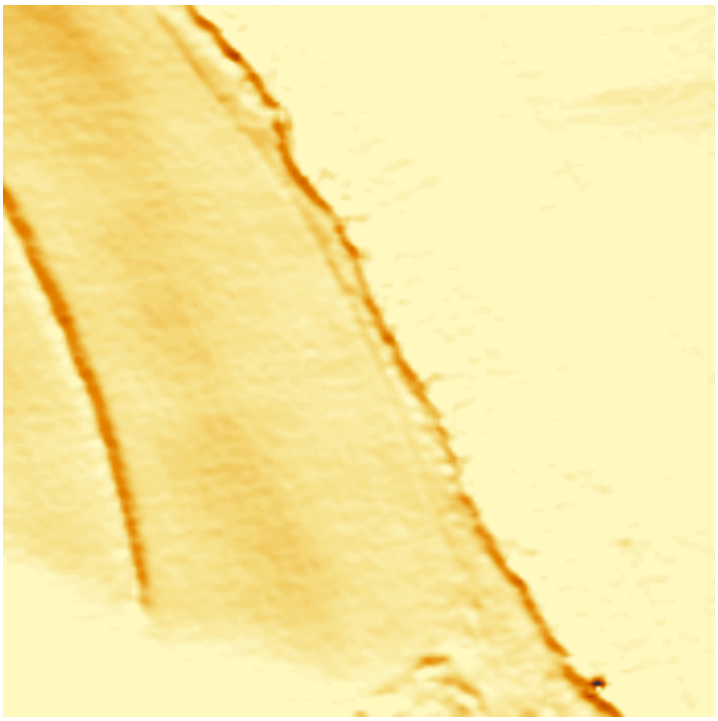
Figures

Figure 1 Site & USGS Topography
Figure 2 Preliminary Identification of Potential Project Sites
Figure 3 Site Control and Preliminary Development Area
Figure 4 Site Prime Farmland
Figure 4a Prime Farmland within the Preliminary Development Area
Figure 5 Prime Farmland within Five Miles of Site
Figure 6 Prime Farmland within Olmsted County
Figure 7 Solar Resources in Minnesota
Figure 8 MSSA Insolation at Site
Figure 9 Lemon Hill Solar Site and POI Constraints

Attachment A

MSSA Report - Site (Olmsted County)

T107N R12W S7
Site Address
Site Notes

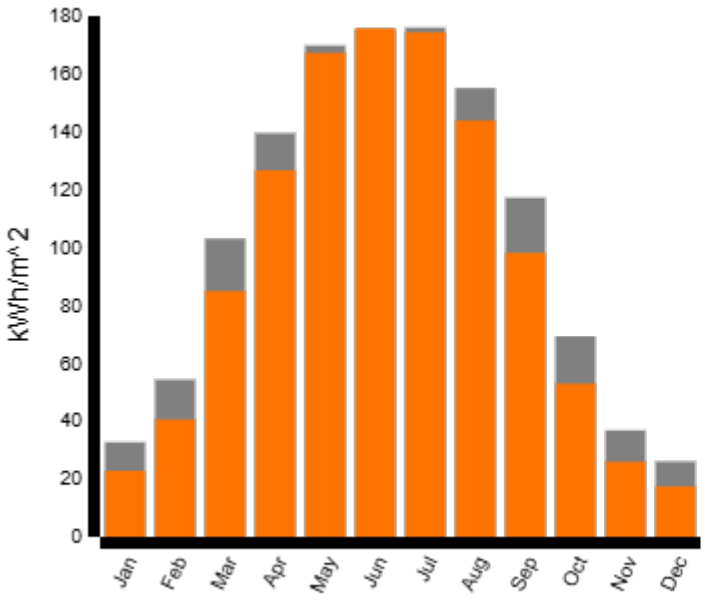


This site is **Good**. It would need a **4.94 kW** system to generate **50%** of average household use. This system would cost approximately **$18,539**. System payback is **13.5 years** after tax credit.

Utility Service Provider:
Peoples Cooperative Power Association
1775 Lake Shady Ave. S.
Oronoco, MN 55960
(507) 367-7000
www.peoplesrec.com

Site Details:
Total Annual Insolation: 1131.53 kWh/m^2
Avg Insolation per Day: 3.10 kWh/m^2
Source Data: Fall 2008

Amount Actual Sun



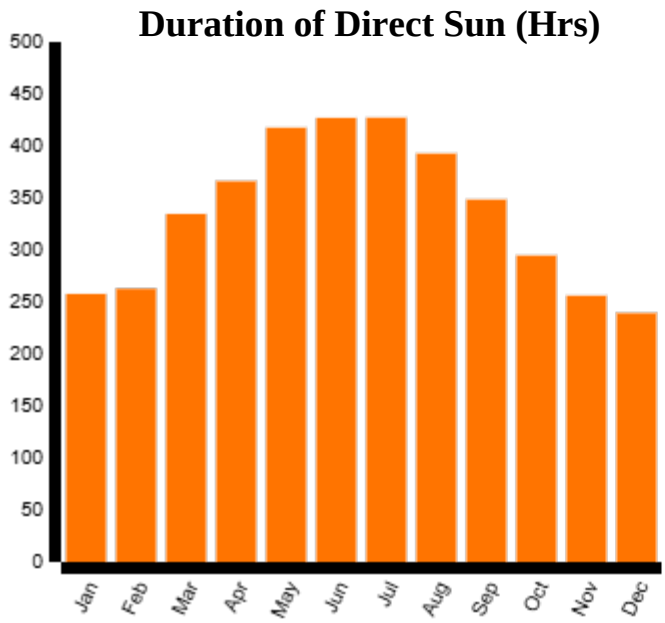
Solar Calculator

User Input	Value	Tips and Notes
Average utility use (per month)	800 kWh	The average residential household uses 800 kWh/month. If you know your monthly usage, fill it in here.
Cost / kWh	$0.12/kWh	Minnesota's average residential cost of electricity is $0.12/kWh. If you know your cost of electricity enter it here.
Percent of electricity provided by solar	50%	Experiment with different percentages here to see how system cost varies. Think about how energy efficiency improvements bring down the cost of your solar system.

Outputs	Value	Tips and Notes
Size of system needed	4.94 kW	Result is based on values provided for monthly electricity use and desired percentage covered by solar. It also includes a derate of 0.87. A factor accounting for conversion of the array's DC nameplate capacity to the system's AC power rating at Standard Test Condition.
System cost estimate	$18,539	Result is based on an average 2020 Minnesota residential system cost of $3,750 per kW. Costs will vary depending on the specifics of your system.
Payback without incentives	18.22 years	Result assumes that electricity costs will rise 3.5% each year over 25 years.
Payback with Tax Credit	13.48 years	Your system may be eligible for a federal tax credit. This result shows the payback of your system with the 26% tax credit applied.

Month	Actual % Sun**	Total kWh/m2	Duration (Hrs)
January	70%	22.81	257.8
February	75%	40.51	262.9
March	82%	84.93	334.7
April	91%	126.65	366.2
May	98%	167.23	417.6
June	100%	175.80	427.0
July	99%	174.36	427.2
August	93%	143.85	392.8
September	84%	98.13	348.5
October	76%	52.93	294.7
November	70%	25.93	256.1
December	67%	17.40	239.4

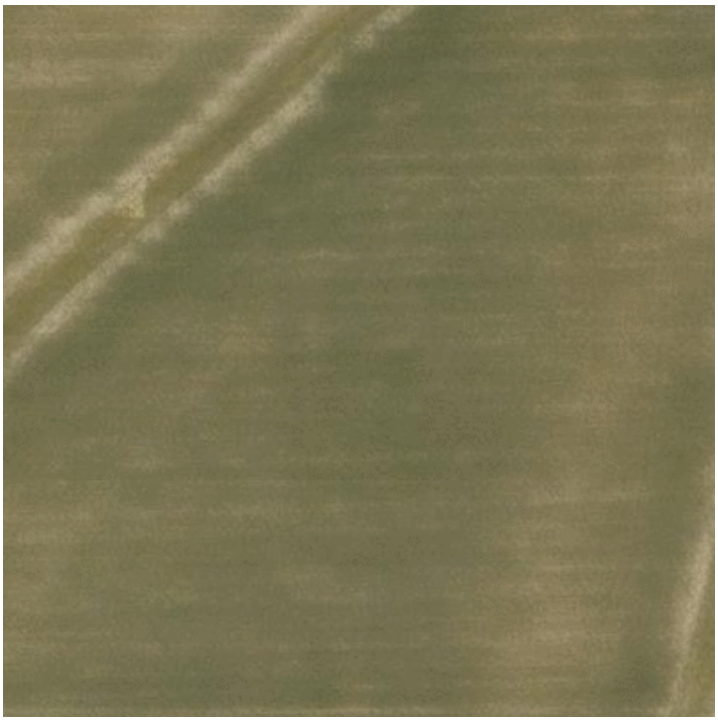
**These percentages should be used as the monthly shading derate factors % on the Xcel Solar Rewards application



This service made possible by:

COMMERCE DEPARTMENT
ENERGY RESOURCES

T107N R12W S19
Site Address
Site Notes

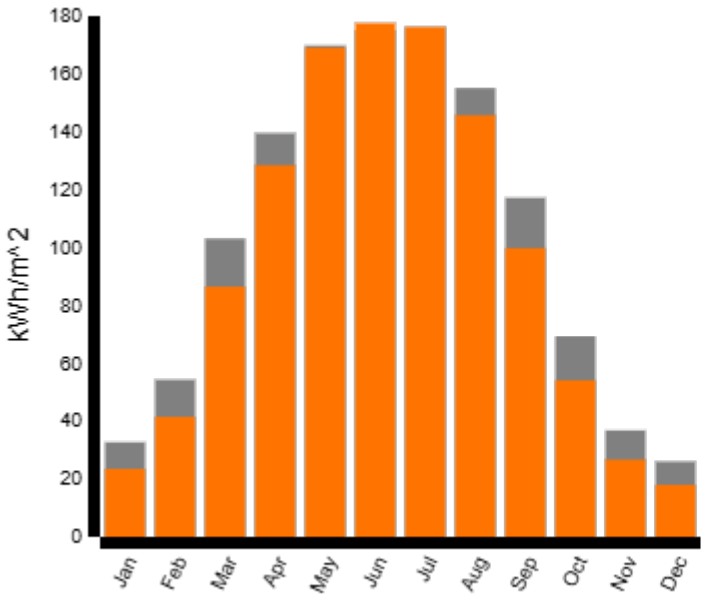


This site is **Good**. It would need a **4.87 kW** system to generate **50%** of average household use. This system would cost approximately **$18,244**. System payback is **13.3 years** after tax credit.

Utility Service Provider:
Peoples Cooperative Power Association
1775 Lake Shady Ave. S.
Oronoco, MN 55960
(507) 367-7000
www.peoplesrec.com

Site Details:
Total Annual Insolation: 1148.77 kWh/m^2
Avg Insolation per Day: 3.15 kWh/m^2
Source Data: Fall 2008

Amount Actual Sun



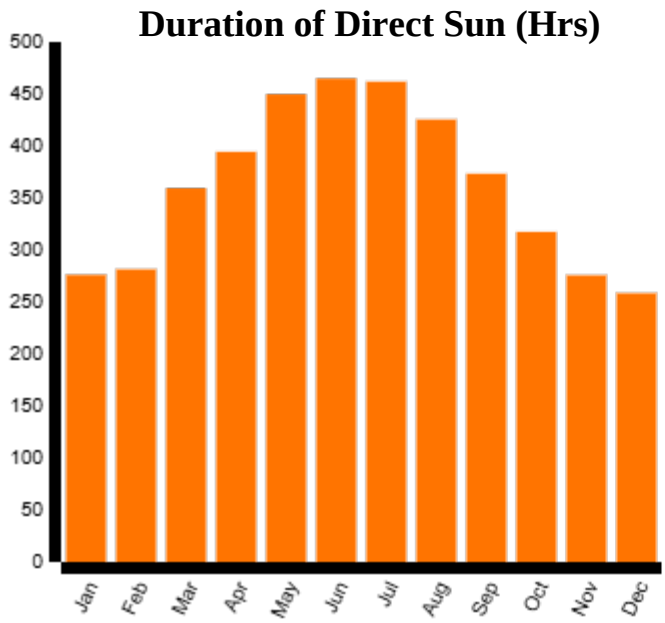
Solar Calculator

User Input	Value	Tips and Notes
Average utility use (per month)	800 kWh	The average residential household uses 800 kWh/month. If you know your monthly usage, fill it in here.
Cost / kWh	$0.12/kWh	Minnesota's average residential cost of electricity is $0.12/kWh. If you know your cost of electricity enter it here.
Percent of electricity provided by solar	50%	Experiment with different percentages here to see how system cost varies. Think about how energy efficiency improvements bring down the cost of your solar system.

Outputs	Value	Tips and Notes
Size of system needed	4.87 kW	Result is based on values provided for monthly electricity use and desired percentage covered by solar. It also includes a derate of 0.87. A factor accounting for conversion of the array's DC nameplate capacity to the system's AC power rating at Standard Test Condition.
System cost estimate	$18,244	Result is based on an average 2020 Minnesota residential system cost of $3,750 per kW. Costs will vary depending on the specifics of your system.
Payback without incentives	17.93 years	Result assumes that electricity costs will rise 3.5% each year over 25 years.
Payback with Tax Credit	13.27 years	Your system may be eligible for a federal tax credit. This result shows the payback of your system with the 26% tax credit applied.

Month	Actual % Sun**	Total kWh/m2	Duration (Hrs)
January	72%	23.48	276.2
February	76%	41.47	281.5
March	84%	86.46	359.6
April	92%	128.40	394.4
May	100%	169.09	449.9
June	100%	177.59	465.0
July	100%	176.22	461.9
August	94%	145.69	425.5
September	85%	99.76	373.3
October	78%	54.09	317.4
November	72%	26.66	275.8
December	69%	17.95	258.5

**These percentages should be used as the monthly shading derate factors % on the Xcel Solar Rewards application



This service made possible by:

COMMERCE DEPARTMENT
ENERGY RESOURCES

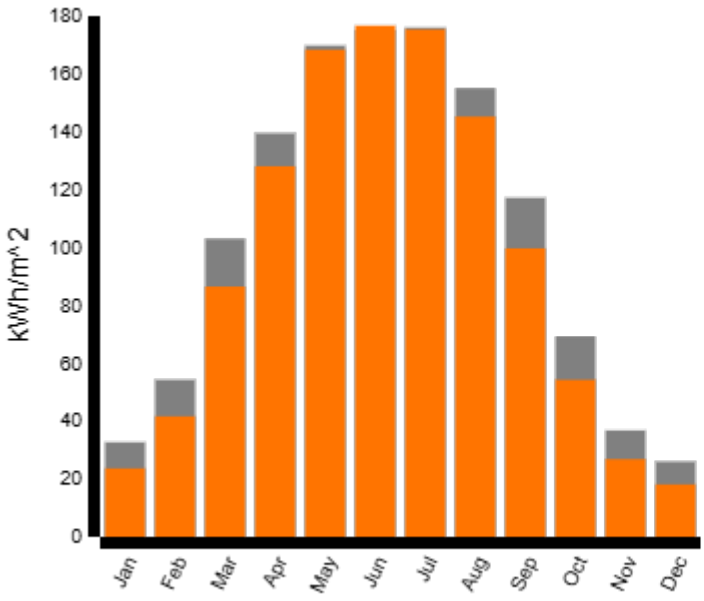
T107N R12W S20
Site Address
Site Notes

This site is **Good**. It would need a **4.87 kW** system to generate **50%** of average household use. This system would cost approximately **$18,244**. System payback is **13.3 years** after tax credit.

Utility Service Provider:
Peoples Cooperative Power Association
1775 Lake Shady Ave. S.
Oronoco, MN 55960
(507) 367-7000
www.peoplesrec.com

Site Details:
Total Annual Insolation: 1148.12 kWh/m^2
Avg Insolation per Day: 3.15 kWh/m^2
Source Data: Fall 2008

Amount Actual Sun



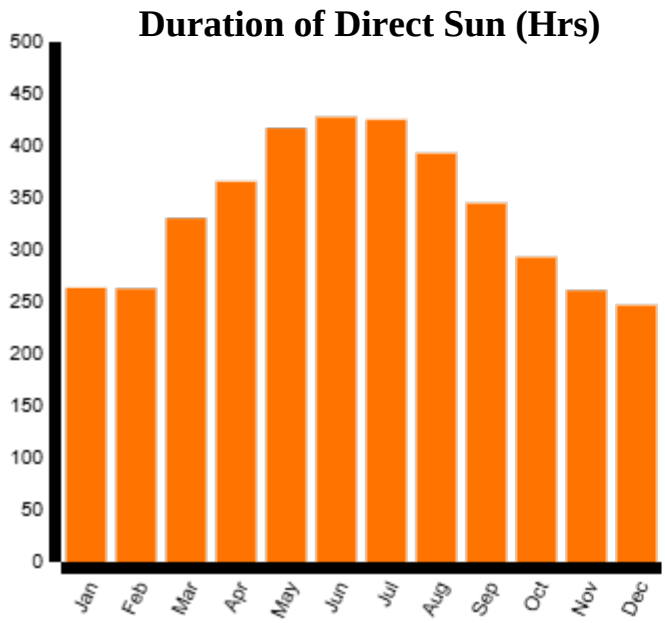
Solar Calculator

User Input	Value	Tips and Notes
Average utility use (per month)	800 kWh	The average residential household uses 800 kWh/month. If you know your monthly usage, fill it in here.
Cost / kWh	$0.12/kWh	Minnesota's average residential cost of electricity is $0.12/kWh. If you know your cost of electricity enter it here.
Percent of electricity provided by solar	50%	Experiment with different percentages here to see how system cost varies. Think about how energy efficiency improvements bring down the cost of your solar system.

Outputs	Value	Tips and Notes
Size of system needed	4.87 kW	Result is based on values provided for monthly electricity use and desired percentage covered by solar. It also includes a derate of 0.87. A factor accounting for conversion of the array's DC nameplate capacity to the system's AC power rating at Standard Test Condition.
System cost estimate	$18,244	Result is based on an average 2020 Minnesota residential system cost of $3,750 per kW. Costs will vary depending on the specifics of your system.
Payback without incentives	17.93 years	Result assumes that electricity costs will rise 3.5% each year over 25 years.
Payback with Tax Credit	13.27 years	Your system may be eligible for a federal tax credit. This result shows the payback of your system with the 26% tax credit applied.

Month	Actual % Sun**	Total kWh/m2	Duration (Hrs)
January	72%	23.65	263.6
February	77%	41.65	262.8
March	84%	86.50	330.5
April	92%	128.09	365.8
May	99%	168.35	417.2
June	100%	176.68	427.8
July	100%	175.39	425.3
August	94%	145.23	393.0
September	85%	99.72	345.0
October	78%	54.26	293.0
November	73%	26.85	261.1
December	70%	18.11	246.9

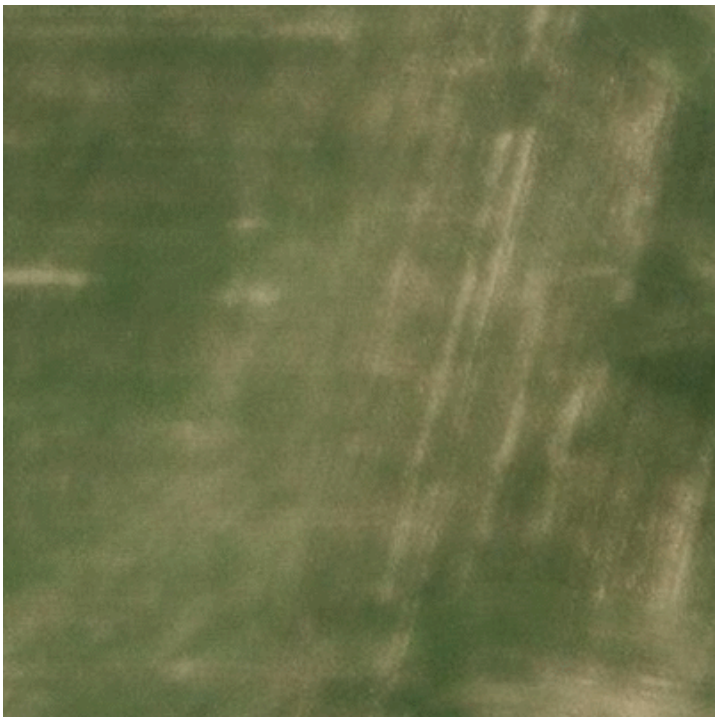
**These percentages should be used as the monthly shading derate factors % on the Xcel Solar Rewards application



This service made possible by:

COMMERCE DEPARTMENT
ENERGY RESOURCES

T107N R12W S29
Site Address
Site Notes

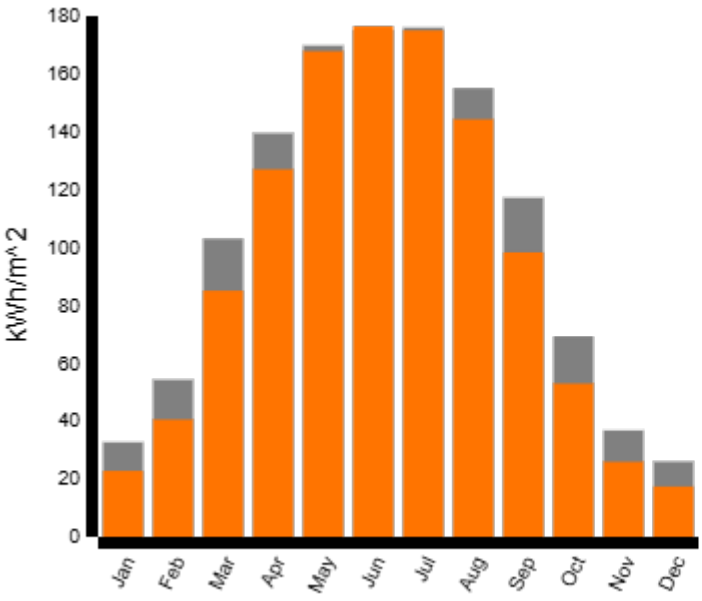


This site is **Good**. It would need a **4.94 kW** system to generate **50%** of average household use. This system would cost approximately **$18,539**. System payback is **13.5 years** after tax credit.

Utility Service Provider:
Peoples Cooperative Power Association
1775 Lake Shady Ave. S.
Oronoco, MN 55960
(507) 367-7000
www.peoplesrec.com

Site Details:
Total Annual Insolation: 1132.04 kWh/m^2
Avg Insolation per Day: 3.10 kWh/m^2
Source Data: Fall 2008

Amount Actual Sun



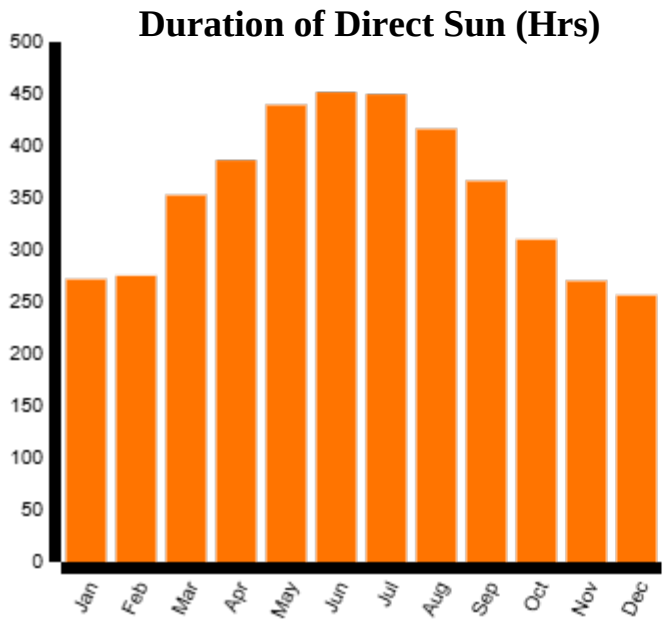
Solar Calculator

User Input	Value	Tips and Notes
Average utility use (per month)	800 kWh	The average residential household uses 800 kWh/month. If you know your monthly usage, fill it in here.
Cost / kWh	$0.12/kWh	Minnesota's average residential cost of electricity is $0.12/kWh. If you know your cost of electricity enter it here.
Percent of electricity provided by solar	50%	Experiment with different percentages here to see how system cost varies. Think about how energy efficiency improvements bring down the cost of your solar system.

Outputs	Value	Tips and Notes
Size of system needed	4.94 kW	Result is based on values provided for monthly electricity use and desired percentage covered by solar. It also includes a derate of 0.87. A factor accounting for conversion of the array's DC nameplate capacity to the system's AC power rating at Standard Test Condition.
System cost estimate	$18,539	Result is based on an average 2020 Minnesota residential system cost of $3,750 per kW. Costs will vary depending on the specifics of your system.
Payback without incentives	18.22 years	Result assumes that electricity costs will rise 3.5% each year over 25 years.
Payback with Tax Credit	13.48 years	Your system may be eligible for a federal tax credit. This result shows the payback of your system with the 26% tax credit applied.

Month	Actual % Sun**	Total kWh/m2	Duration (Hrs)
January	70%	22.80	271.8
February	75%	40.53	275.2
March	83%	85.07	352.7
April	91%	126.99	386.3
May	99%	167.83	439.3
June	100%	176.49	451.8
July	99%	175.02	449.8
August	93%	144.28	416.3
September	84%	98.32	366.3
October	77%	52.97	310.0
November	70%	25.94	270.2
December	67%	17.40	256.3

**These percentages should be used as the monthly shading derate factors % on the Xcel Solar Rewards application



This service made possible by:

COMMERCE DEPARTMENT
ENERGY RESOURCES

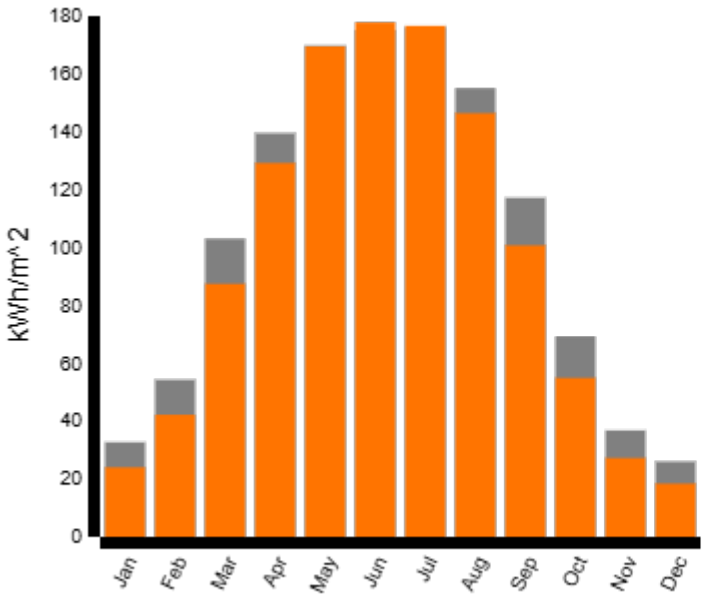
T107N R13W S11
Site Address
Site Notes

This site is **Good**. It would need a **4.83 kW** system to generate **50%** of average household use. This system would cost approximately **$18,129**. System payback is **13.2 years** after tax credit.

Utility Service Provider:
Peoples Cooperative Power Association
1775 Lake Shady Ave. S.
Oronoco, MN 55960
(507) 367-7000
www.peoplesrec.com

Site Details:
Total Annual Insolation: 1157.25 kWh/m^2
Avg Insolation per Day: 3.17 kWh/m^2
Source Data: Fall 2008

Amount Actual Sun



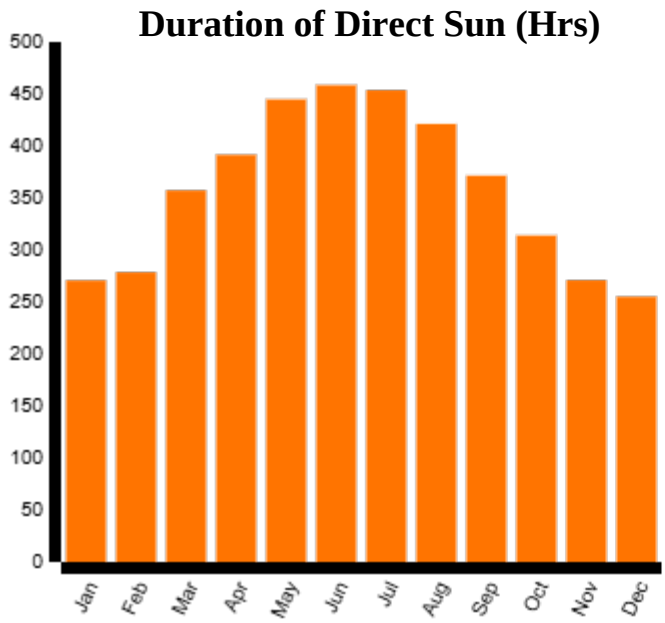
Solar Calculator

User Input	Value	Tips and Notes
Average utility use (per month)	800 kWh	The average residential household uses 800 kWh/month. If you know your monthly usage, fill it in here.
Cost / kWh	$0.12/kWh	Minnesota's average residential cost of electricity is $0.12/kWh. If you know your cost of electricity enter it here.
Percent of electricity provided by solar	50%	Experiment with different percentages here to see how system cost varies. Think about how energy efficiency improvements bring down the cost of your solar system.

Outputs	Value	Tips and Notes
Size of system needed	4.83 kW	Result is based on values provided for monthly electricity use and desired percentage covered by solar. It also includes a derate of 0.87. A factor accounting for conversion of the array's DC nameplate capacity to the system's AC power rating at Standard Test Condition.
System cost estimate	$18,129	Result is based on an average 2020 Minnesota residential system cost of $3,750 per kW. Costs will vary depending on the specifics of your system.
Payback without incentives	17.82 years	Result assumes that electricity costs will rise 3.5% each year over 25 years.
Payback with Tax Credit	13.19 years	Your system may be eligible for a federal tax credit. This result shows the payback of your system with the 26% tax credit applied.

Month	Actual % Sun**	Total kWh/m2	Duration (Hrs)
January	73%	23.82	270.8
February	77%	41.93	278.6
March	85%	87.08	357.4
April	92%	128.90	391.6
May	100%	169.37	444.9
June	100%	177.73	458.5
July	100%	176.44	453.7
August	94%	146.14	421.2
September	86%	100.38	371.5
October	79%	54.63	314.0
November	73%	27.03	271.0
December	70%	18.24	255.2

**These percentages should be used as the monthly shading derate factors % on the Xcel Solar Rewards application



This service made possible by:

COMMERCE DEPARTMENT
ENERGY RESOURCES

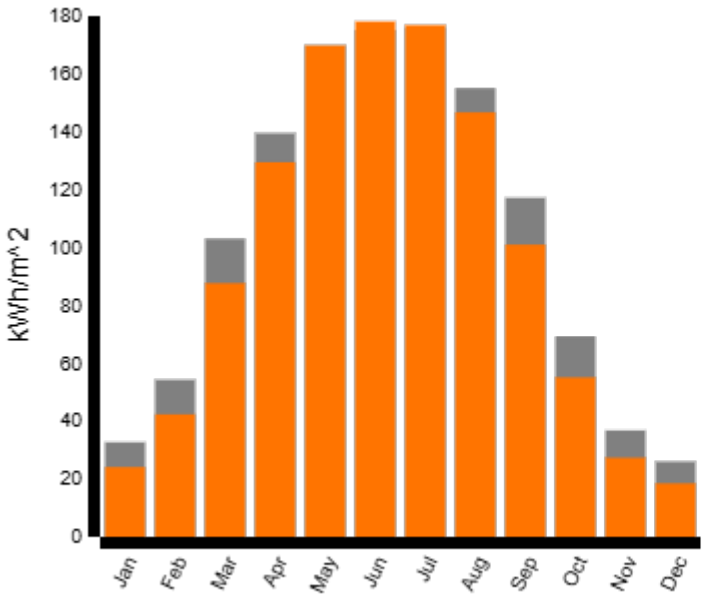
T107N R13W S12
Site Address
Site Notes

This site is **Good**. It would need a **4.77 kW** system to generate **50%** of average household use. This system would cost approximately **$17,903**. System payback is **13.0 years** after tax credit.

Utility Service Provider:
Peoples Cooperative Power Association
1775 Lake Shady Ave. S.
Oronoco, MN 55960
(507) 367-7000
www.peoplesrec.com

Site Details:
Total Annual Insolation: 1170.80 kWh/m^2
Avg Insolation per Day: 3.21 kWh/m^2
Source Data: Fall 2008

Amount Actual Sun



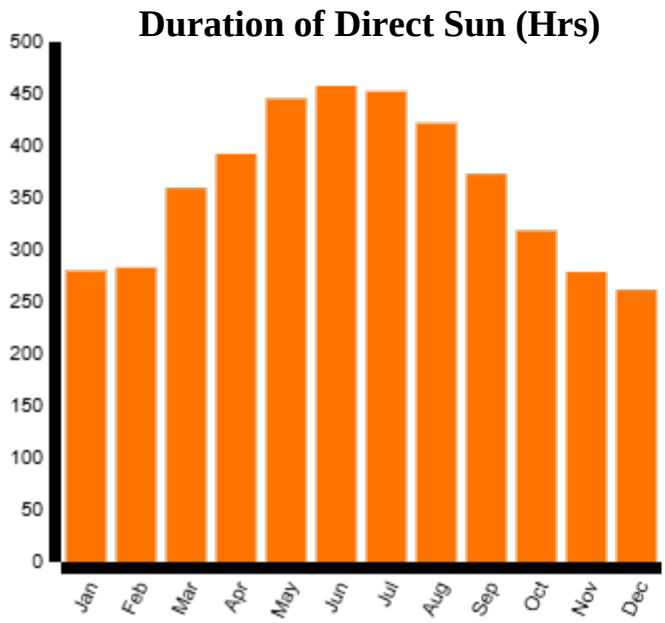
Solar Calculator

User Input	Value	Tips and Notes
Average utility use (per month)	800 kWh	The average residential household uses 800 kWh/month. If you know your monthly usage, fill it in here.
Cost / kWh	$0.12/kWh	Minnesota's average residential cost of electricity is $0.12/kWh. If you know your cost of electricity enter it here.
Percent of electricity provided by solar	50%	Experiment with different percentages here to see how system cost varies. Think about how energy efficiency improvements bring down the cost of your solar system.

Outputs	Value	Tips and Notes
Size of system needed	4.77 kW	Result is based on values provided for monthly electricity use and desired percentage covered by solar. It also includes a derate of 0.87. A factor accounting for conversion of the array's DC nameplate capacity to the system's AC power rating at Standard Test Condition.
System cost estimate	$17,903	Result is based on an average 2020 Minnesota residential system cost of $3,750 per kW. Costs will vary depending on the specifics of your system.
Payback without incentives	17.60 years	Result assumes that electricity costs will rise 3.5% each year over 25 years.
Payback with Tax Credit	13.02 years	Your system may be eligible for a federal tax credit. This result shows the payback of your system with the 26% tax credit applied.

Month	Actual % Sun**	Total kWh/m2	Duration (Hrs)
January	74%	24.11	279.8
February	78%	42.33	283.0
March	85%	87.67	359.3
April	93%	129.47	392.4
May	100%	169.86	445.4
June	100%	178.13	457.7
July	100%	176.90	452.5
August	95%	146.70	421.9
September	86%	100.98	372.7
October	80%	55.11	318.4
November	74%	27.35	278.9
December	71%	18.48	261.3

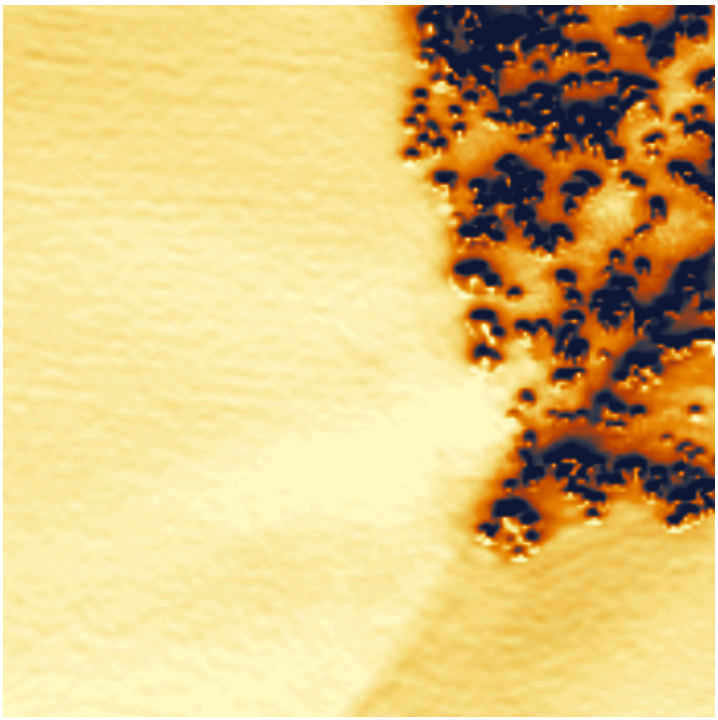
**These percentages should be used as the monthly shading derate factors % on the Xcel Solar Rewards application



This service made possible by:

COMMERCE DEPARTMENT
ENERGY RESOURCES

T107N R13W S13
Site Address
Site Notes

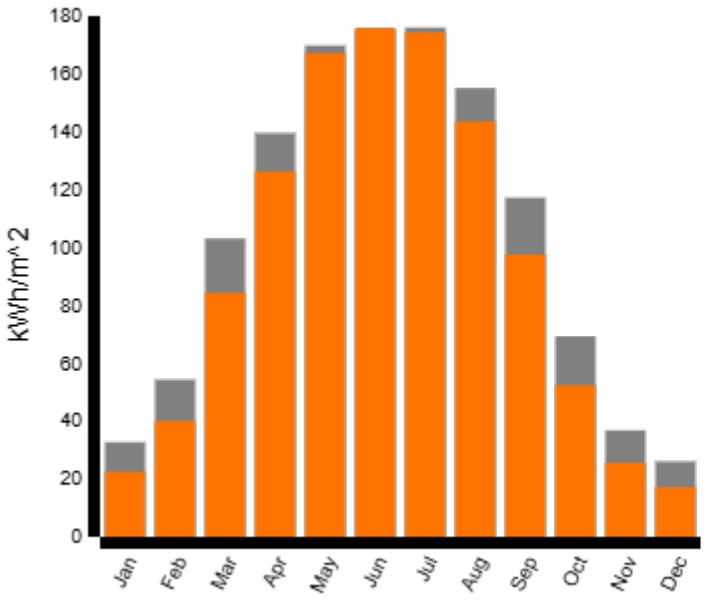


This site is **Good**. It would need a **4.91 kW** system to generate **50%** of average household use. This system would cost approximately **$18,420**. System payback is **13.4 years** after tax credit.

Utility Service Provider:
Peoples Cooperative Power Association
1775 Lake Shady Ave. S.
Oronoco, MN 55960
(507) 367-7000
www.peoplesrec.com

Site Details:
Total Annual Insolation: 1137.32 kWh/m^2
Avg Insolation per Day: 3.12 kWh/m^2
Source Data: Fall 2008

Amount Actual Sun



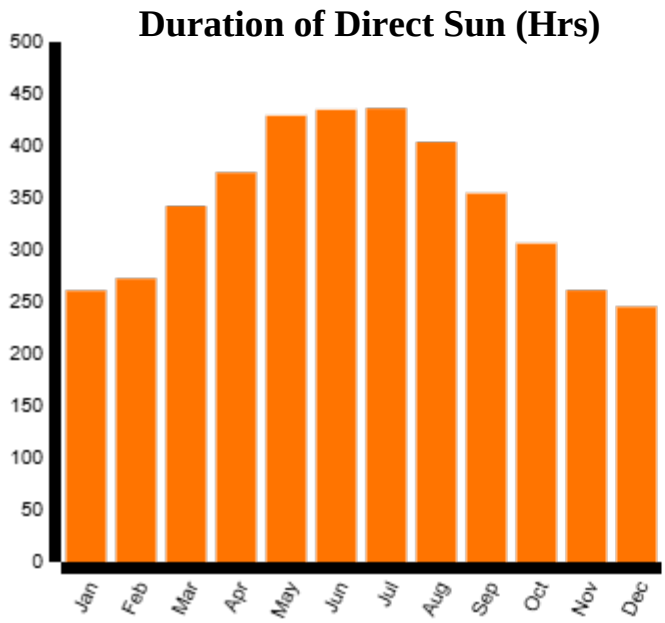
Solar Calculator

User Input	Value	Tips and Notes
Average utility use (per month)	800 kWh	The average residential household uses 800 kWh/month. If you know your monthly usage, fill it in here.
Cost / kWh	$0.12/kWh	Minnesota's average residential cost of electricity is $0.12/kWh. If you know your cost of electricity enter it here.
Percent of electricity provided by solar	50%	Experiment with different percentages here to see how system cost varies. Think about how energy efficiency improvements bring down the cost of your solar system.

Outputs	Value	Tips and Notes
Size of system needed	4.91 kW	Result is based on values provided for monthly electricity use and desired percentage covered by solar. It also includes a derate of 0.87. A factor accounting for conversion of the array's DC nameplate capacity to the system's AC power rating at Standard Test Condition.
System cost estimate	$18,420	Result is based on an average 2020 Minnesota residential system cost of $3,750 per kW. Costs will vary depending on the specifics of your system.
Payback without incentives	18.10 years	Result assumes that electricity costs will rise 3.5% each year over 25 years.
Payback with Tax Credit	13.40 years	Your system may be eligible for a federal tax credit. This result shows the payback of your system with the 26% tax credit applied.

Month	Actual % Sun**	Total kWh/m2	Duration (Hrs)
January	69%	22.43	260.9
February	74%	40.00	272.5
March	82%	84.28	342.3
April	90%	126.18	374.5
May	98%	167.08	429.1
June	100%	175.84	434.8
July	99%	174.31	436.2
August	93%	143.46	403.8
September	83%	97.50	354.4
October	76%	52.34	306.3
November	69%	25.53	261.3
December	66%	17.09	245.4

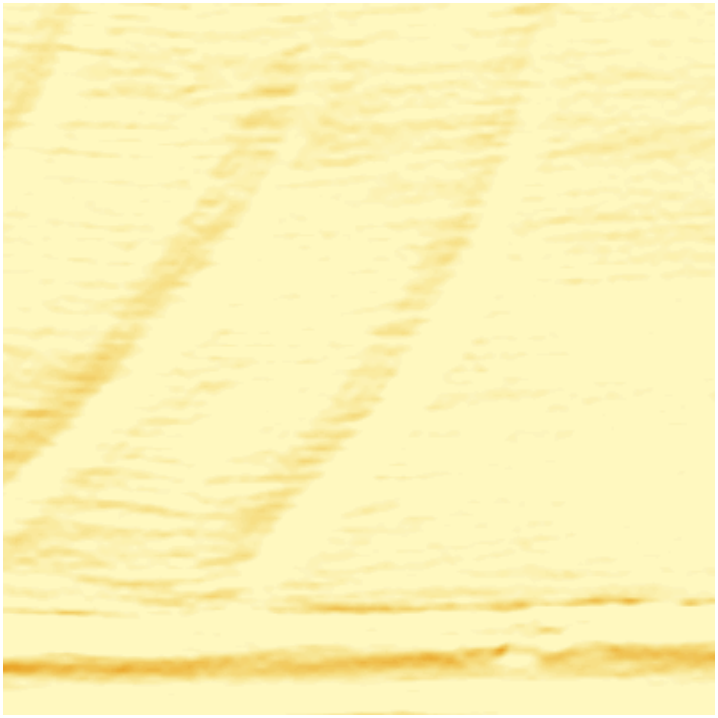
**These percentages should be used as the monthly shading derate factors % on the Xcel Solar Rewards application

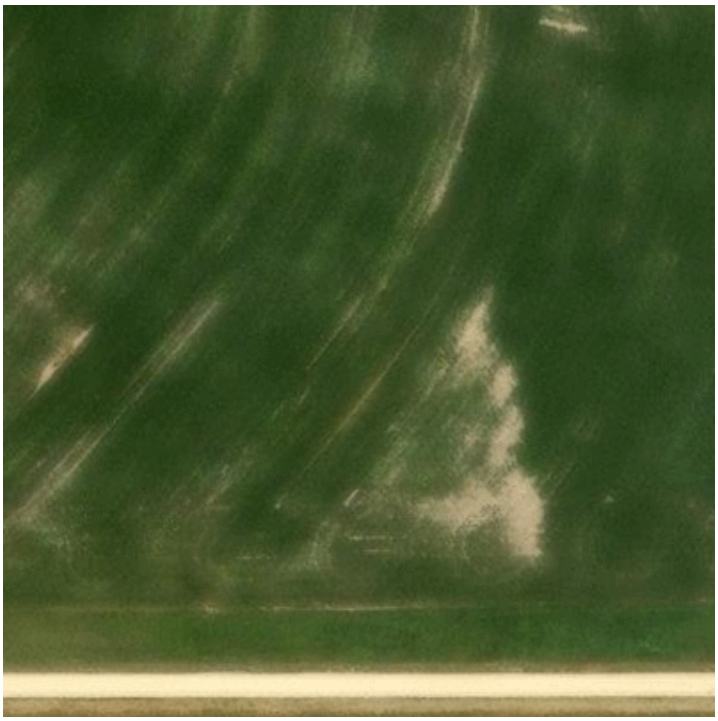


This service made possible by:

COMMERCE DEPARTMENT
ENERGY RESOURCES

T107N R13W S14
Site Address
Site Notes



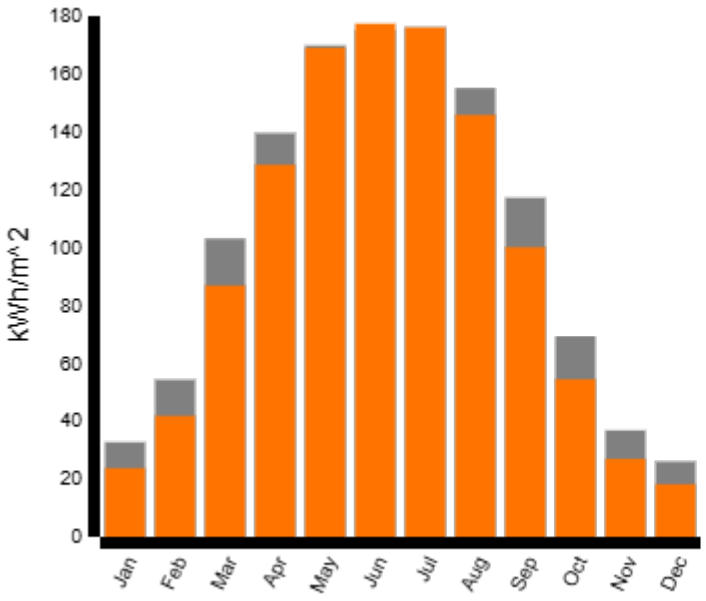


This site is **Good**. It would need a **4.82 kW** system to generate **50%** of average household use. This system would cost approximately **$18,072**. System payback is **13.1 years** after tax credit.

Utility Service Provider:
Peoples Cooperative Power Association
1775 Lake Shady Ave. S.
Oronoco, MN 55960
(507) 367-7000
www.peoplesrec.com

Site Details:
Total Annual Insolation: 1159.99 kWh/m^2
Avg Insolation per Day: 3.18 kWh/m^2
Source Data: Fall 2008

Amount Actual Sun



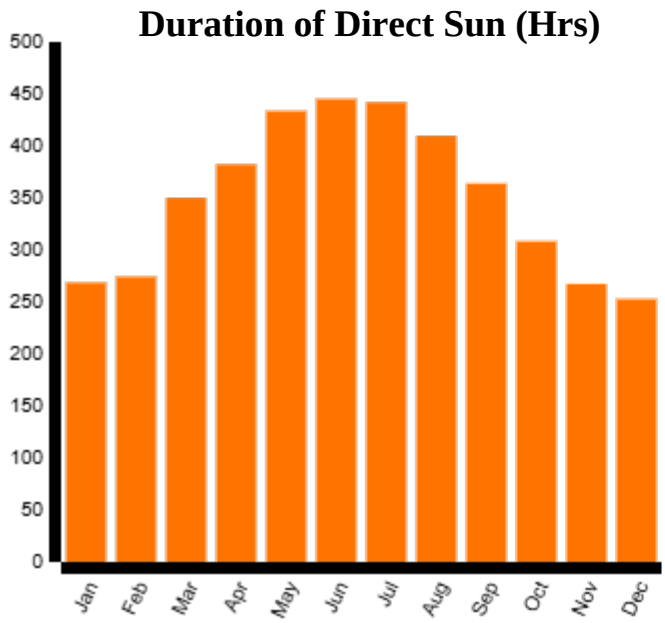
Solar Calculator

User Input	Value	Tips and Notes
Average utility use (per month)	800 kWh	The average residential household uses 800 kWh/month. If you know your monthly usage, fill it in here.
Cost / kWh	$0.12/kWh	Minnesota's average residential cost of electricity is $0.12/kWh. If you know your cost of electricity enter it here.
Percent of electricity provided by solar	50%	Experiment with different percentages here to see how system cost varies. Think about how energy efficiency improvements bring down the cost of your solar system.

Outputs	Value	Tips and Notes
Size of system needed	4.82 kW	Result is based on values provided for monthly electricity use and desired percentage covered by solar. It also includes a derate of 0.87. A factor accounting for conversion of the array's DC nameplate capacity to the system's AC power rating at Standard Test Condition.
System cost estimate	$18,072	Result is based on an average 2020 Minnesota residential system cost of $3,750 per kW. Costs will vary depending on the specifics of your system.
Payback without incentives	17.76 years	Result assumes that electricity costs will rise 3.5% each year over 25 years.
Payback with Tax Credit	13.14 years	Your system may be eligible for a federal tax credit. This result shows the payback of your system with the 26% tax credit applied.

Month	Actual % Sun**	Total kWh/m2	Duration (Hrs)
January	73%	23.72	268.5
February	77%	41.78	274.2
March	84%	86.83	349.9
April	92%	128.58	382.1
May	100%	169.01	433.5
June	100%	177.36	445.2
July	100%	176.07	441.8
August	94%	145.79	409.5
September	85%	100.10	363.9
October	79%	54.45	308.3
November	73%	26.92	267.4
December	70%	18.16	252.7

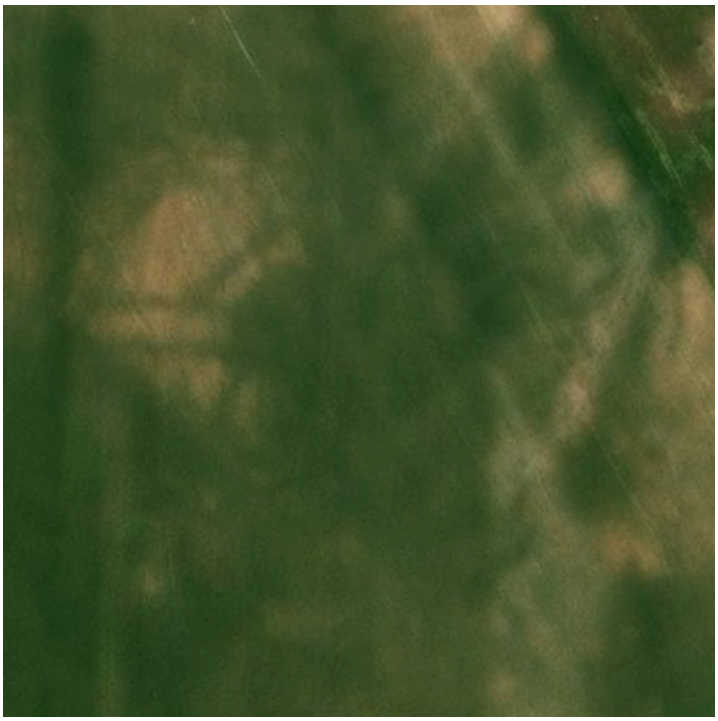
**These percentages should be used as the monthly shading derate factors % on the Xcel Solar Rewards application



This service made possible by:

COMMERCE DEPARTMENT
ENERGY RESOURCES

T107N R12W S17
Site Address
Site Notes

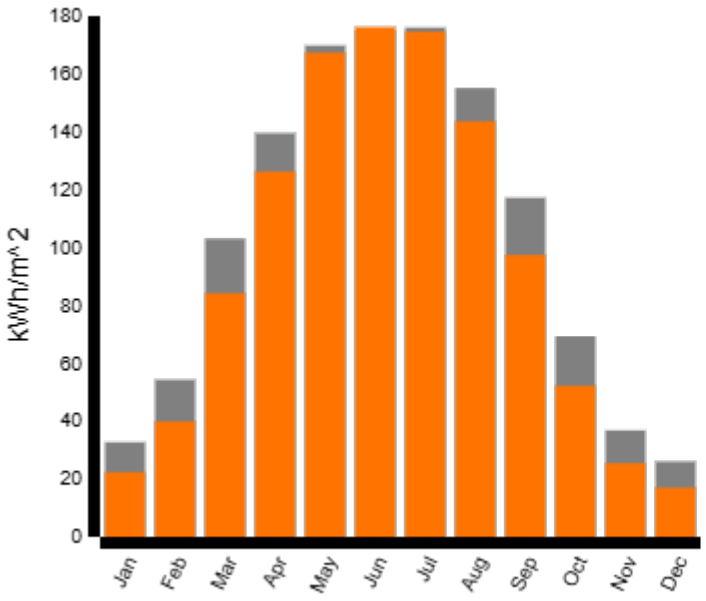


This site is **Good**. It would need a **4.98 kW** system to generate **50%** of average household use. This system would cost approximately **$18,659**. System payback is **13.6 years** after tax credit.

Utility Service Provider:
Peoples Cooperative Power Association
1775 Lake Shady Ave. S.
Oronoco, MN 55960
(507) 367-7000
www.peoplesrec.com

Site Details:
Total Annual Insolation: 1123.81 kWh/m^2
Avg Insolation per Day: 3.08 kWh/m^2
Source Data: Fall 2008

Amount Actual Sun



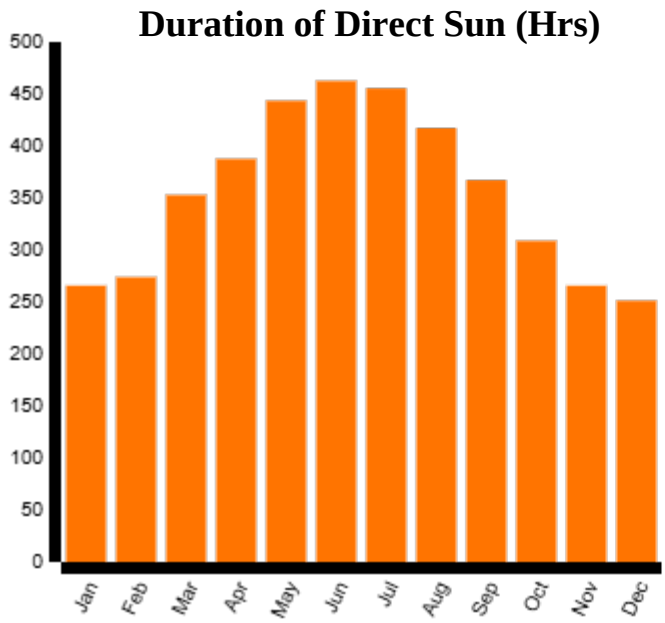
Solar Calculator

User Input	Value	Tips and Notes
Average utility use (per month)	800 kWh	The average residential household uses 800 kWh/month. If you know your monthly usage, fill it in here.
Cost / kWh	$0.12/kWh	Minnesota's average residential cost of electricity is $0.12/kWh. If you know your cost of electricity enter it here.
Percent of electricity provided by solar	50%	Experiment with different percentages here to see how system cost varies. Think about how energy efficiency improvements bring down the cost of your solar system.

Outputs	Value	Tips and Notes
Size of system needed	4.98 kW	Result is based on values provided for monthly electricity use and desired percentage covered by solar. It also includes a derate of 0.87. A factor accounting for conversion of the array's DC nameplate capacity to the system's AC power rating at Standard Test Condition.
System cost estimate	$18,659	Result is based on an average 2020 Minnesota residential system cost of $3,750 per kW. Costs will vary depending on the specifics of your system.
Payback without incentives	18.34 years	Result assumes that electricity costs will rise 3.5% each year over 25 years.
Payback with Tax Credit	13.57 years	Your system may be eligible for a federal tax credit. This result shows the payback of your system with the 26% tax credit applied.

Month	Actual % Sun**	Total kWh/m2	Duration (Hrs)
January	68%	22.30	265.7
February	73%	39.86	273.9
March	82%	84.16	352.9
April	90%	126.22	387.6
May	99%	167.33	443.6
June	100%	176.18	462.6
July	99%	174.61	455.5
August	93%	143.57	417.3
September	83%	97.41	367.2
October	75%	52.18	308.8
November	69%	25.40	265.7
December	65%	16.98	251.3

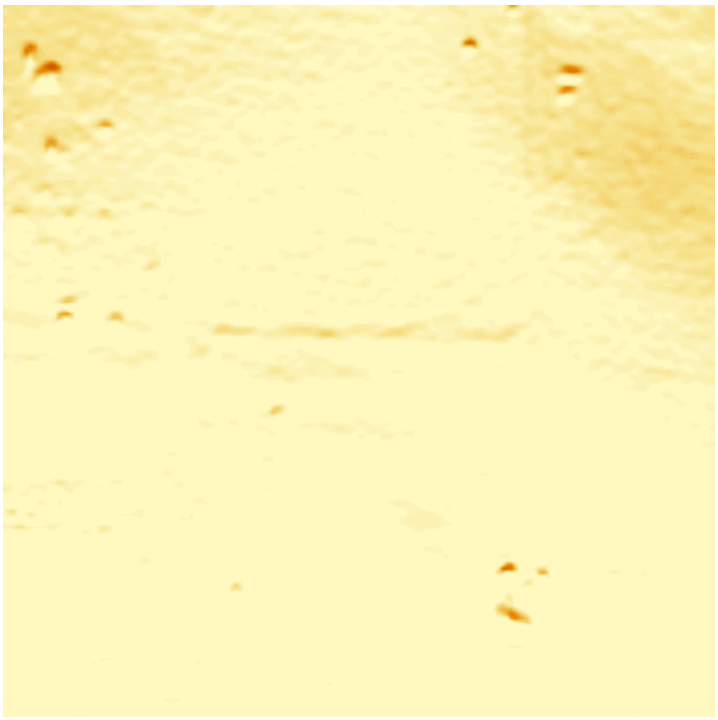
**These percentages should be used as the monthly shading derate factors % on the Xcel Solar Rewards application



This service made possible by:

COMMERCE DEPARTMENT
ENERGY RESOURCES

T107N R12W S18
Site Address
Site Notes

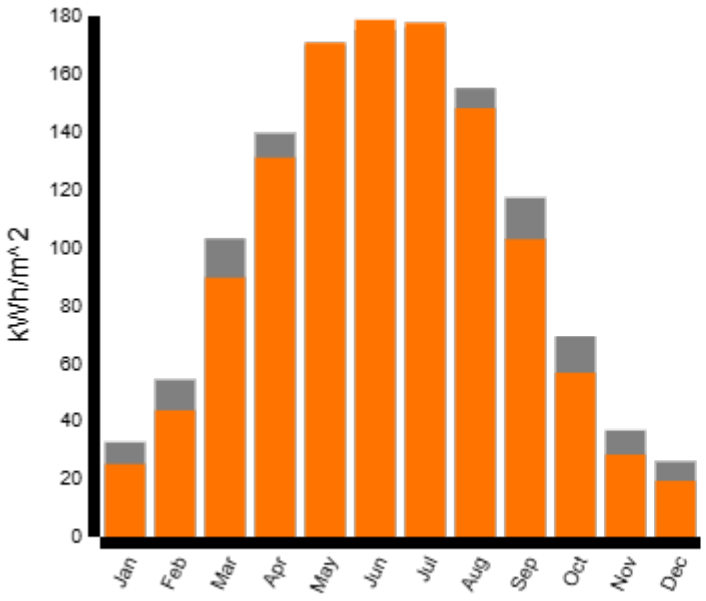


This site is **Good**. It would need a **4.76 kW** system to generate **50%** of average household use. This system would cost approximately **$17,848**. System payback is **13.0 years** after tax credit.

Utility Service Provider:
Peoples Cooperative Power Association
1775 Lake Shady Ave. S.
Oronoco, MN 55960
(507) 367-7000
www.peoplesrec.com

Site Details:
Total Annual Insolation: 1175.20 kWh/m^2
Avg Insolation per Day: 3.22 kWh/m^2
Source Data: Fall 2008

Amount Actual Sun



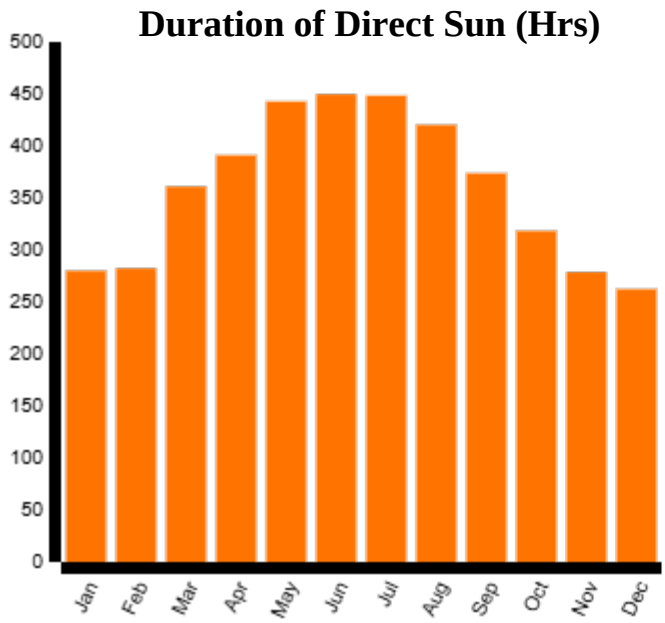
Solar Calculator

User Input	Value	Tips and Notes
Average utility use (per month)	800 kWh	The average residential household uses 800 kWh/month. If you know your monthly usage, fill it in here.
Cost / kWh	$0.12/kWh	Minnesota's average residential cost of electricity is $0.12/kWh. If you know your cost of electricity enter it here.
Percent of electricity provided by solar	50%	Experiment with different percentages here to see how system cost varies. Think about how energy efficiency improvements bring down the cost of your solar system.

Outputs	Value	Tips and Notes
Size of system needed	4.76 kW	Result is based on values provided for monthly electricity use and desired percentage covered by solar. It also includes a derate of 0.87. A factor accounting for conversion of the array's DC nameplate capacity to the system's AC power rating at Standard Test Condition.
System cost estimate	$17,848	Result is based on an average 2020 Minnesota residential system cost of $3,750 per kW. Costs will vary depending on the specifics of your system.
Payback without incentives	17.54 years	Result assumes that electricity costs will rise 3.5% each year over 25 years.
Payback with Tax Credit	12.98 years	Your system may be eligible for a federal tax credit. This result shows the payback of your system with the 26% tax credit applied.

Month	Actual % Sun**	Total kWh/m2	Duration (Hrs)
January	77%	25.13	280.0
February	81%	43.71	282.4
March	87%	89.55	361.0
April	94%	131.04	391.1
May	100%	170.84	442.8
June	100%	178.71	449.7
July	100%	177.69	448.4
August	96%	148.14	420.3
September	88%	102.85	373.8
October	82%	56.73	318.4
November	77%	28.45	278.7
December	74%	19.32	262.4

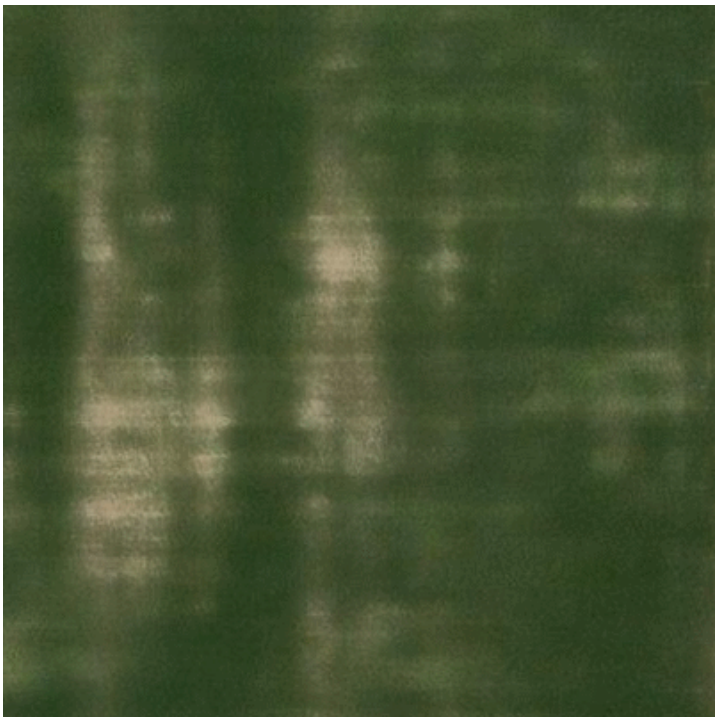
**These percentages should be used as the monthly shading derate factors % on the Xcel Solar Rewards application



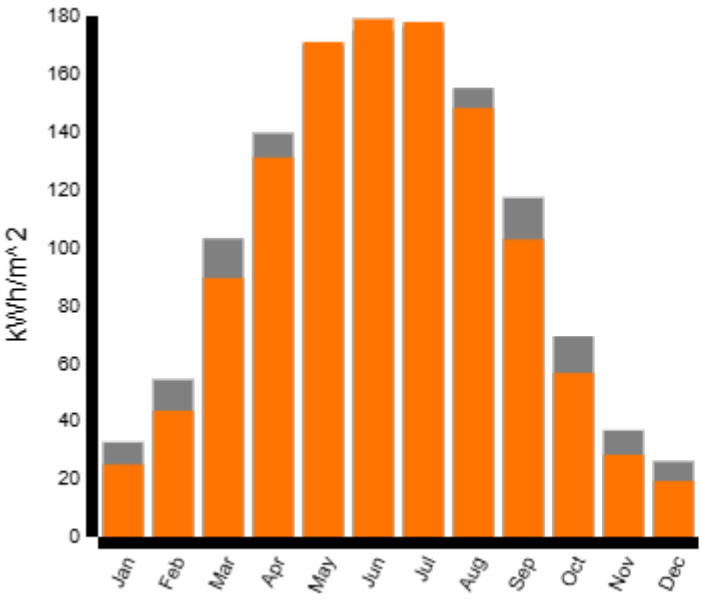
This service made possible by:

COMMERCE DEPARTMENT
ENERGY RESOURCES

T107N R13W S24
Site Address
Site Notes



Amount Actual Sun



This site is **Good**. It would need a **4.80 kW** system to generate **50%** of average household use. This system would cost approximately **$18,016**. System payback is **13.1 years** after tax credit.

Utility Service Provider:
Peoples Cooperative Power Association
1775 Lake Shady Ave. S.
Oronoco, MN 55960
(507) 367-7000
www.peoplesrec.com

Site Details:
Total Annual Insolation: 1163.84 kWh/m^2
Avg Insolation per Day: 3.19 kWh/m^2
Source Data: Fall 2008

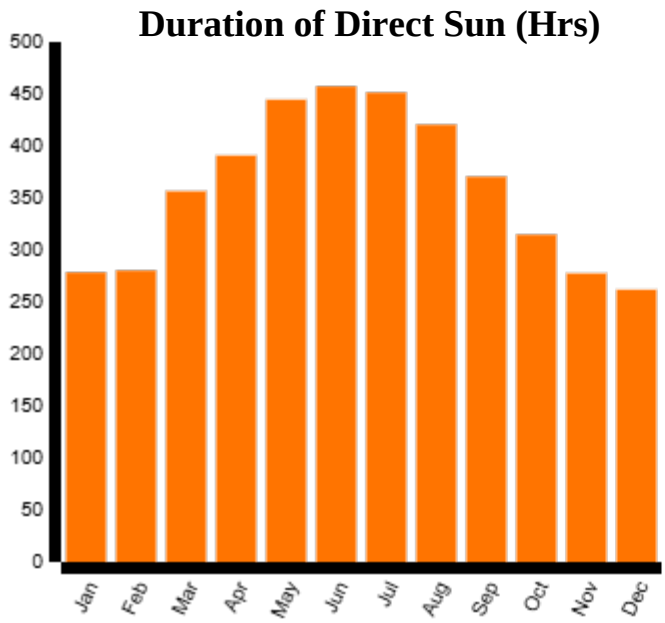
Solar Calculator

User Input	Value	Tips and Notes
Average utility use (per month)	800 kWh	The average residential household uses 800 kWh/month. If you know your monthly usage, fill it in here.
Cost / kWh	$0.12/kWh	Minnesota's average residential cost of electricity is $0.12/kWh. If you know your cost of electricity enter it here.
Percent of electricity provided by solar	50%	Experiment with different percentages here to see how system cost varies. Think about how energy efficiency improvements bring down the cost of your solar system.

Outputs	Value	Tips and Notes
Size of system needed	4.80 kW	Result is based on values provided for monthly electricity use and desired percentage covered by solar. It also includes a derate of 0.87. A factor accounting for conversion of the array's DC nameplate capacity to the system's AC power rating at Standard Test Condition.
System cost estimate	$18,016	Result is based on an average 2020 Minnesota residential system cost of $3,750 per kW. Costs will vary depending on the specifics of your system.
Payback without incentives	17.71 years	Result assumes that electricity costs will rise 3.5% each year over 25 years.
Payback with Tax Credit	13.10 years	Your system may be eligible for a federal tax credit. This result shows the payback of your system with the 26% tax credit applied.

Month	Actual % Sun**	Total kWh/m2	Duration (Hrs)
January	77%	25.05	278.5
February	80%	43.61	280.3
March	87%	89.44	356.5
April	94%	131.07	390.8
May	100%	171.04	444.6
June	100%	179.00	457.4
July	100%	177.95	451.4
August	96%	148.23	420.5
September	88%	102.78	370.5
October	82%	56.61	314.8
November	77%	28.35	277.5
December	74%	19.25	261.8

**These percentages should be used as the monthly shading derate factors % on the Xcel Solar Rewards application

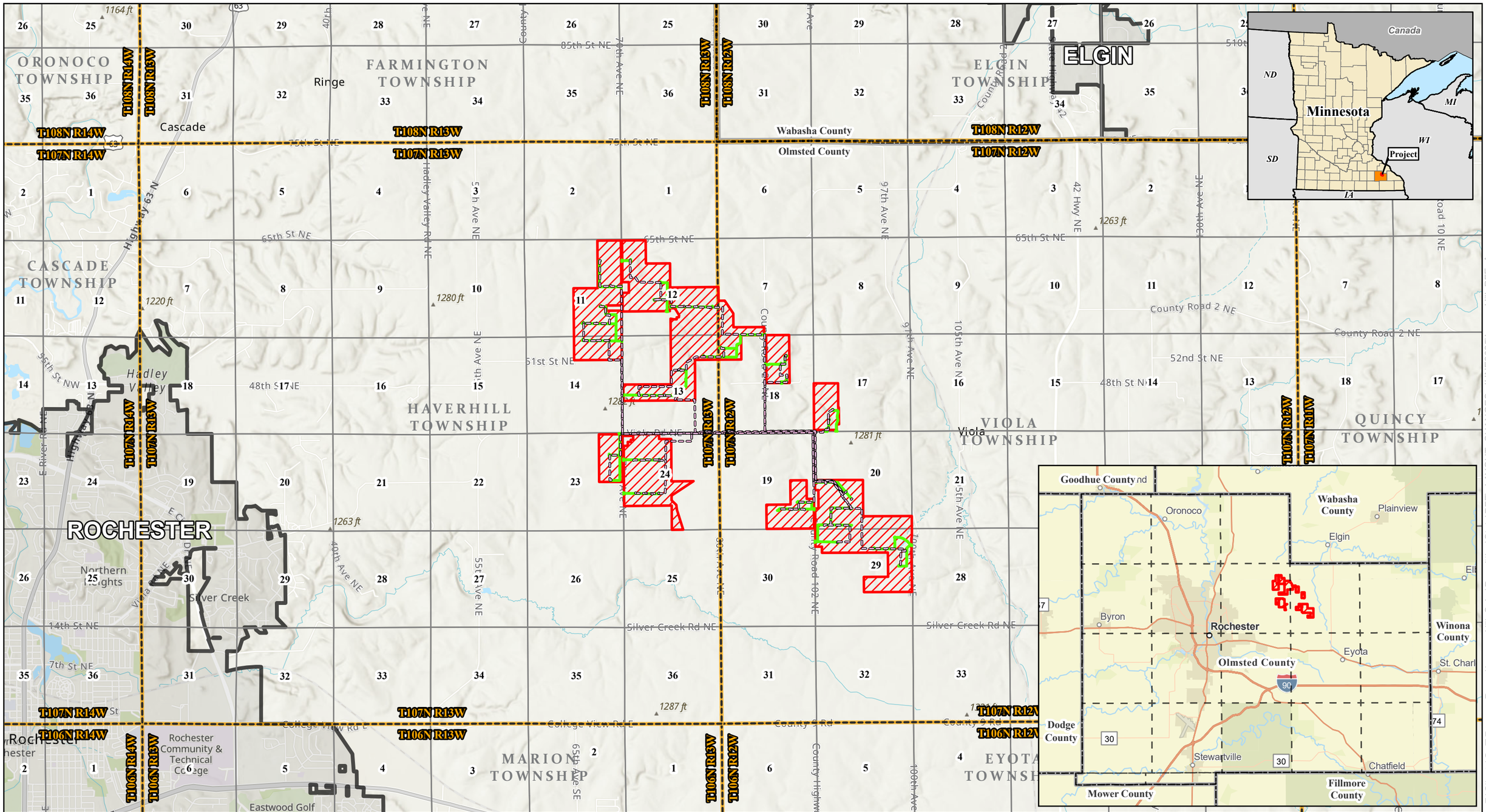


This service made possible by:

COMMERCE DEPARTMENT
ENERGY RESOURCES

Figure 1

Site & USGS Topography



LEMON HILL SOLAR
A RANGER POWER PROJECT

Emerjent

0 0.75 1.5 Miles

1:60,000

N W E S

For Environmental Review Purposes Only

Figure 1 - Proposed Project Boundary
Lemon Hill Solar Project

Lemon Hill Solar, LLC
Olmsted County, Minnesota

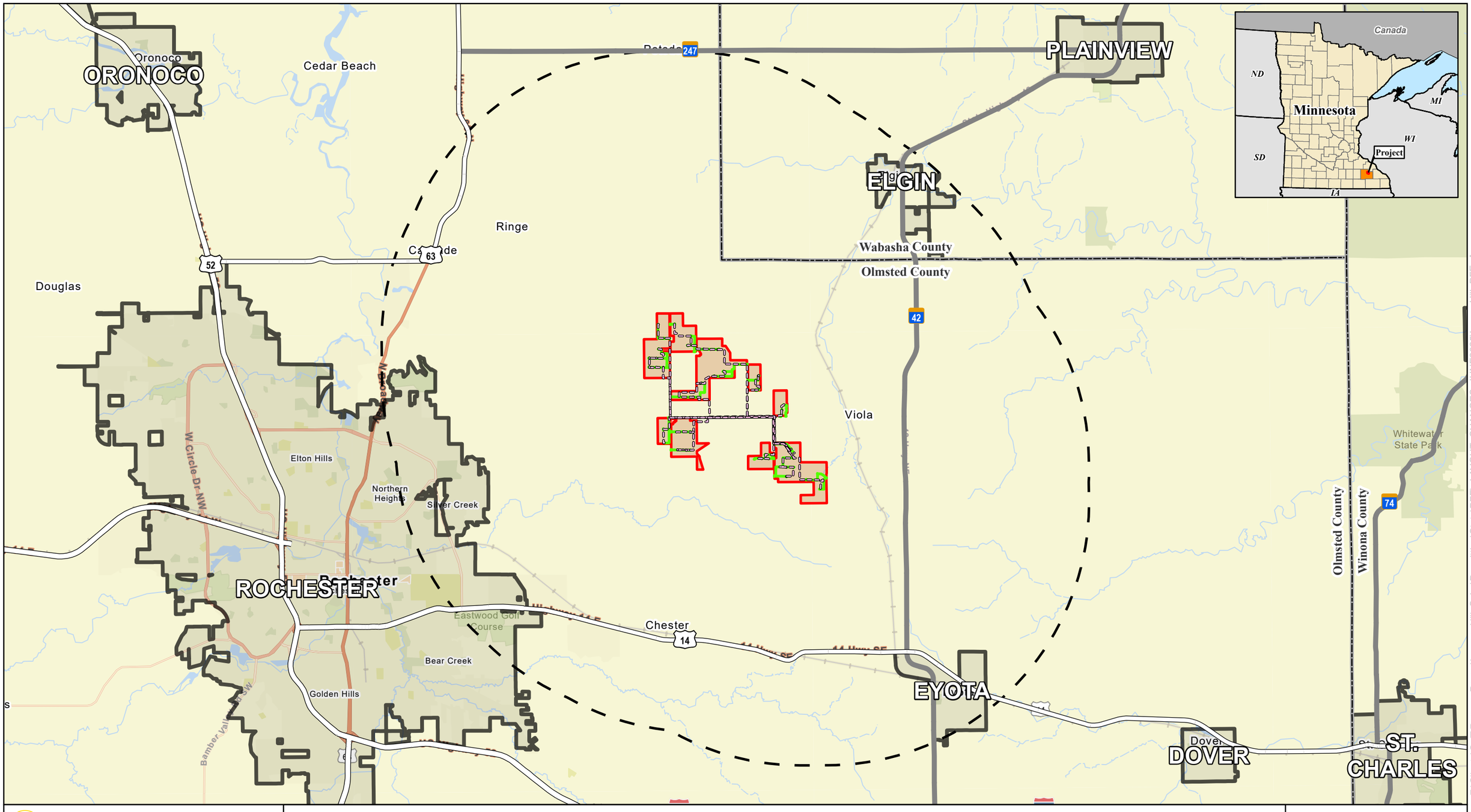
- Site
- Proposed Access Road
- Proposed Collector Line
- County Boundary
- Township Boundary
- Section Line
- Municipal Boundary

Source: Z:\Clients\Q_TRanger_PowerLemon_Hill_Solar\Permitting\State\PFE_LAYOUT_CHANGES_JUNE2025\LemonHill_PFE_App.aprx

Date: (6/23/2025)

Figure 2

Preliminary Identification of Potential Project Sites



LEMON HILL SOLAR
A RANGER POWER PROJECT

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N W E S

For Environmental Review Purposes Only

Figure 2 - Preliminary Identification of Potential Project Sites
Lemon Hill Solar Project
Lemon Hill Solar, LLC
Olmsted County, Minnesota

- Site
- Proposed Access Road
- Proposed Collector Line
- 5-Mile Buffer
- County Boundary
- Municipal Boundary

Source: Z:\Clients\Q_T\Ranger_Power\Lemon_Hill_Solar\Permitting\State\PFE_LAYOUT_CHANGES_JUNE2025\LemonHill_PFE_App.aprx

Date: (6/23/2025)

Figure 3

Site Control and Preliminary Development Area

LEMON HILL SOLAR
A RANGER POWER PROJECT

Emerjent

0 1,500 3,000 Feet

1:30,000

N W E S

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Figure 3 - Site Control and Preliminary Development Area
Lemon Hill Solar Project

Lemon Hill Solar, LLC
Olmsted County, Minnesota

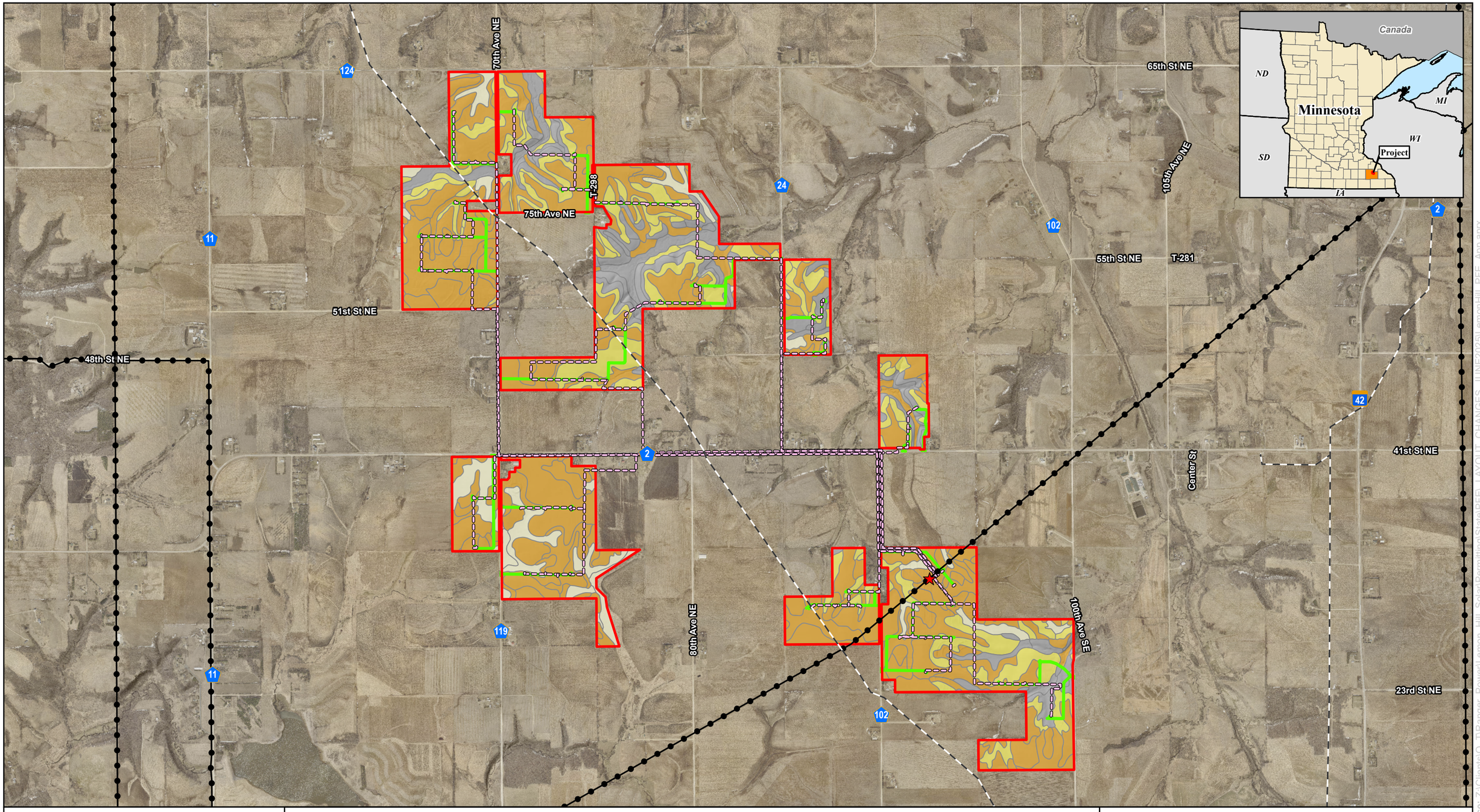
- Site
- Preliminary Development Area
- Parcel Boundary
- Participating Landowner
- Non-Participating Landowner
- Proposed Access Road
- Proposed Substation
- Proposed Collector Line
- Existing Transmission Line
- Existing Pipeline
- Desktop Wetland
- Delineated Wetland <> NEW PARCELS
- Delineated Waterway
- NWI Wetland
- PWI Ditch
- PWI Stream
- Impaired Stream (2024)

Source: Z:\Clients\Q_T\Ranger_Power\Lemon_Hill_Solar\Permitting\State\PFE_LAYOUT_CHANGES_JUNE2025\Lemon Hill_PFE_App.aprx

Date: (6/23/2025)

Figure 4

Site Prime Farmland



LEMON HILL SOLAR
A RANGER POWER PROJECT

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0 1,500 3,000 Feet

1:30,000

N W E S

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Figure 4 - Project Area Prime Farmland
Lemon Hill Solar Project

Lemon Hill Solar, LLC
Olmsted County, Minnesota

- Point of Interconnect
- Site
- Proposed Access Road
- Proposed Collector Line
- Existing Transmission Line
- Existing Pipeline

Farmland Classification

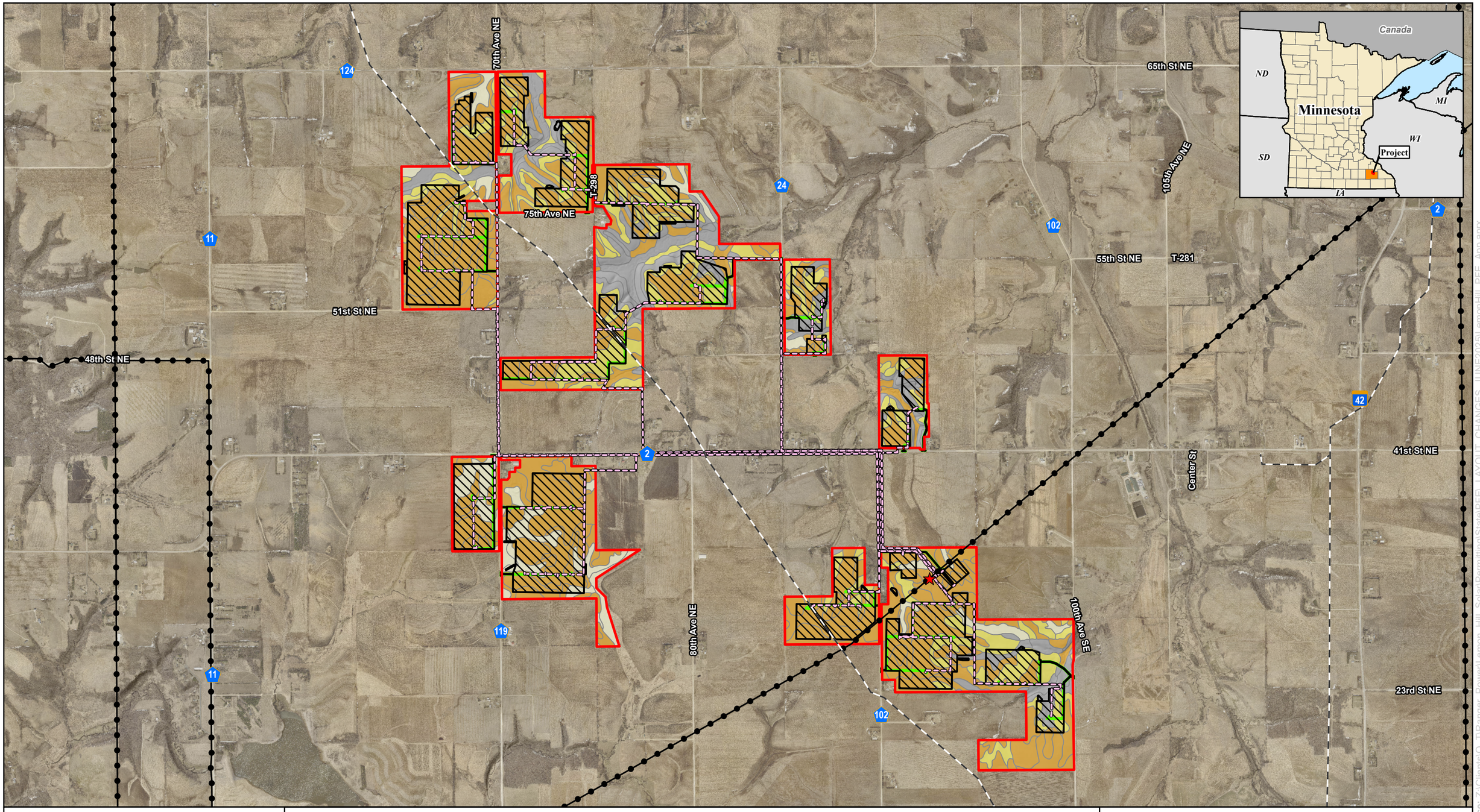
- All areas are prime farmland
- Farmland of statewide importance
- Prime farmland if drained
- Not prime farmland

Source: Z:\Clients\Q_T\Ranger_Power\Lemon_Hill_Solar\Permitting\State\PFE_LAYOUT_CHANGES_JUNE2025\LemonHill_PFE_App.aprx

Date: (6/23/2025)

Figure 4a

Prime Farmland within the Preliminary Development Area



LEMON HILL SOLAR
A RANGER POWER PROJECT

merjent

0 1,500 3,000 Feet

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N W E S

For Environmental Review Purposes Only

Figure 4a - Prime Farmland within the Preliminary Development Area
Lemon Hill Solar Project

Lemon Hill Solar, LLC
Olmsted County, Minnesota

- Point of Interconnect
- Site
- Proposed Access Road
- Preliminary Development Area
- Proposed Collector Line
- Existing Transmission Line
- Existing Pipeline

Farmland Classification

- All areas are prime farmland
- Farmland of statewide importance
- Prime farmland if drained
- Not prime farmland

Source: Z:\Clients\Q_T\Ranger_Power\Lemon_Hill_Solar\Permitting\State\PFE_LAYOUT_CHANGES_JUNE2025\LemonHill_PFE_App.aprx

Date: (6/23/2025)

Figure 5

Prime Farmland within Five Miles of Site

PINE ISLAND
ORONOCO
PLAINVIEW
ELGIN
Wabasha County
Olmsted County
ROCHESTER
EYOTA
DOVER
ST. CHARLES
Olmsted County
Winona County
247
52
63
42
14
74

LEMON HILL SOLAR
A RANGER POWER PROJECT
Emerjent

0 1 2 Miles

1:110,000

N W E S

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Figure 5 - Prime Farmland within Five Miles of Project Area
Lemon Hill Solar Project

Lemon Hill Solar, LLC
Olmsted County, Minnesota

- Site
- Proposed Access Road
- Proposed Collector Line
- 5-mile Project Area Buffer
- County Boundary
- Municipal Boundary

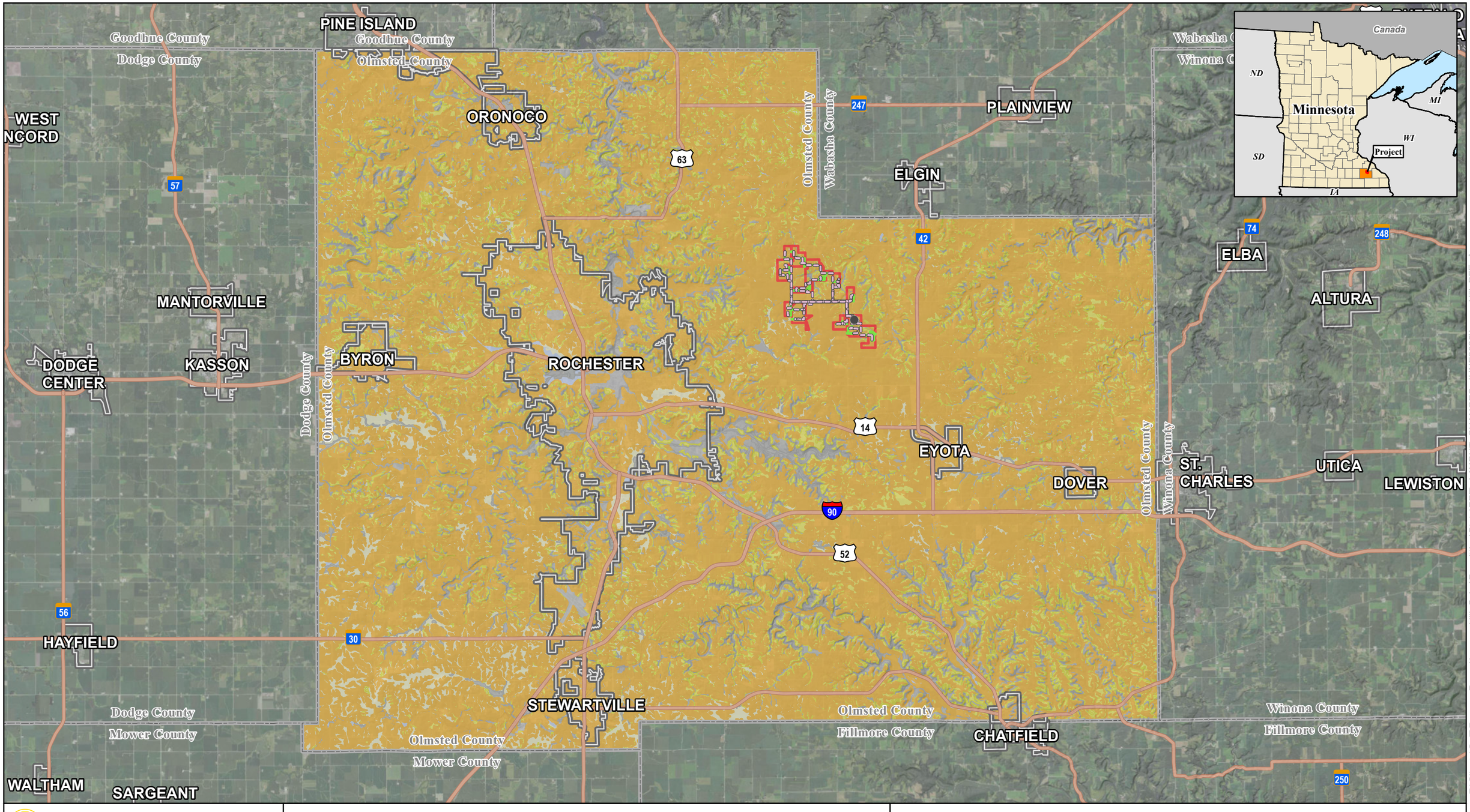
Farmland Class

- All areas are prime farmland
- Farmland of statewide importance
- Prime farmland if drained
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Not prime farmland

Source: Z:\Clients\Q_T\Ranger_Power\Lemon_Hill_Solar\Permitting\State\PFEL_LAYOUT_CHANGES_JUNE2025\LemonHill_PFE_App.aprx
Date: (6/23/2025)

Figure 6

Prime Farmland within Olmsted County



LEMON HILL SOLAR
A RANGER POWER PROJECT

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0 2 4 Miles

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N W E S

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Figure 6 - Prime Farmland within Olmsted County
Lemon Hill Solar Project
Lemon Hill Solar, LLC
Olmsted County, Minnesota

- Point of Interconnect
- Site
- Proposed Access Road
- Proposed Collector Line
- Major Road
- Municipal Boundary
- County Boundary

Farmland Class

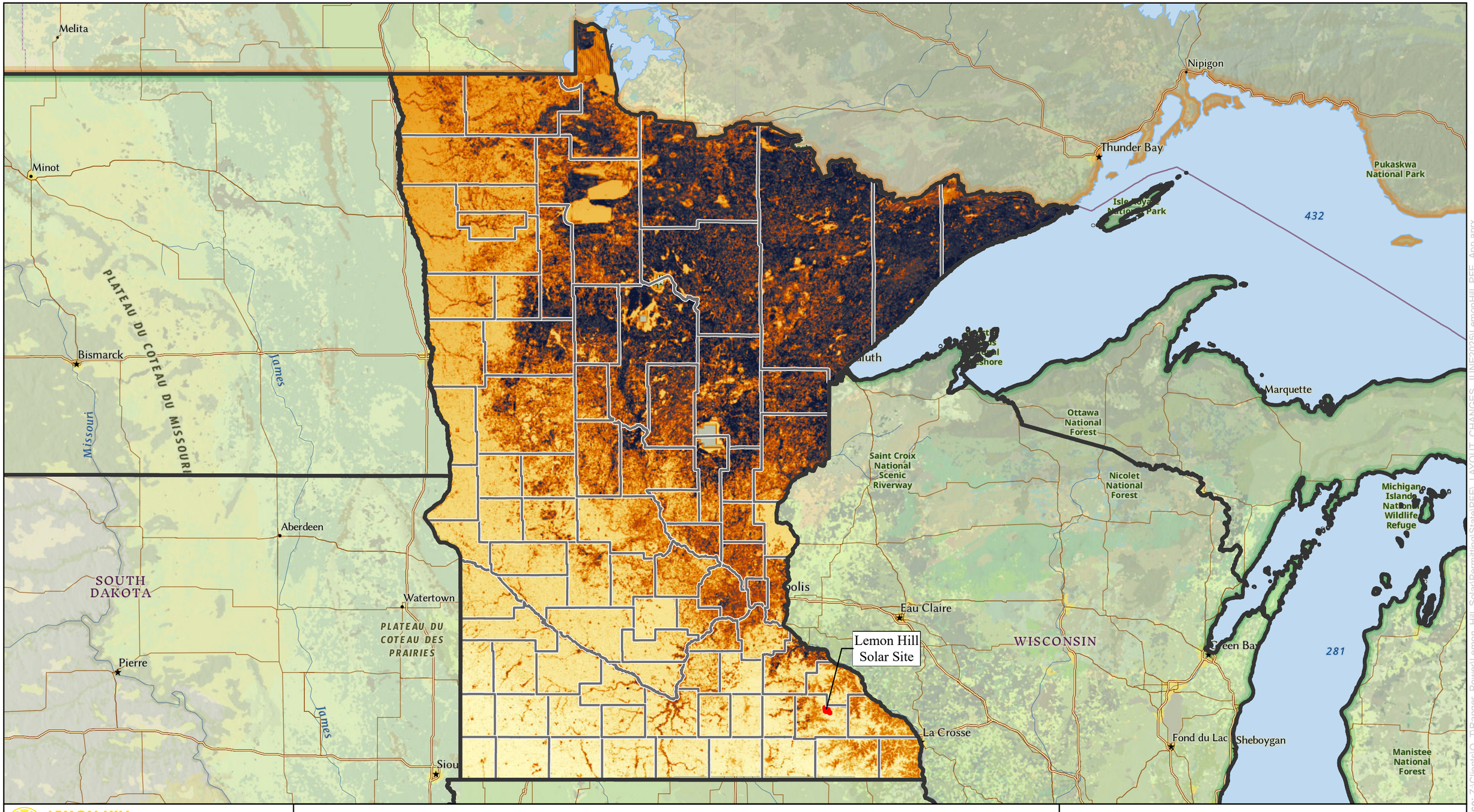
- All areas are prime farmland
- Farmland of statewide importance
- Prime farmland if drained
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Not prime farmland

Source: Z:\Clients\Q_T\Ranger_Power\Lemon_Hill_Solar\Permitting\State\PFE_LAYOUT_CHANGES_JUNE2025\LemonHill_PFE_App.aprx

Date: (6/23/2025)

Figure 7

Solar Resources in Minnesota



LEMON HILL SOLAR
A RANGER POWER PROJECT

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0 45 90 Miles

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N W E S

For Environmental Review Purposes Only

Figure 7 - Solar Resources in Minnesota
Lemon Hill Solar Project
Lemon Hill Solar, LLC
Olmsted County, Minnesota

Site
State Boundary
County Boundary

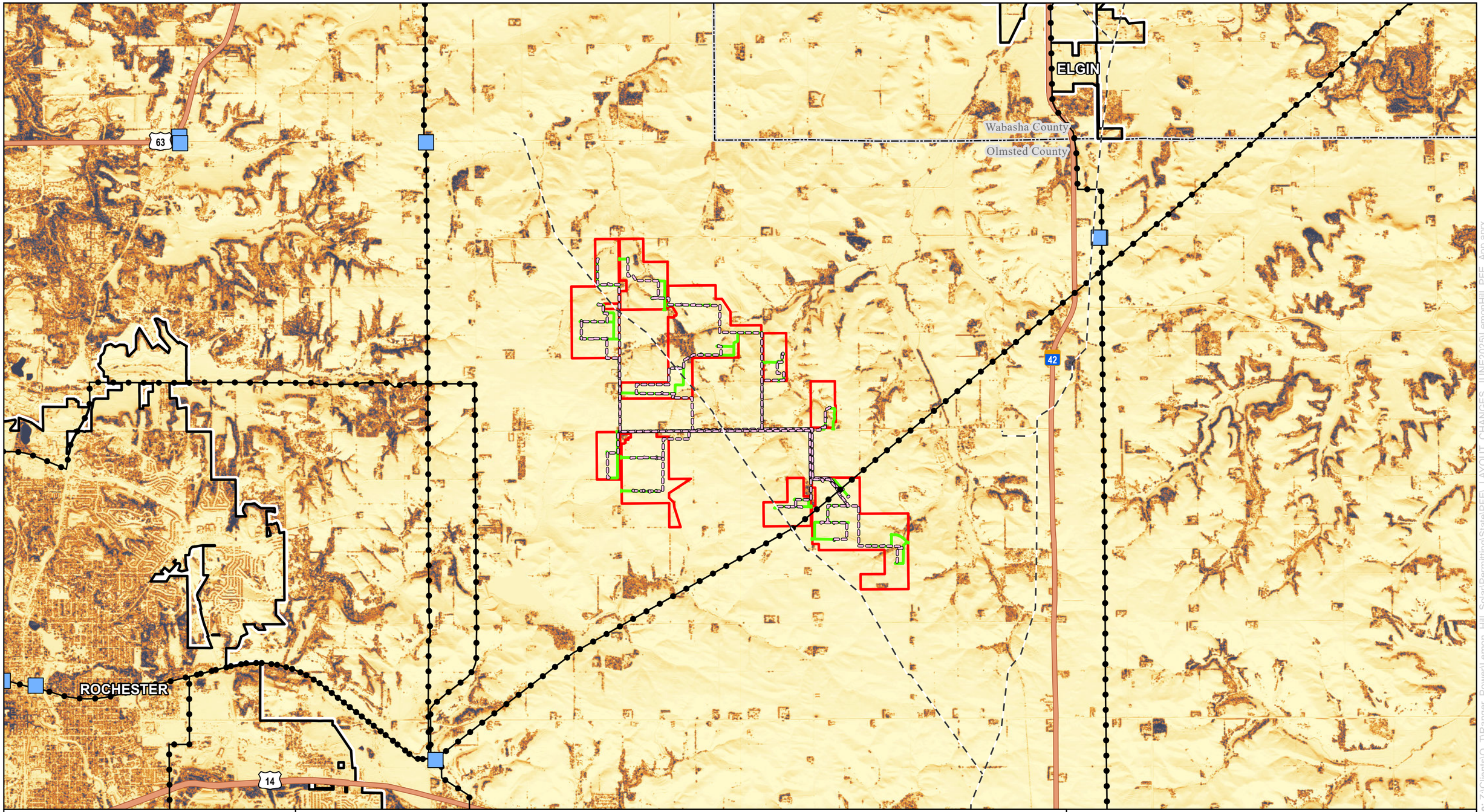
Minnesota Solar Potential (kWh/m^2)
3.5 (Sun)
0.0 (Shade)

Source: Z:\Clients\Q_T\Ranger_Power\Lemon_Hill_Solar\Permitting\State\PFE_LAYOUT_CHANGES_JUNE2025\LemonHill_PFE_App.aprx

Date: (6/23/2025)

Figure 8

MSSA Insolation at Site



LEMON HILL SOLAR
A RANGER POWER PROJECT

merjent

0 0.75 1.5 Miles

1:60,000

N W E S

For Environmental Review Purposes Only

Figure 8 - MSSA Insolation at Project Area Site
Lemon Hill Solar Project

Lemon Hill Solar, LLC
Olmsted County, Minnesota

- Site
- Proposed Access Road
- Proposed Collector Line
- Existing Transmission Line
- Existing Pipeline
- Existing Substation
- Major Road
- Municipal Boundary
- County Boundary

Minnesota Solar Potential (kWh/m^2)

3.5 (Sun)

0.0 (Shade)

Source: Z:\Clients\Q_TRanger_PowerLemon_Hill_Solar\Permitting\State\PFE_LAYOUT_CHANGES_JUNE2025\LemonHill_PFE_App.aprx

Date: (6/23/2025)

Figure 9

Lemon Hill Solar Site and POI Constraints

LEMON HILL SOLAR
A RANGER POWER PROJECT

Merjent

0 1 2 Miles

1:80,000

For Environmental Review Purposes Only

Figure 9 - Lemon Hill Solar Site & POI Constraints
Lemon Hill Solar Project

Lemon Hill Solar, LLC
Olmsted County, Minnesota

- Point of Interconnect
- Site
- Proposed Access Road
- Proposed Collector Line
- POI 5-Mile Buffer
- Municipal Boundary
- Existing Transmission Line
- Existing Pipeline
- County Well Index
- Public Waters Inventory Watercourse
- Public Waters Inventory Ditch
- Public Waters Inventory Watercourse Basin/Wetland
- Impaired Stream (2024)
- State Water Trail
- MDNR River or Stream
- Snowmobile Trail
- State Parks, Trails, and Roads
- Vascular Plant
- Rochester State Game Refuge
- Wildlife Management Area
- MBS Site of Biodiversity Significance
- State Park
- Aquatic Management Area
- BWSR RIM / CREP Easement
- Native Prairie
- Native Plant Community
- NWI Wetland
- 0.2% Annual Chance Flood Hazard
- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Area with Reduced Risk Due to Levee

Source: Z:\Clients\Q_T\Ranger_Power\Lemon_Hill_Solar\Permitting\State\PFE_LAYOUT_CHANGES_JUNE2025\LemonHill_PFE_App.aprx

Date: (6/23/2025)