Supplemental Environmental Assessment of the Maple Grove Solar Project

Joint Application for a Certificate of Public Convenience and Necessity of Maple Grove Solar I, LLC and Maple Grove Solar II, LLC to Construct a Photovoltaic Electric Generation Facility, Battery Energy Storage System, Project Substation, and 161 kV generator tie line in the Towns of Barron and Maple Grove, Barron County, Wisconsin

Public Service Commission of Wisconsin Docket 5-CE-154

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Public Service Commission of Wisconsin

Division of Digital Access, Consumer, and Environmental Affairs

Office of Environmental Analysis

Contents

Acronyms

§	Section
AC	Alternating current
BESS	Battery Energy Storage System
BMP	Best management practices
CA	Certificate of Authority
ch.	Chapter
Commission	Public Service Commission of Wisconsin
CPCN	Certificate of Public Convenience and Necessity
CRP	Conservation Reserve Program
CUP	Conditional Use Permit
DATCP	Department of Agriculture, Trade, and Consumer Protection
dB	Decibel
DC	Direct current
DNR	Department of Natural Resources
DPP	Definitive Planning Phase
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMF	Electric and magnetic fields
EPA	U.S. Environmental Protection Agency
ER	Endangered resources
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
GIS	Geographic Information System
GW	gigawatt
kV	Kilovolt
mG	Milligauss
MISO	Midcontinent Independent System Operator, Inc.
MW	Megawatt
NEC	National Electric Code
NESC	National Electrical Safety Code
NEV	Neutral-to-earth voltage
NHI	Natural Heritage Inventory
NPV	Net present value
NR 40	Wisconsin Administrative Code ch. NR 40
NRHP	National Register of Historic Places
OHWM	Ordinary High-Water Mark
O&M	Operations and maintenance
PPA	Purchase power agreements
PSC	Public Service Commission of Wisconsin
PV	Photovoltaic
PVHI	Photovoltaic Heat Island
ROW	Right-of-way

SHPO	Wisconsin State Historic Preservation Office
SSURGO	Soil Survey Geographic Database
STH	State Highway
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
US EPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USH	U.S. Highway
WEPA	Wisconsin Environmental Policy Act
WHPD	Wisconsin Historic Preservation Database
WHS	Wisconsin Historical Society
Wis. Admin. Code	Wisconsin Administrative Code
Wis. Stat.	Wisconsin Statutes
WisDOT	Wisconsin Department of Transportation
WPDES	Wisconsin Pollutant Discharge Elimination System
WRP	Wetland Reserve Program

1. Introduction

On February 13, 2023, Maple Grove Solar I, LLC and Maple Grove Solar II, LLC (collectively Maple Grove Solar or MGS), a wholly owned subsidiary of ibV Energy Partners, LLC, the United States subsidiary of Vogt Solar Holdings, Inc., filed an application with the Public Service Commission of Wisconsin (PSC or Commission) to receive a Certificate of Public Convenience and Necessity (CPCN) for the authority to construct a solar electric generation facility, battery energy storage system (BESS), and generation tie line in Wisconsin. The applicants' requests to receive a CPCN was filed with the Commission pursuant to Wis. Stat. § 196.431(3) and Wis. Admin. Code § PSC 111.53.

MGS is proposing construction of a new electric generation facility using photovoltaic (PV) solar panels on a single-axis tracking system. The project is planned to have a generation capacity of up to 294 MW direct current (DC) and interconnect to the electrical grid at 228 MW alternating current (AC). The project would be located on approximately 1,554 acres of land under lease option agreement in the Towns of Barron and Maple Grove in Barron County. Major components of the project include PV panel arrays, a collector substation, transformer, BESS units, a generation tie line, temporary laydown yards, junction boxes, the underground collection system, inverters, and an operations and management (O&M) building. Of the 1,554 acres, approximately 889 acres would make up the primary area to host the solar facility. An approximately 1.8-mile long 161-kV generation tie line would be constructed entirely within the revised project footprint, extending from the project substation to the existing Dairyland Barron substation. The solar arrays, BESS system, and substation would be fenced, and the applicants have provided some alternative solar array sites and gen-tie routes for evaluation and use if needed. The project area is primarily comprised of agricultural land, as well as multiple forested areas totaling approximately 91.8 acres.

The project substation would be located on private lands under lease option. The details required for the Maple Grove Solar 1 portion of the solar generation facility to be operational have been worked out in transmission studies between the Midcontinent Independent System Operator, Inc. (MISO) and the applicants as part of the MISO West Definitive Planning Phase (DPP) 2020 Study Cycle. Similar facility studies and discussions for Maple Grove Solar II will also be conducted as part of the MISO West DPP 2022 Study Cycle. The results of the studies have not yet been published publicly, however they can be provided to the PSC once made public. Maple Grove Solar holds two separate MISO queue positions, one for each phase of the project.

Disclaimer: This Supplemental EA updates the original EA prepared for this docket. This document was prepared in response to a change in the project generation-tie line that was proposed after the EA was prepared. Any previously proposed information that no longer fits the current project design at the time of writing has been changed. Further information on how this document has been altered from the original EA can be found in Section 1.4.

1.1. Analysis for Wisconsin Environmental Policy Act Compliance

The proposed project is a Type II action under Wis. Admin. Code § PSC 4.10(2). The Commission has prepared an EA for this project that evaluates the location of the project and its potential environmental, community, and private property impacts. There will be a preliminary determination when the Supplemental EA is complete that will determine whether the preparation of an EIS is necessary. Comments on this preliminary determination will be accepted and the Commission shall make copies of the Supplemental EA available to those persons that request it.

An EIS is required if an EA determines there are significant impacts to the environment as a result of the project. The EA is a written review of the potential impacts of the proposed project that would affect the quality of the human environment as described in Wis. Stat. § 1.11(2)(c). The EA also describes ways of mitigating or avoiding some of the expected impacts and concludes with the evaluation of ten items described in Wis. Admin. Code § PSC 4.10(2)(d).

In accordance with Wis. Admin. Code § PSC 4.20(1m), notification[1] of the Commission's intent to prepare an EA, including a solicitation for comments on the environmental aspects of this proposed project, was sent to the mailing list for this docket on April 2, 2024. The mailing list includes:

- Local residents and landowners potentially affected by the project
- Municipal officials in the towns and counties covered by the project area
- Local news media
- Libraries in the project area
- Regional Planning Commissions
- Legislators representing the affected area
- Any other persons with a demonstrated interest in the proposed project

Through the EA scoping period, Commission staff solicit public comments about the proposed project, and take any comments of concerns regarding the environmental assessment or review of the project into consideration during the analysis of the project. The comments received are discussed in relevant sections of this Supplemental EA.

1.2. Environmental Assessment Scope

Wisconsin Admin. Code § PSC 4.20(1) states that an EA shall be a concise document that provides a factual investigation of the relevant areas of environmental concern in sufficient depth to permit a reasonably informed preliminary judgement of the environmental consequences of the proposed project. The EA includes a recommendation on whether the proposed project is a major action significantly affecting the quality of the human environment, within the meaning of Wis. Stat § 1.11(2)(c). An EIS is required if an EA determines there are significant impacts to the environment as a result of the project.

[1] PSC REF#: 495884 – 5-CE-154 EA Maple Grove Solar Notification Letter

The Commission's Division of Digital Access, Consumer, and Environmental Affairs prepared the original EA in cooperation with the Department of Natural Resources (DNR) Office of Energy to determine if an EIS is necessary under Wis. Stat. § 1.11. A preliminary determination[2] was made on July 1, 2024, concluding that preparation of an EIS was not necessary. The EA was submitted as an exhibit in the technical hearing for the docket.[3]

Supplemental EA:
The Commission's Division of Digital Access, Consumer, and Environmental Affairs prepared the Supplemental EA in cooperation with the Department of Natural Resources (DNR) Office of Energy to determine if an EIS is necessary under Wis. Stat. § 1.11. A preliminary determination[4] was made on November 6, 2024, concluding that the preparation of an EIS was not necessary. This Supplemental EA is being submitted as an exhibit as part of the record for the docket.

1.3. Information Received During EA Process

Wisconsin Admin. Code § PSC 4.20(2)(f) states that the EA shall include a list of other persons contacted and a summary of comments.

Contributors to EA
No other persons besides staff at DNR and the Commission were contacted or involved in the preparation of this Supplemental EA. The following DNR and Commission staff contributed to the EA and Supplemental EA:

- Kyle Feltes, PSC Environmental Analysis and Review Specialist.
- Geri Radermacher, DNR - Environmental Analysis & Sustainability Program, provided information about wetlands and waterway impacts and permit requirements and assisted with those EA sections.
- Stacy Rowe, DNR - Conservation Biologist, Bureau of Environmental Analysis and Sustainability, provided information about potential impacts to endangered resources and assisted with those EA sections.
- Kayla Golden, PSC Public Service Engineer, assisted with EA sections on technical information.
- Aaron Seitz, DNR – Wildlife Technician, assisted with wildlife section of EA.
- Cody Strong, DNR – St. Croix Area Wildlife Supervisor, assisted with wildlife section.

Summary of Public Comments
Thirty-two public comments were received during the EA scoping period. DNR and PSC staff considered all the comments that were received during the EA scoping period and the

[2] PSC REF#: 507077 – EA – Preliminary Determination Letter – Maple Grove Solar

[3] PSC REF#: 510047 – Ex.-PSC-Feltes-1

[4] PSC REF#: 523453 – Supplemental EA Preliminary Determination Letter

Preliminary Determination period in their preparation of the EA. Most of the comments mentioned several topics of concern.

Several commenters were supportive of the project. Other commenters that generally reside near the project had concerns relating to potential impacts to residences, facilities or property damage, wildlife, safety, or land use. Additional public comment periods are available after the Commission makes its preliminary determination on whether to do an EIS for this project, and during the public hearing for this project. Two public comments were received during the EA Preliminary Determination period. One commenter that resides near the project expressed opposition to land use for a large-scale solar project.

Supplemental EA Summary of Public Comments:
Twelve comments were received during the Supplemental EA scoping period which overlapped with the comment period for the public hearing.

DNR and PSC staff considered all the comments that were received during the scoping period and the Preliminary Determination period in their preparation of this Supplemental EA. Most of the comments mentioned several topics of concern.

Several commenters were supportive of the project. Other commenters that reside near the project shared concerns similar to those submitted during the original EA scoping period, including potential impacts to residences, infrastructure damage, decommissioning, wildlife, safety, local financial impacts, or land use. An additional public comment period is available after the Commission makes its preliminary determination on whether to do an EIS for this project. One public comment was received during the Supplemental EA Preliminary Determination period, which expressed the want for an EIS to be conducted due to the amount of land that would be occupied.

1.4. Supplemental Environmental Assessment

On August 21, 2024, Maple Grove Solar filed a notification of a route adjustment for the generation-tie line portion of the proposed project[5]. This Supplemental EA was prepared to include analysis of the adjusted routes for the generation-tie line. Effects of the changed route were considered for all sections of this Supplemental EA, which were adapted from the original EA. If a section did not change from the original EA, the change in the generation-tie line route and related alterations did not alter staff's analysis for that section. An additional disclaimer has been added to each of the sections to follow wherein any alterations were made to account for the gen-tie route change and project substation relocation.

[5] PSC REF#: 514664 – Rebuttal-MGS-Wedesky

2. Project Description and Overview

In accordance with Wis. Admin. Code § PSC 4.20(2)(b), the EA includes an overview of the design of the facilities to be constructed, the construction process, and the project areas.

2.1. Purpose and Need

Wisc. Admin. Code § PSC 4.20(2)(a) directs the EA to describe the purpose and need for the proposed projects.

The purpose of this proposed project is to generate utility-scale solar electricity. As Maple Grove Solar is a developer of a wholesale merchant plant, it is exempt from the needs analysis that would be required of a state public utility.

Maple Grove Solar indicated that it may remain as the entity that would own and operate the proposed project, or may develop and sell the project to a utility or an independent power producer.

2.2. Location

Supplemental EA: This section has been updated to reflect changes due to the gen-tie route adjustment. Location and area impacts were updated.

The proposed project would be constructed in the Towns of Barron and Maple Grove in Barron County. The project study area is 1,607 acres of predominantly agricultural rural landscape, bisected by State Highway 25, and is approximately 7.5 miles west of the City of Chetek. The project study area covers Section 33, Township 34N (Barron Township), and Sections 4, 8, 9, 15, 16, and 17 of Township 33N (Maple Grove Township), Range 12W in Barron County. Within the project study area, MGS has 1,554 acres under lease option agreement, which includes the primary solar arrays (889 acres), alternative solar arrays (272 acres), generation tie line (21.1 acres primary, 21.2 alternate), electric collector system, access roads, project substation and operations & maintenance (O&M) building (2.5 acre together). Not all of the 1,554 acres of the project area would have facilities located on it upon final construction and operation.

The revised gen-tie line mostly follows the same common route between the primary and alternate siting, however the primary and alternate routes diverge in one location, referred to as Segments 2B (Primary) and 2A (Alternate). The primary route would total 1.78 miles in length, and the alternate route would total 1.79 miles in length. Both routes are entirely cross-country through active agricultural fields, non-forested wetland, upland forest, and grassland; both routes cross 11 ½ Avenue and State Trunk Highway 25 along the route to the Barron Substation. Three laydown yards totaling 18.4 acres would be located inside project fences; all three laydown yards would be located inside primary array areas.

2.2.1. Applicant's Siting Process

Solar PV generation sites benefit from areas with flat topography and minimal grading requirements. Avoiding areas that would cast shade onto the PV panels is another suitability factor. For example, large agricultural fields that are not surrounded by large forests or tall buildings are often considered preferred sites. Siting reviews also attempt to avoid impacts to natural resources such as wetlands, waterways, endangered resources, and historic resources to the greatest extent possible.

The applicants consulted with Stantec Consulting Services Inc. (Stantec) to evaluate the regional and local factors that would determine the project site. Features considered included availability of existing transmission systems, land availability consisting of both physical characteristics and landowners willing to participate, limited environmental impacts, and conducive road infrastructure for construction and delivery equipment. Local siting considerations included soliciting community feedback, closer evaluation of environmental resources such as wetlands and waterways, setbacks and vegetative screening possibilities, and site constructability.

2.2.2. Brownfields

Under Wis. Stat. § 196.491(3)(d)8, the Commission must consider whether brownfields are used to the extent practicable when evaluating large electric generation facilities. Brownfields, as defined by Wis. Stat. ch. 238.13(1)(a) are defined as abandoned, idle, or underused industrial or commercial facilities or sites, the expansion or redevelopment of which is adversely affected by actual or perceived environmental contamination.

MGS reviewed brownfields from the DNR Bureau of Remediation and Redevelopment database of Open and Close Site Boundaries. The search identified one brownfield site within 10 miles of the point of interconnection. The identified site is located in the City of Chetek. The applicants stated that the lack of enough contiguous land surrounding the site and no immediate proximity to a viable grid interconnection point ruled out the use of the brownfield site. Therefore, it was determined there are no brownfield sites suitable to host any of the proposed project facilities.

2.2.3. Minor Siting Adjustments

It is the applicants' obligation to minimize the need for minor siting adjustments by rigorously analyzing its proposed project. The Commission recognizes that detailed engineering is not complete prior to authorization of a project and that minor siting adjustments may be needed to accommodate the final design of the project. Situations may be discovered in the field that were not apparent based on the information available to the applicants in development of the proposed project or to the Commission in making its authorization. Therefore, the Commission typically includes an order condition that allows for minor siting adjustments when authorizing a project.

The Commission has developed new minor siting adjustment requirements following incidents occurring in previous similar Commission-approved projects. The following is anticipated to be the new typical requirements for future applicable projects, including this project.

The applicants may propose minor adjustments to the approved locations of project facilities for the protection of environmental resources, landowner requests, or technical design changes that arise during final stages of engineering (up to the authorized nameplate capacity the solar facility stated in the application), but any changes from the approved layout may not affect a type of resource not discussed in the EA, nor may they affect new landowners who have not been given proper notice and hearing opportunity or affect landowners who were given proper notice and hearing opportunity in a significantly different manner than was originally approved, nor may they include a unique occurrence not discussed in the EA of, for example, a particular human burial, archaeological site, or protected species. The applicants shall consult with Commission staff regarding whether a proposed change rises to the level at which Commission review and approval is appropriate. For each proposed adjustment for which Commission review is appropriate, the applicants shall submit for Commission staff review and approval a letter describing:

1. the nature of the requested change;
2. the reason for the requested change;
3. the incremental difference in any environmental impacts;
4. communications with all potentially affected landowners regarding the change;
5. documentation of discussions with other agencies regarding the change; and
6. a map showing the approved layout and the proposed modification(s) of all facilities proposed to be modified, property boundaries, relevant natural features such as woodlands, wetlands, waterways, and other sensitive areas.

Regarding item (3), provide a table with incremental changes in acreage for all the land acres contained within the perimeter fences and the land acres that blocks of arrays/subarrays occupy, changes in length of all collector lines, access roads, and tie lines, and changes in distances to adjacent landowner buildings for all inverters/PCUs and substations where there is a shift in the originally approved location. Identify each change using the infrastructure identification used in the application (i.e. array 1A, inverter #22). Regarding item (4), provide documentation of communications with any landowner, participating or nonparticipating, related to proposed changes wherein any project facility (including perimeter fences as well as items within those fences such as inverters or panels) is proposed to be re-located closer to an inhabited residence than the location that was approved in the Commission's order. Documentation should include all the information provided to the landowner regarding changes, include any feedback provided by the landowner, identify any way in which landowner feedback has informed the changes proposed, and whether the landowner agrees to the proposed changes.

Approval of the requests is delegated to the Administrator of the Division of Energy Regulation and Analysis with advice and consent from the Administrator of the Division of Digital Access, Consumer, and Environmental Affairs.

If the minor siting adjustment criteria are not met, the proposed changes may require the docket to be reopened. Additional requirements for the applicants would apply following an approved change, including:

- Obtaining all necessary permits

- Complying with agreements made with local units of government
- Complying with all landowner agreements
- Avoiding parts of the project area that the Commission finds unacceptable
- Complying with the applicants' environmental siting criteria

2.2.4. Landscape and Maps

Supplemental EA: This section has been updated to reflect changes due to the gen-tie route adjustment and substation relocation. Locations were updated.

The solar facility and gen-tie line are located in an area with several different land use types, including agriculture, forests, grasslands, and wetlands. The project is in an almost entirely rural area, with a few farms and residences near the project facilities. The following pages (

Figure 1 and Figure 2) provide maps of the project facilities (as submitted in the application, updated by data request responses, and updated as part of the gen-tie route revision) with aerial imagery to give an indication of the landscape of the Solar Project.

Figure 1 - Map of the Maple Grove Solar Project and Gen-tie line

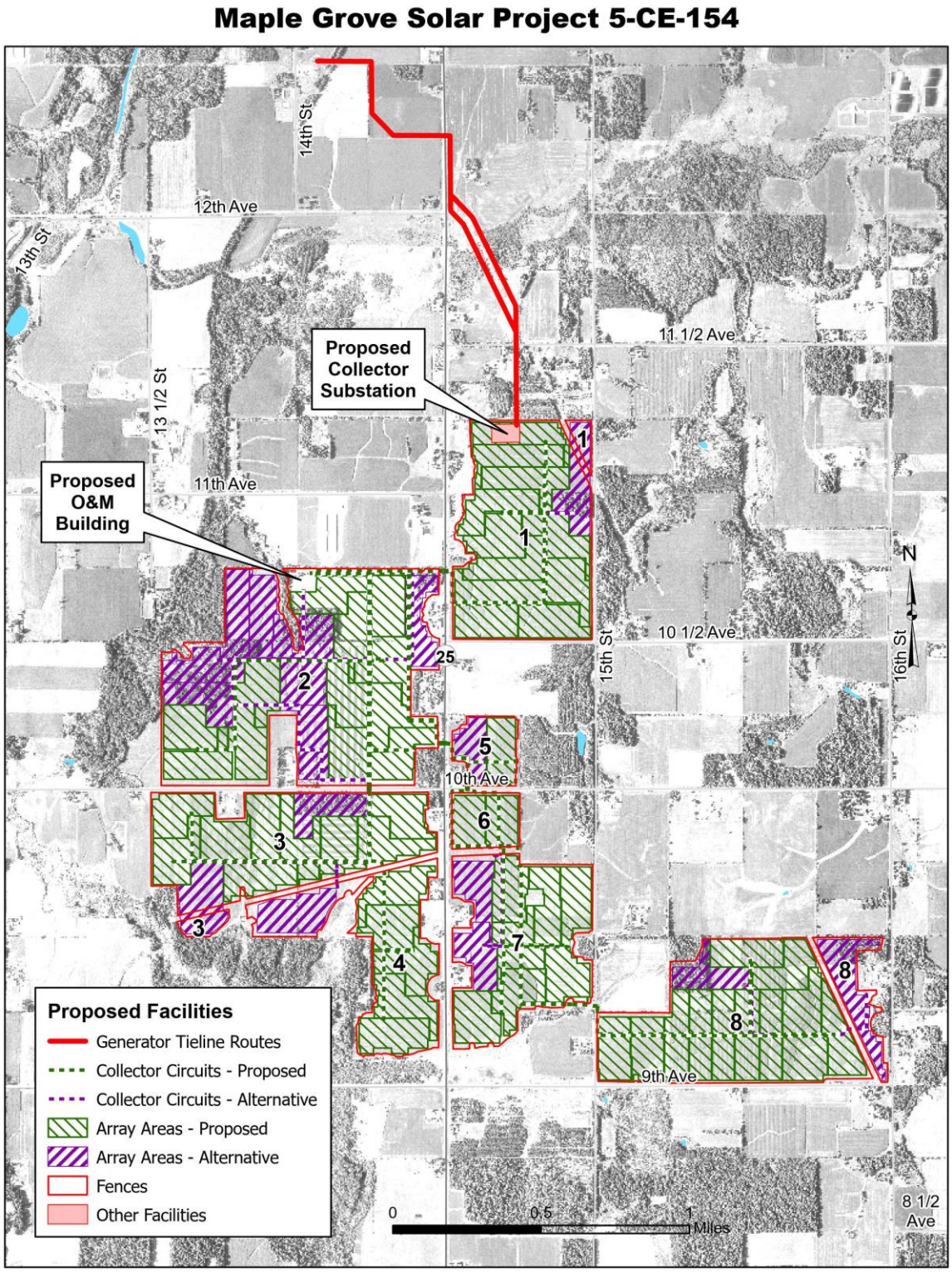
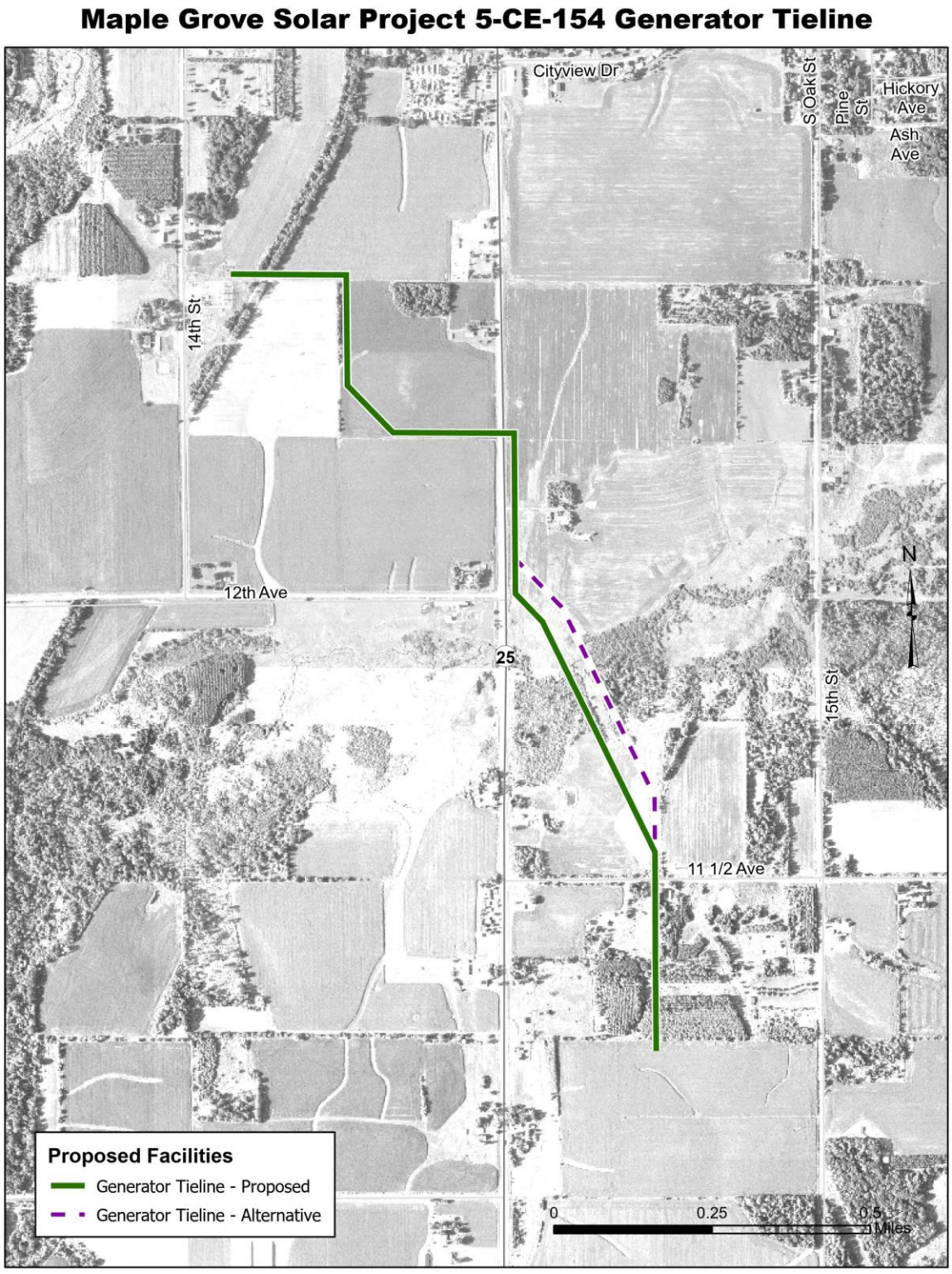


Figure 2 - Map of the Maple Grove Solar Project's associated Gen-tie line



2.3. Cost and Ownership

The Commission's review of CPCN applications for wholesale merchant plants is more limited than for projects proposed by public or investor-owned utilities. Under Wis. Stat. § 196.491(3)(d)2 and 3, a wholesale merchant plant CPCN need not demonstrate that its facility would meet the reasonable needs of the public for electricity, and the Commission may not consider economic factors when evaluating the application. The Energy Priorities Law[6] ranks energy conservation and efficiency as its highest priority, with noncombustible renewable resources as the second highest priority. Maple Grove Solar may own and operate the project, or it may sell partial or complete ownership of the site to a utility or an independent power producer.

2.4. Schedule

Maple Grove Solar anticipates beginning construction of Phase 1 of the project in July of 2025, with Phase 2 beginning in October of 2025. MGS states that the construction timeline would be finalized after final engineering, procurement, and a construction contractor is hired. Variables that may affect the construction schedule include weather conditions, particularly during the winter months, as well as the availability of materials and a work force. Construction is expected to span 18 months including commissioning, dependent on winter weather conditions. If construction can occur, at least in part, during winter months, the project would be estimated to be reduced to a minimum of 16 months.

Construction would begin with installation of tracking pads and stormwater BMPs, vegetation removal, establishment of staging areas, laydown yards, and access roads. Once the site is prepared, the support pilings would be driven, and tracking systems and inverters installed. The solar modules would be installed, and the collector substation built, tested, and energized. Inverter pads across the site and BESS units in Phase 2 are anticipated to begin installation simultaneously around the same time that piles would be driven in Phase 2. Overlap of some construction activities is expected. Additional work on site may be necessary after construction and placement into operation, if necessary, to stabilize soils and ground vegetation and allow for closure of storm water and erosion control permits.

2.5. Permits and Approvals

The Commission must make a number of determinations regarding construction projects in a limited timeframe without knowing whether other regulatory permits will be issued. The Commission typically includes language in an order authorizing a project that states an applicant is required to obtain all necessary federal, state, and local permits prior to starting construction as a practical way of mitigating that uncertainty. The reason for this requirement is to ensure the Commission does not approve, and the applicant begin work on, a section of a project that would not be able to obtain permits from other regulatory agencies, or begin construction in an area

[6] Wis. Stat. § 1.12(4)

without following possible mitigation or construction requirements that are required by another regulatory agency permit.

The solar project may require coverage under various permits from federal, state, county, and local authorities. MGS has already consulted with US Fish and Wildlife Service (USFWS) and DNR on endangered species impacts. Mitigation actions would be required to comply with the Broad Incidental Take Permit/Authorization for threatened and endangered species. The project is expected to avoid waterway impacts that would necessitate DNR permitting, however it would require wetland fill permit coverage. Archaeological and Cultural Resources permits through the Wisconsin State Historical Society are not anticipated at the time of writing this EA.

Authorizations that may be sought and those already obtained include the following, but not limited to:

- USACE: Section 404 of the Clean Water Act
- USFWS: Federal Endangered Species Act Coordination
- FAA: Federal Regulation Title 14 Part 77
- DNR: Wisconsin Pollutant Discharge Elimination System (WPDES) / Construction Site Storm Water Runoff General Permit (ch. 216)
- DNR: Wisconsin Endangered Species Review (Wis. Stat. § 281.36)
- Wisconsin State Historical Society: Archaeological and Cultural Resources Coordination
- WisDOT: Heavy and oversized load permits
- City of Barron: Driveway access permits

2.6. Construction Process

The construction process for a large solar electric generation facility can generally be expected to follow the following steps:

Site preparation

- Sensitive resources and site boundaries are mapped and marked on site plans and in the field as needed.
- Construction entrances and exits are stabilized with tracking pads and aggregate, and storm water and erosion control best management practices (BMPs) are installed in accordance with the final site plans.
- Staging and laydown areas are developed and aggregate materials placed to create a stable area for the delivery of materials and equipment. Construction trailers are placed at the main laydown area.
- Vegetation removal in areas where it is necessary is completed, and other areas may be seeded to stabilize soils, particularly where limited or no ground disturbance is expected.

Construction process

- Site grading occurs in accordance with the final designs. Erosion and storm water control BMPs should be regularly checked to ensure they are in compliance with DNR technical standards.

- Access roads are constructed if used, with topsoil typically stripped and spread onsite, before a layer of aggregate is placed.
- Delivery of machinery and equipment is done on a consistent basis as construction occurs across the project.
- Array perimeter fences and gates are installed, usually as driven posts, though on occasion concrete may be needed for supports.
- Lay concrete foundations and aggregate materials down at substation.
- Install driven piles or helical piers for arrays, moving from area to area as machinery, materials, and site conditions allow.
- Install the collection system through trenching, vibratory plows, and directional drilling as appropriate for conditions.
- Install inverters and tracking systems for arrays.
- Conduct site restoration in areas where ground disturbance is complete, including fine grading of surface soils, seeding the area, and removing waste materials.
- Install the solar PV modules.
- Install substation equipment and connect collection system to transformer substation.
- Construct generator tie-line as applicable.

Project Finalization

- Conduct electrical testing and inspect solar equipment prior to energization.
- Install and inspect generator tie-line to NSPW substation.
- Conduct interconnection inspections and testing.
- Remove any temporary laydown and staging areas. Remove any aggregate materials, decompact underlying subsoils, replace and decompact stored top soils.
- Conduct final permanent seeding on site in accordance with vegetation plans.
- Continue monitoring erosion control and storm water BMPs until 70 percent vegetation establishment exists, allowing permit to be closed.
- Conduct any follow up studies or work required by Commission Final Decisions as applicable.

The construction of any solar facility may have some minor variations in construction process based on the developer, the contractor selected, and site-specific conditions.

2.7. Transmission Network Alternatives

The project requires a new gen-tie line to connect the generation portion of the Maple Grove Solar project to the Barron Substation. The applicants stated that there is no viable alternative to the gen-tie line, as it is electrically necessary to connect the project to the electric grid. Therefore, no alternatives to the gen-tie line were considered.

2.8. Technical Description and Design

Supplemental EA: This section has been updated to reflect changes due to the gen-tie route adjustment and substation relocation. Location and area impacts were updated.

The proposed project is a 259.6 MWAC photovoltaic (PV) electric generation facility made up of multiple fenced proposed project array areas. Maple Grove Solar I, LLC and Maple Grove Solar II, LLC (applicants), as an independent power producer wholly owned by ibV Energy Partners, would serve as the site developer. The applicants provided information on both "proposed" and "alternative" arrays. Certain details have not been decided at the time of the application, such as the specific solar PV module or inverter. Other details may be determined or refined based on a Commission decision, such as the specific array layouts. The following sections of the EA describe some of the anticipated characteristics of the proposed project facilities based on information provided in the application.

2.8.1 Project Components

Solar PV electric generation facilities are comprised of several major component types, which can include:

- Solar PV panels and trackers
- Inverters
- Collector circuits
- Project and Utility substations
- Generator Transmission Tie Line (Gen-Tie)

The solar facility would consist of solar PV panels on a single axis tracking system. The proposed project would have a nameplate generation capacity of up to 259.6 MWAC and connect up to 228 MWAC to the electrical grid. The number of solar panels would be approximately 502,632 PV panels in the proposed array area, though the final number of panels may vary depending on the final selection of panels used for the project. All PV panels would be grouped and organized into power blocks. Each fenced-in array site would include one or more power blocks. The PV panels in each power block would be connected to inverters sized at varying capacities to ultimately achieve the 294.04 MWDC nameplate capacity of the solar generation facility. The inverters would convert the DC power produced by the solar panels into AC.

There would also be a battery energy storage system (BESS), comprised of lithium-ion batteries housed inside outdoor enclosures that have a thermal management system, fire suppression system, and other related components. The BESS units are made up of many small lithium-ion batteries joined together into groups and placed into the racks of the storage containers. Each battery enclosure is accompanied by a bi-directional inverter and a generator step-up transformer used to transfer energy to and from the batteries. The battery units would be DC-coupled and located adjacent to each solar inverter in the Maple Grove Solar II portion of the project. A fraction of the energy generated from the solar panels in each power block would flow directly into the battery units coupled with that power block. Energy stored in the battery units would be

released into the inverters as needed to accommodate evening peak loads and provide flexibility with the solar generation throughout the day. The BESS is proposed to have a 50 MWAC capacity.

The converted power from the solar arrays would go into collector circuits and eventually the transmission system. Feeder collector circuits would be constructed underground in trenches approximately 36-to-48-inches deep and 12-to-18 inches wide for single feeder trenches, three-to-six-feet wide with three-foot spacing for two feeder trenches, and 15-to-16-feet wide with three-foot spacing for five feeder trenches. The collector circuits would connect to a collector substation where the voltage would be converted from 34.5 kV to 161 kV. The power would then be delivered to the existing Barron Substation, owned by Dairyland Power Cooperative (Dairyland), which would connect the facility to the existing transmission system.

A 1.8-mile generator tie line would be required to connect the project collector substation to the Barron Substation. The generator tie line would use only new ROW. The proposed route would run north from the collector substation through active agricultural fields and would cross over two existing Dairyland transmission lines, 69 kV and 161 kV, that also terminate at the Barron Substation. The details required for the solar generation and BESS facilities to be operational have been reviewed in MISO transmission studies between the applicants, MISO, and Dairyland. The applicants submitted an interconnection request for Maple Grove Solar I, LLC (148 MWAC PV) to the MISO West Definitive Planning Phase (DPP)-2020 Study Cycle and an interconnection request for Maple Grove Solar II, LLC (80 MWAC PV and 50 MWAC BESS) to the MISO West DPP-2022 Study Cycle. The applicants expect to execute a Large Generator Interconnection Agreement with MISO in August 2024 for Maple Grove I and July 2025 for Maple Grove II.

The project components would be sited within approximately 1,559 acres and would include the proposed solar arrays (889 acres including fenced areas and facilities within), Commission-required alternative solar arrays (272 acres including fenced areas and facilities within), proposed generator tie line ROW (21.1 acres), Commission-required alternative generator tie line ROW (21.2 acres), and collector substation and operation and maintenance (O&M) building (2.5 acres inside fenced footprint). The land needed would be acquired under lease options that would be executed between the applicants and landowners in the project area.

Solar Panels and Trackers

Solar panels take light coming from the sun and convert it into electrical energy, which can then be used to provide electricity to homes. Solar panels produce the electricity as DC power, which must then be converted to AC power before it can be sent to the electric grid and used for residential and commercial purposes. The electric power produced by the panel is rated as AC power and interconnected to the grid based on the AC rating of the site. The panels come in several different types, including thin film, polycrystalline silicon, and monocrystalline silicon. Some panels feature improved efficiencies by using features such as bifacial glass, which can absorb sunlight directly from the sun, as well as reflected off the ground on the underside of the panel.

Solar panels can either have a fixed orientation or have one or more axes of tracking. Fixed orientation panels point at one part of the sky during the entire day. Single axis tracking, which is proposed to be used for all the solar arrays in the Maple Grove Solar Project, allows the panels to track the sun's motion across the sky from the east to the west throughout the day. Tracking improves energy delivery and panel efficiencies by allowing the individual panels to better face the sun and absorb more incident sunlight. Dual axis tracking, not being sought in this docket, allows for additional motion for the panels in a north/south direction to track seasonal variations in the sun's position throughout the year. Dual axis tracking allows for maximal generation and the highest efficiencies but has the drawbacks of higher upfront costs and a greater likelihood of mechanical failures.

The applicants provided information on three models of solar PV panels that are under consideration for this project.[7] The applicants performed a preliminary site design using the following panel:

- Jinko Solar Eagle G6B 585-watt N-type bifacial module

The applicants state that the final panel selection would be made after detailed engineering is completed based on the most cost-effective option at that time. Moreover, the final site design may contain a mixture of several similar wattages. The panels used for the preliminary design are described to use bifacial technology, which would allow the absorption of light from the back side of the panel, as well as the front side. This type of technology would increase the energy production of the solar panels. The Jinko Solar panels are approximately 45 inches by 90 inches in size. If the Jinko Solar model were to be selected, approximately 502,632 panels would be needed to achieve the 259.6 MWAC capacity proposed in the proposed facility area and approximately 149,838 panels may be needed for the 68.5 MWAC capacity proposed for the alternative facility area. Panel numbers would vary based on the module wattages and manufacturers used in final design.

Panels would be installed in a single-axis tracker system arrangement. Each single power block within each single array site would involve multiple solar panels strung together, with multiple strings associated with one tracker. The tracking system allows the panels to follow the movement of the sun from 60 degrees east to 60 degrees west during the day, with zero degrees being level to the ground when the sun is directly overhead. The tracking system is usually constructed out of galvanized or stainless steel or aluminum. The supports would typically be installed by a pile driver. Inverters may use driven pile foundations or cast in place concrete foundations, depending on soil and geotechnical details. Foundations or supports would be installed to a minimum depth of four feet below ground surface. The applicants performed a preliminary geotechnical review of the site to assess subsurface conditions and provide preliminary geotechnical recommendations for design and construction of the project. Eighteen site sample borings were conducted to a depth of 20 to 50 feet. Most of the project area has a topsoil thickness of about six to eight inches, generally underlain by clay and sand material. Bedrock was not encountered in any of the 18 soil borings. Groundwater was encountered at

[7] PSC REF#: 491031, Appendix B – Engineering Schematics

five of the 18 boring sites during auger advancement at depths ranging from 9 and 42 feet below grade. Pending final engineering, the applicants expect to use steel, driven piles, with a minimum embedment depth of six to eight feet for panel foundations, and inverter foundations may be a concrete slab on grade with footings or piles.

Inverters
Inverters are the devices that convert the DC power generated by the solar panels into an AC current that can be transmitted across the electric transmission and distribution system and used at residences and businesses. Inverters have an inherent DC-to-AC conversion ratio that dictates how much AC power is transformed from the DC power generated at the panels. The inverters would be expected to provide the generated AC power at 34.5 kilovolts (kV) of line voltage.

In the conceptual design, the applicants used SMA 4400kVA S2-US inverters but noted that this choice was subject to change in final design. The proposed array area is designed for a 1.29 DC-to-AC ratio and the alternative array area is designed for a 1.17 DC-to-AC ratio. The project design utilizes 59 inverters at the site for the proposed arrays and 17 inverters for the alternative arrays. These numbers are subject to change as final design steps are completed.

Collector Circuits
The applicants anticipate the use of buried collector circuits that would move the AC power from the inverters to the collector substation. At this time, no overhead collector circuits are anticipated, though the applicants may change the site design during the final design process and notify Commission staff of such changes.

Approximately 25 miles of underground collector circuits would be required for the project's proposed array area and 10 miles for the alternative array area. These collector circuits would run from various power blocks to the collector substation at a 34.5 kV operating range. All sites are expected to have a typical collector circuit trench burial depth of at 36 to 48 inches. Depending on the number of collector circuit feeds in an underground trench, the trenches may have various widths: for a single feed, 12 to 18 inches; for two feeds, a three-to-six-foot trench width with three feet between trenches; and for four feeds, a 15-to-16-foot trench width with three feet between trenches.

Substation
The project would have a project substation that takes the collector circuits and transforms the voltage from 34.5 kV to a higher voltage using a main power transformer. A main power transformer would typically also have multiple mega-volt-ampere (MVA) ratings. This voltage increase allows the power produced at the site to be transferred onto the electric transmission grid and then transferred to load sites.

The proposed project would include construction of a collector substation (also referred to as a project substation or transformer substation) near the transmission interconnection point. The substation would be located on the northern boundary of the proposed array areas in Primary Array P1, with no schools, daycares, hospitals, or nursing homes within 300 feet of its proposed location. The collector substation footprint would be approximately 440 feet by 250 feet in size.

The generator tie line would run northwest from the project substation to the existing Barron Substation, owned by Dairyland.

A perimeter security fence made up of chain link metal fence with barbed wire, with access gate, would surround the substation facilities, as required by the National Electric Safety Code. Within the fenced area, the collector substation would include:

- Main power transformer 161/34.5/13.8kV
- 34.5 kV, 1200 A air-insulated circuit breakers;
- 34.5 kV, 3000 A air-insulated bus and supporting structures;
- 34.5 kV metering and instrument transformers;
- 100 kVA station service transformer;
- 161 kV, 1200 A circuit breaker;
- 161 kV, 1200 A air-insulated gang operated disconnect switch;
- 161 V surge arrestors, if required;
- 161 kV bus and supporting structures;
- 161 kV metering and instrument transformers;
- 161 kV dead-end structure for outgoing transmission line;
- Protection and control building;
- Internal access roads;
- Bare copper grounding grid (to be installed below grade) with high resistance gravel/rock installed above grade for protection against electrical shock;
- Power cables and control cables installed in a below grade trench as required;
- Lightning protection masts as required;
- Yard lighting and receptacles to be used during maintenance or during emergency; and
- Any required power factor control equipment (i.e., capacitor bank) with associated isolation equipment such as reactive power switching equipment and disconnect switches.

Generator Tie-Lines

In addition to the solar generation facility, Maple Grove Solar is proposing the construction of an approximately 1.78-mile, 161-kV generation tie line to connect the collector substation to the existing Dairyland Barron Substation. The length of the alternative route is approximately 1.79 miles. Interconnection will require modifications to the Barron Substation, including the installation of new 161-kV busses, switches, and control house panels. The generator tie-line ROW would be 100 feet wide for both the proposed and alternative routes and would be secured via easements and land agreements. The applicants expect to execute a Large Generator Interconnection Agreement with MISO in August 2024 for Maple Grove I and July 2025 for Maple Grove II.

2.8.2 Other Project Facilities

In addition to the project components stated above, the project would require access roads and laydown yards during construction. O&M structures may be located at the site of the project. Each solar array area would be fenced for the operational life of the project.

Operation and Maintenance Building

The applicants propose to construct one permanent O&M building located to the north of the project substation on the north side of the proposed P1 solar array area. The building would be used as a work location for up to four full-time-equivalent employees and house administrative and maintenance equipment. A drawing of a generic O&M building was included in Appendix B of the application.[8] The O&M building would be approximately 2,400 square feet and would require approximately 40,000 square feet of land for access around the building and vehicle parking, a total of about one acre. Outdoor lighting fixtures installed to light the building would limit lighting of the night sky and be directed away from adjacent properties and public ROWs. The O&M building would be located within a secure fenced area adjacent to the project substation. Potable water from an on-site well would service the buildings and a septic system would be constructed to provide sanitary service.

Access Roads

Existing public roadways will be used to access the project. No external temporary roads or temporary widening of existing permanent roads during construction are planned by the applicants.

Permanent internal access roads within the proposed facility area are expected to be approximately 10 miles in total length, while the permanent internal roads within the alternate facility area are expected to be approximately 1.1 miles in total length. The internal access roads would be located within the secured fenced areas and would not be available for use by landowners. They would be designed to provide access to solar equipment and to power conversion equipment within the panel arrays, and to accommodate ongoing maintenance of the project components. The applicants do not anticipate constructing temporary access roads within the project arrays.

Temporary access roads and structure work pads would be required during the construction of the generation tie line. The temporary access roads would be built utilizing wooden construction matting within wetlands or unstable soils. Construction traffic along the generation tie line in areas with stable soil would travel on the ground surface; therefore, no temporary access roads would be constructed in those areas. These roads would be used to a limited extent in areas with soil strength and stability limitations for construction vehicles. A 50-foot by 50-foot structure work pad would be installed around every structure. Temporary access roads and wooden construction matting would likely remain in place for less than 60 days.

Permanent aggregate base access roads would be constructed by first removing the topsoil and organic material, compacting the subgrade, and constructing the road according to civil design

[8] PSC REF#: 491031, Appendix B – Engineering Schematics

requirements. A layer of road base would then be added and compacted. Road aggregate or fill would be a local pit run aggregate material that meets WisDOT specifications. Upon completion of detailed engineering, the aggregate specifications would be available for construction quality assurance. Permanent access roads would be up to 12-to-16-feet wide and would be maintained for the life of the project.

Laydown Yards
Laydown areas would be needed for storing materials and equipment and vehicle parking. A total of three laydown areas would be utilized for this project: the first would be approximately 7.2 acres in size, the second would be approximately 5.6 acres, and the third would be approximately 4.6 acres. All three proposed laydown areas would be located within agricultural land in the proposed array area. Laydown areas typically require removing and stockpiling topsoil and placing a layer of aggregate material down for a stable surface. Once construction is complete, the laydown areas would be restored to pre-construction conditions.

Project Fences
The applicants plan to use approximately eight-foot-high fence with metal or wood fence posts to enclose the solar arrays. The fence would include 4-inch by 4-inch openings in the top two-thirds and up to 12-inch by 4-inch wildlife friendly fence openings in the bottom one-third to minimize impacts to movement patterns of small mammals and birds. Fences would be set back approximately 20 feet from the edges of PV arrays. No barbed wire would be used on the array fences, although fencing at substations has different security requirements. The applicants would use six-to-eight-foot chain link fence and barbed wire to surround the substation site and O&M facility. Project fences are further discussed in sections 3.21 and 3.23 of this EA.

2.8.3. Battery Energy Storage System (BESS)

The proposed project would include construction of a DC-Coupled BESS comprised of lithium-ion batteries in outdoor enclosures that have a thermal management system, fire suppression system, and other related components.

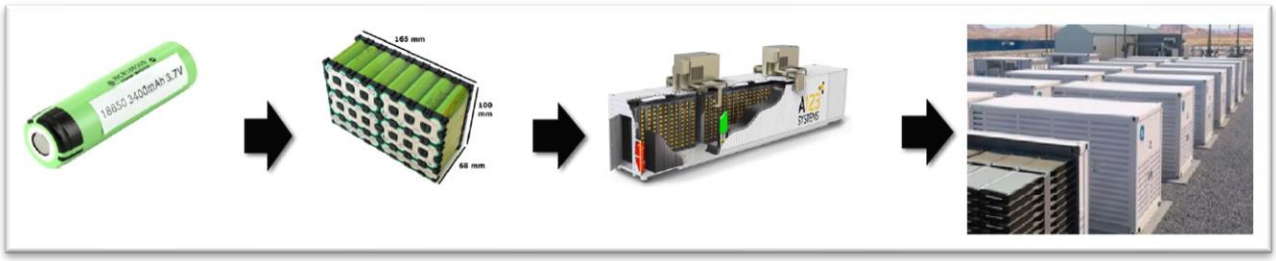
Lithium-ion Batteries
The applicants propose to use lithium-ion batteries for the BESS in this project. Lithium-ion batteries are a popular choice in many types of consumer electronics and other devices due to being relatively inexpensive and having high energy density.[9] Some examples of their use in consumer electronics include cell phones, laptops, portable tools, and cameras. Larger applications of lithium-ion batteries include electronic vehicles and energy storage systems, with safer battery chemistries, such as the one proposed in this docket. Commission staff reviewed information on the proposed lithium-ion battery technology from the applicants, as well as from the University of Wisconsin – Madison Interdisciplinary Professional Programs, National Association of Regulatory Utility Commissioners – Committee on Consumers and Public Interest (NARUC-CPI), Environmental Protection Agency (EPA), Sandia Labs, and Department

[9] Environmental Protection Agency. (July 2021). An Analysis of Lithium-ion Battery Fires in Waste Management and Recycling. EPA 530-R-21-002.

of Energy. A lithium-ion battery consists of similar components as other batteries: an anode, a cathode, a separator, electrolyte, and current collectors. These function as follows:

> "The anode, or negative end of the battery cell, is usually composed of a graphite matrix embedded with a lithium compound. The anode also contains a current collector, which is often comprised of copper. On the opposite end of the cell, the cathode (or positive end) is often cobalt oxide, though other compounds (e.g., iron phosphate, sulfur, manganese oxide, etc.) can be used, depending on the chemistry of the battery. A liquid electrolyte is located between the anode and cathode, and a thin layer of polyethylene or polypropylene acts as the 'separator' in the middle that selectively allows the lithium-ion to pass from one side to another, creating the useful voltage that powers a device."[10]

Figure 3 - Components of the BESS from individual cell to overall plant.[11]



During the energy discharge process, the positive electrode is reduced, and the negative electrode is oxidized. The reaction is reversed in the charging process. Over time, the lithium-ions are consumed slowly through parasitic reactions. This degradation, or loss of lithium-ions, reduces the life and capacity of the battery over time. Such degradation could be partially addressed during the routine maintenance periods discussed in the application.

Each BESS unit has an HVAC system to maintain temperatures within a specified range. This climate control is important because the lithium-ion reaction produces heat which can be exacerbated by high temperatures around the battery units or outside the storage container. The batteries can experience thermal runaway reactions if not properly cooled. Thermal runaway is a condition where individual lithium-ion cells making up the battery can overheat, even in the absence of a fire. If thermal runaway occurs, it can spread to other cells in the battery, which can eventually create a condition for a fire or explosion to occur. Likewise, if the battery is too cold, the lithium-ions are not able to flow and the battery does not operate as intended. Maintaining the climate control systems is vital for the performance, lifecycle, and safety of the BESS.

Battery Storage Units

The battery enclosures would be located adjacent to each solar inverter, with no schools, daycares, hospitals, or nursing homes within 300 feet of their proposed locations. The battery units and inverter would be installed in the same cabinets and placed on a BESS/inverter pad that is approximately 40 feet by 10 feet.

[10] Ibid.
[11] Images from Sandia Labs presentation materials.

The BESS is proposed be rated at 50 MWAC/294.4 MWh. A fraction of the energy generated from the solar panels in each inverter block would flow directly into the battery modules coupled with that inverter block. Energy stored in the battery units would be released into the inverters as needed to accommodate evening peak loads and provide flexibility with the solar generation throughout the day.

Battery storage systems are relatively new to Midwest utility scale solar facilities and the specifications of these systems are changing rapidly. Therefore, the applicants state that at this time, final equipment selection has not occurred, but a common battery storage system manufacturer was used to develop the layout and design set of this project. The specifications that were used for this design are as follows:

- Battery dimensions: 5'2" (L) x 8'1" (W) x 11'3" (H)
- Operating temperature: -30°C to 50°C
- 50 MWAC of DC-coupled storage
- Discharge duration: four hours at 800 kWh

2.9. Decommissioning

No solar PV generation facility similar to the proposed project has yet reached the point of decommissioning or repowering, and projected actions may change from the description provided in the application materials. Some of the details regarding site decommissioning are assumptions based on current knowledge and may change over time as more information and examples are available. The expected lifespan of the project is 35 years. The solar project is expected to operate for at least 25 years based on current forecasts with modern equipment, after which equipment may need to be replaced to extend its useful life. MGS may decide at the end of the projected lifespan to extend leases and continue to operate the facilities. Other than by reaching the end of its operational life, project decommissioning may be triggered by the expiration of lease agreements or by abandonment. A solar facility is typically defined as abandoned when a facility ceases to transfer energy on a continuous basis for 12 months.

A decommissioning plan[12] prepared by Stantec staff was provided in the application materials. The decommissioning plan discusses what triggers site decommissioning, the expected actions, and the basis for estimating decommissioning costs. Removal of equipment and project infrastructure, including restoration and revegetation of the project area, is expected to be completed twelve months following the start of decommissioning activities. Monitoring and site restoration may extend beyond the 12-month period to ensure revegetation and rehabilitation of the site. The expected actions provided in the decommissioning plan are:

- Reinforce access roads, if needed, and prepare site for component removal.
- Install erosion control materials and other best management practices (BMPs) to protect sensitive resources and control erosion during decommissioning activities.
- De-energize solar arrays.
- Dismantle and remove panels and above-ground wiring.
- Remove tracking equipment and piles.

[12] PSC REF#: 491057 – Maple Grove Solar CPCN Appendix S - Decommissioning Plan

- Remove inverter/transformer stations along with support system and foundation pads.
- Remove above and below ground electrical cables and conduits
- Remove BESS components.
- Remove solar array perimeter fence.
- Remove access roads, and grade site (as required).
- Remove substation and associated overhead transmission tie-in line.
- De-compact subsoils as needed, restore, and revegetate disturbed land to pre-construction conditions to the extent practicable.

The decommissioned materials and equipment would be sold, recycled, or disposed of in accordance with applicable local, state, and federal law. Decommissioning of the project would include the removal of an estimated 502,632 PV panels and associated equipment. The total estimated decommissioning cost is $11,400,358 for solar facilities and an additional $520,680 for BESS facilities, with an estimated salvage revenue of $4,067,898, resulting in a net cost of $7,853,140. These cost estimates are based on 2023 pricing and rely on assumptions included in the plan, such as no secondary market fluctuation or inflation being considered.

MGS may need permits for land disturbing activities and other decommissioning activities from DNR and other regulatory agencies. These permits would be determined and applied for at a future date prior to decommissioning work taking place.

Solar PV Panel Recycling Guidelines

The DNR has released guidelines for end-of-life management of solar panel waste and materials management[13]. The new guidance outlines requirements that would apply to this project as a non-household installation. Solar PV Panel recycling and material waste is discussed further in Section 3.10 of this EA.

3. Environmental Effects

Wisconsin Admin. Code § PSC 4.20(2)(c) states that the EA must include a description of the environmental factors that the proposed project affects most directly. Wisconsin Admin. Code § PSC 4.20(2)(d)(1) directs the EA to describe the proposed project's effects on geographically important or scarce resources, such as historic or cultural resources, scenic or recreational resources, prime farmland, threatened or endangered species, ecologically important areas, as well as the potential impacts to other environmental matters the Commission considers relevant.

3.1. Agricultural Lands

Supplemental EA: This section has been updated to reflect changes due to the gen-tie route adjustment. Agricultural impacts due to the gen-tie would remain temporary in nature, and prime farmland impact quantities were updated.

[13] WDNR, Managing Used Solar Panels and Components Guidance. Accessed at https://apps.dnr.wi.gov/doclink/waext/WA2038.pdf on May 20, 2024.

A large majority of the land that would be leased and used for the solar project is currently used for agricultural production. Most of the fields are used for row crop production, consisting of alfalfa, corn, and soybeans.

In many Commission reviews where a project would impact agricultural lands, the Department of Agriculture, Trade, and Consumer Protection (DATCP) would complete an Agricultural Impact Statement (AIS) for use during land right acquisition discussions between a farmer and utility. As a wholesale merchant plant, Maple Grove does not have condemnation rights and therefore is exempt from the AIS statute[14]. In other solar projects proposed by merchant plants, DATCP has provided letters confirming the understanding that since there is no condemnation authority, there is no scope for DATCP to produce an AIS.

Prior to and during construction, farming activities on land which project facilities are being constructed would halt. The construction process is not anticipated to interfere with or damage any agricultural facilities such as irrigation systems. Land not utilized for siting solar facilities in the final project layout may be released by Maple Grove Solar back to the landowner. However, areas that remain under control by the applicants would be seeded with a cover crop and native seed mix and managed the same as areas inside the array fences. Interference between project construction equipment and farm equipment may occur on town, village, or state roadways, but is expected to be minimal. Landowner agreements for all solar facilities within the perimeter fences are approved and signed.

Operation of the solar project would temporarily displace current agricultural activities in the project area. Any farmland leased for the solar project would not be available as rental cropland during the project lifespan, which might drive up rental prices on other local fields due to a decreased supply. Any land in the arrays currently used for manure disposal would no longer be available for this purpose, which may increase the amount of manure applied to surrounding fields or increase the distance it would need to be transported for disposal if dairy farms in the area continue normal operations. Potential construction related impacts on agricultural lands outside the fenced arrays could consist of crop losses, soil mixing, and/or soil compaction along equipment access routes or staging areas. The applicants stated that farmland along the gen-tie route would not be taken out of agricultural production, and therefore impacts along the gen-tie route would only be temporary in nature during construction[15]. The adjustment of the gen-tie route would not impose any new impacts on agricultural production.

The potential benefits the solar project would have upon agricultural lands include the predictable annual payments to participating landowners, which can support continuing agricultural operations on their remaining lands not leased for the project. Some landowners may use this opportunity to retire from farming, relying on the income stream from the projects. In addition, depending on the amounts and types of fertilizers, herbicides, and pesticides used during active agricultural production, the project would significantly reduce or even eliminate the use of such chemicals on those lands in the project area. This reduction in nutrient and

[14] Wis. Stat. § 32.035
[15] PSC REF#: 501668 – Response-Data Request PSC-Koebel-2, Request PSCW-KF-2.5

chemical applications could improve local soil and water quality, and reduce impact to non-target species such as pollinators. At the end of the solar project lifespan (assumed to be approximately 35 years) the lands that are to be converted to solar production could be restored to agricultural farming activity.

3.1.1. Conservation Reserve Program

Lands enrolled in the Conservation Reserve Program (CRP) receive a yearly rental payment in exchange for farmers removing environmentally sensitive land from agricultural production and planting species that improve environmental quality. CRP is administered by the U.S. Department of Agriculture (USDA). If the lands enrolled are part of the solar development area and would need to be removed from the CRP, any early withdrawal from the program might have financial costs for the landowner. At this time, it does not appear that the USDA has a formal policy on the compatibility of solar energy facilities on lands enrolled in the CRP.

None of the project parcels are currently enrolled in CRP.

3.1.2. Drain Tiles

Drain tiles are commonly used throughout Wisconsin to remove excess water from agricultural fields with poor drainage. Current and accurate maps of drain tiles are often hard to come by, even though their use is prevalent throughout Wisconsin. The use and location of drain tiles are usually based on soil type and topography, and in Wisconsin's rolling landscape they are commonly installed on an as needed basis, typically in low lying areas with water retaining soils. As much of the anticipated development areas of the solar project is in agricultural lands, drainage tile irrigation systems may be encountered.

Drain tiles can be damaged during construction activities by excavation, heavy vehicle use, or pile driving in fields. Damaged drain tiles can cause slower drainage, standing water, and flooding in fields where the damage occurs, as well as adjacent fields. Slower drainage could also negatively impact vegetation establishment, which can delay closure of construction permits. It may not become clear that tiles have been damaged as a result of construction activities until after previously drained fields flood during the next heavy precipitation period, which may not occur for months or even years. The applicants have and would continue to engage in discussions with agricultural landowners to determine where drain tiles exist. The applicants stated that to the extent possible, major drain tile channels would be avoided. In the event that drainage tile is damaged, it would be replaced or repaired depending on structural conditions, taking into account weather and soil conditions to complete repairs within a reasonable timeframe.

3.1.3. Prime Farmland

Farmland soil is classified by the USDA based on its ability to produce crops, with some soils classified as "prime". Prime farmland has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. It has the soil quality, growing season, and moisture supply needed to produce

economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

The primary land use in the area is agricultural crop production, including crops such as alfalfa, soybeans, and corn. No impacts to specialty crops, herd management, field and building access, or organic farming are anticipated to be caused by the project.

Maple Grove Solar provided prime farmland soil impact summaries in their response to the second data request, which gave acreage breakdowns for prime farmland within the project area. (PSC REF#: 501670). Following the gen-tie route adjustment, the impacts caused by the new gen-tie location have been updated.

The primary array and perimeter areas (outside fenced areas that would no longer be farmed) would remove approximately 834.6 acres of prime farmland during the operational life of the project. An additional 83.0 acres in the primary array and perimeter areas are designated as prime farmland if drained, and 66.7 acres in the primary array and perimeter areas are designated as farmland of statewide importance. The alternative array areas would contain 230.8 acres of prime farmland, 0.8 acres designated as prime farmland if drained, and 9.2 acres designated as farmland of statewide importance. The project substation, access roads, collector circuits, and O&M building are included as part of the associated primary or alternate facilities in these totals. The gen-tie ROW would only temporarily impact agricultural lands as farming activities would be allowed to continue post-construction. The revised gen-tie line would temporarily impact:

- 13.4 acres of prime farmland for the primary route and 12.3 acres for the alternate route,
- 0.7 acres of farmland of statewide importance for the primary route and 0.8 acres for the alternate route, and
- 4.7 acres of prime farmland if drained for the primary route and 5.9 acres for the alternate route.

3.1.4. Stray Voltage

Stray voltage is a term used by the Commission to describe a physical phenomenon that may affect confined livestock, primarily dairy cows. Electrical systems, including farm systems and utility distribution systems, are grounded to the earth to ensure safety and reliability, as required by the National Electrical Safety Code and the National Electrical Code. Because of this, some current flows through the earth at each point where the electrical system is grounded and a small voltage develops. This voltage is called neutral-to-earth voltage (NEV). When NEV is measured between two objects that are simultaneously contacted by an animal, a current will flow through the animal, and it is considered stray voltage. Animals may then receive a mild electrical shock that can cause a behavioral response. At low voltages, an animal may flinch with no other noticeable effect. At higher levels, avoidance or other negative behaviors may result. Stray voltage may not be noticeable to humans.

An animal feeding operation with 1,000 animal units or more is defined by the State of Wisconsin as a large Concentrated Animal Feeding Operation (CAFO). Three small, confined animal operations were identified within one-half mile of the project study area. Nineteen potential confined animal operations were identified directly adjacent to the project study area, and an additional 21 facilities were identified within one-half mile of the project study area. Previous project testing has been offered to farms with fewer animals to protect both the farmer and the applicants from future problems or litigation.

Grounding for Maple Grove Solar's arrays would be designed and certified by a licensed electrical engineer according to current applicable electric code requirements, therefore the applicants do not anticipate the project to cause significant risk of causing stray voltage. The applicants stated that they would conduct pre- and post-construction induced voltage testing at appropriate agricultural facilities located within one-half mile of the project in coordination with the local distribution utility or as ordered by the PSC.

3.2. Air Quality

Temporary, localized impacts to air quality would occur during the construction phase of the project. These impacts would be a result of construction machinery and delivery vehicles in the project area. Diesel engines can create exhaust impacts that are typically short term in nature, but can be a nuisance or, in high enough quantities, a health hazard. Keeping vehicles and construction equipment in good working order is one way to mitigate these impacts.
Fugitive dust may be generated from excavation or grading work, exposed soils, or materials transport, and could create a nuisance for local homeowners or drivers. Fugitive dust is made up of particulate matter that can be inhaled into the lungs and is hazardous to human health, particularly for sensitive receptors such as the young, sick, or elderly. Fugitive dust clouds can impact visibility on roads and settle onto vegetation. The extent of fugitive dust generated during construction would depend on the level of construction activity, weather conditions such as high winds, and the moisture content and texture of soils being disturbed. High winds and dry conditions increase the chance of fugitive dust affecting air quality. Watering exposed surfaces and covering disturbed soils with quick-growing non-invasive plant species can reduce the chance of fugitive dust. The applicants stated that all contractors would be required to follow an Erosion Control and Storm Water Management Plan and adhere to site-specific environmental requirements that would include dust control.

No air quality impacts would be expected to occur once construction is complete and the solar projects are operational. Solar PV facilities generate energy without the creation of regulated pollutants or carbon dioxide. The use of these sites as energy sources may reduce electric generation at sites that produce air pollutants and lead to a reduction in those pollutants at a wider environmental scale.

3.3. Electric and Magnetic Fields

Supplemental EA: This section has been updated to address the gen-tie route adjustment. EMF estimations have not changed.

Electricity produces two types of fields, electric and magnetic, which are often combined and referred to as electromagnetic fields or EMF. Electric fields are created by electrical voltage and are usually measured in kilovolts per meter (kV/m), measuring the change in electrical voltage over a distance. Magnetic fields are created by electric currents and are measured in units of milli-Gauss (mG). Electromagnetic fields typically decrease in strength as distance from the source increases. Electrical facilities, such as power lines, produce electric and magnetic fields during operation. In addition to power lines, exposure to electric and magnetic fields comes from multiple sources in our daily lives. Neither the Federal government or the State of Wisconsin impose standards limiting occupational or residential exposure to 60-Hz EMF. For information on EMF and human health, a free publication is available on the PSCW website.[16] Typical magnetic field strengths of common household appliances compared to overhead transmission lines can be found on page 3 of the publication. The PSC finds that there is no correlation between magnetic fields and negative health effects.

Stantec conducted an analysis of the estimated magnetic profile of the proposed collector system and BESS feeder lines by using CYMCAP 8.1 software, and an analysis of the overhead gen-tie transmission line using Bonneville Power Administration Corona and Field Effects software. The Maple Grove Solar EMF report is included as Appendix O in the application.

As shown in Table 1, Stantec predicts that the underground circuits produce an absolute maximum magnetic field among all studied arrangements, producing 15.51 mG when measured directly at the cable (zero feet from centerline) with an arrangement of three parallel underground cables. As the underground collector circuits would be buried three feet beneath the ground surface, earth cover above the cable and the metallic shielding around the conductors effectively shield the circuits from producing any above-grade electrical field. Stantec predicts the overhead transmission line to produce a maximum magnetic field of 129.45 mG at the centerline and the electric field measuring 1.81 kV/m at the centerline. At the edge of the 100-foot-wide ROW, the overhead transmission line would produce a maximum magnetic field of 113.47 mG and the electric field was 1.58 kV/m. The values calculated in this study are similar to those calculated for other similar circuits.

EMF estimations were not recalculated for the revised gen-tie line because the structure configuration, equipment, and voltage were stated to remain the same, and therefore the data would not change.

[16] PSC. EMF – Electric and Magnetic Fields. Accessed at: https://psc.wi.gov/Documents/Brochures/EMF.pdf.

Table 1 - Estimated EMF levels near centerline from different underground and gen-tie cable configurations.

Scenario	Arrangement	Maximum Magnetic Field (milli-Gauss)
1	1 underground collector cable	14.79
2	2 parallel underground collector cables	15.21
3	3 parallel underground collector cables	15.51
4	4 parallel underground collector cables	15.40
5	5 parallel underground collector cables	15.32
6	6 parallel underground collector cables	15.27
7	7 parallel underground collector cables	15.37
8	8 parallel underground collector cables	15.3
9	9 parallel underground collector cables	15.19
10	10 parallel underground collector cables	15.14
11	11 parallel underground collector cables	15.11
12	12 parallel underground collector cables	15.23
13	161 kV Single circuit: Tangent structure gen-tie	113.47
14	161 kV Single circuit: Dead-end structure gen-tie	129.45

3.4. Endangered Resources

Supplemental EA: This section has been updated to reflect changes due to the gen-tie route adjustment. The Certified ER Review was renewed to account for the adjustment.

Wisconsin's Endangered Species Law, Wis. Stat. § 29.604, makes it illegal to take, transport, possess, process, or sell any wild animal that is included on the Wisconsin Endangered and Threatened Species List. In addition, it is illegal to remove, transport, carry away, cut, root up, sever, injure, or destroy a wild plant on the Wisconsin Endangered and Threatened Species List on public lands. Although utility practices are exempted from the taking prohibitions of listed plant species on public lands, it may still be prudent for the applicants to actively avoid activities in certain areas that are known to host rare plants. The Federal Endangered Species Act (ESA) protects all federally listed animals from direct killing, taking, or other activities that may be detrimental to the species. Federally listed plants have similar protection, but the direct killing or taking prohibitions are limited to federal lands or when federal funds/permits are necessary. In addition, there may be other state and federal laws protecting rare species including the federal

Migratory Bird Treaty Act, the federal Bald and Golden Eagle Protection Act, and the Protected Wild Animals (NR 10.02 WI Admin Code).

"Endangered resources" is a term that includes endangered, threatened, and special concern species, as well as certain natural communities and animal concentration sites. "Endangered" means a species is in danger of extinction throughout all or a significant portion of its range. "Threatened" means a species is likely to become endangered within the foreseeable future. At the state level, "Special Concern" refers to those species where some problem of abundance or distribution is suspected but not yet proved. The main purpose of this category is to focus attention on certain species before they become threatened or endangered. Reviews were completed at both the state and federal level to determine what, if any, actions may be required or recommended to avoid and/or minimize impacts to federal and state endangered resources. A summary of the endangered resources reviews is provided below.

3.4.1. Federally-listed Endangered Resources

The applicants requested an Official Species List report for the proposed project in this docket from the U.S. Fish and Wildlife Service (USFWS). This list identifies any federally threatened, endangered, proposed and candidate species that may occur within the boundary of the proposed project or may be affected by the proposed project. The list also includes designated critical habitat within the proposed project area. Information for these lists comes from the USFWS Environmental Conservation Online System – Information for Planning and Consultation (IPaC) tool. The following list shows the federal species identified at the proposed Project through this consultation:

The federal review did not identify any critical habitats within the proposed Project area.

Northern Long-eared Bats
Northern long-eared bats, as well as other state-protected bat species, may use parts of the project area for summer habitat, particularly areas with trees. Female bats and their young are vulnerable to mortality during the maternity period because of their use of trees for maternity colonies and the inability of young bats to fly for several weeks after birth. FWS determined that the project "may affect, but not likely to adversely affect" the Northern Long-eared Bat. In addition, per the state ER Review referenced below, no known roosts or hibernacula were identified within or adjacent to the proposed project area. However, identification of maternal roost trees used by bats is very difficult and very few across the state are known. The absence of any mapped roosts in the NHI should not be interpreted as meaning there are no bats present in local woodlands.

There are avoidance measures that can reduce potential for impacts to northern-long eared and other bat species, including a time of year restriction on tree clearing activities. USFWS recommends that tree removal occur between November 1 and April 1 or at minimum avoid removing trees outside of the pup season (June 1- July 31). This time of year, restriction is commonly recommended for construction projects and can benefit not only roosting bats, some of which may be endangered resources, but also nesting birds. Note – in Wisconsin the suggested tree clearing restriction period to avoid impacts to roosting bats is from June 1 through

August 15, as per the DNR[17]. The applicants have stated an intention to conduct tree clearing between August and April, as discussed in the Forested Lands section of this EA.

For the remaining federally-listed endangered resources identified within the IPaC review, no impacts are anticipated to occur due to lack of suitable habitats within the proposed Project area.

3.4.2. State-listed Endangered Resources

A Certified Endangered Resources (ER) Review was completed for the proposed Project on January 12, 2024 (ER Log #24-041) and then renewed on August 30th, 2024 to account for the gen-tie route adjustment. The gen-tie route adjustment did not result in any changes to the endangered resources impacts from the original review. The ER Review is based off information from the Natural Heritage Inventory (NHI) database, maintained by the DNR Bureau of Natural Heritage Conservation. The purpose of the ER review is to use the NHI database to identify any known endangered resources within and near (one-mile for terrestrial and wetland species, two-miles for aquatic species) the proposed project area. The applicants completed a draft ER review for the proposed project area, then sent it to the DNR for verification. The ER Review were checked, modified (if needed), and approved by DNR staff in the ER Review Program. As written, the ER Review only looked at the construction of the facility and associated building/structures. It did not review for ongoing activities or any indirect impacts such as potential habitat fragmentation. The NHI database contains known records for endangered resources. However, most areas of the state have not been surveyed extensively or recently, so the NHI data should not be solely relied upon, particularly in areas dominated by private lands. In areas where suitable habitat exists for protected species, but occurrences have not been recorded in the NHI database, there may be recommended activities that could mitigate or avoid potential impacts to those species.

If approved, the proposed project would begin construction over a year from the Certified ER Review date. DNR regularly updates the NHI database as new species records are discovered or when known populations are updated. Also, any species delisted would be removed from the database. If the project is approved, the applicants should renew the review closer to the construction start date to determine if any changes to the review would be needed. An ER Review should also be completed annually for ongoing maintenance and vegetation management activities to ensure rare species are not impacted by these activities which the applicants have agreed to do.

The ER Review for the project determined there are several species located within the search buffers of the proposed impacted areas. While many of these endangered resources would not be directly impacted, a state threatened herptile species and state threatened fish species could be impacted if actions are not put into place to prevent or minimize these impacts. The DNR provided required actions to ensure compliance for the Broad Incidental Take Authorization for

[17] Wisconsin DNR, Northern long-eared bat species guidance. Accessed at: https://widnr.widen.net/view/pdf/ewbjkurmf0/ER0700.pdf?t.download=true&u=kkadwx on June 17, 2024.

the herptile species while the applicants committed to utilizing BMPs in the form of erosion control measures to ensure the waterway where the fish may be found will not be impacted.

In addition to these required measures, there are several recommended measures that can be implemented to help minimize impacts to other non-game species and potentially improve habitat within and adjacent to the solar facility. They include:

- Tree clearing activities should occur outside of the bird nesting and bat roosting period, collectively from April through mid-August.
- The proposed project area is located within and adjacent to numerous wetlands and waterways which may provide habitat to small wildlife. In particular, turtles move around frequently during the late spring-early summer months to find suitable upland nesting habitat which may be present within the proposed solar arrays. Therefore, long-term impacts cause by restriction of movement throughout the project area should be mitigated by using wildlife permeable fencing. The applicants stated in their application that they would utilize fencing with 12-inch by 4-inch openings at the bottom. While this will allow some small mammals access, medium to large sized turtles will not be able to fit through these openings. Examples of wildlife permeable fencing that would fit most sized turtles may include raising the fence a minimum of six to eight inches off the ground or adding in roughly 1-foot by 1-foot openings intermittently (every 50-100') throughout the design. A data request[18] was issued to prompt the applicants to consider altering the fencing design to be more accessible to wildlife such as turtles, however the applicants stated they are not willing to alter the proposed design to have increased openings or to raise the fence. This is discussed further in the Wildlife section of this EA.
- Erosion control netting (also known as erosion control blankets, erosion mats or erosion mesh netting) used to prevent erosion during the establishment of vegetation can have detrimental effects on local snake and other wildlife populations. Plastic netting without independent movement of strands can easily entrap snakes moving through the area, leading to dehydration, desiccation, and eventually mortality. It is recommended that netting which contains biodegradable thread with the "leno" or "gauze" weave (contains strands that are able to move independently) be used in areas adjacent to or near any waterbody.
- The applicants have included a partially native pollinator seed mix in their Vegetation Management for areas within the arrays and an all-native pollinator seed mix for area adjacent to the arrays. The pollinator species within the seed mixes will benefit many of the state's pollinators such as butterflies and bumble bees, many of which have steadily been in decline in recent years. Threats, including climate change, pesticide use and habitat loss are having a devastating impact on their populations.

The applicants are proposing a Low Grow Native/Non-native Graminoid and Wildflower Seed Mix for under the panels which includes cool season, non-native grasses of red fescue (*Festuca*

[18] PSC REF#: 505072 – Response-Data Request PSC-Koebel-2.10-r, Request PSCW-KF-2.10

rubra), rough bluegrass (*Poa trivialis*), and Kentucky bluegrass (*Poa pratensis*). These species are commonly used to form dense mats of vegetation allowing for quick stabilization at the ground surface. Warm season prairie species are slower to grow above ground and instead spend their first year or two developing roots that can reach several feet below ground. Over time, those roots can extend to 10 feet or more below ground. So, while these plants take longer to fill in and obtain a look of above ground stabilization, their roots are feet deeper than red fescue and other cool season grasses thereby stabilizing the ground below. By mixing these species with warm season prairie plants, even at a low seed rate, there is concern that the fescue and bluegrasses would quickly outcompete the prairie plants and not allow them to survive long-term. Suggested improvements to remove those species are detailed in Data Request WDNR-SR-3.1, and discussed in Section 3.20 of this EA.

In addition, it seems the mowing height and timings could be adjusted to better benefit the native species present in these seed mixes. Suggested improvements are detailed in Data Request WDNR-SR-3.6 and PSCW-KF-2.12, and discussed in Section 3.20 of this EA.

3.5. Environmental Justice and Sensitive Receptors

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Historically, communities of color and low-income communities have been disproportionally impacted by adverse human health and environmental effects associated with pollution and developments. The first step towards evaluating whether a project may have disproportionate impacts is by evaluating the population in a project area. For the Maple Grove Solar project area, local census data was reviewed to determine whether any identifiable groups of minority or low-income persons are present. The population of the Towns of Barron and Maple Grove were 813 and 877 respectively at the 2020 census, however no local racial or income data exists due to low population density. There are no known areas of disproportionately high minority populations or low-income populations in the proposed project area.

Sensitive receptors are mainly those individuals that are very young, elderly, or infirm. Local day care facilities, schools, hospitals, and elderly care facilities could have a greater potential to be affected by construction impacts such as fugitive dust, increased noise, and increased traffic hazards. No sensitive receptors are located within the boundaries of the solar project. The applicants did not identify any sensitive community resources such as schools, churches, nursing homes, or hospitals and other healthcare facilities within a one-mile radius of the solar project area boundaries.

The applicants should ensure that contractors are taking actions to mitigate noise and dust impacting adjacent communities at all construction sites. The incorporation of screening vegetation buffers between any sensitive resources and the solar project or gen-tie line could limit aesthetic and noise impacts, particularly when sensitive locations or residences are in close proximity of project facilities. Once construction activities are complete, there should not be ongoing impacts to the surrounding community apart from some areas of aesthetic and noise impacts to properties and roadways immediately adjacent to the solar project. Overall, the

project is not anticipated to cause significant impacts to sensitive receptors during construction or operation.

3.6. Conservation Easements

The applicants state that the project would not intersect any known conservation easements based on a review of conservation easement data available from the National Conservation Easement Database, USGS P5AD-US, the Nature Conservancy, the Wisconsin Department of Natural Resources, and the Wisconsin Department of Agriculture Natural Resources Conservation Service.

3.7. Forested Lands

Supplemental EA: This section has been updated to reflect changes due to the gen-tie route adjustment. Area impacted was updated, and MGS rebuttal testimony was addressed.

For the purposes of this EA, forested areas are considered any forested/wooded landscape (greater than 20 percent canopy cover) including forested wetlands and riparian areas adjacent to waterways; it excludes narrow windbreaks located between agricultural areas. The solar project would have relatively small amounts of forested land impacts associated with construction if alternate arrays are not utilized. Generally, solar projects in Wisconsin have avoided forested areas in favor of the open, relatively flat agricultural land that is available. Some tree lines or windbreaks may be cleared to avoid shading of panels, depending on array layout. Appropriate vegetative screening would be left in place around residences and other buildings.

Up to 91.8 acres of upland forest are proposed to be cleared for the project. The upland forests are dominated by sugar maple (*Acer saccharum*), ironwood (*Ostrya virginiana*), green ash (*Fraxinus pennsylvanica*), common buckthorn (*Rhamnus cathartica*), red elderberry (Sambucus racemose), American elm (Ulmus americana), basswood (Tilia americana), red oak (Quercus rubra) and white pine (Pinus strobus). Pine plantations and recently cleared shrub thickets are also present within the forested areas, which are viewed as providing less ecological value than the other more diverse upland forests in the area.

The majority of the land in the project area is non-forested, agricultural land. The proposed arrays include approximately 5.0 acres of upland forest that would require clearing, which would occur mainly within fence lines and small portions of larger wooded areas. The alternate array areas would require approximately 80.2 acres of upland forest clearing if utilized, with an additional 0.09 acre of forested wetland that would require clearing if utilized. The majority of tree clearing that would occur in within the proposed array areas is located within array P2, which contains 3.66 acres of upland forest. Nearly all tree clearing that would occur within alternate array areas would occur in arrays A1 (5.0 acres), A2 (54.6 acres), A3 (9.8 acres), and A8 (10.4 acres). The revised gen-tie line would result in approximately 2.1-acre of clearing for the primary route, and nearly 2.6-acre for the alternate route.

Utilizing alternate arrays such as Alternate Arrays A2, A3, or A8 may cause negative environmental impacts due to the required amount of tree clearing. Forested lands provide key

habitat to wildlife that increase biodiversity, and also sequester carbon which helps mitigate the effects of climate change. The Wisconsin DNR has released statements about ways to combat climate change and improve the health of natural communities. One key factor includes the conservation of forestland, which is part of the state's commitment to the Trillion Tree Pledge[19], where 125,000 acres are to be conserved and 75 million trees are to be planted by 2030.

The applicants had stated that clearing within the alternate array areas would consist of larger tracks of forested land as well as previously logged areas that could now be considered shrub thickets. Data requests were issued to clarify the proportion of forested areas within arrays that had previously been cleared, among other information such as average tree size. The applicants' responses to the third data request[20] indicated that just over half of the area to be cleared in Alternate Array A2, which contains most of the potential tree clearing for the project, is known to have previously been cleared. The applicants also claim in the third data request response that the majority of Alternate Array A8 had previously been cleared, with the clearing of A2 and A8 occurring within the last 5 years. However, the exact acreage of A8 that was cleared is unknown. Given that the majority of these lands had recently been cleared and/or harvested for timber, the clearing proposed would consist of removal of small shrubs and young trees, not mature forests. Therefore, the ecological impacts of placing project facilities within these forested areas may not be as great compared to other forested lands.

The time of year tree clearing would occur is stated in the third data request response[21] to take place during the dryer months of the year (August through December) and during the winter months (January through mid-March). The applicants agreed in rebuttal testimony to extend the tree clearing time of year restriction to include mid-March through August 15[22]. Tree clearing activities occurring outside of this time period stated by the applicants is beneficial for bats, nesting birds, actively growing vegetation, and would reduce the risk of spreading diseases and pathogens. Invasive species and pathogens such as the emerald ash borer and oak wilt are known to be in Barron County, as discussed in Section 3.11. In addition, MGS would work with the DNR to determine the best timeframe to clear trees in close proximity to threatened and endangered species, habitat, or other sensitive resources if necessary. MGS stated they will work with the DNR to determine tree clearing restrictions once a final design is completed and a construction start date has been determined.

3.8. Geology and Hydrology

The project area is located in Barron County near the southern portion of the Superior Upland Physiographic Province of the United States. The project study area is also within the Central Sand Plain of Wisconsin within the outwash plains and till-covered uplands of Barron County. The landscape is characterized by rolling and hummocky topography, distinctive from other parts of the state due to several glacial advances.

[19] Wisconsin DNR. Making Strides on Climate Change and Environmental Equity. Available at: https://dnr.wisconsin.gov/sites/default/files/topic/ClimateChange/WiDNR_CEOTReport.pdf. Accessed on June 17, 2024.
[20] PSC REF#: 504139 – Response-Data Request PSC-Koebel-3, Request PSCW-KF-3.11
[21] PSC REF#: 504139 – Response-Data Request PSC-Koebel-3, Request PSCW-SR-3.5
[22] PSC REF#: 514665 – Rebuttal-MGS-Wiater-4

Soils in the area are primarily classified as silt loam which are formed mainly on loess or silty lacustrine deposits over dense sandy loam till. The bedrock within the project area is underlain by late Cambrian, undivided sandstone that contains dolomite and shale.

The application states that the solar arrays are generally proposed for areas of flat and gently rolling topography, with micro depressions and small undulations, and topographic lows in and around Fourmile Creek and the field verified unnamed tributaries to Fourmile Creek. With most of the solar arrays proposed for larger agricultural fields the site is expected to require minimal cut and fill grading. Some localized grading will be necessary to meet racking tolerances. The applicants have stated that site grading would be minimized by designing the project for the existing topography. Some localized grading may take place to construct permanent project facilities, but the nature of site topography would not be significantly altered.

3.8.1. Preliminary Geotechnical Investigation

A preliminary geotechnical investigation of the solar project area was conducted by ANS Geo[23]. It is expected that additional geotechnical investigations would occur during the final engineering process to confirm and further refine the findings of the preliminary investigation.

Eighteen test borings were conducted within and adjacent to the project area. The preliminary geotechnical report stated that topsoil in the project area ranges from six to eight inches thick, generally underlain by clay and sand material extending to the boring termination depths. Based on geologic mapping and preliminary geotechnical borings, depth to bedrock is expected to range from 5 feet to 50 feet within the area. None of the soil boring tests conducted during the geotechnical investigation had encountered bedrock. Soil borings were conducted to target depths of 20 feet to 50 feet, or until refusal. Boulders were encountered within the test pits, with one test reaching refusal at 9 feet below grade due to boulders. ANS Geo had conducted pile installation tests at 16 locations across the project area, where each pile location had two test piles embedded at depths ranging from 9 to 12 feet below grade. If bedrock formations or boulders are encountered during the final geotechnical evaluation, measures such as pre-drilling or alternative foundations may be necessary. If bedrock is encountered during construction, preventative measures should be taken to mitigate construction-related contaminants such as fuel and hydraulic fluid from reaching local groundwater. The applicants did not state any anticipated risk to private wells to be caused by bedrock depths.

Groundwater was encountered at five of the 18 borings examined in the investigation. The depth to groundwater ranged from nine feet below the ground surface to 42 feet below the surface. It should be noted that seasonal conditions and low soil permeability causing a "perched water table" may exist during certain seasons and periods of precipitation that could affect where groundwater is encountered. Dewatering may be necessary during excavation of directional drill bore pits or trenching depending on the groundwater level.

[23] PSC REF#: 491036 – Appendix H – Geotechnical Report

The majority of the soils in the project area are considered frost susceptible. The mixing of surface and sub-surface soils from agricultural practices and water within or near the surface can affect the performance of subsurface infrastructure such as piles and foundations. ANS Geo recommends that shallow foundations, slabs and footings should either be founded, or frost protected to 60 inches below grade. If the risk of frost heave is not accounted for, piles may shift independently and damage the solar panels or associated facilities, necessitating increased repairs.

The application states that top soils would be stripped prior to grading, separated from sub-soils, stockpiled, and maintained by BMPs in proper upland areas within the project limits in accordance with the ECSWMP. The applicants state that minimal grading is anticipated for the project due to the relatively flat ground surface within the project boundary. The proposed construction sequence would have as much as 300 to 500 acres of simultaneous disturbance with the construction phasing, however these numbers may change with the final engineering design and construction sequencing. This is a substantial amount of soil disturbance if done all at one time, and MGS should ensure soil stabilization work is conducted and the site remains in compliance with DNR soil erosion and storm water permits.

Depending on the soil conditions at the time of construction, matting, low pressure equipment, or decompaction of soils may be needed to improve conditions for vegetation establishment.

3.8.2. Soil Erosion and Storm Water Management

The project must meet Wisconsin Pollutant Discharge Elimination System (WPDES) storm water regulations as established by the Clean Water Act and regulated by the Wisconsin DNR under the authority of Wis. Admin. Code ch. NR 216. The proposed project involves an increase in the impervious surfaces across the project site through increased aggregate surfaces for roads, as well as the substation, battery-energy storage system (BESS) and inverter pads, O&M building, and associated parking area. Post-construction runoff from these types of sites is typically managed with swales and drainage basins and should be modeled separately from the solar array area. Solar panels are also considered disconnected impervious surfaces which could concentrate runoff and have potential to cause erosion and increased runoff from the site. Erosion and runoff issues can be minimized by spacing arrays to maintain vegetation between and underneath panels, establishing a maximum panel height from the ground of less than 10 feet, and phasing work areas to minimize the amount of unstable ground exposed at a time. Per the requirements in NR 151.11(8)(d), Wis. Adm. Code, temporary stabilization activity shall commence when land disturbing construction activities have temporarily ceased and will not resume for a period exceeding 14 calendar days.

Commission and DNR staff have now visited several solar generation sites at various stages of construction and operation. Generally, contractors appear to be effectively separating topsoil from subsoils while grading and implementing erosion control and storm water management measures that have been functioning as intended. However, there have been instances of improper installation and/or extended periods of problematic weather conditions that have led to offsite discharge of sediment-laden water onto adjacent properties and/or into water bodies. Permit conditions have not been met in a number of instances. Sediment-laden water entering

waterways is an issue that needs to be taken seriously and prevented during construction of these facilities. Mixing of clayey subsoils with topsoil across vast areas, which can contribute to erosion control challenges, has been observed as well. This can lead to poorer vegetative growth and inhibit any eventual return to agriculture practices.

An issue frequently observed during winter months is a lack of adequate erosion control practices in relation to the area of exposed soils present on construction sites. As construction crews continue earth work into the winter months, large areas of exposed soils are often left without adequate stabilization. Sediment basins tend to freeze in the winter, and construction site storm water entering the basins cannot infiltrate. Winter rainfall events on frozen ground contribute to the likelihood of offsite discharges of sediment-laden water. Offsite discharge is often due to the amount of unvegetated and unstable soil, therefore priority should be given to:

- completing construction in areas that drain to sensitive resources first to allow for adequate vegetation to grow,
- focusing on establishing vegetation earlier in the fall, and
- creating a winter construction and stabilization plan to minimize the area of exposed soils.

Post-construction stormwater management guidelines have been prepared by the DNR to address the needs for ground-mounted solar generation installations[24]. Well-maintained vegetation between and underneath solar panels can minimize water scour or erosion from driplines, filter runoff, and improve infiltration capacity of the soil. Infiltration of storm water typically improves in areas where row cropland is converted to grassland. Special attention should be given to compaction mitigation of soils prior to seeding to maximize germination potential. Vegetation under and around the arrays would require long-term maintenance for the lifetime of the facility, as it would be the primary means of managing post-construction storm water runoff. The exact amount of increased impervious surface would be determined in final engineering design and would be discussed in the Storm Water and Erosion Control Plan submitted to the DNR as part of the permit application under Wis. Stat. § 30.025 and Wis. Admin. Code ch. 216.

3.9. Grasslands

Supplemental EA: This section has been updated to reflect changes due to the gen-tie route adjustment. Area impacted was updated.

For the purposes of this EA, grasslands are defined as undeveloped landscape dominated by non-woody vegetation which is not actively used for agricultural production, and may include prairie, pasture, and fallow fields.

Contractors may remove vegetation for site grading or to allow construction equipment to access and install facilities including access roads, collector circuits, and arrays. Table 2 shows the amounts of anticipated grassland impacts by type of facility infrastructure. Perimeter areas include any acreage which could not be exclusively assigned to primary or alternate facilities. Most of the perimeter area consists of areas area between the study area boundary and project

[24] https://dnr.wisconsin.gov/topic/Stormwater/publications.html. Accessed in June 2024.

facilities. Areas that would be within perimeter fences but not "solar production areas" were included as perimeter areas.

Table 2 - Grassland impacts for the Maple Grove Solar Project (in acres).

	Arrays	Access Roads	Collector Circuits	Project Substation	Gen Tie-Line	Total (facilities)	Perimeter Areas
Proposed	33.4	0.5	0.5	0.1	1.3	35.7	62.8
Alternative	20.5	0.3	0.2	n/a	1.2	22.2	

Grassland habitat is expected to increase as a result of the proposed project. The types of plant species proposed for planting in the arrays and the ongoing management of the project facilities would encourage grasses and other low growing, non-woody plant species. The additional grassland areas would create suitable habitat for species of birds, small mammals, reptiles, and pollinating insects that may not find the current agricultural fields suitable for life-cycles such as reproduction. To avoid negatively impacting these species after this grassland habitat is created and species may be present, maintenance activities such as mowing should be scheduled outside the breeding/nesting season. Additional impacts and mitigation methods anticipated are discussed further in the applicants' Vegetation Management Plan and the corresponding Section 3.20.

3.10. Hazardous Materials, Batteries, and Solid Waste

During construction of the project there would be solid wastes generated. Hazardous materials would be used during the construction and operation of the project. The public and local communities have raised concerns on how to dispose of any hazardous materials or solid wastes during site decommissioning. How these materials would be treated over the lifetime of the solar project may change, but generally, what is known about these impacts is discussed in this section.

3.10.1. Hazardous Materials

During the construction phase of this project, there could be spills of potentially hazardous pollutants such as diesel fuel, insulating oils, hydraulic fluid, drilling fluids, lubricants, and solvents. These materials would be used during construction of the facilities or during the refueling and maintenance of equipment and vehicles. Herbicides could be used during construction or operation of the facilities. These various substances would need to be kept onsite in limited quantities and brought in as required. MGS would require that the contractor selected prepare a Spill Prevention, Control and Countermeasures Plan that would describe measures to be used to prevent spills or releases of hazardous substances, as well as response and cleanup procedures. Spill kits and staff training in the use of these materials would decrease the risk of spills leading to site or water contamination.

Concerns have been raised by the public regarding potentially hazardous materials contained in solar PV panels and the potential release of these materials. Reasoning for concerns of contaminant release ranged from damage caused by severe weather during facilities operation, to how waste would be handled during replacement or decommissioning of the panels. During the operational phase of the project, the panels are considered to be at low risk of releasing hazardous materials into the environment due to small amounts of heavy metals in proportion to the overall panel and the encapsulation of these materials due to panel design. Contamination potential attributed to damaged project facilities is discussed further in subsection 3.10.3 below.

The disposal of solar PV generation facility components is governed by the Federal Resource Conservation and Recovery Act and state-specific waste rules. If waste has the potential to be hazardous, the generator of that waste must determine the presence and quantity of toxic substances through representative sampling and laboratory analysis, or "acceptable knowledge" of the waste[25]. Some items used during construction and operation of the facilities are known hazardous materials (fuels, solvents, herbicides), however, the waste status of PV panels is not universally recognized and requires more evaluation when disposing of materials.

The eventual disposal of the PV panels, including any crushing or damage to the panels, as well as the potential quantities of panels placed in a landfill, would require additional consideration. The US EPA classifies types of hazardous wastes based on one of four characteristics, with "toxicity" being the potential type that might apply to solar PV panels. The toxicity of a waste is determined by the Toxicity Characteristic Leaching Procedure (TCLP). Certain solar PV panels may exhibit the hazardous waste characteristic of toxicity due to the presence of heavy metals such as cadmium, copper, lead, or selenium. If testing is done on a panel and it passes the TCLP, it can be treated as general waste, but if it fails the test, it must be disposed of according to federal and state hazardous waste rules. In Wisconsin, solar PV panels must be evaluated according to the TCLP and state rules on hazardous waste.

There is much discussion on improving the ability to recycle solar PV panels and other components of a solar PV generation facility. Increasing the ability to recycle components or whole panels could reduce the potential for these facilities to be sources of increased amounts of hazardous wastes. The Wisconsin DNR have developed draft guidelines for end-of-life management of solar panel waste and materials management[26].

3.10.2. BESS Fire and Emergency Service Response

Batteries used in vehicles or machinery could also be a source of hazardous materials depending on the type of battery used and would need to be disposed of at appropriate disposal facilities. Any use of a BESS would have the potential for hazardous material releases, or waste generation from damaged or spent batteries. Use of a BESS at the solar facility requires a site-specific safety plan that would need to be developed and enacted. Local first responders and emergency services would need training on how to respond and may need specialized equipment.

[25] Wisconsin Department of Natural Resources, 2023. Waste Determinations & Recordkeeping, Publication WA 1152. Accessed at: https://apps.dnr.wi.gov/doclink/waext/wa1152.pdf on June 24, 2024.
[26] WDNR, Managing Used Solar Panels and Components Guidance. Accessed at https://apps.dnr.wi.gov/doclink/waext/WA2038.pdf on May 20, 2024.

Battery Energy Storage Systems (BESS) may have the potential for thermal runaway and lithium-ion battery fires, whether in vehicles or energy storage units. The applicants should look for ways to lower the risk of these events occurring, or if they do occur, to reduce the risk of injury or death to the public, including fire fighters or emergency services. The BESS units as proposed in this project would be dispersed throughout the Maple Grove Solar II portion of the project, with each unit located directly adjacent to project inverters. Due to this design, catastrophic failure (such as thermal runaway) of BESS units may be less likely to spread to other sensitive project components compared to other BESS configurations where BESS units are concentrated more densely in a smaller footprint.

One such incident occurred in 2019 in Surprise, Arizona, at a BESS owned by Arizona Public Service. In a report[27] on that incident, they came to a number of conclusions on how the event occurred, including that it was due to a thermal runaway event caused by abnormal lithium metal deposition and dendritic growth in the battery, that clean agent fire suppression systems cannot prevent or stop a cascading thermal runaway in a BESS, and that off-gassing from the batteries experiencing thermal runaway produced a large quantity of flammable gases within the BESS, which was an enclosed structure with an external door. The report does state that today there are better standards for hazard assessment and first responder training but encourages the industry to continue to go further in developing these standards.

Applicants in other Commission dockets have emphasized the precautionary steps that would be taken to reduce the risk of a fire or thermal event causing a similar incident as experienced in Arizona. These include:

- Utilizing a lithium-ion battery with a more stable chemistry, with lower risk of thermal runaway propagation or deflagration event.
- Ensuring all equipment is made in accordance with stringent quality standards, tested to a range of safety standards.
- Utilizing a system that tracks real-time data from cells, modules, racks, and system to monitor for any deviation from operating limits. The system would be able to remotely disconnect parts of the system that are experiencing a fault if an alarm is triggered.
- Automatic fire suppression systems that use clean agent, non-water, materials that can suppress fires but would not cause electrical shorts.
- A containerized, external access only, storage solution for the BESS units to provide segmentation reducing risk of fire propagation across the project. External access only would reduce risk to first responders if an event occurs.
- Providing training and developing a collaborative emergency response plan (ERP) specific to the proposed project.

The Emergency Response Plan (ERP) is vital to ensure that the responders would have knowledge of what was in the facility and have access to a full plan of response. The ERP should require quarterly safety drills for the operators of the facility and annual safety training for local first responders. The ERP should include the procedures for first responders to follow

[27] DNV GL. Technical Support for APS Related to McMicken Thermal Runaway and Explosion. July 18, 2020. Provided as Exhibit 3 of the Paris Request for Limited Reopening (docket 9801-CE-100).

for a range of incidents that may occur, as well as information on how to respond given the specific equipment and chemistry of the batteries used at the facility. Maple Grove Solar stated that the BESS market is continuously increasing trainings on potential BESS hazards and proper emergency response.[28] Initial trainings would be performed, with additional refresher trainings as needed during the lifespan of the project. Should industry-wide best management practices change, new trainings would be provided.

The report on the Surprise, Arizona incident produced by DNV GL states that ERPs should be developed through exercises that test worst-case thermal runaway hazards during project commissioning. The ERP should then include:

> "…details such as current system drawings, specific emergency responder instructions and guidance, applicable Safety Data Sheets (SDS), a comprehensive list of any combustible products and their off-gassing capabilities and other hazardous materials, site evacuation plans, and other relevant environmental and supporting material."[29]

The applicants stated in the third data request response[30] that the ERP would include measures for notifying residents in the area, as necessary, of any emergency situation that may result in hazards to health or property. The applicants also stated that plans to meet with emergency response personnel are included as part of the JDA that is currently under negotiations at the time of writing this EA. In the unlikely event that a JDA is not executed, MGS would still meet with local emergency responders to develop the ERP[31].

Should a fire or thermal runaway event occur, there would need to be proper clean up and disposal of materials. Some materials, such as other batteries within a unit, may need to be carefully disconnected and any stored energy discharged. The applicants should have an established protocol, prior to operation, that discusses what follow up steps would occur for site treatment and materials disposal after a fire or thermal runaway event.

3.10.3. Operational and Emergency Response Contaminants

Several public comments received during the EA Scoping Period had expressed concerns surrounding the possibility for project facilities such as PV panels and BESS units to contribute contaminants to the local environment. PSC staff issued inquiries in the third data request to allow the applicants to respond to these topics. The potential risks of typical operational conditions resulting in leaking chemicals, damage to array and BESS technologies due to weather, and contaminants caused by or made mobile by fire suppression activities were emphasized in the data request.

[28] PSC REF#: 504139 – Response-Data Request PSC-Koebel-3, Request PSCW-KG-3.22
[29] DNV GL. Technical Support for APS Related to McMicken Thermal Runaway and Explosion. July 18, 2020. Provided as Exhibit 3 of the Paris Request for Limited Reopening. Page 62.
[30] PSC REF#: 504139 – Response-Data Request PSC-Koebel-3, Request PSCW-KG-3.21
[31] PSC REF#: 504139 – Response-Data Request PSC-Koebel-3, Request PSCW-KG-3.23

Maple Grove Solar stated that the project solar arrays and BESS units would be monitored remotely 24/7 to identify real-time lapses in performance and potential damage to equipment.[32] On-site technicians would be alerted to any potential damage immediately. Damaged equipment would be removed and replaced as quickly as possible to prevent a lapse in generation and any potential impacts. The applicants would also ensure that any equipment removed due to potential damage or performance issues would be properly recycled or disposed of at an approved facility.

The applicants also stated the potential for chemical or material contaminants from the BESS and PV units is not anticipated due to the BESS units and PV panels being fully enclosed and sealed[33]. The units used for the project are designed to withstand the typical severe weather in Wisconsin. The selected module for the proposed project is certified to withstand hail 40 mm in diameter, however new technology is said to be emerging that would exceed 55 mm hail diameter resistance.[34] Final equipment selection would be made following a Commission approval of the project and during final engineering design, in which case more resilient modules could be selected. Additionally, measures would be taken to mitigate severe weather damage by altering stowing angles of the PV panels to better withstand the circumstances. The equipment selected for the application could stow at angles between 5 degrees and 30 degrees. Utilizing variable stowing angles could decrease forces imparted on the arrays by high winds, or impact damage from hail.

Fire suppression systems utilizing per- and polyfluoroalkyl substances (PFAS) are also a concern as they have been commonly found in fire suppression solutions, until recent efforts in the United States have sought to reduce or outright ban their use. When asked if materials containing PFAS are under consideration for fire suppression systems, the applicants responded that the system to be used in conjunction with the BESS equipment has not been finalized[35]. Local emergency response unit input would be considered in the selection process. If water would be a suitable fire suppression method, a water source may be from on-site wells or from fire tanker trucks. Applicable fire codes would be followed and approved by the local fire code official. The currently selected units for the project would likely have fire suppression measures contained within each BESS unit.[36] The ERP would include additional fire suppression measures. The applicants may also design measures at individual BESS units in accordance with best management practices to contain any potential contaminants from leaving the site, which would prevent mobilization to local surface waters such as Fourmile Creek, groundwater, or soil.

In the event that contamination would occur due to any of these scenarios, Maple Grove Solar would follow best management practices for mitigation.

[32] PSC REF#: 504139 – Response-Data Request PSC-Koebel-3, Request PSCW-KF-3.17
[33] PSC REF#: 504139 – Response-Data Request PSC-Koebel-3, Request PSCW-KF-3.18
[34] PSC REF#: 504139 – Response-Data Request PSC-Koebel-3, Request PSCW-KG-3.24
[35] PSC REF#: 504139 – Response-Data Request PSC-Koebel-3, Request PSCW-KG-3.19
[36] PSC REF#: 504139 – Response-Data Request PSC-Koebel-3, Request PSCW-KG-3.20

3.10.4. Solid Waste

Solid wastes would be generated during the construction of this project and would need to be removed to appropriate waste disposal or treatment facilities. Examples of the types of wastes expected to be generated include scrap steel and other metals, sanitary waste, scrap plastics and wood, and other items used by construction staff. Large stacks of rejected support pilings have been seen at some utility scale solar facilities in Wisconsin. Pre-drilling holes prior to driving piles may decrease the amount of damaged piles and waste metal. However, if concrete is needed to set the piles after pre-drilling, this could not occur within areas of wetland soils without impacting DNR wetland permit requirements.

At the end of construction, items such as silt fences, stakes, and any non-biodegradable waste should be fully removed from the site when no longer needed. During operation of the solar projects, there may be damage to project components that would generate waste. Damaged or defective items not able to be repaired would need to be removed to appropriate waste disposal facilities. This would likely include defective or broken electrical materials (including PV panels), empty containers and other miscellaneous solid wastes. The applicants should ensure waste materials are separated and recycled as much as possible at the solar project, and promptly remove all waste from the project areas during construction and operational phases to reduce safety and aesthetic impacts.

During site decommissioning, project components would be removed from the project areas. The anticipated treatment of these components is discussed in the Decommissioning Plan provided in Appendix S. These plans state that components that have resale value may be sold, and other components would be recycled or disposed of at an approved offsite licensed solid waste disposal facility. Any components left on properties would be done in compliance with landowner lease agreements.

3.11. Historic Resources

Supplemental EA: This section has been updated to reflect changes due to the gen-tie route adjustment. Analysis of the historic resources review for the gen-tie route adjustment study area was included.

The applicants contracted Stantec to review potential impacts of the proposed project to historic resources. The review consisted of a review of the Wisconsin Historic Preservation Database (WHPD), a site probability model, and field investigations to identify resources present within the project area. The WHPD review indicated that four archaeological surveys had previously been conducted within or adjacent to the project area. No recorded archaeological sites, cemeteries, burial sites, or catalogued historic structures were identified to be present within the project area. The WHPD review identified four archaeological sites, two burial sites, and 17 historical structures within one mile of the project area. Two of these structures were determined by the WHS as potentially eligible for the National Register for Historical Places (NRHP), one was not evaluated for NRHP listing, and the remaining structures were determined as not eligible for NRHP listing. A data request was issued to make determinations regarding the three

structures that were potentially eligible or not evaluated for listing in the NRHP. (PSC REF#: 504139).

The two structures that were determined to be potentially eligible are a Spanish/Mediterranean-style residence and a First Lutheran Church/Late Gothic Revival Church, and both are 0.98-mile northeast of the project area boundary. The residence was recommended for eligibility in the NRHP. The church was not recommended for eligibility in the NRHP. Due to the intervening distance, vegetation, and buildings however, neither of these resources are anticipated to be affected by the project. (PSC REF#: 504140). The previously unevaluated structure is known as the School District No. 7, a Craftsman style one-to-six room schoolhouse that is directly adjacent to the project area. The school was recommended for NRHP eligibility. The State Historic Preservation Office completed a review, included in Appendix A of this EA, and determined that the project as proposed would not adversely affect the schoolhouse.

No known human burial sites would be affected by the project, therefore no Burial Site Disturbance Authorization/Permit would be required from WHS. Stantec prepared an Unanticipated Archaeological Discoveries Plan, included in Appendix K with the Cultural Resources Report, that details contingencies in the event previously unidentified resources are encountered during construction. If the applicants encounter cultural resources such as grave markers or human skeletal remains during construction, all activities in the area would cease and the State of Wisconsin Historic Preservation Office would be contacted for further instructions. Local law enforcement would also be contacted immediately if human burials are discovered.

Appendix K in the application includes an archaeological site probability model to identify areas of high potential for unrecorded archaeological sites using WHPD and historical maps. Stantec determined that areas of high potential for prehistoric sites would be within 300 feet of sources of water where topography exhibited less than 15 percent slope and soils that are not subject to frequent flooding. The model identified approximately 235 acres of the 1,559-acre project area as having either a high probability for prehistoric Native American archaeological sites, or a medium probability to contain Historic period Euro-American archaeological sites. Stantec conducted field investigations over these 235 acres within the solar generation portion of the project. Two historic period sites with artifacts dating from the late nineteenth to early/mid-twentieth centuries were identified within the solar generation portion of the project, however neither site appeared to provide significant national or local historical information.

A Phase 1 archaeological survey report was completed by Stantec to account for the relocated gen-tie line, included as Appendix K-Addendum in the application. (PSCREF#: 515639). Desktop and field surveys were completed along the revised gen-tie route on August 8 and August 9, 2024. No previously recorded archaeological sites, above-ground historic resources, or burial sites were discovered within the survey area during the literature review or field surveys.

Based on the investigations, Stantec determined that there would likely be no adverse effects to cultural resources associated with the proposed project.

3.12. Invasive Species and Disease Organisms

Construction of the project may cause the spread and establishment of non-native invasive species. Construction equipment traveling from infested to non-infested areas could spread noxious or invasive weed seeds and propagules. The removal of existing vegetation during construction could increase the spread and establishment of noxious and invasive weeds, which often invade and persist in areas after disturbance. Although many areas of the proposed project area are currently in row crop agricultural production, where such weeds are typically controlled by physical actions or herbicide treatments, existing seedbanks may allow for new populations to establish in areas of disturbed soils where continuing control does not occur. Areas with established populations of invasive plants can include field edges, road ROWs, wetlands and waterways, and potentially fallow fields or areas not in active management.

The project study area was surveyed for the presence of invasive plant species during field investigations conducted in September of 2023. Surveys conducted outside of the summer months are not as effective, but these should not impact management overall if BMPs are followed during construction.

Detailed information on Wisconsin's invasive species rule, Wis. Admin. Code ch. NR40 (NR 40) is found on the DNR's website[37], including current lists of regulated species. Invasive species documented during field surveys of the project area included the following which are all regulated by NR 40: Reed Canary Grass (*Phalaris arundinacea*), Common Buckthorn (*Rhamnus cathartica*), and Japanese Honeysuckle (*Lonicera japonica*). Japanese Honeysuckle is regulated under the prohibited category, and the others under the restricted category. No non-native species were observed within the project boundary.

In addition to the species identified in the field surveys, there are likely to be other invasive species found in the project areas. The applicants or their contractors should conduct plant surveys as final construction plans are being prepared to gain an understanding of where invasive species are located. Knowing where these species are located would allow for the evaluation and use of appropriate BMPs for a given project action and location. MGS stated in a response to the third data request that invasive species surveys would be conducted at the same time as post-construction vegetation monitoring as detailed in the Vegetation Management Plan.

In addition to invasive plants, there are a range of forest pests that can be spread or transmitted through construction activities if rules or BMPs are not followed. Barron county is known to have both oak wilt and emerald ash borer, however neither is known to be established in the project area. Any tree clearing or pruning activities should consider current Wisconsin-specific BMPs[38] to prevent the introduction and spread of tree pests and diseases. MGS stated in the application that they would utilize standard vegetation management practices in accordance with the PSC's oak tree cutting and pruning restrictions as specified in Wis. Admin. Code § PSC 113.0511.

[37] Wisconsin DNR. Invasive Species Rule – NR 40. https://dnr.wisconsin.gov/topic/invasives/classification.html. Accessed June 2024.
[38] These BMPs can be found at the DNR's Forest Health webpage: https://dnr.wisconsin.gov/topic/ForestHealth. Accessed June 2024.

A critical element of invasive species management is the monitoring plan for a site. Staff that access the site should be trained to look for early establishing invasive species and have a process for mapping and reporting new populations for control treatment. The plan and list of species should be adaptive, and able to address new invasive species that might be found in the project area. MGS states that management of noxious and invasive species may be required to comply with regulations, allow the permanent seed mix to establish, and reduce the long-term maintenance requirements to maintain desirable vegetation. Mowing and herbicide treatments would be critical to successful vegetation establishment during the first three years following completion of construction. This is discussed further in the Vegetation Management section of the EA.

3.13. Local Government

No land use permits have been determined for the Maple Grove Solar project at the time of writing this EA. Local construction permits, such as building permits and driveway permits, may be required.

3.13.1 Local Emergency Responders

The applicants would rely on local fire and emergency medical services during construction and facility operation. The applicants are negotiating a Joint Development Agreement with local communities which would include emergency response training and coordination between local emergency responders and Maple Grove Solar. Coordination with local emergency responders would include meetings to maintain familiarity with site facilities and clear channels of communication. The applicants stated that in the unlikely event that a JDA is not executed, Maple Grove Solar would independently meet with local emergency responders in order to develop an appropriate emergency response plan.

3.13.2. Land Use, Zoning, and Developer Agreements

The Town of Barron, City of Barron, and Barron County each have Comprehensive Plans, which were included in Appendix E of the application. (PSC REF#: 491033, PSC REF#: 491034). The plans outline goals of protecting productive farmland for agricultural purposes. The majority of the project area is located within the Exclusive Agricultural District Zoning (A-1) and the General Agriculture District (A-2) of Barron County; the portion of the revised gen-tie route located north of 12th Avenue is within the City Extraterritorial Zoning. Although in the long term the land could return to agricultural use after decommissioning, during the current planned operations the project would largely be a different land use to that intended in the Comprehensive Plans. The plan includes results of a 2008 public opinion survey, in which it stated a strong level of support for pursuing wind and solar energy as economic development options.

The applicants stated that areas outside fenced project facilities, but inside the project boundary, may remain under control by Maple Grove Solar through the life of the project if it is determined necessary during the construction design phase. These areas, if remaining under control by MGS, would be managed the same as the "green" areas inside the array fences. Maple Grove

would retain the right to release a parcel (or a portion of a parcel) back to the landowner if solar generation facilities are not sited on that parcel. Parcels or portions of parcels retained for purposes other than the construction of solar generation facilities (including the project substation, O&M building, and associated stormwater facilities) would not be fenced, and landowners reserve rights to those lands.

Maple Grove Solar is not a public or investor-owned utility and does not possess eminent domain statutory authority. MGS must secure long-term lease agreements with landowners in the project area to acquire the property for the project facilities. Commission staff is unaware of any other local development plans that would have significant impacts from the installation of the solar facilities in the project area.

The applicants believe the project would not interfere with local planning based on the zoning codes and plans outlined in the Comprehensive Plans. More details would be available in the JDAs between Barron County, the Town of Maple Grove, and the Town of Barron and Maple Grove Solar, which are not available at the time of this EA.

Joint Development Agreement
At the time of writing this EA, Joint Development Agreement negotiations are still ongoing, with drafts currently before the three local government agencies. The applicants expect that negotiations will be completed prior to the close of the record in this docket, and at that point MGS will enter the JDA into the record.

In addition to the JDA, the applicants stated a separate financial commitment would be made to the Barron Area School District to consist of an annual donation for a substantial period. The commitment called The Educational Fund Pledge Agreement was signed by the Barron Area School District on June 3, 2024. Maple Grove Solar expected this agreement to be executed in the near future, at the time of responding to the third data request[39]. Once executed, the applicants would enter the Pledge Agreement into the record.

3.13.3. Shared Revenue

A solar electric generation facility is considered tax-exempt utility property in Wisconsin. The loss of property taxes from the land taken up by the proposed generation facilities could be a negative impact to any hosting municipalities and counties. However, the project owners pay into the Wisconsin Department of Revenue's Shared Revenue Utility Aid Program that distributes annual funds to communities hosting an electric generating facility. If the proposed project is approved, each of the counties and municipalities hosting the solar facilities that make up the overall project would receive shared revenue payments based on the nameplate capacity of the facility and the number of residents in their respective jurisdictions.

Under Wis. Stat. 79.04, local municipalities are paid annually for generation that is located within their boundaries. A per capita limit is placed on the payments determined by the distribution formulas. The municipalities and counties that host a solar facility also qualify for an incentive payment under Wis. Stat. 79.04(7)(c)1, which applies to power plants that derive

[39] PSC REF#: 504139 – Response-Data Request PSC-Koebel-3, Request PSCW-KF-3.7

energy from an alternative energy resource. This incentive payment would be an amount that is equal to the number of megawatts that represents the power plant's name plate capacity multiplied by $1,500.

MGS provided the estimates of annual local revenue impacts for the Town of Maple Grove and Barron County. The MW-based payments assume primary array generation of approximately 259.6 MW located in the Town of Maple Grove and 0 MW located in the Town of Barron. Each of the estimated shared revenue payments are comprised of MW-based payments and renewable resource incentive payments. The estimated amounts are shown in Table 3.

Table 3 - Estimates of Annual Shared Revenue Payments.

Frequency	Town of Maple Grove	Barron County	Total
Annual	$563,333	$736,667	$1,300,000

Additional financial benefits from the proposed project include payments made to participating landowners of the solar project, either ongoing for leases or as direct payments for purchase of land.

3.13.4. Community Income

This section is not applicable to this project because the proposed generation tie line facilities are designed for operation at less than 345 kV.

3.14. Local Infrastructure

3.14.1. Airports and Air Traffic

Due to the height of the proposed facilities and distance to the airports, the proposed project is not expected to impact airports or local air traffic. The applicants conducted a search using the FAA's Notice Criteria Tool to find airports, airstrips, or helipads within a 10-mile radius of the project boundary. The glare analysis in Section 3.21.3 of this EA predicts no significant impact to airports. MGS does not expect mitigation measures to be necessary regarding impacts to airports or helipads. Additionally, the applicants stated that no commercial air services are known to operate within the project boundary, thus no mitigation measures have been considered regarding commercial aviation.

There are five airports and two helipads within a 10-mile radius of the project boundary, none of which have air traffic control towers. Four of the five airports are publicly owned, which include: Barron Municipal airport, Rice Lake Regional airport, Cumberland Municipal airport, and the Chetek Municipal airport. The fifth airport that is privately owned is the Knutson Farms airport. The heliports are the Mayo Clinic Northland heliport, and the Lakeview Medical Center heliport, both of which are located on top of the medical centers. Only one airstrip is within 0.5-

mile of the project area, and none of the airports were determined to be within a notice criteria proximity to FAA licensed facilities, as found in Appendix C of the application.

3.14.2. Communication Facilities

A review of Federal Communications Commission (FCC) GIS data was used to determine the number of communication towers within one mile of the project boundary. The types of infrastructure considered included broadcasting technologies, transmitting technologies, and the Doppler radar network. One microwave service tower, no radio broadcast stations, no television stations, and no doppler radar rowers are located near the project area.

No cellular or antenna towers are located within the project boundary. One microwave service tower owned by Dairyland Power Cooperative is located approximately 200 feet south of the Dairyland Power Barron Substation. The application states that the height of gen tie structures should not obstruct microwave beam paths, degrade broadcast communications, or interfere with cell phone communications. No other cellular or antenna towers were identified within one mile of the project boundary.

AM broadcast coverage interference is only anticipated when a broadcast station is located within its respective exclusion distance from an interfering object. Exclusion distance varies by antenna type: directional antenna exclusion distance is approximately 10 wavelengths (1.9 miles), while non-directional antennas are equal to one wavelength. FM antenna radiation patterns can be disrupted by structures in proximity of less than 0.3 miles. FM broadcast stations do not typically experience interference from solar facilities. No AM or FM radio stations were identified within a three-mile search of the project boundary, therefore the project is not expected to impact the coverage of local AM or FM stations.

There are no television stations located near the project area, and solar projects do not typically cause interference to broadcast television reception given that modern digital television receivers significantly mitigate the effects of signal scattering. For utility-scale solar projects, the most likely source of electromagnetic interference would be a PV inverter, which are located intermittently throughout a solar array. Although inverters emit at too low of a frequency to interfere with television, inverters are recommended to have a minimum setback of 250 feet from residences. The proposed project places the nearest inverter approximately 420 feet from a household.

There are no anticipated impacts to any WiFi or internet services for residences near any of the proposed project infrastructure. Additionally, Maple Grove Solar is not aware of evidence suggesting the project may interfere with internet services.

Doppler radar is a specialized radar that may experience interference if tall structures are within the sight line of a Doppler radar tower. To avoid interference caused by topography or other structures, Doppler radar towers are typically elevated. There are no doppler radar network towers located within one mile of the project area.

Based on the description of project facilities, there are no anticipated impacts to any telecommunications services, radio or television broadcasts, Doppler radar, or other communications systems.

3.14.3. Railroads

The project would not cross or share railroad ROW. The applicants stated that most of the snowmobile trail which crosses the gen-tie corridor runs along a railroad corridor, however the railroad corridor is abandoned. Therefore, no project related impacts made to railways would be anticipated.

3.14.4. Roads and Traffic

There would be increased impacts to roads and traffic during the construction of the projects as workers arrive and leave the site, deliveries are made, and any large machinery travels to or within the project area. Delivery vehicles and construction traffic are expected to arrive on road legal vehicles for the most part, except for the delivery of the Main Power Transformer (MPT), which would require special multi-axle trucking and state road permits from WisDOT. No disconnections of local electric distribution lines, clearing of trees in road rights-of-way, or modifications to roadways are expected to be necessary for material and equipment delivery.

The application does not state that local roads in the following project areas are posted for weight restrictions, suggesting that the local road systems have sufficient load bearing capacity and width to accommodate the types of vehicles that would be used to deliver most components. Most project vehicles used for transport would be legal load flatbed and box trucks, therefore damage to local roads from construction traffic is expected to be minimal. Localized damage is most likely to occur at entrance points to project access roads. A Road Condition Report was completed for the project to aid in documenting damage caused during the construction process. The report is included in Appendix S of the application. Should any road damage occur, the applicants would ensure the damaged road section would be repaired to as-good or better-than initial conditions.

Delivery of construction materials is anticipated to utilize STH 8 and STH 25 to approach the project area. Once the materials are near the project, equipment would be delivered to the three laydown yards using STH 25, County Trunk D, and 10th Avenue.

3.15. Local Jobs

The construction workforce would likely consist of delivery drivers, laborers, equipment operators, and management personnel. Most of the personnel required to construct the project would be laborers that install racking systems and place modules. MGS estimates that 250 to 270 construction workers would be necessary at any given time during the peak construction period. MGS anticipates that approximately 80 percent of the construction jobs would be contracted locally in Barron County and from the state of Wisconsin. The number of locally sourced construction workers may vary depending on final equipment selection and local worker availability.

Once construction is complete, the project would be staffed by three on-site permanent employees for ongoing O&M work during solar facility operations. Examples of O&M tasks include remote monitoring, maintenance of equipment, daily facilities operations monitoring, and maintenance of facilities.

There would likely be a short-term influx of personnel associated with the proposed project during the construction of the project. The communities near the project may experience short-term positive economic impacts during this construction phase as the contractors use various local businesses for food, lodging, supplies, and fuel. Local vendors may also benefit from sales of goods such as fuel and construction materials.

3.16. Noise and Sound

Supplemental EA: This section has been updated to reflect changes due to the gen-tie route adjustment. Residential proximity was updated to be relative to the relocated project substation. An updated preconstruction noise study has been provided.

Noise is unwanted sound considered unpleasant, loud, or disruptive to hearing. Noise is measured in units of decibels (dB) on a logarithmic scale. Because the human ear is not equally sensitive to sounds throughout the range of hearing frequencies, a weighted scale is commonly used, with the A weighted scale (dBA) most often used for sound measurements affecting human hearing. Due to the logarithmic scale of sound measurements, a change of 3 dBA is considered barely perceptible, while a change of 10 dBA is perceived as a doubling/halving of noise. For reference, the sound level of normal breathing is about 10 dBA, normal conversation at three feet is about 60 dBA, and emergency vehicle sirens are about 115 dBA.

Impacts associated with noise can be subjective and vary from person to person, based on factors such as loudness, time of day, frequency, or duration, and the amount of other background noise audible to the listener. Most noise impacts caused by the project would occur during the construction phase due to the use of heavy machinery and particularly, use of pile drivers. Noise levels during operation of the solar facilities are expected to be less than construction. During operation of the solar facilities, the primary source of noise would be the inverters, the rotation of the tracking systems, the project substation transformer, and the BESS units that would be co-located at 27 of the 76 inverter locations. The facilities would not be generating electricity at night, therefore the tracking systems would not be rotating and inverters that are not co-located with BESS units would generate minimal noise. Noise from substation transformers, BESS units, and co-located inverters could be expected during nighttime operational hours.

In previous electric generation facility projects, the Commission has typically required that a post-construction noise survey be prepared as a condition of approval of the project. A similar post-construction noise survey would likely be required of this project to confirm noise impact assumptions.

3.16.1. Standards for Noise Levels

There are no statewide noise standards for solar electric generation facilities in Wisconsin. Most counties and municipalities do not have specific solar facility noise standards. The applicants did not identify any local ordinances that would be directly applicable to limit noise from solar electric generation facilities. In the absence of solar specific regulations at the municipality or county level, Stantec used the noise limits set for wind energy systems in Wis. Admin. Code PSC 128 as a guideline for the project. These limits are 50 dBA for daytime hours and 45 dBA for nighttime hours, measured at the outside wall of a nonparticipating residence or community building. Maple Grove Solar states that as shown in its pre-construction noise studies, the project facilities would be expected to meet these levels.

3.16.2. Pre-construction Noise Study

Large solar electric generation projects have conducted pre-construction noise studies to predict the noise levels that would be experienced at local residences. Maple Grove Solar commissioned Stantec to conduct a pre-construction ambient noise study at six locations in the project area, as well as predict the operational noise levels anticipated at the solar project and local receptors. Three of the measurement points were located along State Trunk Highway 25 near multiple residences expected to experience higher levels of project noise. The remaining three measurement points were located away from highway 25, adjacent to non-participating properties, to gather ambient noise with decreased highway influence. Existing equivalent continuous ambient noise at the study locations ranged from 44 to 68 dBA across the six locations and the measurement time periods.

The gen-tie route adjustment and relocation of the substation would result in non-participating residences to be in closer proximity to the substation than originally proposed. An updated pre-construction noise study was provided[40] as a data request response to account for any changes that may result from the new substation location. The applicants were also prompted to provide any mitigation methods that could be implemented to ensure the project would remain in compliance with PSC 128 noise limits, if necessary. No mitigation methods were proposed because operational noise levels are not expected to exceed 45 dBA at any receptors.

The noise study provided the sound levels that could be generated by project equipment as well as areas that are anticipated to experience greater noise impacts due to the proposed facilities. Some results of the noise study are summarized in as well as distances to the nearest non-participating residences which were estimated by Commission staff using GIS software.

Table 4, as well as distances to the nearest non-participating residences which were estimated by Commission staff using GIS software.

[40] PSC REF#: 524610 – Appendix P – Pre-Construction Noise Study (Revised) Replaces ERF #491054

Table 4 – Pre-construction noise study predictions.

Nearest residence to proposed inverter (approx.)	Nearest residence to proposed inverter + BESS (approx.)	Assumed inverter station sound level	Assumed BESS container sound level	Highest anticipated sound level at neighboring residence	Nearest residence to proposed substation (approx.)	Assumed substation transformer sound level
560 feet	420 feet	91 dBA	78 dBA	45 dBA	660 feet	104 dBA

Stantec utilized the CadnaA noise modeling software to predict project noise at the identified sensitive receptors within one-half mile of the project area. Based on their calculations, the highest predicted noise level between daytime and nighttime periods was estimated to be 45 dBA at the nearest residence, identified as R-97 in the updated pre-construction noise study. Residence R-97 is the closest receptor to the updated substation location; the movement of the substation increased the expected noise level at this residence from approximately 35 dBA to 45 dBA. All measurement points were calculated to expect an increase of 1 dBA or less from the measured ambient noise levels except for the measurement point adjacent to the residence nearest to project inverters (measurement point ML-4, residence R-145). The measurement point located near R-145 was calculated to expect a 6 dBA increase over the measured ambient noise levels during the day, and a 4 dBA increase over the measured ambient levels during nighttime hours.

The predicted noise impacts as summarized do not exceed the 45 dBA nighttime noise standard for wind turbines in PSC 128. Noise from the solar electric generation facility is anticipated to have minimal impact on nearby residences. No additional mitigation measures are required above complying with the general layout and equipment specifications used for this analysis and verifying the predicted levels are represented during the operational phase.

3.16.3. Construction Phase

Construction noise would come from a series of intermittent sources, most of which would be diesel engine construction equipment. Because of the unique nature of large-scale solar projects, most construction activity would be spread over a large area. Construction noise impacts would vary significantly with time of day, stage of construction, and the location of work. Construction would occur primarily during daytime hours, so there should be little or no construction noise impact at night. Pile driving work would likely be the most impactful source of construction noise and vibration. During pile driving activities, the regularly spaced noises for the length of time of construction may be disruptive and annoying for nearby residents. Table 5 shows some of the typical noise levels at 50 feet for commonly used construction equipment.

Table 5 - Average Maximum Noise Levels from Common Construction Equipment[41]

Equipment	Noise level at 50 feet (dBA)
Dozer	82
Grader	85
Excavator	81
Flat Bed Truck	74
Pile Driver	101
Crane	81
Roller	80

Keeping construction predominately during the day would decrease noise impacts to nearby residences. Another way to mitigate noise impacts during construction is to ensure that diesel engine mufflers on machinery or equipment are kept in good working order. The applicants stated that the proposed hours of construction would be from 7 a.m. to 6 p.m. Monday through Friday. Maple Grove Solar and their contractors would be cognizant of nearby residences, especially during early morning hours, when conducting construction activities. Deliveries and construction traffic would be minimized on local roads as practicable. Deliveries would be scheduled outside of peak traffic hours when able, however may occur outside of the proposed construction hours due to unforeseen factors.

3.16.4. Post-construction Operational Phase

If the project is approved, Maple Grove Solar would be required by the Commission's order to collect post-construction noise measurements in accordance with the PSC Noise Protocol. These measurements are taken at the same places and during the same time periods as the pre-construction measurements. Two sets of measurements are required: one with the solar facilities in operation, and one where the solar facilities would not be operating. This post-construction study could identify any areas where actual sound levels were greater than predicted and higher than permitted levels.

Any areas where actual sound levels are higher than predicted in the application may need noise mitigation actions, such as noise wall construction, installation of vegetation buffers, or alterations to the solar project equipment. Maple Grove Solar states in the application that in response to any complaint filed by a local resident regarding project noise, the source of the noise would be investigated and mitigated, if appropriate. Equipment would be maintained and repaired in a timely manner to avoid excessive sound. The applicants stated in response to a data request that noise complaints would be addressed on a case-by-case basis, and a likely response

[41] Sound levels taken from US DOT Construction Noise Handbook. Accessed at: https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook09.cfm on June 10, 2024.

would include discussion with the concerned party, monitoring the noise levels, and potential sound dampening methodologies such as a sound dampening barrier[42].

3.17. Landowners, Easements, and Property Values

Supplemental EA: This section has been updated to reflect changes due to the gen-tie route adjustment, the number of good neighbor agreements executed by the applicant, and corrections in GIS data. Residential proximity was updated to be relative to the revised gen-tie centerline.

3.17.1. Landowner Agreements

The solar project and gen tie line would be constructed on 52 separate parcels that is leased from 13 participating landowners. These solar projects often have a solar option or lease agreement for an entire parcel, although only part of a parcel may eventually host project facilities. Additional leases and easements are negotiated with landowners for the ability to cross property with collector circuits and generator tie-lines. The amount of land under lease agreements is usually to support the final project. The project substation would be approximately 2.5 acres in size and is located on a parcel that is included within the solar generation parcel lease. Discussions regarding purchase options for the substation property are ongoing with the parcel owner. The proposed O&M building, parking, and associated stormwater facilities would be co-located within the same substation location.

A landowner leasing property to the facility would not have access to the land within arrays while the solar project is in operation. The applicants stated in response to the third data request that leases or purchase agreements for participating landowner parcels include development of the entire parcel for the purpose of solar generation[43]. Maple Grove Solar may deem it necessary to retain control of areas outside array fences through the generation life of the project, however they would retain the right to release a parcel or portion of a parcel back to the landowner if it is not needed for facility siting purposes. Parcels or portions of parcels retained by Maple Grove Solar for purposes other than the construction of solar generation facilities (such as the substation, O&M building, or stormwater facilities) would not be fenced, and landowners would reserve the rights to these lands.

Some renewable energy projects offer "good neighbor agreements" to nearby non-participating residences. These typically include payments to mitigate some of the impacts that affect nonparticipating properties. Some good neighbor agreements may contain actions that the developer agrees to conduct, such as planting screening vegetation. At the time of writing this Supplemental EA, four good neighbor agreements are known to have been executed. MGS stated in the first data request response that it has begun discussions with certain neighboring non-participating landowners to address concerns individually.

[42] PSC REF#: 495820 – Response-Data Request PSC-Koebel-1
[43] PSC REF#: 504139 – Response-Data Request PSC-Koebel-3

3.17.2. Nearby Residences

In previous Commission dockets for solar generation and electric transmission facilities, as well as in this docket, nonparticipating landowners adjacent to the project have voiced concerns regarding the proximity of arrays, fences, and new transmission ROW to their property. Concerns raised include the aesthetic impacts from facilities, particularly when panels would be on multiple sides of a property, the potential for noise or glare, limits to wildlife use of the areas occupied by the arrays, potential impacts to property value, and the possibility of contaminants sourced from solar panels or battery units. According to the impact tables provided in the application, respective to the revised gen-tie line centerline, one residence is located between 101- and 150-feet, and no other homes or apartment buildings are within 300 feet. The single nearby residence is less than 150 feet from route segment 1, which is common to the primary and alternate routes. The applicants' impact table shows that there are 11 participating residences and 37 non-participating residences located within 300 feet of array fence lines. Six of the non-participating residences would be within 25 feet of array fence.

Maple Grove provided the self-determined setback distances for the solar project. The applicants had also stated that a setback distance for perimeter fencing to arrays would be 20 feet. The current setback distances for the solar facility would be:

- 100 feet from panel edge to nonparticipating inhabitable structures
- 100 feet from panel edge to participating inhabitable structures
- 20 feet from noninhabitable structures
- 10 feet from panel to side yard property line
- 25 feet from panel to rear-yard property line with a principal structure present
- 10 feet from panel to rear-yard property line with an accessory structure present
- 108 feet from state/federal highway centerline, 83 feet from county highway centerline, and 63 feet from town road centerline

The GIS data provided with the application as well as the project maps in Appendix A seem to illustrate perimeter fences being placed slightly outside of the proposed project boundary. A data request was issued by Commission staff to allow the applicants to make corrections and clarify proposed setback distances. The applicant stated in response[44] that no fences would be placed outside of the project boundary on non-participating landowner parcels.

The Commission could consider requiring the use of different setback distances or screening vegetation to mitigate the impacts described by landowners that are concerned about solar facilities adjacent to their property. It appears that four non-participating landowners could potentially have solar facilities on nearly all four sides of their residence given the proposed layout. One of these residences is mostly surrounded by primary arrays, and the remaining three have at least one of the directions made up of alternate arrays. If it is discovered during the final engineering stage that less land is necessary to produce the proposed nameplate capacity of the project (such as equipment selection offering increased efficiency), increasing setbacks of arrays to these residences may be most impactful. Similarly, alternate arrays or portions thereof could

[44] PSC REF#: 508959 – Response-Data Request-PSC-Wales-6, Request PSCW-KF-6.4

be utilized to avoid using portions of the primary arrays near residences that are disproportionately affected by panel placement.

3.14.3. Other Existing Easements

Existing infrastructure such as high voltage transmission lines, natural gas pipelines, and telecommunications infrastructure may already be located on properties that are now leasing land for the solar facilities. These existing easements may have restrictions on the type of infrastructure that can be constructed in existing ROW and/or restrictions on construction or operational activities in existing ROWs or near existing facilities. Conservation easements can also be located on rural properties such as forests, wetlands, or certain agricultural lands set aside for conservation practices. These easements may have different restrictions on what can be done to the vegetation, soils, or any facilities placed on the property. Examples of these easements or land agreements include Managed Forest Law (MFL) property, Conservation Reserve Property (CRP), or wetland compensatory mitigation property. The applicants would need to negotiate with specific landowners who have signed agreements to utilize land for the proposed project. It would be up to the landowners and the applicants to agree to any mitigation measures or special requirements to maintain special easement status.

3.17.4. Property Values

Residents near proposed solar PV facilities have expressed concerns that construction and operation of the project would reduce their property values. The public comments anticipate a lowering of property values due to changes in aesthetics as well as changes to a property's rural character. Public comments concerned about property values often bring up the potential for an increase in impacts from noise, light (glare), or damaged panels. Property values can be influenced by a complex interaction of factors specific to individual parcels. These factors can include, but are not limited to, the condition of a property including improvements, acreage, or neighborhood characteristics, as well as proximity to schools, parks, and other amenities. In addition, local and national market conditions can influence property values.

The presence of a utility-scale solar PV facility would become one of many interacting factors that could affect a property's value. Solar generating facilities have the potential to impact property values. Negative effects from these facilities could be the result of impacts that extend beyond the immediate footprint of the arrays, such as noise and visual impacts. However, unlike fossil-fueled electric generating facilities, a PV facility would not produce air emissions during operation of the facility. The installation of PV facilities and associated gen-tie line would create a visual impact. PV facilities lack the height of smokestacks or wind turbines and are not typically visible at longer distances like those facilities. The visual impact of PV arrays is greatest at short distances at ground level and depending on the distance, layout, and acreage of the array in relation to the viewer, may be extensive, or may be very minor. Transmission structures of the gen-tie line may be visible from longer distances comparatively. Features such as topographic formations, screening vegetation, or other structures can soften or mitigate visual impacts.

Some landowners may not like the change in the area from agricultural land use; however, other landowners may prefer the solar project to other land uses, such as row crop agriculture, housing developments, or industrial buildings. On a long-term basis, improper or incomplete decommissioning of a proposed project could adversely affect local property values. The income to the local municipality or county from the Shared Revenue payments may provide benefits to local services that could positively impact a property's value.

Published literature specifically aimed at quantifying impacts to property values based solely on proximity to utility-scale PV facilities is limited. Currently there are few studies that discuss the potential property value impacts near solar installations. These studies vary in their conclusions and methods.[45] Results from these studies vary presenting positive, zero, and negative impacts on property values as a result of the construction of solar installations. In certain situations, it is possible that individual property values could be negatively impacted.

3.17.5. Road Congestion

The applicants would develop traffic control plans to minimize traffic impacts and comply with permit requirements. Construction vehicles would use existing public roads to access the permanent internal solar array access roads and the temporary access roads within the ROW for the gen-tie line construction. The internal access roads would be located within fenced areas to provide access to and facilitate maintenance of project equipment. There may be occasions when construction vehicles are parked on roads during construction. All current traffic control measures would be adhered to while equipment is on a public roadway.

3.17.6. Impacts to Driveways

The applicants stated that no driveways would be blocked by equipment unless an agreement is made with the landowner or resident. Maple Grove Solar does not anticipate requiring the use of driveways for ROW or construction access. If a driveway is needed however, consent would be obtained beforehand, and the driveway would be protected using matting or other low-profile methods.

3.18. Photovoltaic Heat Island Effect

The heat island effect is a term used when local air and surface temperatures are higher than nearby natural areas as a result of heat absorbing surfaces at a developed site. This has been observed in urban environments where heat builds up during daytime hours and becomes stored in rooftops and pavement.

[45] (1) Kirkland, Richard. 2018. Re: Flatwood Solar Impact Study. *Letter to Strata Solar Development*; (2) Al-Hamoodah, L., Koopa, K., et. al. (2018). *An Exploration of Property-Value Impacts Near Utility-Scale Solar Installations*. The University of Texas at Austin; (3) Gaur, V. and C. Lang. (2020). *Property Value Impacts of Commercial-Scale Solar Energy in Massachusetts and Rhode Island*; (4) Salma Elmallah, Ben Hoen, et. al. (2023) *Shedding light on large-scale solar impacts: An analysis of property values and proximity to photovoltaics across six U.S. states.*

There are few studies currently available that investigate whether a similar heat island effect is created from solar electric generation facilities, referred to in the literature as the photovoltaic heat island effect (PVHI effect). The PVHI effect is described as solar PV arrays elevating ambient air temperatures relative to their natural surroundings. Solar electric generation facilities do this by changing the albedo, vegetation, and structure of the terrain; therefore, affecting how incoming energy is reflected back to the atmosphere or absorbed, stored, and reradiated.

Commission staff reviewed available studies regarding heat island effects related to solar generation facilities. The published literature on the PHVI effect vary, with some theoretical in nature focusing on simulations and mathematical models[46,47] and others utilizing empirical research to measure PVHI.[48,49] Most of the published research to date has occurred at small scale solar electric generation facilities in arid landscapes, dissimilar to the proposed facilities in Wisconsin. Currently there are no known studies that have been conducted at large utility-scale solar facilities in the temperate environments of the Upper Midwest. While none of the studies reviewed were in locations similar to the proposed project, each found that solar electric generation facilities were altering the temperature of the air and in some cases the soil near the solar panels by a small amount. Some of the studies found that temperatures completely returned to normal overnight, while others found that temperatures remained altered.

In Wisconsin, the fenced array areas would be vegetated, unlike most solar facilities in arid landscapes. The vegetation within and around panels would actively cool ambient air through transpiration. Empirical research is needed to determine the occurrence and spatial extent of PVHI as well as any potential impacts it may have on local environments at utility scale solar facilities in temperate landscapes.

3.19. Public Lands and Recreation

Supplemental EA: This section has been updated to reflect changes due to the gen-tie route adjustment. Landmark locations were updated with respect to the gen-tie route adjustment.

All solar arrays for this project would be fenced off, and access would be limited to authorized staff. Land taken up by the arrays would be unavailable for access by the public or landowners, including for hunting or trail use. The applicants used the USGS Protected Areas Database of the United States (PADUS), USGS topographic maps, aerial photos, agency databases, and consulted with USFWS, WDNR, and Barron County to identify public or protected lands within two miles of the project area. Except for one snowmobile trail, two ATV trails, and two WDNR Managed Forest Law parcels, there are no state, federal, or county-owned or managed properties

[46] Demirezen, E. & Ozden, T. & Akinoglu, B. (2018). Impacts of a PV Power Plant for Possible Heat Island Effect. Conference Paper – DOI: 10.1109/PVCon.2018.8523937.

[47] Fthenakis, V.M., & Yu, Y. (2013). Analysis of the potential for a heat island effect in large solar farms. 2013 IEEE 39th Photovoltaic Specialists Conference (PVSC), 3362-3366.

[48] Barron-Gafford, G., Minor, R., Allen, N. et al. (2016). The Photovoltaic Heat Island Effect: Larger solar power plants increase local temperatures. Sci Rep 6, 35070.

[49] Yang, L., Gao, X., Lv, F., Hui, X., Ma, L., & Hou, X. (2017). Study on the local climatic effects of large photovoltaic solar farms in desert areas. Solar Energy, 144, 244-253.

located within the project area boundaries. This includes state and county parks, state and federally designated wildlife areas, refuges, fisheries, or state or federal recreational trails. A total of seven state-owned or WDNR managed wildlife properties, and 46 privately owned WDNR MFL properties are located within two miles of the project area.

The snowmobile trail crosses the northern portion of the revised project gen-tie route between State Highway 25 and 14th Street, directly east of the Barron Substation. The snowmobile trail is operated by Barron County, which has entered into easement agreements with the impacted landowners. The two ATV trails located within the project study area run along the public roadways 12th Street, 14th Street, and 15th Street. The trail on 15th Street is located between project Arrays 7 and 8. The applicants stated that the project would not adversely affect the snowmobile trail or the ATV trails.

The two WDNR Managed Forest Law parcels each cross into the project boundary. One of these parcels, located partly within the boundary for Alternate Array A2, contains a wooded ravine. The applicants have stated[50] that they will work with the DNR and current landowner to comply with the MFL withdrawal requirements if the site is used. The other parcel, which contains a portion of Primary Array P4, is currently farmed thus no tree clearing would be required. The applicants would still work with the DNR and current landowner as necessary to comply with MFL requirements.

There are no other anticipated impacts for public lands or recreation facilities surrounding the proposed solar project area or generation tie line.

3.20. Vegetation Management

Supplemental EA: This section has been updated to reflect commitments made in rebuttal testimony with regard to seed mixes.

Vegetation management during the construction phase of the project would include removing any incompatible or obstructing vegetation prior to site grading and project installation. A non-selective herbicide may be used to remove all vegetation, such as to prepare areas for permanent seeding. Most areas would have been agricultural land, with crops removed prior to construction. As much as 300 to 500 acres of the project area is estimated to be disturbed at one time during the initial stages of the project. Loose soils can cause erosion, sedimentation of local water resources, and inhibit future vegetation establishment. Erosion and sediment control devices (stormwater BMPs) would be installed prior to grading activities to comply with the storm water management permit. It is recommended that temporary cover crops should be installed if soils are idled for periods greater than 14 days or overwintered prior to solar construction.

During the operational life of the project, solar electric generation facilities in the upper Midwest typically have vegetation growing on the array sites around the site perimeter as well as between and underneath panels. This vegetation decreases the amount of impervious surface associated

[50] PSC REF#: 501668 – Response-Data Request PSC-Koebel-2, Request PSCW-KF-2.8

with the site and assists in managing storm water runoff and erosion. Plant species that can create a healthy and sustainable groundcover on the site are preferred to any noxious or invasive plants. The vegetation needs to be established and managed in a way that avoids conflicts with the operation of the solar generation facility. Solar developers must look for plants that would not grow tall enough to shade the PV panels or interfere with other equipment. This is usually achieved by avoiding plants that grow above a certain height (usually 18 inches).

Seed Mixes

The application states a temporary annual seed cover (i.e. oats or winter wheat) would be installed as a cover crop simultaneously with the permanent long-term seed mixes. This cover crop seeding would stabilize soils after ground disturbing activities (such as grading) and reduce the chance for invasive species to establish. Seed mixes with long-term, permanent seeds should be applied after ground disturbing actions are complete to avoid wasting seeds on sites that could be damaged or destroyed during soil disturbance.

The applicants' vegetation management plan includes the following seed mixes proposed for the project area:

1) Low Grow Native/Non-Native Graminoid Seed Mix for PV Panel Areas: Native and non-native low-growing grasses that allow for active growth, and suppression of invasive and weedy species, during cool seasons. Forbs are included to support pollinator species.
2) Pollinator Refuge Native Prairie Seed Mix: Native grasses, sedges, rushes, and wildflowers to be planted outside a 20-foot buffer from the arrays in areas including select access roads, perimeter areas, and main array corridors.
3) Pollinator Refuge Wetland Native Seed Mix: Native grasses, sedges, rushes, bulrushes, and wildflowers of short to medium height suitable for wetland areas that are presently farmed within the array fences. Wetlands outside the array fence would only be seeded if disturbed during construction.

Native species included in the seed mixes would require a greater amount of time to fully establish. Oats or winter wheat would be used as a cover crop to protect the native mixes as they establish. Species that may be found in each of the seed mixes are stated in the vegetation management plan. While pollinator supporting vegetation is included in the seed mix, proper timing and occurrence of mowing and other management practices would be required for pollinator habitat to be effective. The pollinator mix makes up a small portion of the project area, which is largely dominated by the solar array mix, thus management of the solar array areas will have the greatest effect on pollinators.

A data request[51] was issued that prompted the applicants to consider removing Red Fescue (*Festuca rubra*), Rough Bluegrass (*Poi trivialis*), and Kentucky Bluegrass (*Poa pratensis*) from the Low Grow Native/Non-native Graminoid and Wildflower seed mix due to these species being introduced, aggressive species that can outcompete other native grasses and forb species in the seed mixes. The applicants responded that they would consider altering or removing these species, however Maple Grove Solar prefers to keep Red Fescue in the seed mix. MGS agreed

[51] PSC REF#: 504139 – Response-Data Request PSC-Koebel-3, Request PSCW-SR-3.1

to reducing or removing Rough Bluegrass and Kentucky Bluegrass, and stated that to compensate they would need to increase the seed rate of Upland Bent Grass to maintain seed density in the mix. In rebuttal testimony, the applicants agreed to remove Red Fescue from the seed mix as well, to be replaced by another species of seed[52].

Mowing

The vegetation management plan described some of the ongoing maintenance tasks that would be used during the operational life of the facilities. Mowing would likely be necessary more frequently in the early years of vegetation establishment to cut seed heads of noxious weeds and prevent unwanted vegetation from spreading. Mowing is anticipated to occur three to five times during the first two years following permanent vegetation establishment, two to three times during the third year, and once every two years for the remainder of the project lifespan. The vegetation management plan indicated that during the early years mowing across the site would likely be necessary, but following a greater establishment of vegetation, spot cutting where needed may be feasible instead. To prevent excessive soil compaction, mowing should only take place a day or more after significant rainfall events.

The height of the mower deck during mowing events was proposed in the applicants' vegetation management plan to vary depending on the maintenance phase of the project. In the third data request[53] the applicants were prompted to consider alterations to the mow heights, which were originally proposed to be a minimum of three to four inches. The applicants had agreed to mow to a height of six inches or lower during the first four years following establishment. Although a maximum height of six inches did not meet the eight-inch minimum of the request for years 3-4, they had stated that a height greater than six inches would not be possible between panel rows due to the size of the equipment and the species that would be seeded. Whenever possible, especially three or more years following native seed establishment, grasses on site should be mowed to the tallest appropriate height without causing panel shading or safety risks. In areas where herptile species may be located, keeping the mowing deck height at ten inches or above is one way to reduce impacts to these species. Grass outside the solar arrays may be left slightly taller, if desired. Grasses as part of a pollinator friendly habitat should be cut to a height of 20 to 30 inches.

Maintaining a minimum vegetation height of five-to-eight inches (or greater when possible) and eliminating mowing during the ground-nesting bird and pollinator seasons (from April through October of each year) would attract and support wildlife communities. Some limited weed trimming activities could occur during this period if staff were trained to look for and avoid any areas of nesting birds prior to activities. The second issued data request[54] prompted the applicants to consider a time of year restriction for mowing events between April 15 and September 15 to mitigate impacts to pollinator and wildlife species. MGS believes such a window would not be feasible to appropriately address and control invasive or weedy species, however they are open to discussing timing restrictions.

[52] PSC REF#: 514665 – Rebuttal-MGS-Wiater-4
[53] PSC REF#: 504139 – Response-Data Request PSC-Koebel-3, Request PSCW-SR-3.6
[54] PSC REF#: 501668 – Response-Data Request PSC-Koebel-2, Request PSCW-KF-2.12

Invasive Species Management
Invasive species management is a necessary part of the ongoing vegetation management of a solar facility. Operations and Maintenance staff should be trained to identify populations of invasive plants and begin treatment early after observation to prevent establishment of these species. Many invasive plant species would grow to heights that could impact the PV panels or equipment. Treatment of these species could include spot treatment through herbicide, mowing or cutting, or if populations are more established, larger scale applications of specific herbicides or mowing regimes. Cutting or mowing should be timed to prevent seeds from developing and would ideally occur between flowering and seed production. Herbicide applications should be done by trained and licensed applicators[55] following the herbicide labels and safety data sheets.

3.21. Visual and Aesthetic

Supplemental EA: This section has been updated to reflect changes due to the gen-tie route adjustment. Photo simulations depicting the gen-tie adjustment were provided as part of the application.

3.21.1. Aesthetics

The scenic value, or aesthetics, of any area is a subjective matter and can depend on the values and actions of the viewer. Whether a landowner sees any benefits from the project, directly or indirectly, has been shown to influence attitudes towards aesthetic impacts. Visual impacts of the solar PV arrays would include changing open agricultural fields and parts of adjacent forested areas to a view of mono-structural, industrial-appearing features across the span of the fields. The transmission structures of the gen-tie line would likely be visible from greater distances than the solar arrays. The application information states that solar PV panels would be approximately 12 feet high at their maximum daily tilt, and the gen-tie pole heights would range from 95 feet to 150 feet. Topography or vegetation in each project area may obscure parts of the project installations and decrease the visual impacts on surrounding areas. The applicants provided photo simulations to illustrate to the public how select locations would affect the surrounding landscape. (PSC REF#: 515519).

Maple Grove proposes to use up to eight-foot-high fences often referred to as agricultural or 'deer exclusion' fences for security around the solar PV arrays. These array fences would not consist of chain link or barbed wire, but instead would be made up of wide woven wire joined by wooden or metal fenceposts. These "deer" fences would lessen the visual impact of the facilities compared to other fencing options due to being more aesthetically fitting in a rural landscape. Six to eight-foot chain link fence would be required surrounding the project substation and may include three strands of barb wire atop the fence, to comply with applicable electrical safety codes. The project substation would have a very different, industrial appearance compared to the natural and agricultural surroundings.

[55] Individuals should have a current Commercial Pesticide Applicator certification and license issued through DATCP.

The most effective method to mitigate aesthetic impacts of solar facilities would be to retain or plant vegetative buffers between proposed facilities and adjacent residences and roads. If no vegetation exists, creating landscaping plans that use compatible vegetation or topographical features to block or soften the view from a residence to the arrays may mitigate visual impacts. In addition to the strategic placement of vegetative buffers, avoiding the placement of arrays on all sides of a residence would mitigate aesthetic impacts. Allowing at least one unimpeded landscape view for a resident or setting back panels on at least one side to a point where they are shorter than an existing tree line, may mitigate aesthetic impacts.

The topography surrounding the arrays consists mainly of gentle slopes and flat areas, therefore panels would not likely be obscured from view by natural features apart from tree lines and forested areas. One non-participating landowner's residence located at 934 14 ½ Street along STH 25 would be surrounded in all directions except to the northeast by primary panels. The panels to the east would be on the other side of the highway. This landowner would seem to benefit most from utilizing alternate array areas to decrease the quantity of proposed arrays surrounding the property and increase the setback distance of project facilities to mitigate the aesthetic impacts. Another non-participating landowner would potentially have panels on all four sides of the property, however this landowner would have larger setback to the north, existing vegetation to the west that may provide visual screening, and the panels to the east are part of an alternate array. The alternate array to the east would place the perimeter fence approximately 95 feet from the residence. The panels to the south of this landowner would be on the other side of 10th Avenue. Another public comment was submitted by non-participating landowners Brian and Bonnie Chermack during the EA Scoping Period[56] which expressed concern with being surrounded on all sides by project arrays. This landowner would see primary arrays directly east across STH 25, and alternate arrays wrapping from the north side of the residence to the west, to the south side in one contiguous array block. The landowner's residence would be within approximately 200 feet of the fence at its minimum distance to alternate array A2. Satellite imagery suggests that some existing trees or other vegetation would provide screening directly west and east, however the surrounding project facilities do not appear they would be effectively screened by existing vegetation. Other non-participating landowners would see their residence in very close proximity to project facilities, as six residences would be within 25 feet of an array fence. Seven participating landowners would also be within 25 feet of an array fence, however these are not equally impactful as they would be compensated for the project.

Commission staff issued a second data request which included plans for vegetative buffers to mitigate visual and aesthetic impacts that would be caused by the proposed project.[57] Maple Grove stated they would work with interested participating and non-participating landowners adjacent to solar panel arrays and other project components on one or more sides of their property to create visual buffers, to the extent reasonable and economically feasible, and not otherwise impeding solar operations or access to sunlight. Where appropriate and possible, those screening commitments would be captured in an agreement with the participating and non-participating landowner. The vegetative screen would take several years to fully establish its

[56] PSC REF#: 499395 - Public comment by Brian and Bonnie Chermack
[57] PSC REF#: 501668 – Response-Data Request PSC-Koebel-2, Request PSCW-KF-2.9

targeted mature height no matter which of the proposes species would be utilized. Existing windbreaks comprised of trees and shrubs along town and county roads would remain in place wherever feasible.

Where screening is appropriate, MGS would generally install three distinct types of screening materials, categorized as:

- "Dense" screening: staggered plantings of mixed evergreen and deciduous species of various growth heights and characteristics to ensure screening generally suitable for more dense residential areas.
- "Dispersed" screening: variety of native evergreen and deciduous trees and shrubs, and possibly a tall grass prairie seeding mix, which could potentially be used along higher traffic roadways.
- "Light" screening: evergreen trees and appropriate shrubs which provide screening while also respecting the character of areas without significant buffers already in place, potentially to be used as roadside screening along lower traffic roadways.

Apart from array impacts, a substation would have higher potential visual impact due to the industrial nature, height of structures, and chain-link fence topped with barbed wire surrounding the substation site. Two of the nearest non-participating landowners may be impacted by the substation; the residences would be approximately 660 feet and 740 feet from the substation footprint. Both non-participating residences may have the line of sight to the substation interrupted by an existing tree line.

3.21.2. Facility Lighting

The proposed solar project would primarily be constructed during daylight hours. Maple Grove Solar plans to use temporary light plants connected to trailers for portability. The laydown yard and parking area may require lighting to support construction conducted during non-daylight hours; however, the applicants stated in the first data request response that it is not likely, and that they would work with local representatives and landowners should the need for lighting arise. (PSC REF#: 495820). No lighting ordinances exist for the towns of Barron or Maple Grove. Barron County's code of ordinances, included in Appendix E of the application, includes requirements that lighting used to illuminate off-street parking areas shall be directed away from residential and public streets to avoid causing nuisance.

Facility lighting would be required during non-daylight hours once the project is completed. Per regulatory specifications, the project substation would require lighting. The applicants stated in the first data request response that lighting times may include motion lighting, permanent lighting, or timed lighting. Lights would be projected downward to minimize light intrusion to the extent practicable. The applicants also stated that it is unknown whether the O&M facility would need permanent lighting, however its proximity to the substation may make additional lighting at the O&M facility unnecessary.

3.21.3. Glint and Glare

Solar PV panels are constructed of dark, light-absorbing materials and covered with an anti-reflective coating designed to maximize absorption and minimize reflection. However, the metal frames and glass surfaces of solar PV panels do reflect sunlight to varying degrees throughout the day and year. The amount of reflected sunlight is based on the incidence angle of the sun relative to the light-sensitive receptor (e.g., a pilot or road user). The amount of reflection increases with lower incidence angles. Each panel is placed on a single-axis tracking system that would adjust angle with the sun. The intensity of any light reflected from the solar panel would decrease with increasing distance, and landscape features such as vegetation could prevent glint or glare affecting a viewer. Topography can affect glint or glare, for example, a residence or road above a solar facility may experience more glare than when they are at the same level.

MGS had glare hazard analyses conducted by Stantec. The glare study report[58] utilized the ForgeSolar glare hazard analysis program to evaluate the potential for glare from the project. The glare study analyzed 71 nearby structures that appear to be primarily residences, nine roadways in the project vicinity, six airport runway approach paths, and two medical center helipads. The report concluded that no residences, roads, or flight paths would experience extreme glare levels that could permanently damage the human eye. The glare analysis report states that no glare is predicted for any of the 71 structures included in the analysis. Two of the nine roadways analyzed, 15th Street and 16th Street, would be expected to experience short segments of glare for up to 40 minutes per day from November through January. Drivers are said to be expected to pass through these glare locations within seconds, with the glare level having low potential to produce a temporary after-image. Glare is not predicted for pilots approaching any of the six runways or for helicopter pilots hovering above the helipads at the Mayo Clinic Northland in Barron and Lakeview Medical Center heliport.

The application states that in the event of a complaint about glare by a resident within or outside of the project boundary, ForgeSolar modelling would likely be used to assess the extent and time of day of glare at the point of concern. If glint or glare prove to be problematic for an observer, complaints may be addressed with mitigation measures such as vegetation screening, fencing, or anti-reflective coating on panel surfaces.

Having a formalized complaint resolution process for dealing with potential glare concerns from receptors, as well as outlined steps that could be taken to mitigate glare effects that may occur, could reduce impacts from facility glint or glare, should any occur. The existing Commission complaint process could be used to address any of these concerns if they arise.

3.22. Water Resources

Supplemental EA: This section has been updated to reflect changes due to the gen-tie route adjustment. Specific waterway and wetland impacts, as well as permitting actions, have changed.

[58] Appendix N: Glare Hazard Analysis (Part 1) (PSC REF#: 491047)

3.22.1. Wetlands

Wetlands provide vital functions that benefit society. Wetlands detain storm water runoff, enabling the slow recharge of groundwater resources and lowering downstream peak flood levels; filter sediments and pollutants from the air, precipitation, and upstream sources which results in higher water quality downstream; provide food, cover, and nesting habitat for many species of fish and wildlife; provide a recreational opportunity for bird watching and other wildlife viewing, hiking, and enjoying the aesthetics of the surrounding landscape. It is estimated that between one-quarter and one-third of all rare species in Wisconsin are found in wetlands.

Wetlands are a dynamic ecosystem and provide different functions depending on the type of wetland. The same wetland may even provide different functions from year to year and season to season. There are many different types of wetlands, typically characterized by the size, type of vegetation and amount of soil saturation or surface water found within them.

Wetland Identification and Quality
Wetlands within the proposed solar generation project study area and the proposed gen-tie study area were identified through wetland field delineations completed in September of 2023 and August of 2024 in accordance with the criteria and methods of the U.S. Army Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1 (1987) and subsequent guidance documents, and applicable Regional Supplements to the Corps of Engineers Wetland Delineation Manual.

A total of twenty-seven (27) separate wetlands were field identified within the combined Solar Generation and Gen-Tie project study area.

Seven wetland vegetative communities were observed within the project study area. Numerous wetland complexes within the project area contain more than one vegetative community type. A description of the wetland community types found within the project area are listed below.

Ten (10) wetlands containing seasonally flooded basin plant communities were identified within the project study area (Wetlands W01, W02, W08, W09, W10, W12, W26, W27,W101 and W103). Dominant species included barnyard grass (*Echinochloa crus-galli*, FAC), fall panic grass (*Panicum dichotomiflorum*, FACW), reed canary grass (*Phalaris arundinacea*, FACW), Canada goldenrod (*Solidago canadensis*, FACU) and yellow foxtail (*Setaria pumila*, FAC).

Fifteen (15) wetlands containing wet meadow plant communities were identified within the project study area (Wetlands W03, W04, W07, W11, W13, W14, W16, W20, W21, W24, W26, AW1, W100, W101, and W102). All wet meadow communities except W14 were considered degraded due to the presence of invasive reed canary grass. Dominant species included reed canary grass, yellow foxtail, Kentucky bluegrass (*Poa pratensis*, FACU), fall panic grass, orange jewelweed (*Impatiens capensis*, FACW), stinging nettle (Urtica dioica, FAC), bluejoint (*Calamagrostis canadensis*, OBL), and redtop (Agrostis gigantea, FACW).

Two (2) wetlands containing shallow marsh plant communities were identified within the project study area (Wetlands W07 and W16). Dominant species included reed canary grass, broadleaf cattail (*Typha latifolia*, OBL), and lake sedge (*Carex lacustris*, OBL).

Eight (8) wetlands containing hardwood swamp plant communities were identified within the project study area (Wetlands W02, W09, W11, W15, W21, W22, W23, W25). Dominant species

included reed canary grass, common buckthorn (*Rhamnus cathartica*, FAC), speckled alder (*alnus incana,* FACW), quaking aspen (*Populus tremuloides*, FACU), green ash (*Fraxinus pennsylvanica,* FACW) and black ash (Fraxinus nigra, FACW).

Two (2) wetlands containing floodplain forest plant communities were identified within the project study area (Wetlands W13 and W14). Dominant species included reed canary grass, common buckthorn, speckled alder, quaking aspen, green ash, and American basswood (*Tilia americana,* FACU).

Two (2) wetlands containing alder thicket communities were identified within the project study area (Wetlands W101 and W13). Dominant species included speckled alder, reed canary grass, quaking aspen, sandbar willow (*Salix interior,* FACW) and gray dogwood (*Cornus racemose* FAC).

One (1) wetland containing sedge meadow communities were identified within the project study area (W13). Dominant species included reed canary grass, lake sedge, and tussock sedge (*Carex stricta,* OBL).

A total of three of the wetlands would be located within proposed perimeter fencing. W02 is a seasonally flooded basin within an agricultural field and forested wetland complex. It is dominated by barnyard grass, yellow foxtail, and common buckthorn. W12 and W27 are seasonally flooded basins within agricultural fields and are both dominated by fall panic grass. All three wetlands would be considered to have low functional value given their proximity to agricultural fields and dominance of invasive species.

A total of four wetlands (W100, W101, W102,and W103) would be crossed by the Primary and Alternate gen tie routes. Wetland W100 is a degraded wet meadow community that extends outside the gen-tie Project Study Area to the west and is associated with waterway S100. At the time of the field survey, the southern portion of the wetland was planted with corn and contained grass species as the dominant non-agricultural vegetation present. This wetland contains a degraded wet meadow plant community dominated by reed canary grass (Phalaris arundinacea). Wetland W101 is a large wetland complex associated with Fourmile Creek (S101) and contains degraded wet meadow, alder thicket, seasonally flooded basin and shrub-carr communities. W101 extends into an agricultural field on the northern end and portions of wet meadow are planted with corn. Dominant plant species in this wetland include reed canary grass, woolgrass (Scirpus cyperinus), lake sedge (Carex lacustris), speckled alder (Alnus incana), yellow watercress (Rorippa sylvestris), pussy willow (Salix discolor), and gray dogwood (Cornus racemosa). Wetland W102 is a degraded Hardwood swamp community that extends off of the Study Area to the northeast along the abandoned railroad corridor/ATV trail. Dominant vegetation consists of reed canary grass and box elder (Acer negundo). Wetland W103 is a seasonally flooded basin community within a soybean field. The wetland appears to drain north into W101 during flooding events, however no signs of surficial flow of water were observed at the time of the field surveys. Dominant vegetation consists of reed canary grass, creeping yellowcress (Rorippa sylvestris) and spotted ladysthumb (Persicaria maculosa). W101 has moderate functional value and serves as a wildlife corridor, provides floodplain and shoreline protection, and water quality benefit. W101 is associated with Fourmile Creek (S101), a WDNR Class 2 trout stream so would be classified as an ASNRI wetland. However, the wetland itself would not be considered sensitive or high quality. W100, W102 and W103 are considered to have low functional value and provide limited water

quality benefits and wildlife habitat. All four wetlands are dominated by invasive species and provide limited floristic diversity.

Potential Wetland Impacts

Two wetlands (W26 and AW1) would be crossed by collection lines to connect Primary Arrays P7 and P8. The collection lines would cross wetlands using horizontal directional drilling (HDD). Trenching of wetlands would not occur for any collection line crossings of wetland. Entry points and exit points of the HDD would be positioned outside of any wetland boundaries. Temporary staging areas and equipment storage would be located in uplands.

Two wetlands, (W100 and W101) would be crossed with equipment for gen-tie access and construction of new structures. The applicants stated they would utilize construction matting to provide safe access for equipment and a work pad around each structure in the wetland. Matting would consist of roughly 20-foot-wide wooden construction mats placed edge to edge to form an access route. Additionally, a 50'x 50' work pad would be required around each structure in wetlands. For the Primary T-Line route, the total square footage of construction matting required to access the structures in wetland is 33,291 sq.ft (0.76 acres). Additionally, three structure work pads built with wooden construction matting in wetlands would be required for a total temporary impact of 7,500 sq.ft. (0.17 acre). For the revised Alternate route, the total square footage of construction matting required to access the structures in wetland would be 27,173 sq.ft (0.62 acre). Additionally, 4 structure work pads (one common to both routes) built with wooden construction matting in wetlands would be required for a total temporary impact of 10,000 sq.ft. (0.23 acre).

Two wetlands (W100 and W101) would have permanent impacts from the installation of new transmission structures. For the Primary route, four structures would be constructed in wetlands creating permanent wetland impacts. Two of these structures would be direct embed steel monopoles (3' diameter structures with additional 2 feet of impacts around the structure) with a total permanent wetland impact of 27.7 sq.ft (0.0006 acre). The remaining two structures would be self-supporting steel monopoles on 8-foot diameter concrete foundations (with 2 feet of impacts around the structure). The total permanent wetland impact from the two structures mounted on concrete foundations would be roughly 70.91 sq.ft. (0.0016 acre). The Primary route would have roughly 98.59 sq.ft. (0.0022 acre) of permanent wetland impacts. For the Alternate route, five structures would be constructed in wetlands creating permanent wetland impacts. Four of these structures would be direct embed steel monopoles (3' diameter structures with additional 2 feet of impacts around the structure) with a total permanent wetland impact of 55.40 sq.ft (0.0012 acre). The remaining structure would be self-supporting steel monopole on 8-foot diameter concrete foundation (with 2 feet of impacts around the structure). The total permanent wetland impact from this structure mounted on concrete foundations would be roughly 35.45 sq.ft. (0.0008 acre). The revised Alternate route would have roughly 90.84 sq.ft. (0.0020 acre) of permanent wetland impacts.

One wetland (W02) located in array A1 would have approximately 0.09-acre of forested wetland cleared to avoid shading of panels Arrays A1 and P1. Trees in this wetland would be cut at ground level and the stumps and root balls would be left in place. All cut material would be taken to an approved offsite disposal site or given to the property owner. Cleared areas within

Wetland W02 would be kept free of trees and shrubs to the extent practicable as long as the project is operational. Following removal of trees, the area would be seeded with a wetland seed mix consisting of low growing sedges and rushes. No vegetation removal/tree clearing would occur within wetlands in the primary solar arrays.

Wetland Impact Avoidance and Minimization

All attempts should first be made to avoid impacting wetlands. Direct impacts to wetlands would be avoided by adjusting structure placements to avoid wetlands and siting permanent access roads, laydown yards, and substations outside of wetlands. The proposed project would not include any array structures, perimeter fence, inverter pads, laydown yards, or substations in any wetlands, however four transmission line structures would be constructed in wetland to construct either gen-tie route.

Where complete wetland avoidance is not possible due to engineering constraints, existing infrastructure, or other factors, wetland impacts should be minimized as much as possible. The degree and nature of impacts to wetlands depend on factors such as the type of wetland, quality of the wetland, ground conditions at the time of construction, and the type and duration of construction activities. Short-term wetland impacts can become long-term impacts if the construction phase is not well managed, or if restoration techniques are not properly applied.

Construction methods that can minimize impacts to wetlands include:

- Conducting construction activities when wetland soils were frozen or stable and vegetation is dormant.
- Using construction matting and wide-track vehicles with equipment crossing of wetlands when wetlands were not stable or not frozen.
- Using adjacent roadways and existing off-ROW access roads for access, when possible.
- Siting structures and access roads on the edges of wetlands rather than in the middle of wetland to avoid fragmenting wetland complexes.
- Reducing the construction workspace in wetlands.
- Installing site-specific sediment and erosion control measures and devices prior to construction activities, with daily inspections and maintenance throughout all construction and restoration phases.
- Implementing a construction sequencing plan that minimizes the amount of land disturbed or exposed (susceptible to erosion) at one given time across the project.
- Marking the boundary of wetlands.
- Using alternative construction methods and equipment such as helicopters, marsh buggies, and vibratory caisson foundations.
- Preparing and implementing an invasive species management plan that identifies known areas of invasive species populations, addresses site restoration activities, and includes specific protocols to minimize the spread of invasive species.
- Minimizing the amount of vegetation clearing in wetland and conversion of wetland types.
- Removing all brush piles, wood chips, and woody debris from wetlands following clearing activities.

- Conducting surface and sub-surface assessments prior to construction, including hydrology and soil evaluations. This includes modifying the engineering plans, as needed, to avoid and minimize long term impacts to surface and subsurface resources and to re-establish conditions post-construction.
- Preparing and implementing dewatering practices that prevent sedimentation into wetlands.
- Revegetating disturbed areas and areas of exposed soil as soon as possible and seeding with a cover crop and/or native seed mix to help prevent the establishment of invasive species.
- Scheduling construction to avoid disrupting sensitive species.
- Limiting the amount of time necessary to complete construction.
- Limiting forested wetland clearing areas to the proposed ROW.

The project avoids all regulated impacts to the three wetlands located within proposed perimeter fencing of the solar generation component of the project. Project infrastructure for the solar generation component of the project, including the installation of arrays and fencing, would be located outside of these wetlands and the applicants stated there would be a 35-foot buffer around the wetlands to minimize potential impacts during construction. These wetlands would be restored to vegetated wetlands post construction. The applicants indicated they would utilize timber matting when accessing and constructing the gen-tie portion of the project that is within wetland. The applicants stated they would install and maintain erosion control BMP's to minimize the chance sediment impacting water resources during construction. The applicants also stated they would utilize invasive species control Best Management Practices (BMPs) to avoid the introduction and spread of invasive species.

3.22.2. Waterways

Waterways in the form of creeks, streams, rivers, and lakes are abundant throughout Wisconsin, and provide for many recreational activities, as well as habitat for aquatic species. Wisconsin has more than 12,600 rivers and streams that meander their way through 84,000 miles of varying terrain. About 32,000 miles of these streams perennially or continuously run throughout the year, while the remainder flow intermittently during spring and other high-water times.

Waterway Identification and Quality
Waterways within the project area were identified by the applicants using the 24K hydro layer of the DNR Surface Water Data Viewer (SWDV) and during field investigations. A total of ten waterways were either mapped in the SWDV or observed in the field by the applicants. The applicants submitted a jurisdictional determination and the WDNR determined two of the waterways to be non-jurisdictional under Chapter 30 within the identified project area. Of the eight jurisdictional waterways, two are located within the gen-tie portion of the project and six of these waterways are located within the solar generation portion of the project.

Waterway S01 (WBIC 5006556) is identified on the WDNR 24K hydrolayer as an intermittent stream and is contiguous with delineated Wetland W04. This waterway is located directly east of STH 25 on the western boundary of Primary Array P1.

Waterway 101 (WBIC 2096300) is located south of 12th Ave and is situated within the gen-tie line portion of the Project. The WDNR 24K hydrography layer shows the waterway mapped as Fourmile Creek (WBIC 2096300), a perennial waterway that continues off the gen tie project study area to the east and west. This waterway is an Area of Special Natural Resource Interest (ASNRI) Class 2 Trout Stream.

Waterway S04 (WBIC 2096300, Fourmile Creek) is contiguous with delineated Wetland W13 and is identified on the WDNR 24K hydrography layer as a perennial stream. This waterway is located directly southwest of Alternate Array A3.

Waterway S05 (WBIC 2096300, Fourmile creek) is not associated with any wetlands and is identified on the WDNR 24K hydrography layer as a perennial stream. This waterway is located in the northwest corner of Alternate Array A2.

Waterway S06 (no WBIC) is an unmapped and unnamed waterway and an intermittent tributary to S05 (Fourmile creek). This waterway is located in the northwest corner of Alternate Array A2.

Waterway S07 (WBIC 5006545 – unnamed) is an ephemeral tributary to Fourmile creek and is identified on the WDNR 24K hydrography layer as an Intermittent stream. This waterway is located directly west of the project substation and flows through Alternate Array A2 and Primary Array P2.

Waterway S08 (WBIC 2096300, Fourmile creek) flows through field delineated Wetland W16 and is identified on the WDNR 24K hydrography layer as an Intermittent stream. This waterway is located northeast of the corner of STH 25 and CTH D, south of Primary Array P7.
Waterway S100 (unnamed WBIC 5006556) crosses 11 ½ Avenue approximately 800 feet east of STH 25. This waterway is intermittent and flows south through W-100 and W-101.

Potential Waterway Impacts
Construction activities conducted near and across waterways have the potential to impact water quality and aquatic species habitat. Forested and shrub areas along waterways provide a natural corridor for wildlife movement, help maintain soil moisture levels in waterway banks, provide bank stabilization, filter nutrient-laden sediments and other runoff, maintain cooler water temperatures, and encourage a diversity of vegetation and wildlife habitats. The removal of riparian vegetation can cause water temperatures to rise and negatively affect aquatic habitats, especially cold-water systems. Removing riparian wetland vegetation may decrease shoreline protection and may lead to increased sedimentation of waterways. Vegetation disturbance along the waterway can also lead to the infestation by invasive and nuisance species. Constructing in areas with seeps and springs may temporarily alter the surface and subsurface hydrology feeding waterways. Recreational use such as sight-seeing, boating, fishing, or bird watching could be adversely affected by activities in and adjacent to waterways during construction of the overhead gen-tie line.

The project avoids regulated waterway impacts within the solar generation portion of the project. No infrastructure is proposed within waterways. The project was sited so that waterways would

not be located within perimeter fencing. The overhead portion of the project crosses two waterways, one of which would require a temporary clear span bridge (TCSB) for vehicular access during construction.

One (TCSB) would be installed along the gen-tie route. Waterway S100 would be crossed utilizing a TCSB to provide access along the Primary gen-tie route and to proposed structures P4 and P5. The applicant stated that the TCSB would be left in place for the duration of construction and installation of structures P4 and P5 which is expected to take approximately three weeks to complete. The channel of waterway S100 is approximately five feet wide with banks roughly two feet high. Flow within the channel is sluggish over a primarily mud substrate. The banks of the waterway are heavily vegetated with no signs of erosion. The applicant stated that the TCSB would be constructed utilizing wooden construction matting laid perpendicular to the channel on top of matting laid parallel to the channel with no in-stream supports. The typical construction matting dimensions would be 4'x20'. Two construction mats would be laid on each bank parallel to the channel (headers). A minimum of two additional construction mats would be laid on top of the headers to completely span the channel.

Waterway Impact Avoidance and Minimization
All attempts should first be made to avoid impacting waterways. Impacts to waterways can be avoided by routing the tie line away from riparian corridors, routing the solar arrays away from waterways, routing both temporary and permanent roads and driveways away from waterways, avoiding fence crossing of waterways, and using alternative installation methods (trenchless).

Where complete waterway avoidance is not possible, waterway impacts should be minimized as much as possible. The type and significance of the impact is dependent on the characteristics of the waterway and the construction activities proposed. Physical features of the waterway are considered when assessing potential impacts to water quality, water quantity, habitat, recreational use, and the scenic quality of the waterway.

In order to minimize impacts to waterways, the following practices should be followed:

- Marking waterway boundaries.
- Minimizing the number of potential vehicle crossings of waterways by accessing the ROW on either side of the stream or from adjacent roads.
- Installing site-specific sediment and erosion control measures and devices prior to construction activities, including daily inspections and maintenance throughout all construction and restoration phases. This includes installing sediment control BMP's under and on the sides of TCSB's.
- Implementing a construction sequencing plan that minimizes the amount of land disturbed or exposed (susceptible to erosion) at one given time across the project.
- Leaving existing vegetative buffers undisturbed whenever possible or minimizing vegetation clearing in riparian zones.
- Revegetating disturbed areas and areas of exposed soil as soon as possible.
- Landscaping to screen the structures from the view of river users.
- Maintaining shaded stream cover.

- Avoiding the use of herbicides near waterways or utilizing herbicides approved for use in aquatic environments.
- Conducting surface and sub-surface assessments prior to construction, including hydrology and soil evaluations. This includes modifying the engineering plans, as needed, to avoid and minimize long term impacts to surface and subsurface resources and re-establishing conditions post-construction.
- Preparing and implementing dewatering practices to prevent sedimentation into waterways.
- Avoiding the withdrawal of water from surface waters. If withdrawal cannot be avoided, all pumps and intakes would be floating to minimize sediment intake and be screened to minimize impact to aquatic species.
- Preparing and implementing an invasive species management plan that identifies known areas of invasive species populations, addresses site restoration activities, and includes specific protocols to prevent and minimize the spread and introduction of invasive species.
- Marking TCSB's to alert navigators.
- Restoring waterway banks to pre-existing conditions.
- Checking equipment for fluid leaks before crossing TCSB's.
- Isolating all soil piles from waterways with perimeter erosion control BMP's.
- Anchoring TCSB's to prevent them from washing away during high flow conditions.
- Monitoring TCSB's daily for debris and removing debris, as necessary.
- Scheduling construction to avoid disrupting sensitive species.
- Limiting the amount of time necessary to complete construction.

The project sites all solar generation project infrastructure outside of waterways. The gen-tie corridor crosses two waterways (S100 and S101). The applicants stated that an approximate 25-foot buffer on either side of these waterways would be left in place to provide stabilization to the banks of the waterways. The vegetation along each waterway consists mainly of low growing herbaceous vegetation with small inclusions of shrubs. Based on the existing vegetation type, vegetation removal would not be anticipated along the waterways. If clearing occurs, it would consist of spot clearing of woody vegetation that would have the potential to grow into the gen-tie lines.

The applicants propose to implement practices to minimize impacts to the waterway from the placement of the TCSB. The proposed TCSB would be anchored in place using cables and guy wires to prevent it from being transported downstream. The applicants propose the placement of the header mats as part of the TCSB to provide bank stability protection. The applicants stated that if bank stress is noted, the TCSB may be moved within the ROW to an adjacent location to avoid bank failure or a discharge of sediment into the waterway. The applicants stated that a wooden construction mat access road would be installed on either side of the proposed TCSB to minimize transport of sediment into the waterway and adjacent wetland to the extent practicable. Once the TCSB is removed, the applicants stated that the area would be seeded with an appropriate native seed mix with erosion matting or blown straw applied.

In addition to the above practices to minimize waterway impacts as a result of the TCSB, the applicants also stated as part of overall project construction they would install and maintain erosion control BMP's to minimize the chance of sediment impacts water resources as a result of construction. The applicants also stated they would utilize invasive species control BMP's to deter the spread and colonization of invasive species as a result of the project.

Beneficial impacts to waterways could result from a decrease in the amount of fertilizer and pesticide runoff as a result of the change from agricultural land use to the solar facility. Reducing the regular disturbance of vegetation and soil could also reduce local soil erosion and sedimentation once the site has established vegetation.

3.22.3 State wetland and waterway impact permitting

DNR participates in the joint review process with the Commission, as detailed in Wis. Stat. § 30.025, with respect to wetlands, navigable waterways, and storm water management. Wisconsin Stat. § 30.025 describes DNR process for reviewing and permitting utility projects that require authorization from the Commission and DNR.

DNR is responsible for regulating the discharge of dredge and fill material into wetlands under Wis. Stat. §281.36. DNR is also responsible for regulating impacts to navigable waterways and waterbodies under Wis. Stat.§ 30. The proposed project would not require waterway permitting under Wis. Stat.§ 30.

The USACE and/or USFWS might also require additional permits and approvals. Some of the federal legal protections and permitting requirements for activities affecting waters include, but are not limited to:

- 33 USC § 403 Section 10 of the Rivers and Harbors Act of 1899 prohibits the unauthorized obstruction or alteration of any navigable waters of the U.S.
- 16 USC §§ 1271-1287 prohibit federal agencies from authorizing a water resources project that would have a direct and adverse effect on the values for which a river protected by the Wild and Scenic Rivers Act was established.

CPCNs granted by the Commission are often contingent upon an applicant's ability to secure all necessary permits from state and federal agencies. Likewise, any permit granted by DNR or USACE could be contingent on the implementation of all mitigation procedures ordered by the Commission in its CPCN authorization. This project, as proposed, would require wetland fill permit coverage and TCSB permit coverage, and based on the application filing should qualify for coverage under WDNR-GP3-2023. State compensatory wetland mitigation is not required for this project, per Wis. Stat. §281.36(3n)(d)2.

3.23. Wildlife

Separate from the review of endangered resources impacts, Commission and DNR staff evaluated potential impacts to other wildlife species in areas of solar generation facilities. Most solar projects in Wisconsin are proposed for areas of large agricultural fields, with mixed habitat

areas including small forests, wetlands, and residential areas around the various arrays. Wildlife species in these areas are likely those that are generally more common and are accustomed to agricultural habitats or human disturbance. Examples of these species include deer, squirrel, raccoons, small rodents, common perching birds, red-tail hawks, pheasant, turkey, and geese. The ecological impacts of solar arrays are being discussed and examined by other states and organizations. The Nature Conservancy developed Principles of Low Impact Siting and Design[59] for solar PV energy facilities in North Carolina. These principles would also be of benefit when considering solar PV facility siting and construction in Wisconsin. These principles are:

1. Avoid areas of high native biodiversity and high-quality natural communities
2. Allow for wildlife connectivity, now and in the face of climate change
3. Preferentially use disturbed or degraded lands
4. Protect water quality and avoid erosion
5. Restore native vegetation and grasslands
6. Provide wildlife habitat

Several direct impacts to wildlife could occur during construction activities. The most common types of mammals likely present in the project area include white-tailed deer, black bear, coyote, common raccoon, red fox, eastern gray squirrel, groundhog, opossum, rabbits, and other rodents. Other common wildlife species such as wild turkey or ring-necked pheasant may be present. Wildlife present in the project area could use the land to forage and shelter. Wildlife that resides within the construction zone of the project would likely be temporarily displaced to adjacent habitats during the construction process. Some species of herptiles may use areas of agricultural fields during their life cycle, primarily for nesting, and could be directly impacted by work activities. If erosion control netting is used, it would be beneficial to use wildlife-friendly varieties, rather than plastic netting, which can entangle small wildlife species. Once construction is complete, the project area would be revegetated with native and non-native perennial grasses and sedges. It is possible that this revegetation would provide suitable habitat for wildlife species, pollinator species, nesting birds, and small mammals.

Vegetation clearing, both trees and long grasses, can negatively impact species depending on when the clearing activities occur. Generally, clearing vegetation outside of nesting or breeding seasons would decrease these direct impacts. It would be beneficial for bats, as well as nesting birds, for tree clearing to occur outside of the summer avoidance period of June 1 – August 15. The applicants stated in response to the third data request that tree clearing would take place during the dryer months and winter months of the year, collectively August through mid-March. Maple Grove Solar also stated that they would work with DNR staff to determine the best timeframe to clear trees in close proximity to threatened and endangered species, habitat, or other sensitive resources. Once final design is completed and a construction start date has been determined, MGS would work with DNR staff on tree clearing restrictions.

[59] The Nature Conservancy in North Carolina. 2019. Principles of Low Impact Solar Siting and Design. Accessed at https://www.nature.org/content/dam/tnc/nature/en/documents/ED_TNCNCPrinciplesofSolarSitingandDesignJan2019.pdf on June 17, 2024.

Some public comments cite concerns about impacts to waterfowl nesting habitat. While the project site does border Four-mile Creek, the proposed array areas fall primarily within agricultural lands that are unlikely to provide significant nesting habitat currently. Project impacts to waterfowl populations are unlikely. The Quaderer's Creek Wildlife Management Area and associated public access easements are located about 1 mile northwest of the project facilities. These conservation areas provide habitat for threatened and endangered species, game species, and non-game species. Direct construction impacts to this area are not anticipated to occur as a result of the proposed project.

There is evidence of birds being killed or stranded in solar PV arrays. In 2016, a multi-agency collaborative working group released an avian-solar science coordination plan that discussed ways solar development may affect birds and areas where more information is needed to understand potential impacts to birds. In 2019, the Department of Energy announced that it would award $4.3 million in grant funds to three projects to study solar project effects on bird populations. There have been few studies of avian impacts, particularly systematic studies of mortality, at large-scale solar facilities in non-arid environments. The Commission required the first two solar facilities it authorized, Badger Hollow and Two Creeks, to conduct post-construction mortality surveys. Commission staff had worked with the respective project applicants to finalize the survey methodology. Results of the survey were made available to PSC staff, however discussions regarding the final reports are ongoing. Continuing to build the understanding of how solar facilities at this scale impact species is necessary to acknowledge and mitigate the specific impacts of any given project. The Commission may decide to pursue similar avian impact surveys or adjacent topics in the future on a case-by-case basis.

Overall, due to the proposed project occurring mostly within agriculture row cropland that isn't considered deer range, long-term negative impacts to larger wildlife movement are unlikely. The area has an abundance of agriculture land that will provide other opportunities for animals to forage when displaced by construction activity. The wildlife species with the highest potential to be impacted would be small mammals that use the agricultural fields for shelter. Once the project area is revegetated, the habitat should become suitable for displaced or otherwise impacted animals to take shelter and forage.

Fencing Impacts

The proposed array perimeter fencing would be eight-foot-tall with 4-inch by 4-inch openings in the top two thirds, and up to 12-inch by 4-inch openings in the bottom third. The use of this fence around the arrays would restrict the movement of large species such as deer and may cause fragmentation of habitat. Some smaller animals should be able to pass through the fence and use the project arrays. By not using barbed wire on the PV array fences, the risk of wildlife injury or mortality due to entanglement decreases.

The additional fencing in the landscape around the arrays could affect wildlife movement corridors across the project area. Larger animal species would find the fenced arrays a barrier to movement, which could cause habitat fragmentation and disruption to migratory patterns. Where a solar facility fence line runs along a road, deer that start to proceed along the ROW may have movement restricted, which could lead to more interactions with drivers. This proposed project runs parallel to a major highway (HWY 25) on both the east and west side. Most of the proposed

area is not considered deer range, so impacts on deer movement will be limited. However, the four-mile creek provides an excellent travel corridor for wildlife and runs on both the west and south side of the proposed area. Fencing on these sides has the potential to impact large mammal and predator movement across the landscape.

The solar project area would contain mixed habitat areas with natural woodlands, wetlands, and grasslands around the fenced arrays. In addition, some of the arrays have resources (wetlands and waterways) adjacent to, or surrounded by, the perimeter fence. The second data request included an inquiry whether the proposed fencing designs could be improved for wildlife passage, especially regarding turtle species that are often most negatively affected by fencing of this sort. In the limited literature currently available on this topic, the term 'wildlife permeable' fencing is sometimes used. This refers to incorporating perimeter fence design choices that allow for small, non-avian wildlife species to pass through arrays, and can be done though choice of fence fabric dimensions, height of fence from the ground, or constructed passages where no fence is placed (e.g. eight-inch PVC pipe, six-inch wood framed openings at areas with high potential for species crossings). If solar developers can utilize these wildlife permeable fencing options and provide routes under or through fenced arrays, it would help to lessen the secondary impacts to wildlife species in those resource areas.

In a revised response to the second data request[60], Maple Grove Solar stated that the suggested changes would not meet NESC safety standards for site security and would result in an estimated minimum of a 25 percent cost increase for the custom fencing. Commission staff are not aware of any NESC safety standards that explicitly prohibit the suggested changes. Each of the options listed in the data request have been implemented or agreed upon by previous utility-scale solar projects approved by the Commission. Raising the fence fabric would strongly benefit small non-avian wildlife compared to alternatives used in some previous solar dockets, such as intermittently cutting holes in the fence fabric. When raising the fence, additional labor and custom fencing are not required to implement larger openings at intervals. To achieve the eight-inch gap, the bottom of the fence fabric could be "knuckled" or wrapped back to form a smooth edge that would be less likely to snag on wildlife. Wetlands located within and directly adjacent to solar array fences would likely contribute to herptile species traversing between wetlands and waterways and upland areas within the project area. The application of a fence gap across the whole project area would greatly decrease wildlife fragmentation for smaller species that can pass through the gaps.

4. Evaluation of Reasonable Alternatives

Wisconsin Admin. Code § PSC 4.20(2)(e) requires an EA evaluate the reasonable alternatives to the proposed project and significant environmental consequences of the alternatives, including those alternatives that could avoid some or all of the proposed project's adverse environmental effects and the alternative of taking no action.

[60] PSC REF#: 505072 – Response-Data Request PSC-Koebel-2.10-r, Request PSCW-KF-2.10

No Action Alternative

The no action alternative, which would be a denial of the application, is a potential outcome of the Commission's consideration of this application. Another no action alternative would have been the applicants choosing not to make the effort to bring this potential project to the Commission in the first place, or that effort falling short prior to filing an application with the Commission. In either instance, the no action alternative could result in the continued operation of other electric generating units or the delay of announced retirements, which may be needed to operate in lieu of the proposed solar photovoltaic electric generation facility.

The potential environmental consequences of the proposed project described in this Supplemental EA would not occur if the Commission denied the application or if the applicants had never filed an application with the Commission. Positive environmental impacts resulting from the solar facility replacing any greenhouse gas emitting generation sources, reducing water usage and withdrawals at existing traditional power plants, and decreased runoff of pollutants, soils, and storm water due to the conversion of agricultural land to stable grassland, would not occur if the no action alternative is selected. If the Commission decided that the solar energy facility is not in the public interest, the associated impacts would not occur.

Alternative Sites for Project Infrastructure

Supplemental EA: This sub-section has been updated to reflect changes due to the gen-tie route adjustment. The revised gen-tie would only have one alternate route which is generally similar to the primary route.

As part of project evaluation during a CPCN, Wis. Stat. § 196.491(3)(d)3 requires the Commission to consider alternative locations when determining whether a proposed generating plant is in the public interest. Wisconsin Admin. Code §§ PSC 111.53(1)(e) and (f), which implement that statutory provision, require a CPCN application to describe the siting process, to identify the factors considered in choosing the alternative sites, and to include specific site-related information for each site. For projects above 100 MW, providing alternative arrays is required by Wis. Stat. 196.491. The solar project has alternative arrays that could generate at least 25 percent of the energy that the proposed arrays would produce. These alternative arrays could be used to make up energy production area if the Commission identified any proposed areas that were not suitable for project construction or use. Portions of the alternate siting in array A2 would likely cause disproportionately greater impacts to the local environment and residents compared to the primary and remaining alternate array areas. A section of array A2 would nearly surround (on three sides) a non-participating residence that had provided a comment during the EA scoping period. Another portion of array A2 would potentially place perimeter fencing less than 100 feet from a non-participating residence that would have the property surrounded on four sides if all nearby primary and alternate arrays would be utilized. Primary array P4 would however result in placement of arrays nearly surrounding a non-participating residence on STH 25 if the primary arrays would all be utilized. Forested tracts within arrays A2, A3, and A8 would require larger amounts of tree clearing, as discussed in Section 3.6, however portions of these tracts have been disturbed in recent years.

The alternate route for the revised generation tie line would generally impose similar impacts to those that would be expected for the proposed route. The proposed and alternate routes would be similar in length, and largely impact similar land cover types.

If the project facilities were located in entirely different areas of the state from the sites selected, specific project impacts would likely change to some extent. Based on the types of projects submitted to the Commission, other project areas for these solar electric generation sites would likely use similar types of agricultural lands. Each of those sites could have impacts specific to the resources in the area, as well as impacts that would be similar to those expected for the proposed projects.

Transmission Based Alternatives

Local transmission, distribution, and distributed resource alternatives are not applicable to the project as they would not meet the functional requirements of the gen-tie line to connect the Maple Grove Solar project to the electrical grid. Therefore, transmission-based alternatives were not considered by the applicants for this project.

Non-Transmission Based Alternatives

Non-transmission alternatives were not considered, as the project gen-tie line is necessary to connect the Maple Grove Solar project to the transmission grid.

Other Alternative Actions

An alternative to the solar PV and BESS facilities proposed could take the form of other energy generation technologies, such as wind energy systems, independent battery energy storage systems, or natural gas electric generation facilities. Any alternative generation facility would have its own suite of impacts on the human environment, some of which would be similar to those discussed in this Supplemental EA. For example, wind energy facilities may impact fewer acres directly, but are more visible, at greater distances, than solar projects. The concerns raised over noise and wildlife impacts with regards to wind energy systems are more documented and replacing these facilities with similar sized wind energy facilities has the potential to have greater impacts in these areas. If replaced by a generation facility that used fossil fuels, air quality impacts would be substantially different. Depending on the location and type of a fossil fuel generation plant, increased impacts resulting from noise, lighting, and water use may occur. All forms of combustible fuels, both fossil fuels and biomass, create some amount of air pollution, which would be subject to air permitting requirements.

5. Wisconsin Environmental Policy Act Determination

When determining whether an EIS is warranted for a given Commission action, the Commission must consider ten broad factors listed in Wisconsin Admin. Code § PSC 4.20(2)(d). Based on

the analysis provided in Section 3 of this Supplemental EA, the following subsections provide Commission staff's conclusions regarding each of the ten factors with respect to the proposed project.

5.1. Effects on Geographically Important or Scarce Resources

The Commission must consider a proposed action's "[e]ffects on geographically important or scarce resources, such as historic or cultural resources, scenic or recreational resources, prime farmland, threatened or endangered species and ecologically important areas." Wis. Admin. Code § PSC 4.20(2)(d)1.

No geographically important or scarce resources were identified within the areas to be affected by construction of the proposed project. If proposed mitigation actions are followed, the proposed project facilities are not expected to significantly affect historic resources, scenic or recreational resources, threatened or endangered species, or ecologically important areas. There would be agricultural land taken out of production, including areas classified as prime farmland, for the duration of the project's operation. When the solar facilities that make up the project are eventually decommissioned, these agricultural areas may again be available for production.

5.2. Conflicts with Federal, State, or Local Plans or Policies

The Commission must consider a proposed action's "[c]onflicts with federal, state or local plans or policies." Wis. Admin. Code § PSC 4.20(2)(d)2.

The proposed large-scale, industrial-like, solar facility does not seem to be in keeping with the agricultural designations of land that would be used for the project in local land use plans. The solar facilities proposed to date have not included any type of activity such as sheep grazing, bee keeping, or other crop production, and are intended to be a long-term non-agricultural land use. However, land use plans generally allow for solar or other utility use on agricultural lands as a conditional or permitted use. The applicants state that they are actively negotiating a joint developer agreement (JDA) with local municipalities. When the project is decommissioned, the project lands could be returned to agricultural use. No other conflicts with federal, state, or local plans were brought to Commission staff's attention.

5.3. Significant Controversy Associated with the Proposed Project

The Commission must consider any "[s]ignificant controversy associated with the proposed action." Wis. Admin. Code § PSC 4.20(2)(d)3.

There is no known significant controversy associated with the proposed project. Notice of the proposed project was sent to local municipal offices, local media, and potentially affected landowners. The Commission received comments from landowners in the area of the solar project with questions, concerns, or opinions on the proposed facilities, but not significantly more than other infrastructure projects of this nature. The solar project may be subject to local land use permits from the local municipal or county government as applicable. Those permits often contain requirements that address any local siting concerns.

5.4. Irreversible Environmental Effects

The Commission must consider "[i]rreversible environmental effects." Wis. Admin. Code § PSC 4.20(2)(d)4.

There would be few truly irreversible environmental effects of the proposed project, however reversing project actions would incur substantial effort and create additional environmental effects. If the project is approved, there would be concrete foundations for the substations and O&M buildings. Each of the concrete installations and project infrastructure could be reversed by demolition and decommissioning actions. No significant sensitive or rare habitats, water resources, historic or community resources, or other environmental resources would be irreversibly destroyed by construction of the proposed project. Oils, fuels, and some materials used during construction would be irreversibly committed and could not be used for other purposes.

5.5. New Environmental Effects

The Commission must consider "[n]ew environmental effects." Wis. Admin. Code § PSC 4.20(2)(d)5.

The installation of the solar generation facility and associated gen-tie line infrastructure would incur new environmental effects. The physical presence of the infrastructure on the landscape would create environmental effects, or changes, relating to land use, aesthetics, wildlife impacts, changes to vegetation, and storm water runoff and infiltration.

PSC and DNR staff are still reviewing project construction impacts at the large solar facilities that have been constructed in Wisconsin to date. The installation of smaller solar PV facilities has occurred elsewhere in the state, although nowhere near the scale of projects submitted in the last few years. The potential for avian collisions with solar arrays has been studied to a certain degree, however analysis and determinations are ongoing. There have been studies in the arid southwest regarding the PVHI effect and stakeholders are currently exploring how studies could occur to better learn any effect of PVHI at recently constructed solar facilities in Wisconsin. The large increase in fenced acreage could have effects on how animals move through the wider project area. There may be unanticipated impacts to wildlife in the surrounding areas, or the vegetation in those areas, that are not fully understood at the time of this Supplemental EA. The local topography in the project area would be changed to the extent of site grading that would have to occur for installation of the facilities. This would result in a change to local drainage patterns and stormwater runoff.

5.6. Unavoidable Environmental Effects

The Commission must consider "[u]navoidable environmental effects." Wis. Admin. Code § PSC 4.20(2)(d)6.

As discussed in this Supplemental EA, construction of the project would result in a range of environmental effects that could not be avoided by array selection or construction methods.

Some effects may be reduced or minimized but would not be entirely eliminated as a result of project activities. Some of the unavoidable environmental effects that would occur during construction include:

- Soil compaction and erosion;
- Storm water ponding and runoff;
- Disturbance to nearby residents due to noise, dust, and vibration;
- Air quality impacts as a result of diesel fumes and dust;
- Disturbance of wildlife;
- Increased traffic in the project area, and
- Cutting or alteration of vegetation.

There would be some unavoidable effects caused by the proposed project that would be longer term, likely lasting the entire time the solar facilities are in operation. These long-term unavoidable environmental effects include:

- Removal of agricultural land from production;
- Aesthetic impacts due to the change from a typical rural landscape to a more industrial appearance, and
- Displacement of wildlife that previously was able to access the fenced array sites.

5.7. Precedent-Setting Nature of the Proposed Project

The Commission must consider "[t]he precedent-setting nature of the proposed action." Wis. Admin. Code § PSC 4.20(2)(d)7.

Utility scale solar development has been occurring for some time now in Wisconsin. Individual developers and utilities review their needs and interests in developing electric infrastructure projects. There are also financial incentives in various places that can incentivize this type of solar development. The proposed solar facility and associated gen-tie line in this docket do not appear to set any unique precedents in and of itself.

5.8. Cumulative Effects of the Proposed Project

The Commission must consider "[t]he cumulative effect of the proposed action when combined with other actions and the cumulative effect of repeated actions of the type proposed." Wis. Admin. Code § PSC 4.20(2)(d)8.

The construction of solar arrays in the project area, or possibly elsewhere in the state, would increase some of the cumulative impacts that may be caused by this proposed project, even though this project is not adjacent or contiguous to any others. Additional solar arrays would remove additional lands from agricultural use, or if no agricultural fields are available, another project may cause increased impacts to more natural areas such as wetlands, forests, or natural grasslands. Any additional large solar array would likely use similar fencing around the arrays, further restricting the movement of wildlife through the area and access to habitat. Additional

facilities in the area, and throughout Wisconsin, would increase the impact to aesthetics and local rural landscapes.

Continued solar energy generation facility construction could displace fossil-fueled generation, benefitting air quality as well as many other resources in areas near those types of generation sites.

5.9. Foreclosure of Future Options

The Commission must consider "[t]he foreclosure of future options." Wis. Admin. Code § PSC 4.20(2)(d)9.

The construction of the proposed solar PV facilities would remove participating fields from commonly used agricultural production or open pasture during the operational life of the projects. Landowners are not typically allowed access to or use of the land during the solar project lease period. Some solar projects are studying the co-location of some agricultural activities on land used for solar facilities. This type of 'agri-voltaic' use has not been proposed for the current project but may be evaluated in the future. Other landowner uses such as hunting would not be permitted. After the sites are decommissioned, the lands could be restored and used for agricultural or other purposes.

5.10. Direct and Indirect Environmental Effects

The Commission must consider "[d]irect and indirect environmental effects." Wis. Admin. Code § PSC 4.20(2)(d)10. As discussed throughout this Supplemental EA, the construction and operation of the proposed project would cause a range of direct and indirect environmental effects.

Direct effects would include soil disturbance and vegetation removal in areas not previously cleared as a result of agriculture activities. These activities increase the risk of soil erosion and runoff, particularly where grading or excavation is done at a large scale. In areas near wetlands and waterways, this soil erosion and runoff can cause sedimentation, which has a negative effect on fish and other aquatic species. Soil erosion and runoff can also negatively affect adjacent properties by depositing sediment, increasing scour of soils, or damaging vegetation. These direct effects can be mitigated through use of storm water and erosion control best management practices. Prompt vegetation establishment on areas of disturbed soils can assist in making these impacts temporary.

Direct effects of tree clearing or vegetation removal include altering habitats and potential introduction of forest pests and invasive species. Indirect effects from invasive species introduction include the spread of these species onto adjacent areas, and the effort and cost to control these species if established. The applicants should ensure that all staff and contractors follow BMPs such as those provided by the DNR and WI Council on Forestry to mitigate these negative effects.

Construction in and through agricultural fields would result in both temporary and long-term impacts. Some areas, such as laydown yards and temporary access roads may only be taken out of agricultural use during the construction phase of the project. Areas for the solar PV arrays, new collector substation, BESS units, and any O&M structures would be taken out of agricultural production for the operational life of the project. Soil compaction and topsoil loss in agricultural fields are direct impacts and can affect future productivity. If drainage tiles are broken or damaged, the drainage of the arrays and surrounding fields could be affected, although some impacts might not be immediately known. The use of BMPs and post-construction soil restoration can reduce many direct impacts to agricultural operations. The eventual impacts of decommissioning the solar facility are not well known, but it is likely that thorough decommissioning, including de-compacting soils and repairing any damaged drainage tiles, would allow properties to resume agricultural use. A pause in agricultural activities in the project area may also improve soil health for future cultivation purposes.

The project would increase noise, dust, and vibration in construction areas, causing direct effects for those that experience impacts from these activities. There would be increased traffic in the project area as employees and deliveries travel to and from project areas. A visual change in project areas would affect viewers differently and may have negative, positive, or no effect on the viewer. Vegetation screenings can mitigate any of these effects to some amount, as could larger set back distances.

Areas through which wildlife currently freely pass would be fenced, restricting movement and use by certain species. Direct displacement of species could occur during construction activities. Indirect effects of the proposed project could include increased pressure on or use of adjacent, non-fenced areas. There could be negative effects, including mortality or injury, on birds due to the generator tie-line and, potentially, the solar arrays. The environment could benefit from the use of a diverse native seed mix, particularly one that contains a range of flowering plants known to benefit pollinator species. The level of that effect would depend on the amount of, and location of, any land planted with a more ‘pollinator-friendly’ seed mix. Any reduced use of herbicides and pesticides would be a benefit to biodiversity and local water quality.

Air quality would experience minor and temporary negative effects due to the operation of construction machinery and potentially dust from disturbed soils. Once construction is complete, these impacts would cease, and during the operational phase, any displacement of fossil-fueled power generation by the project would improve air quality.

The lease payments to participating landowners and shared revenue dollars to the hosting county and townships could have direct and indirect net positive impacts on the long-term local economy.

6. Recommendation

This Supplemental EA informs the Commissioners, the affected public, and other interested people about the proposed project and its potential environmental and social impacts. Through data requests, additional analyses, and a review of public comments, Commission staff has provided very thorough, factual and up-to-date information about the project, potential impacts of the proposed project, and the mitigation measures that could address some of those potential impacts.

The EA concludes that construction and operation of the project would be likely to have a range of environmental effects. Commission staff has not identified any potential environmental effects of the proposed project that could be considered significant. This evaluation is arrived at assuming that some, if not all, of the mitigation measures proposed by the applicants and Commission or DNR staff are used.

This assessment finds that approval and construction of this project is unlikely to have a significant impact on the human environment as defined by Wis. Stat. § 1.11, therefore the preparation of an EIS is not required.

___x___ Environmental review complete. Preparation of an environmental impact statement is not necessary.

_____ Prepare an environmental impact statement.

Submitted by: Kyle Feltes
Environmental Analysis and Review Specialist
Date: November 6, 2024

This environmental assessment complies with Wis. Stat. § 1.11, and Wis. Admin. Code § PSC 4.20.

Adam Ingwell
Environmental Affairs (WEPA) Coordinator – Supervisor
Date: November 21, 2024

Attachment: EA Appendix A - PSC-SHPO Historic Properties Review

Public Service Commission of Wisconsin

Summer Strand, Chairperson
Kristy Nieto, Commissioner
Marcus Hawkins, Commissioner

4822 Madison Yards Way
P.O. Box 7854
Madison, WI 53707-7854

June 10, 2024

Re: Joint Application of Maple Grove Solar I, LLC and Maple Grove Solar II, LLC for a Certificate of Public Convenience and Necessity to Construct a Photovoltaic Electric Generation Facility, Battery Energy Storage System, Project Substation, and 161 kV Generator Tie Line in the Towns of Barron and Maple Grove, Barron County, Wisconsin

5-CE-154

Dear Wisconsin State Historic Preservation Office,

The Commission is required to notify the Wisconsin State Historic Preservation Office (SHPO) if a Commission action would affect a historic property, as stated under Wis. Stat. s. 44.40. The Commission's Historic Preservation Officer (HPO) reviewed the proposed project and found that the proposed action may affect a historic property, as defined in Wis. Stat. §. 36(2). Therefore, the Commission is requesting SHPO review and comment. According to the PSC-SHPO Interagency Programmatic Agreement (PSC-SHPO Agreement), Appendix of PSC Authorization Actions Subject to Wis. Stat. § 44.40, this project is listed as Type I(a) Power plant siting and construction or expansion (including water, sewer, natural gas, fuel oil, steam, rail, road, and ash disposal facilities), including nuclear power, wind power, solar power, hydroelectric, or other types of facilities; I(b) Power line siting and construction, including rebuilds and upgrades; and I(c) Substation siting and construction or expansion beyond the boundaries of the existing fence. Therefore, Commission authorization of the project must comply with Wis. Stat. § 44.40.

Commission Review of WHPD Properties
The HPO reviewed and evaluated the project application materials related to historic properties, which were provided by the applicant as part of the PSC Application Filing Requirements. The Commission HPO also reviewed and evaluated property records using the Wisconsin Historic Preservation Database (WHPD) online portal and its associated GIS data. As stated in the PSC-SHPO Agreement (3), the WHPD contains all listed property, the Wisconsin inventory of historic places, and the list of locally designated historic places. These recorded properties comprise all relevant "historic properties" for the purpose of this review.

Area of Potential Effect (APE)
The APE is the area where WHPD properties may be affected by the proposed activity. The PSC-SHPO Agreement (7g), requires the Commission HPO to determine the APE. The APE is

the area where physical disturbance or construction would occur, and where aesthetic changes could affect WHPD property integrity.

WHPD Archaeological Site Inventory (ASI) Properties in the APE
The WHPD records indicate no archaeological sites within the APE.

Burial Sites and Cemeteries in the APE
Review of the WHPD ASI indicated no properties within the APE.

WHPD Architecture History Inventory (AHI) Properties in the APE
Review of the WHPD AHI indicated one property within the APE:

AHI 128398 (Maple Grove Center School) Maple Grove Center School, District No. 7, Circa 1925. This property is located at 1023 14 1/2 Street/State, Highway 25, Barron, WI 54812 (45.355088, -91.858592). This property is recommended for eligibility in the NHRP.

This 1.06-acre parcel includes a former school. Based on the massing, materials, design, and Craftsman elements such as carved rafter tails, decorative gable trusses, and gable-on-hip roof, this former school appears to have been built circa 1925. The running bond brick building is one-story with a raised basement. The building has a gable-on-hip-roof that is clad in asphalt shingles and panelized metal. The ridgeline of the roof spans north-south. A gable-roof mass projects from the west roof slope. The façade of the building has a W-W-D-W-W fenestration pattern. The façade entry is located on the west elevation of the gable-roof projection and is sheltered by a shed-roof porch that is supported by wood columns atop brick rails. The porch has exposed carved rafter tails. The entry has two-light sidelights and a wooden panel door that appears to have originally been a half-light door. A bay above the entry porch has been infilled with a wood panel; it has a stone sill and a stone lintel with lettering embossed, “Maple Grove Center School Dist No. 7.” The gable above the bay has a decorative wood truss, wide overhanging eaves, and carved wood rafter tails. A bay within the gable has been infilled with a wood panel. Windows on either side of the gable-roof projection have four-light sashes topped by three-light transoms. Windows along the sides of the building repeat this same configuration, with four-light sashes or 1/1 sashes, topped by three-light transoms. The eaves of the gable-on-hip-roof are also wide and feature exposed carved wood rafter tails. Windows along the basement level are square and paired, with concrete or stone lintels. Some of the basement windows have been infilled with brick; some feature three-light sashes. The entire building, including the gable-roof projection features a stone or concrete belt course. A brick chimney pierces the intersection of the front gable mass and the west roof slope of the gable-on-hip-roof mass. The chimney appears to have been reduced in size based on an historic image of the building.

The first mention of the school in local newspapers appears to be from 1928 when a brief listing of local school openings included, “Mildred Erickson began her school at Maple Grove Center

this week." It is unclear if this is the first opening of the school or just the opening of the school for that particular school year. A 1953 topographic map depicts the school in this location when it was still known as "Maple Grove Center School.

Two other WHPD AHI properties were identified roughly one-mile from the project area: AHI, 23529, a Spanish Revival Style house, and AHI 23534, the First Lutheran Church. However, due to the intervening distance, vegetation, and buildings, these resources are anticipated to have no effects.

Project Effects on WHPD AHI Property
The project would construct solar panels and associated facilities adjacent to AHI 128398. Therefore, the property may be indirectly affected from new visual features.

Wis. Stat. § 44.36(2) Historic Property Criteria
Based on the information available, the following WHPD property may qualify as a historic property under Wis. Stat. § 44.36(2).

AHI 128398 (Maple Grove Center School) is recommended eligible as a historic property under Criterion 3 as an example of early twentieth century Craftsman Style educational architecture in Barron County. The field investigation found that it retains integrity of location, design, materials, workmanship, setting, feeling, and association. The school may also be eligible under Criterion 1 for its association with the school system and the local history of education in the rural area of Dallas and Maple Grove. Additional research would be needed to make a recommendation under Criterion 1. This property does not appear to have an association with persons of significance; therefore, it is not eligible under Criterion 2.

Conclusion
The Commission HPO reviewed the project for affects to historic properties in accordance with the PSC-SHPO Agreement. AHI 128398 is a WHPD property in the APE that may be eligible as a historic property under Wis. Stat. § 44.36(2). The property may be affected by the proposed project. Therefore, the Commission is requesting SHPO review and comment on this undertaking as required by Wis. Stat. s. 44.40.

Sincerely,

/s/ Andrew Craft

Andrew Craft
Historic Preservation Officer
Public Service Commission of Wisconsin

Attachments:
PSC Request for SHPO Review and Comment Form
PSC Application for Williams Bay Water Project (weblinks):
Maple Grove Solar CPCN Application - Solar - PSC REF#: 491010
Maple Grove Solar CPCN Application - GenTie - PSC REF#: 491011
Attachment E Data Response-PSC-Kobel-3
Attachment K Cultural Desktop Review

ALC:DL:02015377

DOE: 24-1305/MN - PSC# 5-CE-154 Maple Grove Solar

felipe.avila@wisconsinhistory.org <felipe.avila@wisconsinhistory.org>

Tue 6/18/2024 11:10 AM

To:Craft, Andrew - PSC <Andrew.Craft@wisconsin.gov>

Dear Mr. Andrew Craft,
The Resource Evaluation Committee agrees with the findings of the consultant that the Maple Grove Center School, AHI #128398 is eligible for the National Register of Historic Places.

The Maple Grove Solar Project as designed will not have an adverse effect on the property. No physical changes to the building will be taking place.

The SHPO does recommend to keep the trees that are standing across the street from the resource and that are on the property line to act a screen. If additional screening trees are needed to soften the visual impact of the solar field then, we would be in favor of them as well.

If your plans change or cultural materials/human remains are found during the project, please halt all work and contact our office.

Please use this email as your official SHPO concurrence for the project. If you require a hard copy signed form, please contact me and I will provide you a signed copy as soon as possible.

Felipe Avila
State Historic Preservation Office

Wisconsin Historical Society
816 State Street, Madison, WI 53706
608 264-6013
felipe.avila@wisconsinhistory.org

Wisconsin Historical Society
Collecting, Preserving, and Sharing Stories Since 1846

(09/6/2019) For SHPO Use Only. Case # _____

REQUEST FOR SHPO REVIEW AND COMMENT ON A STATE UNDERTAKING

Submit one copy with each undertaking for which our comment is requested. Please print or type. We do not accept Electronic Submittals.

Return to:

Wisconsin Historical Society, State Historic Preservation Office, 816 State Street, Madison, WI 53706

Please Check All Boxes and Include All of the Following Information, as Applicable:

I. GENERAL INFORMATION

☐ **This is a new submittal.**
☐ **This is supplemental information relating to Case #:_____, and title:_____**
☒ **This project is being undertaking pursuant to the terms and conditions of a programmatic or other interagency agreement.**

The title of the agreement is PSC-SHPO Interagency Wis. Stats. 44.40 Programmatic Agreement executed May 2018

a. State Agency Jurisdiction (Agency providing funds, assistance, license, permit): Public Service Commission of WI

b. State Agency Contact: Andrew Craft, PSC Historic Preservation Officer

c. Phone: 608-266-3375 FAX: _____

d. Return Address: PO Box 7854 City: Madison Zip Code: 53705

e. Email Address: andrew.craft@wisconsin.gov

f. Project Name: PSC# 5-CE-154 Maple Grove Solar

g. Project Street Address: Please see attached documentation for sections (g) through (k).

h. County: _____ City: _____ Zip Code: _____

i. Project Location: Township _____, Range _____, East ☐ or West ☐, Section _____, Quarter Sections _____

j. Project Narrative Description—Attach Information as Necessary, including brief project overview and current photos of project property(ies).

k. Area of Potential Effect (APE). Attach Copy of U.S.G.S. 7.5 Minute Topographic Quadrangle Showing APE.

II. IDENTIFICATION OF HISTORIC PROPERTIES

☒ The following historic property(ies) is (are) recorded in the Wisconsin Inventory of Historic Places and is (are) located within the project APE.

AHI 128398

Attach supporting materials (including copy of Wisconsin inventory database record, current photo(s) of property).

III. FINDINGS

☐ No historic property (enumerated in II above) may be affected by the proposed project. Attach supporting material.
☒ The proposed undertaking may affect an historic property (identified in II above) located within the project APE. Attach supporting material.

Authorized Signature: Andrew Craft Digitally signed by Andrew Craft Date: 2024.06.13 14:01:21 -05'00' Date: _____

Type or print name: _____

IV. STATE HISTORIC PRESERVATION OFFICE COMMENTS

☐ Agree with the finding in section III above.
☐ Do not agree with the finding in section III above.
☐ The proposed undertaking will not adversely affect one or more historic properties.
☐ The proposed undertaking will adversely affect one or more historic properties.
☐ WHS requires negotiation with the state agency to address the adverse effect.
☐ WHS does not require negotiation with the state agency to address the adverse effect.
☐ WHS objects to the finding for reasons indicated in attached letter.
☐ WHS cannot review until information is sent as follows: _____

Authorized Signature: _____ Date: _____