Certificate of Public Convenience and Necessity Application

Langdon Mills Solar Project

Springvale and Courtland Townships

Columbia County, Wisconsin

LANGDON MILLS
SOLAR

TABLE OF CONTENTS

APPENDICES

ABREVIATIONS

AC	Alternating Current
AFR	Application Filing Requirements
ASNRI	Area of Special Natural Resource Interest
ATC	American Transmission Company
bgs	Below Ground Surface
BMP	Best Management Practice
CPCN	Certificate of Public Convenience and Necessity
CRP	Conservation Reserve Program
DATCP	Department of Agriculture, Trade and Consumer Protection
dBA	A-weighted decibels
DC	Direct Current
DNR	Department of Natural Resources
ECSWMP	Erosion Control and Stormwater Management Plan
EMF	Electromagnetic Field
ER	Endangered Resource
FAA	Federal Aviation Administration
FACE	Field and Corona Effects
FEMA	Federal Emergency Management Agency
Gen-Tie	Generator Transmission Line
GIS	Geographic Information System
GSU	General Step-up Transformer
HDD	Horizontal Direction Drilling
Hz	Hertz
IEEE	Institute of Electrical and Electronics Engineers
IPaC	Information for Planning and Consultation
ISO	International Standards Organization
JDA	Joint Development Agreement
kV	Kilovolt
kW	Kilowatt
LLC	Limited Liability Corporation
MISO	Midcontinent Independent System Operator
MW	Megawatts
NEC	National Electrical Code
NEXRAD	Next-Generation Radar
NHD	National Hydrography Dataset
O&M	Operations and Maintenance
OHWM	Ordinary High Water Mark
POI	Point of Interconnect
PSCW	Public Service Commission of Wisconsin

psf	Pounds per square foot
PV	Photovoltaic
ROW	Right of Way
SHPO	State Historic Preservation Office
SPCC	Spill Prevention, Control, and Countermeasures
US	United States
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VMS	Vegetation and Soil Management Plan
W	Watts
WDNR	Wisconsin Department of Natural Resources
WHS	Wisconsin Historical Society
WisDOT	Wisconsin Department of Transportation
WPDES	Wisconsin Pollutant Discharge Elimination System
WWI	Wisconsin Wetland Inventory Mapping

1.0 Project Description and Overview

Ursa Solar, LLC (Ursa Solar) is proposing a 200-megawatt (MW) alternating current (AC) (at the point of interconnection (POI)) photovoltaic (PV) solar project (Langdon Mills Solar [Project]) to be located in Columbia County, Wisconsin. The on-site facilities may include a Battery Energy Storage System (BESS) located at the Project substation. Pursuant to Wis. Stat. § 196.491, Ursa Solar is filing this application for a Certificate of Public Convenience and Necessity (CPCN) with the Public Service Commission of Wisconsin (PSCW) to get approval to construct and place in service the Project. This application was prepared in accordance with the recommendations in the Application Filing Requirements, Solar Energy Projects (AFR) (updated 2021) applicable to non-utility solar energy projects with a capacity of 100 MW or greater.

1.1 General Project Location and Description of Project and Project Area

(The overall size of the project area will have an impact on the amount of data and analyses required in this AFR. It is recommended that the project area be optimized so that the project retains flexibility for siting panels while at the same time reducing the total area for which data will be required.) Provide the following information about the project:

1.1.1 Project Location – counties and towns in the project area.

The Project location is in the towns of Springvale and Courtland, Columbia County, Wisconsin in Sections 12, 13, 24 and 25 of Township 12 North, Range 11 east and Sections 7, 16-21, and 28-30 of Township 12 North, Range 12 East (4.1.1 in Appendix A).

1.1.2 Area (in acres), area to be disturbed by construction activities (in acres), and size of solar arrays (in acres).

The Project will be located within the 2,311-acre Project Study Area. Within the 2,311-acre Project Study Area, 1,201 acres will be required for primary and alternate arrays (Primary Arrays and Alternate Arrays, respectively). The Primary Arrays will be located within 957 acres, including the space for the solar panels, space between the racks of panels, inverters, step up transformers, access roads, fences, and collection lines within the array areas. An additional approximately 33.7 acres are allocated for the Project substation, BESS, operation and maintenance (O&M) building, and stormwater management. The Primary Arrays include approximately 131,740 linear feet of collection lines. The Alternate Arrays are located on 244 acres, including the space for the solar panels, space between the racks of panels, inverters, step up transformers, access roads, fences, and collection lines. The Alternate Arrays include

approximately 4,200 linear feet of collection lines. The Project engineering layout plan sheets are in Appendix B.

Both the Primary Arrays and Alternate Arrays will utilize a 30-40 foot long gen-tie line (Gen-Tie Line) located between the Project step up substation and the new switchyard. The Gen-Tie Line will be located entirely within parcels either leased for the Project or purchased for the switchyard.

Approximately 3.5 to 7 acres will be used for the 50 MW/200 megawatt-hour (MWh) BESS system located adjacent to the Project substation. The BESS areas are identified on the site layout drawings provided in Appendix B.

1.1.3 Size (rated capacity) in both direct current (DC) and alternating current (AC) MWs, of the proposed project. When providing the DC MW size, a range can be provided. (If an actual panel model is not yet under contract, the applicant must provide information on at least two models that are being considered. Those panels must represent the maximum and minimum megawatt size under consideration for purchase for the project).

Electricity will be generated in arrays of solar panels as direct current (DC). The DC current generated in the panels will be converted to AC at the Project inverters. The planned total DC current is 331.09 MW at the inverters. Project nameplate capacity is planned to be 200.00 MW AC at the POI. The Project Alternate Arrays were designed to provide 68.22 MW DC at the inverters and 62.89 MW AC. The Project design used the Jinko Solar model JKM575M-7R64-TV in the array design models. Another panel model under consideration is the Hanwha Q.Cells Q.Peak Duo XL-G11.3 575.

Solar panel design is a rapidly changing and evolving market. Panel selection is anticipated to change between CPCN application preparation and Project construction. The actual panel selection is anticipated to occur closer to construction depending on availability and supply logistics.

1.1.4 Number of Panel Sites Proposed for the project and the number of alternative panel sites that have been identified (See the discussion on page 1 regarding alternatives). Identify any new or modified electric transmission lines or other electric transmission facilities that might be needed.

Project panel sites describe specific arrays of solar panels that will be surrounded by security fences. Each panel site will have a unique fence line. Panel sites vary in terms of the number of panels and inverters within each site. The panels arrays were aggregated into sites based on

geographical proximity and whether a continuous fence line could surround the arrays without causing impacts to resources. Panel site areas are numbered from 1 to 20 with lettered fenced areas for Alternate array areas (ex. 2A) where Primary and Alternate fenced areas adjoin. The Primary Arrays would be located within panel sites 1-14 and the Alternate Arrays would be located within panel sites 2A, 9A-9C, 10A-10C, 13A, 13B, and 15-20.

Two inverter sizes were included in the present design, 4,200 kW and 2,800 kW units. The Primary Array has 59 power blocks and the Alternate Array has 15 power blocks.

The Project POI is proposed to be located immediately adjacent to the Project substation. As such, the Gen-Tie Line will be 30-40 feet long. New transmission lines are not planned for the Project.

1.1.5 Provide a general map showing the location of the project area, nearest communities, townships, and major roads. Include an inset map showing where the project is located in the state. Scale should be appropriate for showing communities within at least 10 miles of the project area boundary.

The general map of the Project is shown in Figure 4.1.1 in Appendix A. The map shows the Project Study Area and surrounding area including the requested information.

1.2 Ownership

Identify the corporate entity or entities that would own and/or operate the plant.

Ursa Solar will own and operate the Project. Ursa Solar is a wholly owned subsidiary of Samsung Solar Energy 2, LLC. Samsung Solar Energy 2, LLC is the wholly owned entity and the renewable energy arm of Samsung C&T America, head-quartered in New Jersey.

1.3 Project Need/Purpose

Independent Power Producers (IPP) (merchant plants) skip to Subsection 1.3.6.)

*Subsections 1.3.1 thru 1.3.5 apply to **utilities only**. These subsections focus on compliance with Wis. Stat. § 196.374, the Renewable Portfolio Standard (RPS).*

1.3.1 The utility's renewable baseline percentage and baseline requirement for 2001-2003 and the amount of renewables needed in the future.

1.3.2 Amount of renewable energy currently owned and operated by the utility as defined by the RPS requirements for additional renewable energy.

1.3.2.1 Total existing renewable generation capacity.

1.3.2.2 Total energy produced by renewable assets in previous calendar year separated by generation type (Hydro, biomass, methane, wind etc.).

1.3.2.3 Amount of renewable energy acquired through purchase power agreements (separated by type, hydro, biomass, wind, solar, etc.).

1.3.2.4 Amount of RPS credits purchased.

1.3.3 Expected annual energy output for the project.

1.3.4 Other need not covered in Section 1.3.1.

1.3.4.1 Monthly demand and energy forecast for peak and off peak periods over the next 20-25 years.

1.3.4.2 Describe how the availability of purchase power was analyzed.

1.3.4.3 Identify plant retirements forecast over the next 20-25 years.

1.3.4.4 Describe how the existing and expected applications for generation from IPPs have been factored into your forecast.

1.3.4.5 Describe how the proposed project meets the requirements the Energy Priorities Law, Wis. Stat. §§ 1.12 and 196.025(1).

1.3.5 Briefly describe utility's compliance under Wis. Stat. § 196.374 for energy efficiency.

1.3.6 Utilities Only – Generation Capacity Expansion Modeling

The generation capacity expansion modeling should be performed in a software program like EGEAS or similar and include a 30-year extension period. The generation capacity expansion modeling should be filed on CDs, DVDs, or uploaded to the PSC's SFTP site, based on discussion with the docket coordinator as described in the PSC ERF Policy/Procedure Filing guide.

1.3.6.1 Describe the 25-year optimal generation expansion plan for all of the entities that are part of the generation plan.

1.3.6.2 The solar resource should be modeled as non-dispatchable, using an hourly solar profile if the project does not include a storage component. If the proposed solar project includes a storage component, the project can either be modeled as two units, one non-dispatchable (solar resource) and one dispatchable (storage component) or as a single unit as long as the single unit can accurately reflect the operational characteristics of the project.

Sections 1.3.1 through 1.3.5 omitted because they only apply only to public utility sponsored projects.

1.3.6 IPPs Only – Energy Agreements

1.3.6.1 Identify all Wisconsin utilities under contract for delivery of energy from the proposed project

Offtake contracts for the Project have not yet been finalized. Ursa Solar will provide this information to the PSCW if and when any such contracts are finalized.

1.3.6.2 For each utility under contract or with which an agreement in principle for delivery of energy is in place provide the following, by utility

1.3.6.2.1 Rated capacity under contract

No contracts are in place.

1.3.6.2.2 Annual energy to be delivered under contract or expected to be delivered

No contracts are in place.

1.4 Alternatives

1.4.1 Utilities (CPCN) Supply Alternatives

Describe the supply alternatives to this proposal that were considered (including a "no-build" option) and present the justification for the choice of the proposed option(s).

1.4.1.1 Describe any alternative renewable fuel options considered and why those options were not selected.

1.4.1.1.1 Wind
1.4.1.1.2 Biomass
1.4.1.1.3 Hydro
1.4.1.1.4 Landfill Gas
1.4.1.1.5 Fuel Cell

1.4.1.2 Describe Purchase Power Agreements (PPA) considered or explain why a PPA was not considered for this project.

1.4.1.3 No-Build Option.

Section 1.4.1 is omitted because it only applies to public utility sponsored projects.

1.4.2 Utilities (CPCN or CA) and IPPs (CPCN) Project Area Selection

1.4.2.1 Alternative Project Areas. Describe the project area screening and selection process used to select the proposed project area. Provide the following:

1.4.2.1.1 List individual factors or site characteristics used in project area selection

The general Project area was selected for proximity to a transmission line, large contiguous parcels located on relatively level terrain, access to highways, and landowners amenable to solar development. A location was sought that would have sufficient area to develop the target energy capacity for the Project. The prospective parcels were screened for a suite of possible constraints, including wetlands, waterways, cultural resources, habitat for threatened and endangered species, distance from airports, geologic conditions, soil conditions and initial buildable areas. The specific process used is described in more detail in section 1.4.2.2.

1.4.2.1.2 Explain in detail how brownfields were considered in the selection of sites to develop

The US Environmental Protection Agency (EPA) Cleanups in My Community webpage was consulted to determine the number and size of brownfields in proximity to the general Project location in Columbia County, and more specifically in close proximity of the anticipated POI. The number of brownfield sites were inventoried in Columbia and the surrounding counties, which included Adams, Dane, Dodge, Green Lake, Marquette and Sauk. Table 1.4.2.1.2 summarizes the results.

Table 1.4.2.1.2 Brownfield Sites in and in Proximity to Columbia County

County	Number of Brownfields	Range in Size (acres)
Columbia	2	0.14-2.4
Adams	1	0.27
Dane	40	0.60-43
Dodge	1	0.1

County	Number of Brownfields	Range in Size (acres)
Green Lake	2	0.5
Marquette	0	0
Sauk	10	0.5-5

None of the investigated counties had brownfields of sufficient size individually or adequately contiguous with one another to support a solar development size targeted for the Project.

1.4.2.1.3 Explain how individual factors and project area characteristics were weighted for your analysis and why specific weights were chosen

See response in section 1.4.2.2.

1.4.2.1.4 Provide a list of all project areas reviewed with weighted scores for each siting factor or characteristic used in the analysis

See response in section 1.4.2.2

1.4.2.2 Provide a narrative describing why the proposed project area was chosen.

Ursa Solar has its own site selection process to evaluate solar prospects. This Preliminary Constraints Process (PCS) consists of two phases.

1st Phase – Macro Level

Ursa Solar utilizes a GIS database to see which regions meet certain criteria for solar power development and operation. The main criteria items are:

a. **Topological conditions** – this includes a broad analysis of physical conditions and land availability.
b. **Environmental conditions** – this evaluates solar irradiation, water resources, wetlands, animal habitats, wooded habitats, cultural resources, and any state or local government conservancy or land use protection.
c. **Grid issues** – an evaluation of electric interconnection issues. This includes contact with the regional transmission operator (the Midcontinent Independent System Operator (MISO) in this case) and the local utility to understand interconnection requirements and possible limits on the system. Critical in this evaluation is access to high voltage transmission infrastructure. Also evaluated are local and regional generation plans,

including the siting and retirement of generation. For the Project, the planned retirement of the Columbia Energy Center and the State of Wisconsin's renewable energy goals were important factors.

d. **Other local issues** – additional technical and non-technical evaluation of the potential locations, including the anticipated support of the local community towards energy projects.
e. **CAPEX & OPEX analysis** – an economic analysis to be conducted with the dataset consolidated as above to see whether the project would meet the expected level of the power purchase price by local off-takers.

2nd Phase – Micro Level

Once the viable prospects are identified through the Macro Level analysis, a three-pronged approach is used to further narrow down the sites:

a. **Buildable area analysis** – a review of the available land parcels based on the data acquired through desktop and field review. A focus is on avoiding environmentally sensitive areas and topological constraints, and utilizing reasonable setbacks to get to a reasonable proxy for a buildable site. Also, the development team and legal team review titles, land rights, and any neighboring circumstance affecting project development (such as vegetation, cultural resources, existing infrastructure, connectivity to the targeted POI and aviation).
b. **Permit matrix and relevant community engagement planning** – an additional evaluation of the community receptivity to the project, and initial outreach to select members of the community.
c. **CAPEX & OPEX update –** the CAPEX and OPEX figures are updated with more granular and current information.

1.5 Utilities (CPCN or CA) and IPPs (CPCN) – Site Selection

1.5.1 List the individual factors or characteristics used to select the proposed and alternative panel sites (arrays)

The locations within the Project Study Area for placement of both Primary and Alternate Arrays were evaluated based on wetlands, waterways, topography, rare species habitat, cultural resources, land rights, FEMA floodplains and flood potential, contiguous space for panels relative efficient use of inverters, proximity to the proposed electrical infrastructure, existing underground utilities, existing transmission and distribution lines, shading impacts from vegetation, potential impacts to adjacent residents, and comments from the towns of Springvale and Courtland. Areas selected for Primary Arrays generally had relatively fewer constraints and were larger contiguous areas of land that allow for efficient combinations of panels into power blocks. Alternate Array areas generally were located in smaller, discontinuous areas that

tended to have less efficient combinations of panels or were somewhat isolated by other constraints.

Environmental Factors or Characteristics

Environmental factors played a direct and significant impact on shaping where arrays were located. The Project made a commitment to avoiding both temporary and permanent impacts to wetlands and waterways. Field delineation of both wetlands and waterways was performed in fall of 2021 with additional areas delineated in spring of 2022. All delineated wetlands were considered federally jurisdictional and all mapped waterways were considered navigable, and as such to be avoided. Mapped FEMA floodplains were excluded from array locations. Similarly, woodlots were avoided to the extent possible to minimize impacts on wildlife habitat. Areas where environmental constraints resulted in relatively smaller or discontinuous areas were allocated to Alternate Arrays.

State of Wisconsin listed threatened and endangered species habitat was not identified within the Project Study Area and as such were not considered a constraint in terms of locating array areas within parcels.

Setback Factors or Characteristics

The Project observed the Columbia County established setbacks from parcel boundaries, roadway ROWs, structures and environmental features. Setbacks from sensitive environmental areas, such as wetlands and waterways impacted on areas that were excluded from array location. An effort was made to locate alternate arrays in areas adjacent to, or across the street from non-participating landowner residences, and in effect create a greater than specified setback zone from the non-participating landowner residences.

Unavailable Land Factors or Characteristics

Several parcels within the Project had subsets of the overall parcel that were specified as unavailable land and as such were not considered for array location. These areas were specified at the discretion of the parcel owners. The Project Primary Arrays and Alternate Arrays were sited to avoid, to the extent practicable, impacts on sensitive sites, such as cemeteries, daycare providers, hospitals, nursing homes, and places of worship. As such sensitive sites were not a selection criterion used to allocate arrays as either Primary or Alternate.

Airport Factors or Characteristics

Proximity to airports was not considered a selection parameter for location of arrays. The closest public airport to the Project, Gilbert Field Airport, is located 5.1 miles from the Project and is not close enough to be impacted by Project infrastructure or glint and glare, and thus array location. There were no private airfields located on Project parcels nor located in parcels adjacent to the Project. Proximity of airports was not used as a selection criteria to allocate arrays as either Primary or Alternate.

Constructability Factors or Characteristics

Constructability factors mainly included steep slopes and small isolated areas. Areas having slopes steeper than ten degrees were considered non buildable areas and were excluded from further considerations. Small areas that were physically isolated from other areas by other constraints, such as wood lots, wetlands, or waterways were considered as potentially buildable, but were excluded from consideration as Primary Array areas because of the inefficiency of connecting multiple small, isolated areas into a power block. These areas were allocated to Alternate Arrays.

1.5.2 Provide information on how site characteristics and the type/s of panels chosen factored into the selection of the final panel sites

Panel site selection is described in Sections 1.4.2 and 1.5.1. As described above the Project design avoids impacts to wetlands and waterways, and to the extent practicable clearing of wooded areas. Small discontinuous areas that would have been electrically inefficient were avoided. The Project design includes a total of 59 power blocks in the Primary Array. The present design includes 57 4.2 MW AC power blocks and two 2.8 MW AC power blocks. Each 4.2 MW AC power block includes 108 tracker rows and each 2.8 MW AC power block includes 54 tracker rows. The present design includes the SMA Medium Voltage Power Station (MVPS) 4200-S2-US and the MVPS 2800-S2-US model inverters. The design is based on the Jinko Solar model JKM575M-7R64-TV panel. Each of these panels included 156 P type mono crystalline cells. It is anticipated that similar equipment will be specified for construction. In the rapidly evolving solar market, it is anticipated that newer models will likely be available at the time of design for construction. The Alternate Arrays include a total of 15 power blocks.

1.5.3 Setback distances

1.5.3.1 Provide the minimum setbacks and reasons for those setback distances for both boundary fences and solar panels from:

- *residences*
- *property lines*
- *other buildings (e.g., animal barns, storage sheds)*
- *roads*
- *wetlands and waterways*
- *any other features*

The setbacks used to locate Project elements are listed in Table 1.5.-1.

Table 1.5.-1 Project Setbacks

CATEGORY	ITEM	DESIGN CRITERIA (From PV / Fencing)
Property Lines/Occupied Residences		
	Participating Property Line	Columbia County standard setback Side Yard 10’ Back Yard 25’
	Participating Occupied Residence	100’ from residence
	Non-Participating Property Line	100’
	Non-Participating occupied residences on participating parcels	Columbia county standard setbacks for structures from residences were observed, at a minimum.
Transportation	State Highway	110' from highway centerline
	County Road	75' from road centerline
	Local Road	63' from road centerline
Other Infrastructure	Overhead Power Line	Within road ROW; one non-ROW transmission line, easement assumed to be 150', locations revised upon review of easement.
	Overhead/Underground Communication Line	Assumed within road ROW

CATEGORY	ITEM	DESIGN CRITERIA (From PV / Fencing)
	Communication Tower	Only one was identified within one mile of the Project (give distance here from Project boundary
	Underground Power Line	Assumed within road ROW
	Water Wells	Cannot restrict access to wells or pump with structures.
	ACOE Jurisdictional Wetlands	Voluntary avoidance of wetlands and 75 foot setback within shoreland zoning. Voluntary avoidance of wetlands and 35 foot setback outside of shoreland zoning.
	WDNR Jurisdictional Wetlands	Voluntary avoidance of wetlands and 75 foot setback within shoreland zoning. Voluntary avoidance of wetlands and 35 foot setback outside of shoreland zoning.
	Non-Jurisdictional Wetlands	Voluntary avoidance of wetlands and 75 foot setback within shoreland zoning. Voluntary avoidance of wetlands and 35 foot setback outside of shoreland zoning.
	ACOE Streams	Voluntary avoidance of streams and 75 foot setback.
Environmental	State Streams	Voluntary avoidance of streams and 75 foot setback.
	Non-Jurisdictional Streams	Voluntary avoidance of streams and 75 foot setback.
	Non-Jurisdictional Drainage Ditches	Voluntary avoidance of streams and 75 foot setback.

CATEGORY	ITEM	DESIGN CRITERIA (From PV / Fencing)
	ACOE Surface Waters	Voluntary avoidance of surface water and 75 foot setback.
	State Surface Waters	Voluntary avoidance of surface water and 75 foot setback.
	Non-Jurisdictional Surface Waters	Voluntary avoidance of surface water and 75 foot setback.
	Any Environmentally Sensitive Habitats	US FWS and WDNR are not imposing any requirements.
	FEMA Floodplain	Voluntary avoidance of floodplains.
	Threatened or Endangered Animal Species	US FWS and WDNR are not imposing any requirements.
	Threatened or Endangered Plant Species	US FWS and WDNR are not imposing any requirements.
Cultural		Historical Church marker at corner of County Road B and Kuehn Road. Approximately 2-acre area removed from buildable area to avoid feature.

1.5.3.2 Identify any sites where non-participating "good neighbor" agreements have been executed

To date, good neighbor agreements have not been negotiated with adjacent non-participating landowners.

1.5.3.3 Status of easement agreements

1.5.3.3.1 Identify all project sites with easement agreements that have been signed

Table 1.5-2 summarizes the status of Project land agreements as of the filing date of this CPCN submittal. The listed parcels include Project array parcels, Project substation parcels and Project collection line easement parcels.

Table 1.5-2 Project Land Agreements

Parcel Tax ID	Landowner	Contract Type	Status	Array / Fence ID
11008-162	Link, Randal J; Scott & Kimberly Link Revocable Trust Created 1/21/2019	Option/Lease	Signed	1
11008-163	Link, Randal J; Scott & Kimberly Link Revocable Trust Created 1/21/2019	Option/Lease	Signed	1
11008-165	Dennis G & Diann K Jones Rev Liv Tr Dated 5/21/2012	Option/Easement Option/Purchase	Signed	Collection Line Easement
11008-166	Dennis G & Diann K Jones Rev Liv Tr Dated 5/21/2012	Option/Easement	Signed	Collection Line Easement
11008-169.02	Jung, Jason H	Option/Lease	Signed	3
11008-170.01	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Easement	Signed	Collection Line Easement
11008-170.A	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Easement	Signed	Collection Line Easement
11008-172	Dennis G & Diann K Jones Rev Liv Tr Dated 5/21/2012	Option/Easement	Signed	Collection Line Easement
11008-173	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Easement	Signed	Collection Line Easement
11008-174	Wingers Living Trust Dated 10/5/2016	Option/Lease	Signed	4
11008-376.07	Wingers Farms LLC	Option/Lease	Signed	NA
11008-376.11	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Lease	Signed	NA
11008-378.01	Wingers Farms LLC	Option/Lease	Signed	6

Parcel Tax ID	Landowner	Contract Type	Status	Array / Fence ID
11008-379.01	Wingers Farms LLC	Option/Lease	Signed	8
11008-380.02	Wingers Farms LLC	Option/Lease	Signed	9
11008-381	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Lease	Signed	9, 9A & 9B
11008-381.02	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Lease	Signed	9B
11008-382	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Lease	Signed	9
11008-383	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Lease	Signed	9
11008-384	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Lease	Signed	9
11008-386	Wingers Living Trust Dated 10/5/2016	Option/Lease	Signed	4
11008-387	Wingers Living Trust Dated 10/5/2016	Option/Lease	Signed	4, 6
11008-400	Wingers Farms LLC	Option/Lease	Signed	NA
11008-401	Wingers Living Trust Dated 10/5/2016	Option/Lease	Signed	6 & 8
11008-402	Wingers Living Trust Dated 10/5/2016	Option/Lease	Signed	6 & 8
11008-403	Wingers Farms LLC	Option/Lease	Signed	8
11008-404	Wingers Farms LLC	Option/Lease	Signed	8
11008-405-01	Richard M. and Ryan A. Maier	Option/Easement	Signed	Collection Line Easement
11008-405.02	Wingers Farms LLC	Option/Lease	Signed	16

Parcel Tax ID	Landowner	Contract Type	Status	Array / Fence ID
11008-405.03	Wingers Farms LLC	Option/Lease	Signed	Collection Line Easement
11008-408	Wingers Farms LLC	Option/Easement	Signed	Collection Line Easement
11008-415	Kast, Carol L; Kast, Curtis G; Kast, Gregory A; Kast, Jessica L	Option/Easement	Signed	11
11008-416	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Lease	Signed	10, 10A & 11
11008-417.02	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Lease	Signed	10, 10A, 10B & 11
11008-419.02	Wingers Farms LLC	Option/Lease	Signed	13 & 13A
11008-420.02	Kast, Carol L; Kast, Curtis G; Kast, Gregory A; Kast, Jessica L	Option/Easement	Signed	12
11008-423	Agnew, James R; Agnew, Peggy S	Option/Easement	Signed	8
11008-424	Agnew, James R; Agnew, Peggy S	Option/Lease	Signed	9 & 9C
11008-427.2	Agnew, James R; Agnew, Peggy S	Option/Lease	Signed	9 & 9C
11008-428.02	Agnew, James R; Agnew, Peggy S	Option/Lease	Signed	9
11008-435.03	Wingers Farms LLC	Option/Lease	Signed	13
11008-436	Wingers Farms LLC	Option/Lease	Signed	13 & 13A
11008-437	Wingers Farms LLC	Option/Lease	Signed	13 & 13B
11008-438.02	Kampstra, John	Option/Lease	Signed	14

Parcel Tax ID	Landowner	Contract Type	Status	Array / Fence ID
11008-440	Wingers Farms LLC	Option/Lease	Signed	NA
11008-442	Kampstra, John	Option/Lease	Signed	14 & 20
11008-450.10	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Lease	Signed	9
11008-611	Kampstra, John	Option/Lease	Signed	20
11008-635	Wingers Farms LLC	Option/Lease	Signed	10
11008-636.02	Wingers Farms LLC	Option/Lease	Signed	10 & 10C
11008-636.03	Wingers Farms LLC	Option/Lease	Signed	10C
11038-372.04	Jung, Jason H	Option/Lease	Signed	2 & 2A
11038-372.05	Jung, Jason H	Option/Lease	Signed	2
11038-382	Vanderhei, Brenda S; Vanderhei, Tim M	Option/Lease	Signed	5
11038-383	Link, Linda S; Link, Randal J; Scott & Kimberly Link Revocable Trust Created 1/21/2019	Option/Lease	Signed	5
11038-385.05	Senft, Delores A; Senft, Ronald W	Option/Easement	Negotiating	Collection Line Easement
11038-386	Senft, Delores A; Senft, Ronald W	Option/Easement	Negotiating	Collection Line Easement
11038-387	Link, Linda S; Link, Randal J; Scott & Kimberly Link Revocable Trust Created 1/21/2019	Option/Lease	Signed	7
11038-388	Bubolz, Sharon; Bubolz Farms	Option/Lease	Signed	5 & 15
11038-389	Link, Linda S; Link, Randal J; Scott & Kimberly Link	Option/Lease	Signed	5

Parcel Tax ID	Landowner	Contract Type	Status	Array / Fence ID
	Revocable Trust Created 1/21/2019			
11038-391	Bubolz, Sharon; Bubolz Farms	Option/Lease	Signed	7
11038-592	Link, Linda S; Link, Randal J; Scott & Kimberly Link Revocable Trust Created 1/21/2019	Option/Lease	Signed	7 & 18
11038-595.01	Vanderhei, Brenda S; Vanderhei, Tim M	Option/Lease	Signed	17
11038-596	Link, Linda S; Link, Randal J; Scott & Kimberly Link Revocable Trust Created 1/21/2019	Option/Lease	Signed	18
11038-598.01	Senft, Delores A; Senft, Ronald W	Option/Easement	Signed	Collection Line Easement
11038-599.1	Deyoung, Diane L; Deyoung, Joseph M	Option/Easement	Negotiating	Collection Line Easement
11038-600	Schneider, Gail M; Schneider, Jeffrey W	Option/Easement	Negotiating	Collection Line Easement
11038-601	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Lease	Signed	10
11038-603	Schneider, Gail M; Schneider, Jeffrey W	Option/Easement	Negotiating	Collection Line Easement
11038-604	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Lease	Signed	10
11038-605	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Lease	Signed	10
11038-609	Wingers Farms LLC	Option/Lease	Signed	10

Parcel Tax ID	Landowner	Contract Type	Status	Array / Fence ID
11038-610	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Lease	Signed	10 & 10C
11038-611	Lynn D Wingers Living Trust Dated 4/9/2019	Option/Lease	Signed	10 & 10C
11038-617.3	Bubolz Farms	Option/Lease	Signed	10 & 10C
11038-618.A	Bubolz Farms	Option/Lease	Signed	19

1.5.3.3.2 Identify all sites where easement agreements have not been signed and status of negotiations

See Table 1.5-2.

1.5.4 Identify whether setbacks are consistent with local zoning (county or municipality) or if there are variations from local zoning setbacks, describe why.

Columbia County setbacks are being used for participating landowner properties. Setbacks from nonparticipating landowner parcels are at least 100 feet, which exceeds the Columbia County setbacks. Columbia County setbacks were followed for environmental features such as wetlands, streams and waterbodies. Setbacks from road centerlines or ROWs were based on Columbia County standards.

1.6 Utilities Only – Cost

This section is omitted as it is only applicable to public utility sponsored projects.

1.7 MISO and Project Life Span

1.7.1 MISO Market. Describe how, at the time of this filing, the proposed facility would be treated as an intermittent resource in the MISO market

Ursa Solar holds MISO position J1629 in the East (ATC) 2020 queue and has completed Phase 1 System Impact Study. The draft of MISO DPP-2020 Phase 2 System Impact Study report was released in September 2022 and Phase 2 is anticipated to be completed in October 2022.

Phase 3 is anticipated to begin in October 2022 and is anticipated to complete in December 2022. Ursa Solar anticipates executing a Large Generator Interconnection Agreement (LGIA) with MISO sometime in June 2023.

Section 4.2.3.3.2. Solar Capacity Credit of the MISO Resource Adequacy Business Practice Manual 11 specifies that "Solar photovoltaic (PV) resources will have their annual Total Unforced Capacity value", which is the reliable capacity of a resource adjusted for outages, "determined based on the three-year historical average output". The manual further states that "resources with less than 30 days of metered values would receive the class average of 50% for its Initial Planning Year."

1.7.2 Provide an estimate of the expected life span for the power plant

The Project is anticipated to have a 35-year life span. There is the possibility that technology changes and Project refurbishment could result in a longer life span, subject to Ursa Solar having land rights to execute on the same.

1.7.3 Describe how the facility would be decommissioned at the end of its life span. Describe expected decommissioning actions and timelines.

Decommissioning shall include removal of all solar electric systems, battery storage, buildings, ballasts, cabling, electrical components, roads, foundations, pilings, and any other associated facilities. The decommissioning process is estimated to take approximately seven months but may change depending on weather and soil moisture conditions.

Following coordination with the utility company regarding timing and required procedures for disconnecting the Facility from the utility, all electrical connections to the system will be disconnected and all connections will be tested locally to confirm that no electric current is running through them before proceeding. All electrical connections to the panels and battery storage will be cut at the panel and then removed from their framework by cutting or dismantling the connections to the supports. Then panels, inverters, transformers, meters, fans, lighting fixtures, and other electrical structures will be removed. Disposal of non-salvageable materials at a landfill will be governed by state and local laws, including Wisconsin solid waste rules and statutes. Any materials deemed to be hazardous at the time of disposal will be handled and disposed according to applicable laws and regulations.

A significant amount of the components of the PV system at the Project will include recyclable or re-saleable components, including copper, aluminum, galvanized steel, battery storage, and panels. Due to their resale monetary value, these components will be dismantled and disassembled rather than being demolished and disposed.

The PV mounting system framework will be dismantled and recycled. The galvanized support piles will be completely removed and recycled.

Finally, all associated structures will be demolished and removed from the site for recycling or disposal. This will include the site fence, gates, access roads, equipment foundations, and underground cables, which will likely be removed or recycled.

Consultation with the landowner will determine if the access roads should be left in place for their continued use. If the access road is deemed unnecessary, the contractor will remove the access roads and all non-adaptable parts of the Project. All concrete associated with the Project on-site will be broken and removed in its entirety, and clean concrete will be crushed and disposed of or recycled off-site. Final stabilization thresholds on the entire site shall be met prior to approval of site decommissioning. Underground conduits and raceways are to be removed. Above ground lines and poles that are not owned by the utility will be removed (along with associated equipment (isolation switches, fuses, metering)), and holes will be filled with clean topsoil.

Erosion and sediment control measures are required during the decommissioning process. These measures include construction access, silt fence, concrete washout stations, and land stabilization. The areas of the Project that are disturbed (during decommissioning) will be subject to minor re-grading (no imported soil is anticipated), to establish a uniform slope and stabilization, including application of a selected grass seed mix to surfaces disturbed during the decommissioning process. The Project site will be restored to a vegetated condition consistent with pre-construction conditions.

A final site walkthrough with the appropriate authorities will be conducted to verify removal of debris and/or trash generated within the site during the decommissioning process and will include removal and proper disposal of any debris that may have been wind-blown to areas outside the immediate footprint of the Project. A detailed description of the decommissioning process is included in the Decommissioning Plan for the Project in Appendix C.

1.7.3.1 Provide an estimate of the cost of and source of funding for decommissioning. State whether financial security would be provided to cover decommissioning costs, including the amount and time it would be provided.

An estimate of probable cost to decommission the Project is included in the Decommissioning Plan in Appendix C, and totals $12,810,273 with a material salvage value of $16,824,334 (net credit of $4,014,061). Decommissioning costs will be the responsibility of Ursa Solar or any subsequent owner of the Project. Ursa Solar will provide to the relevant authority a Letter of Credit or other surety adequate to decommission the Project in the unlikely event the Project is abandoned during construction or after operation.

1.7.3.2 State how the start of decommissioning would be decided, including a description of what constitutes site abandonment

If construction or operation activities cease prior to Project completion, with no expectation to restart construction or operation activities for more than 12 months, the Project would be decommissioned as described in the Decommissioning Plan. Any installed components will be removed and managed, as per the Decommissioning Plan, and the site will be restored to a vegetated condition.

Properly maintained PV panels have an expected lifespan of 35 years or more. At the end of the Project's economic life, or if the Project has not been in operation and stops producing energy for a period of 12 consecutive months, it shall be considered a "cessation or abandonment of operations." Installed components will be removed and reused/recycled where possible, and the site restored in accordance with the activities discussed in the Decommissioning Plan.

1.7.3.3 State whether a participating landowner could be responsible for decommissioning costs in any situations

Participating landowners will not be responsible for any decommissioning costs at any time during the construction, operation or decommissioning of the Project.

1.8 Required Permits and Approvals

1.8.1 Approvals and Permits. For each of the regulatory agencies listed below provide the following information

- *regulatory agency,*
- *the approvals/permits required,*
- *application filing date,*
- *the status of each application,*
- *agency contact name and telephone number.*

1.8.1.1 Federal

1.8.1.1.1 Federal Aviation Administration (FAA)

1.8.1.1.2 U.S. Army Corps of Engineers

1.8.1.1.3 U.S. Fish and Wildlife Service (USFWS)

1.8.1.1.4 Other federal agencies not listed here

1.8.1.2 State

1.8.1.2.1 Wisconsin Department of Transportation

1.8.1.2.2 WDNR

1.8.1.2.3 DATCP

1.8.1.2.4 Other state agencies not listed here

1.8.1.3 Local Permits – including county, town, city, and village

Table 1.8.1 Regulatory Permits and Approvals

Agency	Permit / Approval	Contact	Notes	Filing Date	Status
Federal					
FAA	Form 7460-1	Natalie Schmalbeck (816) 329-2525	Notification not required for Project per notice criteria tool	N/A	N/A
ACOE	Section 404 Wetland Permit	Stevens Point Team USACE_Requests_WI@usace.army.mil (651) 290-5876	The Project is expecting to avoid aquatic resources and have no need for a permit	N/A	N/A
USFWS	Federal Endangered Species Act Coordination	Green Bay, Wisconsin Ecological Services Sub-Office GreenBay@fws.gov (920) 866-3650	IPaC completed in February 2022 and revised July 2022		
State					
PSCW	Engineering Plan	Akanksha Craft Akanksha.Craft@wi.gov (608) 267 9509	Prepared per requirements of PSCW and WDNR Application Filing Requirements (AFR)	May 2022	Received

Agency	Permit / Approval	Contact	Notes	Filing Date	Status
PSCW	Certificate of Public Convenience and Necessity	Akanksha Craft Akanksha.Craft@wi.gov (608) 267 9509		October 2022	Pending
WDNR	Wetland Water Quality Certification – Section 401	Geri Radermacher geri.radermacher@wisconsin.gov (262) 239-0994	The Project is expecting to avoid aquatic resources and have no need for a permit		N/A
WDNR	Endangered Species Review	Stacy Rowe stacy.rowe@wisconsin.gov (608) 228-9796	An initial Endangered Resource Review request was filed with the WDNR. Refresh requested based on revised Project Study Area	Initial request 09/29/2021 Refresh 07/20/2022	Received 10/15/2021 Received 07/28/2022
WDNR	Wisconsin Pollutant Discharge Elimination System (WPDES) Construction Site Storm Water Runoff General Permit No. WI-S067831	Dan Bekta Eugene.Bekta@wisconsin.gov (608) 333-6579	Final application will be filed following receipt of CPCN order from PSCW and final design is completed	Q4 2023	Yet to be completed
WisDOT	Utility Permit	Southwest Region swutilitypermits@dot.wi.gov Scott Coburn (608) 246-3821	Utility crossing permit to construct or maintain a utility in a WisDOT ROW	Q4 2023	Yet to be completed
WisDOT	Oversize-Overweight Vehicle Permit	WisDOT Bureau of Highway Maintenance (608) 266-7320	If necessary, required for vehicles exceeding weight limits on state roads.	Q4 2023	Yet to be completed
WisDOT	Driveway Permit	WisDOT Bureau of Highway Maintenance (608) 246-5334	Required for construction of driveway on state highways	Q4 2023	Yet to be completed

Agency	Permit / Approval	Contact	Notes	Filing Date	Status
Local (to the extent the requirement to get such permits is not otherwise preempted by the grant of the CPCN)					
Columbia County Highway Department	Utility Permit	Highway and Transportation Department (608) 429-2136	Permit to construct, operate, maintain use and/or remove utilities within a county road right-of-way	Q4 2023	Yet to be completed
Columbia County Highway Department	Temporary Weight Perm	Highway and Transportation Department (608) 429-2136	Permit to use a road posted with a specific temporary weight limit on a Columbia County-maintained highway or roadway	Q4 2023	Yet to be completed
Columbia County Highway Department	Driveway Permit	Highway and Transportation Department (608) 429-2136	Permit to access and construct any driveway, or to improve or modify an existing driveway, on a Columbia County-maintained highway or roadway	Q4 2023	Yet to be completed
Town of Courtland	Building Permit	Town Clerk (920) 210-6093	Building permits are required for the construction, reconstruction, remodeling or moving of any building within the Town of Courtland whenever the cost of such shall be estimated to be over the amount of fifteen thousand dollars	Q4 2023	Yet to be completed
Town of Courtland	Driveway Permit	General Engineering Co. (608) 745-4070	Driveway Plan Review	Q4 2023	Yet to be completed

1.8.2 Correspondence with Permitting Agencies Provide copies of correspondence to and from state and federal agencies that relate to permit approval, compliance approval, or project planning and siting. Provide copies of any correspondence to or from local governments. This should continue after submittal of the application.

Copies of correspondence with regulatory agencies are provided in Appendix D. Langdon Mills Solar will continue to correspond with permitting agencies throughout development, construction, and operations phases of the Project.

Table 1.8-2 Table of Correspondence

Agency	Correspondence
FAA	Notice Criteria Tool Results of Project corner
FAA	Notice Criteria Tool Results of Project corner
FAA	Notice Criteria Tool Results of Project corner
FAA	Notice Criteria Tool Results of Project corner
PSCW	Email to PSCW transmitting Draft Photo Simulation Study 7/12
PSCW	Emailed Draft Photo Simulation Study scope 7/12
PSCW	Email from PSCW regarding Photo Simulation Study 7/12
PSCW	Email to PSCW regarding Photo Simulation Study 7/12
PSCW	Email from PSCW approving Photo Simulation Study 7/12
PSCW	Email to PSCW regarding Draft Noise Study 7/8
PSCW	Emailed Draft Noise Study 7/8
PSCW	Email from PSCW regarding Draft Noise Study meeting schedule 7/21
PSCW	Email to PSCW regarding information in Draft Noise Study 7/22
PSCW	Email to PSCW regarding information in Draft Noise Study 7/25
PSCW	Email to PSCW regarding information in Draft Noise Study 7/25
PSCW	Email to PSCW transmitting Revised Draft Noise Study 7/27
PSCW	Revised Draft Noise Study 7/27
PSCW	Email from PSCW approving Noise Study 8/2
WDNR	Letter from WDNR regarding review of the Engineering Plan

2.0 Technical Description – Project Area, Arrays, Panels, and Ancillary Facilities

2.1 Estimated Solar Resource and Projected Energy Production

Provide a complete energy production assessment for the project. This report should include, at a minimum:

2.1.1 Solar resource data used in analysis.

PVsyst (v. 7.2.17) was used to estimate first year energy production using historical weather data for the site in consideration.

Location-specific weather files from Solar Anywhere (v. 3.6) were imported into PVsyst to support the analysis. PV syst modeling results are in the confidential Appendix E.

2.1.2 Gross and net capacity factor (explain the method used to calculate the capacity factors and provide the data used).

Gross capacity factor was defined as the ratio of the effective energy at the output of the array over a specified period of time to the maximum system energy output if the system was to generate 24 hours per day. Net capacity factor of a PV system over a specified period of time is the ratio of the generated energy at the POI to the maximum system energy output if the system was to generate 24 hours per day. A Year 1 P50 (50% probability) energy estimate has been created using historical weather data and PV Syst modeling software. Based on the PV Syst modeling, the Project gross capacity factor is estimated at 23% and the net capacity factor is estimated at approximately 21% on an annual basis. The confidential PV Syst modeling report is in Appendix E.

2.1.3 Estimated energy production of project

2.1.3.1 Estimated production losses

Production losses result from various aspects of electrical generation including conversion from DC to AC current at the Project inverters, transformers that convert inverter voltage to collector line voltage, electrical losses in the collector lines, losses in the step-up transformer at the collector substation and other equipment. PV system losses from substation to POI are estimated to be 3%. PV system can accommodate a ±0.95 power factor when required.

2.1.3.2 Estimated net energy production

Accounting for system losses, the Project is estimated to have an average annual output of approximately 352,200 to 376,500 MWh. The average annual output will depend on the details of the final design and the annual variability in the solar resource. The model output documenting the predicted system output is in the confidential Appendix E.

2.2 Solar Panel Type and Characteristics

2.2.1 Identify the manufacturer and model of solar panel to be used (If no Panel Purchase Agreement has been signed, applicants should identify the panel or panels being considered. It is acceptable to identify a range by providing information on the largest and smallest panel being considered, however, consult with Commission staff prior to preparing the application)

The Project design used the Jinko Solar model JKM575M-7R64-TV in the array design models. Another panel model under consideration is the Hanwha Q.Cells Q.Peak Duo XL-G11.3 575. Solar panel design is a rapidly changing and evolving market. Panel selection is anticipated to change between CPCN application preparation and Project construction. The actual panel selection is anticipated to occur closer to construction depending on availability and supply logistics.

2.2.2 Panel delivery date – Indicate whether or not this date is firm

Construction is anticipated to begin in Q4 of 2024 with panel delivery anticipated to begin Q1 2025. This information is the best available at the time of the submission of this application.

2.2.3 Total number of panels required for project

Project panel count is estimated at 452,400 high efficiency PV panels. Each panel in the present design is rated at 575 watts. This could change if the panel manufacturer or Project design changes.

2.2.4 Technical characteristics of panels

2.2.4.1 Panel physical dimensions

Panels presently under consideration have general dimensions of approximately 2,411 mm by 1,134 mm, or 7.9 feet by 3.7 feet. The precise dimensions of the panels eventually selected could be different depending on the manufacture and model of the panels selected.

2.2.4.2 Panel material/type

Each panel is made from crystalline silicon, conductive metals for the electron flow, anti-reflective glass, aluminum frames, and weather-resistant “quick connect” wire connectors. Together, these components are referred to as solar modules.

2.2.4.3 Any surface treatment of panels

The panels being considered for the Project would have an anti-reflective coating to reduce possibility of glint and glare generation. In addition, anti-reflective coating increases the effectiveness of panel glass cover layers to transmit light, increasing panel efficiency.

2.2.4.4 Panel power curve (provide actual data – solar resource and rated output needed to create the curve).

Power curves for the panels being considered and modeled for the Project, the Jinko Solar JKM575M-7RL4-V, and the Hanwha Q.Cells Q.Peak Duo XL-G11.3 575 are in Appendix F.

2.2.4.5 Panel tolerances for extreme weather events or physical damage

Extreme weather conditions of concern for solar panels generally occur during high wind events, hailstorm events, and heavy snow loading events. All tracker designs will be in compliance with the latest edition of ASCE 7. Trackers will stow in response to high wind events as monitored by on-site weather stations.

2.2.5 Technical characteristics of inverters

Two inverters were included in the present design and were modeled in the evaluation of system production. These were the SMA Medium Voltage Power Station (MVPS) 4200-S2-US and the MVPS 2800-S2-US. The skid mounted equipment enclosures for both of these models are approximately 20 feet long by 10 feet wide by 8 feet high. Specification sheets for both of

these inverter models are in Appendix F. The inverter models selected could vary depending on product market at the time of construction.

2.2.6 Technical characteristics of any tracking systems, panel supports, and racking

2.2.6.1 Type of material used for supports and racking

The supports will be made of steel piles that are driven into the ground. A cap will be bolted to each pile, and in turn, the cap will be bolted to the racking structure. Both the pile caps and the racking structures will be made of steel.

2.2.6.2 Tracking system used

The present Project design has racks of panels aligned in north-south rows with panels mounted on a single axis tracking system that can vary the panel angle from +60 degrees to -60 degrees, tracking the position of the sun across the sky over the course of a day to optimize energy production. To optimize the land use, the present design utilizes a two module in portrait configuration along the torque tube. Early in the morning the panels will be at the greatest positive angle, at noon panels will be at a zero-degree angle and late in the day panels will be the greatest negative angle.

The tracking systems presently being evaluated for the Project include models produced by Soltek and Gamechanger Solar. The preliminary site plan is based on the Soltek SF model which is a horizontal single-axis tracker with independent rows. Each row is self-powered with a PV power supply.

2.2.6.3 Dimensions and number of sections required

The present design of the Project includes fifty-seven 4.2 MW AC power blocks (area of panels connected to an inverter and transformer) and 2 2.8 MW AC power blocks. Each 4.2 MW AC power block includes 108 tracker rows and each 2.8 MW AC power block includes 54 tracker rows.

2.2.6.4 Typical distances between rows, access roads, and fences

The present design has a 33.92-foot row to row spacing. Access roads are generally 12-feet wide, widening to 20-feet wide within roadway ROWs at the points of ingress and egress. Access roads additionally widen at turn-around locations. A generic 30-foot distance was maintained between panels and fence lines where feasible.

2.2.6.5 Highest and lowest points of panels during daily rotation

Based on the present design, panels will be at their highest point at either positive or negative 60 degrees tilt, a height of 16.3 feet, early in the morning or in the evening. Final maximum and minimum heights will be determined during final design.

2.2.6.6 Operational actions in case of extreme weather events. Include descriptions of actions in response to high wind events, as well as snow or ice removal

Extreme weather conditions of concern for solar panels generally occur during high wind events, hailstorm events, and heavy snow loading events. All tracker designs will be in compliance with the latest edition of ASCE 7. Trackers will stow in response to high wind events as monitored by on-site weather stations.

2.2.6.7 Panel tolerance for placement on slopes

The tracking system evaluated for the present design and modeled for evaluation of energy production has a ± 60-degree limit of north-south slope angles. These trackers do not have an east-west slope limit with arrays aligned in a north-south alignment.

2.2.7 Scale drawings of a typical panel row including inverter pad and transformer box

A scale drawing of a typical panel row is shown in Appendix B.

2.2.8 Provide information on any perimeter fencing that would be used around the solar PV arrays. Describe any requirements on the fencing around the PV sites

Security fencing will be installed around the perimeter of the solar arrays. Corner and gate fence posts will likely require cast-in-place concrete foundations for strength and security. Other posts will be driven directly into the soil with no concrete foundations. The fencing will be eight feet tall and be a non-barbed wire agricultural or deer fence. Areas requiring additional security to comply with applicable regulation and codes, such as the Project substation and switchyard, would be surrounded with a chain link fence topped with barbed wire.

2.3 Other Project Facilities

2.3.1 Site Construction Area. Describe the site construction area. Include the number of, location, and dimensions for:

2.3.1.1 Solar arrays, proposed and alternative

The locations of the proposed Primary and Alternate Arrays are shown on the figures in Appendix A and the civil plan set in Appendix B. The number of power blocks per array area is shown in Table 2.3-1.

Table 2.3-1 Power Blocks Per Array Area

Primary Array Number	Power Blocks	Alternate Array Number	Power Blocks
1	2		
2	1	2A	0
3	2		
4	4		
5	3		
6	5		
7	4		
8	10		
9	2	9A	1
		9B	0
		9C	0
10		10A	0
		10B	0
		10C	5
11	5		
12	2		
13	3	13A	0
		13B	1
14	1		
		15	0
		16	2
		17	1
		18	1
		19	3
		20	1
Totals	59		15

2.3.1.2 Lay-down/staging areas

A 13-acre Project laydown and staging area is located on the same parcel as the Project O&M building, substation and BESS, which is located on the east side of CTH B, approximately 0.55 miles south of the intersection with Morgan Road at the intersection of Jones Drive and CTH B.

2.3.1.3 Parking area

Approximately 2.3 acres will be allocated at the Project Laydown and staging area for parking. It is also anticipated that task-specific construction worker parking will occur within array work areas as task-specific efforts, such as protection of sensitive areas, vegetation clearing, limited grading, driving foundations, installing racking systems and similar tasks step through the array areas.

2.3.1.4 Provide a Scale drawing showing the general construction setup for the solar array sites

A scale drawing showing general construction setup for the solar array sites is in Appendix B.

2.3.2 Collector Circuits

2.3.2.1 Total number of miles of collector circuits required – separated by circuit type (overhead vs. underground)

There are approximately twenty-five miles of collector circuits planned for the Project Primary Arrays. These collector lines are planned to be installed underground. The 200 MW AC system will require five circuits for the Primary Arrays. Approximately 1.5 miles of collector lines serve only Alternate Arrays. These lines connect into the circuits connected to the Primary Arrays. Approximately one circuit will be required to connect the Project BESS to the substation. These lines are planned to be installed underground. The locations of the lines are shown on the maps in Appendix A and the drawing in Appendix B.

2.3.2.2 Collector circuit voltage to be used

The design collector circuit voltage is 34.5 kV.

2.3.2.3 Transformer type, location, and physical size of transformer pad at each site

Project transformers will be located on the inverter skids placed on concrete pads. The Project design includes 57 SMA MVPS 4200-S2 4,200 kVA and the 2 SMA MVPS 2800-S2 2,800 kVA transformers. These transformers will be three phase and have high-side voltage of 34.5 kV. The transformers are approximately 10 feet long by 10 feet wide by 8 feet high. The locations of the transformers are shown on the maps in Appendix A and the drawings in Appendix B.

2.3.2.4 Underground collector circuits

2.3.2.4.1 Conductor to be used

The conductors will typically be a 35 kV Aluminum (AL) cable with a concentric neutral and 105°C XLPE jacket. This will be verified during detailed engineering for construction documents based on an ampacity study using thermal resistivity data from the geotechnical report.

2.3.2.4.2 Describe installation type and how lines would be laid (open-cut trench, vibratory plow, directional bore, etc.). Provide scale drawing of underground circuit

Collector lines will be installed in open cut trenches where that construction technique is allowable and through directional borings under roadways, waterways and wetlands. The present plan spaces collector lines a minimum of 2 feet apart when a trench contains two circuits, 3 feet apart when a trench contains three circuits and 4 feet part when a trench contains four or five circuits. This spacing is necessary to maintain thermal conditions and allow for sufficient dissipation of heat to maintain low line losses. A detailed underground trench study is necessary to verify the minimum circuit spacing for the specific soil type and current carried by the cables. Drawings are provided in Appendix B.

2.3.2.4.3 Depth and width of trench, and minimum depth of soil cover over circuits (if applicable).

Open cut trenches will be one- to two-feet wide. The collector lines will be installed at a minimum depth of three feet or deeper in areas where lease agreements require greater burial depth. Directional bores will be dug at a minimum depth of five feet below the bed of waterways and wetlands.

2.3.2.5 Overhead collector circuits

Overhead collection circuits are not planned to be part of the Project.

2.3.2.5.1 Size of pole to be used

Poles are not planned for use on collection circuits because overhead collection circuits are not planned.

2.3.2.5.2 Engineering drawing of structure to be used

Overhead collection circuits are not planned.

2.3.3 Site Foundations. Describe the type of foundation or foundations to be used for each part of the project. If more than one type of foundation may be needed describe each and identify under what circumstances each foundation type would be used. Include the following:

2.3.3.1 Describe how the panel and inverter foundations installations would be installed (e.g. direct imbed, excavation for pouring of concrete footings, etc.)

Based on the preliminary geotechnical investigation, driven steel piles are planned to support the racking-system-mounted PV array modules. Each pile will be shaped as an H-pile. The racking system will be designed by a structural engineer to support the panels and cabling, as well as the anticipated wind and snow loads. It is anticipated that steel piles will be driven directly into the soils. Electrical inverters and transformer skids are planned to be supported on cast-in-place concrete slab-on-grade mat foundations with approximate dimensions of 12 ft by 22 ft by 1.5 ft. It is anticipated that spaces for the cast in place inverters and transformer skids will be excavated using equipment such as backhoes.

2.3.3.2 Dimensions, surface area and depth required for each foundation

Racking foundation steel piles are not anticipated to require any excavation and are planned to be driven directly into Project soils. The depth of pile installation is anticipated to vary around the Project depending on specific soils conditions. Anticipated depths will be refined during detailed engineering and design. Inverter pad foundations will be slab-on-grade cast-place concrete mats. Subgrade preparation for the mat foundations is expected to consist of stripping of topsoil materials and other unsuitable soils, then replacement with engineered fill, including open graded base. Should soils be found to have insufficient bearing strength at specific inverter skid locations, foundations will be designed during detailed engineering and design phase to address local conditions. Soil conditions at the planned location substation transformer have yet to be evaluated. Upon detailed geotechnical investigation of the substation soil conditions, the design of the transformer foundations will be completed. Substation foundation designs are anticipated during the detailed engineering and design phase.

2.3.3.3 Amount of soil excavated for each foundation type

Soil excavation is not anticipated for the driven steel piles. If shallow bedrock or refusal is encountered, alternate foundation installation techniques or designs such as predrilling or

spudding with a heavy steel beam, heavier-grade larger-diameter posts, screw piles or helical piles or shallow spread footings or ballast foundations. Should excavation of soils at inverter pad locations be required, approximately 15 cubic yards would be removed per pad assuming an 18-inch excavation depth. It should be noted that this quantity may change if more substantial subgrade preparation is required based on the location of the inverter pad. At the time of this CPCN application submittal, 59 inverter pads are proposed for the Project; therefore, a total of 885 cubic yards of excavated soil is estimated.

2.3.3.4 Describe how excavated soils would be handled including disposal of excess soil

Installation of driven pile foundations is not anticipated to generate significant excess soils. If soils are required to be excavated for a subset of inverter pads due to local soil conditions, the soils would be thin spread in an area where the additional soils would not impact on the nature of quantity or quality of runoff. Depending on the volume of soils to be spread, prior to thin spreading excavated spoil soils, topsoil would be removed and staged before thin spreading. Following spoil thin spreading and grading to maintain drainage, topsoil would be replaced so as not to have an adverse impact on future soil productivity.

2.3.3.5 Materials to be used for the foundation. Include:

2.3.3.5.1 Approximate quantity and type of concrete required for typical foundation

Direct driven piles installed for the racking system are not anticipated to require concrete. Concrete pads for inverter pads are anticipated to require approximately 15 cubic yards of Type II concrete per pad. At the time of this CPCN application submittal, 59 inverter pads are proposed for the development; therefore, a total of approximately 885 cubic yards of concrete is estimated.

2.3.3.5.2 Materials required for reinforcement

Concrete foundation pads will be reinforced with appropriately sized steel rebar. Specific foundation design will occur during the detailed engineering design phase.

2.3.3.5.3 Description of the panel mounting system

The proposed array will consist of modules (solar panels) mounted on single-axis-tracker racking systems. Driven steel h-piles will serve as the foundations and vertical members of the racking system, providing stability to the assembly.

2.3.3.5.4 Technical drawings of each foundation type to be used showing foundation dimensions

Technical drawings of anticipated foundations for the racking supported panels and electrical equipment pads are included in Appendix B.

2.3.3.5.5 Description of how foundation or support installation would address the risk of frost heave on facilities

The Geotechnical Report (Appendix H) provides recommendations and considerations for the design and construction of foundation systems regarding the impacts of frost on the Project Study Area. A summary is provided below.

The soils within the frost zone across the Project Study Area are generally characterized as soft to medium stiff clayey silt or loose to medium dense silty sand. Due to the variable groundwater across the area, potential heave issues are anticipated for piles. It is recommended that test trenches in the areas of the proposed solar arrays be conducted to determine if frost susceptible soils are within the frost zone. If lean clay is encountered to approximately 5 feet bgs, heave issues are not anticipated.

If more frost susceptible soils and groundwater are encountered, it is recommended that some form of frost heave mitigation be applied to the piles or an uplift load due to frost heave be included in the axial design of the piles. Recommendations of frost protection methods for driven steel piles are outlined the Geotechnical Report. For design of driven piles, reductions in resistance in the topsoil layer and soils within the frost zone are recommended.

Shallow foundations supporting inverters and other electrical equipment should be founded below the frost depth if the structures cannot tolerate movement. Considering the soil conditions, removing the upper 1 foot of subgrade, placing a separation geotextile, and properly placing a 1--foot thick open graded base is anticipated to reduce the foundation movements associated with frost heave to serviceable levels. At the time of construction, it should be confirmed that the subgrade soil conditions in the area of the electrical equipment pads are consistent with soils encountered at the soil borings. If frost susceptible soil conditions are encountered, removal and replacement should extend deeper as recommended by the geotechnical engineer.

The flatwork should be designed to account for additional frost heave induced pressures if not founded below the frost line. Slack should be provided to underground conduits that are fastened to flatwork founded above the frost depth to accommodate potential movement. Topsoil should be removed completely when placing the shallow foundations.

2.3.4 Access Roads

2.3.4.1 Provide the total number and total miles required for access roads. Provide the amounts for both temporary access (used during construction only) and permanent access (for long-term facility operation and maintenance) roads. State if any temporary access roads would be converted into permanent access roads

Suitable gravel access roads 12 feet wide, increasing to 20 feet wide within road ROWs at roadway access points will be constructed within the Project Area and are shown in Appendix B. A total of 16 permanent access roads totaling approximately 25 miles are anticipated for the Project based on current design estimates for the Primary Arrays and the O&M building / substation / BESS parcel. A total of five permanent access roads, totaling approximately one mile are anticipated for the Alternate Arrays. All access roads are subject to final design engineering and any required input from local road authorities. As such, the exact number and width of access roads will not be known until the time of construction, when final determinations can be made.

Permanent access roads will be used to provide site access for equipment maintenance and emergency response. As the final array configuration will be determined following PSCW approval, the access road design and locations depicted in Appendix B are preliminary. Langdon Mills Solar will incorporate the input from landowners and local road authorities when feasible in the final design considerations.

No temporary access roads constructed within the Project are anticipated at this time. If temporary access roads are required during construction, they will be built according to the specifications summarized in Section 3.3.4.2 below.

Vehicular access within the arrays away from access roads will primarily be utilized by utility vehicles that are significantly lighter and have lower ground pressures than pickup trucks or larger vehicles. Some compaction from construction is expected, however this compaction will be removed by natural processes, such as freeze/thaw cycles, throughout the operating life of the Project. Following construction, if re-seeding is to occur, local de-compaction activities with equipment such as agricultural plows may be used for establishment of vegetation.

2.3.4.2 Describe materials to be used and methods for construction of temporary and permanent access roads, including road bed depth

Access roads will be designed to follow existing grades as much as possible to limit earth moving activities. Roads will be constructed to existing grades as much as possible by removing topsoil and placing aggregate for principal access routes to equipment. In areas with greater

depths of topsoil, geotextile may be placed beneath the aggregate. Excess topsoil with either be stockpiled, respread, or sold by the landowner.

2.3.4.3 Specify the required width of temporary and permanent access roads. Fully describe any differences between final road size and that required during construction

The permanent access roads are planned to be 12 feet wide, increasing to 20 feet wide within road ROWs at roadway access points. No temporary access roads are planned at this time.

2.3.4.4 Describe any site access control (e.g. fences or gates)

The site will have a perimeter fence with secured gates for site access. Only Langdon Mills Solar personnel, contractors, and local emergency personnel will have access to the Project.

2.3.4.5 Describe any setbacks from sensitive resources or storm water management considerations in road location

Existing native vegetation will be protected to the greatest extent possible. Wetlands, waterways, and other sensitive features have been identified and impacts to these resources will be avoided by the Project layout. Prior to construction, contractors will be required to participate in an environmental presentation where wetlands, waterways, and other sensitive areas will be discussed and specifics around best management practices (BMPs) in these areas will be explained. Prior to constructing around wetlands and waterways, these features will be marked off using colored flagging or tape to signify avoidance areas.

2.3.5 General Construction Areas

2.3.5.1 Identify size, number, and location of laydown/staging areas outside of those found at the array sites and any other areas used for material storage

A 13-acre Project laydown and staging area is located on the same parcel as the Project O&M building, substation and BESS, which is located on the east side of CTH B, approximately 0.55 miles south of the intersection with Morgan Road at the intersection of Jones Drive and CTH B. The laydown/staging area will be surrounded by a temporary security fence.

2.3.5.2 Identify size and location of construction parking areas

Approximately 2.3 acres will be allocated at the Project laydown and staging area for parking. It is also anticipated that task specific construction worker parking will occur within array work areas as task-specific efforts, such as protection of sensitive areas, vegetation clearing, limited grading, driving foundations, installing racking systems and similar tasks step through the array areas.

2.3.5.3 Describe the expected use of these areas after project completion

The Project laydown/staging area will be restored to pre-Project conditions and returned to agricultural use if so desired by the Project landowner.

2.3.5.4 Provide a list of all hazardous chemicals to be used on site during construction and operation (including liquid fuel)

Fuel for construction and delivery vehicles will be the primary hazardous chemicals at the Project during construction. In addition, there will be oils within electronic equipment at the substation and inverter pads, and vehicle lubricants. Limited quantities of paints will be used. During operation there will be fuel in Project vehicles and heating fuel at the O&M building.

2.3.5.5 Discuss spill containment and cleanup measures including the Spill Prevention, Control, and Countermeasures (SPCC) and Risk Management planning for the chemicals proposed

Langdon Mills Solar will require the contractors selected to construct the Project to prepare a Spill Prevention, Control, and Countermeasures (SPCC) Plan that complies with all applicable federal and state laws. Contractors working on the Project shall be required to develop SPCC plans specific to their aspect of the Project. Langdon Mills Solar will also develop an SPCC plan specific to the operational phase of the Project.

2.3.6 Construction Site Lighting

2.3.6.1 Describe the site lighting plan during project construction

Construction crews will use mobile light plants to provide temporary lighting during low light times of the day. Light plants are trailer mounted and can be moved by standard pickup trucks. Light plants will be moved as construction activities shift throughout the Project. Laydown areas may have lights mounted to temporary poles to provide safe loading and offloading conditions during low light times.

2.3.6.2 Provide copies of any local ordinances relating to lighting that could apply

Columbia County lighting ordinances do not apply to areas zoned for agriculture and the entire Project Study Area is within areas zoned for agriculture. The Courtland Township zoning ordinance does not address lighting. Springvale Township implements the county ordinance, and the ordinance does not apply to lighting in agricultural zoning districts.

2.4 Substation

If the project includes the construction of a substation or modifications to an existing substation, provide the following information:

2.4.1 A complete electrical description of required substation facilities including a list of transformers, busses, and any interconnection facilities required.

Interconnection Facilities – A three breaker ring bus will be constructed with two terminals connected to the existing 345kV ATC "W-5" line and one terminal connected to the Project substation.

Project Substation – This station will consist of a 223 MVA, 345/34.5kV Main Power Transformer and up to ten 34.5kV feeders. A 345kV breaker will be installed on the gen-tie connection.

2.4.2 Indicate the size (in acres) of the land purchase required for the new substation or substation expansion.

The Project has signed leases totaling approximately 33.7 acres on two adjoining parcels where the new Project substation will be constructed.

2.4.3 Indicate the actual size of the substation or substation addition in square feet, the dimensions of the proposed substation facilities, and the orientation of the substation within the purchase parcel. This should include the size of any new driveways associated with the substation.

The Project substation fenced area is approximately 60,000 square feet (1.4 acres). It will be oriented immediately to the west of the Project switchyard and adjoining the purchased parcel's eastern property boundary. The interconnection switchyard is proposed to be 470' X 350'.

2.4.4 *Identify current land ownership and whether applicant has control of property or whether or not an option to buy has been signed.*

The Project has a signed option to lease agreement on two adjoining parcels totaling 33.70 acres where the new Project substation will be constructed.

2.4.5 *Describe substation construction procedures (in sequence as they would occur) including erosion control practices (see Section 3.1).*

Once the substation pad has been brought to the appropriate elevation, the below grade work would begin. This consists of the installation of the foundations, grounding, conduit, and cable trench. Once the below grade work has been completed, a layer of stone will likely be installed to aid in construction. The above grade work will install the steel structures and place the equipment on the foundations. Once the steel, insulators and equipment are in place, then bus work will be connected per the design. The last phase will be the protection and control where the control cables are terminated in the appropriate locations.

2.4.6 *Describe associated permanent storm water management facilities that will be constructed, or expansion/modification of existing storm water treatment facilities to comply with applicable post-construction performance standards in Wis. Admin. Code §§ NR 151.121 through 151.128. Identify the locations of the point(s) of collection and discharge.*

Storm water management facilities will be constructed for the duration of the operational phase of the Project. It is anticipated that stormwater management controls will be required near the proposed substation area to provide both stormwater detention and peak flow attenuation. These anticipated controls will be sized and located during the detailed engineering and design phase of the Project. Additional information can be found in the stormwater management narrative in Appendix B.

2.4.7 *Describe any security requirements for the substation site and provide information on how these would be met.*

The substation will be surrounded by a woven wire mesh fence topped with three strands of barbed wire in conformance with applicable sections of the National Electrical Code (NEC). Substation communication and control equipment will be located within the Control House that will be secured with a locked entrance door. The substation will have security lighting including motion detecting lights at the entrance door. Security cameras may be installed at the substation.

2.5 Transmission and Distribution Interconnection

If the project includes the construction of a generator tie line, that is not the subject of a separate application before the Commission, provide the following information:

2.5.1 Describe any transmission or distribution grid interconnection requirement.

A new switchyard is being constructed immediately north of the ATC South Fond Du Lac SW YD 345kV T-Line. The Project substation will be located immediately adjacent to the west side of the new switchyard. The substation and switchyard will share a common fence line on the east side of the substation and west side of the switchyard.

2.5.2 Identify the length of the generator tie line.

The length of the Gen-Tie Line between the adjacent substation and switchyard will be a 30 – 40’ section of 5” rigid bus on 16’ spacing that is approximately 35’ above grade.

2.5.3 Provide details on the types of structures (underground/overhead, single-pole/H- frame, direct embed/concrete caisson, typical span length, etc.) and lines that would be constructed as part of any necessary generator tie line, including the height of the structures. If the installation will be underground, identify the installation method(s), such as directional bore, open-cut trench, plow, etc.

The Gen-Tie Line will extend between two 345kV disconnect switches – one in each of the substation and the switchyard. Two new turning structures will be located on the ATC South Fond Du Lac SW YD 345kV T-Line to bring the current into the switchyard and carry the current out of the switchyard.

2.5.4 Describe the transmission configuration (single-circuit, double-circuit, etc.).

The Gen-Tie Line will be a single circuit 345 kV line.

2.5.5 *Describe the right-of-way (ROW) area needed for the generator tie line and the status of any easements or other land agreements with property owners.*

A right-of-way is not needed for the Gen-Tie Line due to the proximity of the substation and the switchyard. East of the joint fence the Gen-Tie Line will be located within the footprint of the switchyard and west of the joint fence the Gen-Tie Line will be located within the footprint of the Project substation.

2.5.6 *Describe all communications and agreements, official or otherwise, with the transmission or distribution owner. These can include definitive phase planning (DPP) studies and any signed generator interconnection agreements, or more informal meeting notes or letters.*

In addition to introductory emails between the Project and ATC, a virtual meeting was held on July 20, 2022 with attendees from Samsung, TRC, MISO, and ATC. A slight relocation of the switchyard from the initial MISO application was discussed. ATC stated that the switchyard and substation could share a common fence line. It was further determined that the substation and switchyard could share a grounding grid.

ATC did not see an issue with moving the substation and switchyard to the present proposed location. It was further verified that the shared fence concept means that there would not be a physical separation between parallel fence lines. One section of fence will be constructed to the ATC standard for fencing; the other three sides of the respective substation and switchyard fencing will be unique to each development.

The concept of adding a BESS through the surplus energy process was discussed.

2.5.7 *For transmission interconnections, indicate where the project is in the MISO Queue and provide copies of the latest draft or final MISO report for the project interconnect. During the PSC review process applicant must continue to supply the latest reports from MISO.*

Ursa Solar holds MISO position J1629 in the East (ATC) 2020 queue and has completed Phase 1. MISO DPP-2020 Phase 2 is anticipated by October 2022 and Phase 3 completion is anticipated in January 2023. Ursa Solar anticipates executing a Large Generator Interconnection Agreement (LGIA) with MISO sometime in June 2023.

Because of the anticipated minimal length of the Gen-Tie Line between the Project substation and the new switchyard, the Project does not a have a separate MISO position for the Gen-Tie Line. The Project will supply the latest reports from MISO during the review process.

2.5.8 Indicate how equipment access will occur, and if off-ROW access roads will be utilized. If off-ROW access roads will be utilized, provide the following:

An access road within an existing ATC ROW is anticipated for the Project. Off-ROW access roads are not proposed for the Project.

2.5.8.1 Provide the number of off-ROW access roads proposed, and an identifying name or number for each off-ROW access road.

Off-ROW access roads are not proposed for the Project.

2.5.8.2 For each proposed route, provide the dimensions (length, width, area) and construction method, including any modifications that would be needed to utilize the off-ROW access roads, such as road widening, road fill placement, tree clearing, etc.

Off-ROW access roads are not proposed for the Project.

2.5.8.3 Discuss the reasons for the necessity for off-ROW access roads (e.g. topography, rivers/wetlands, *If protection of a natural resource is a reason, discuss how the resource would be protected during construction and operation of the proposed project*.

Off-ROW access roads are not proposed for the Project.

2.5.8.4 Provide quantitative land cover information for off-ROW access roads similar to the information provided in PSC Impact Table.

Off-ROW access roads are not proposed for the Project.

2.5.8.5 If the off-ROW access roads would be modified post-construction, provide details.

Off-ROW access roads are not proposed for the Project.

2.5.9 Describe the type of construction machinery that would be used.

Construction of the Gen-Tie Line will be part of construction of the Project substation and the switchyard. Following installation of the grounding grid and site grading, it is anticipated that for the switchyard and substation components small to medium cranes would be required. In addition, bucket trucks and forklifts would be required.

2.5.10 Describe the construction disturbance zone, if different from the ROW.

The construction zone for the Gen-Tie Line will be limited to the east side of the Project substation and the west side of the switchyard. As such there will not be a separate construction zone for the Gen-Tie Line.

2.5.11 Describe how spoil materials would be managed on and off-site.

If excess soils result from substation construction, the soils would be thin spread in an area where the additional soils would not impact on the nature of quantity or quality of runoff. Depending on the volume of soils to be spread, prior to thin spreading excavated spoil soils, topsoil would be removed and staged. Following spoil thin spreading and grading to maintain drainage, topsoil would be replaced so as not to have an adverse impact on future soil productivity.

2.5.12 Describe the dewatering method(s) that may be utilized during excavation activities, such as pit/trench dewatering or high capacity wells. Identify treatment methods that would be utilized to treat the discharge, and the discharge location.

Dewatering is not anticipated. Should dewatering be necessitated by unforeseen conditions, dewatering would be accomplished by a submersible pump located within a pit within the flooded excavation. Waters would be discharged following WDNR standards for discharge of construction dewatering. High capacity wells would not be utilized nor are conditions that would require them anticipated.

2.5.12.1 Describe if the construction of a new substation or switchyard, or modifications to existing facilities would be needed for the transmission interconnection. If so, describe which company would own and operate the facilities, and which company would conduct any ground disturbing construction for the facilities.

As stated above, a new switchyard, located adjacent to the Project substation will be constructed. The switchyard will be a 345kV, three breaker ring bus.

2.6 Operations and Maintenance Building

2.6.1 Describe the purpose and use of the proposed O&M building.

The O&M building is to house the Project control center, office space, meeting space, bathrooms, kitchen/break room, tool storage, equipment storage area and spare parts. In addition, the O&M building location will include an onsite water supply well, septic tank system, and permanent parking.

2.6.2 Number of full-time employees that would be working at the facility.

It is estimated that Langdon Mills Solar will employ three full time employees at the Project.

2.6.3 Provide the size (in acres) of the land purchase required for the facility.

The Project has a signed option to lease two adjoining parcels totaling 33.70 acres where the Project O&M building will be constructed.

2.6.4 Building and Building Footprint.

The Project O&M building will be comprised of a single-story building similar to a metal shop-type structure or a permanent trailer and will primarily serve as a storage location and an office for on-site personnel. The conceptual building design is to have approximately 2,400 square foot building, inclusive of all occupied space and storage rooms. Additional space will be reserved outside of the O&M building for parking spaces The building layout may be modified prior to the final design.

2.6.4.1 Provide a drawing or diagram of the O&M building with dimensions including square feet.

A generic building footprint is shown on the drawing in Appendix B. Detailed building design, such as room size and location within the building will occur during detailed design prior to construction.

2.6.4.2 Indicate the actual size of the building in square feet, and the size of any permanent driveways for the building to be constructed.

The conceptual building design is to have approximately 2,400 square foot building, inclusive of all occupied space and storage rooms. There will be an access drive from CTH B into the parcel that contains the O&M building, Project substation and BESS. Due to the demands of equipment installation at the Project substation, the road is planned to be 20-foot wide throughout the extent of the roadway.

2.6.4.3 Describe the type of building to be constructed (metal, frame, etc.).

The Project O&M building will be comprised of a single-story building similar to a metal shop-type structure or a permanent trailer and will primarily serve as a storage location and an office for on-site personnel.

2.6.5 Lighting and Security Plan for O&M Property

2.6.5.1 Describe how the building property would be lit and how the lighting plan minimizes disturbance to nearby residences.

Exterior lighting at the O&M building will included motion activated lighting at the entry/exit points of the building.

2.6.5.2 Describe any security plans for the property (fences etc.).

The O&M building will be located within a fenced area. Building doors will be locked and require use of keys for access.

2.6.6 Describe any other facilities needed, including:

2.6.6.1 Parking lots.

Approximately 1,600 square feet are allocated for permanent parking, sufficient to park six vehicles, adjacent to the O&M building.

2.6.6.2 Sheds or storage buildings.

There are no plans at present to include outbuildings with the O&M building. However, final design of the O&M building and associated infrastructure could be modified during detailed final design.

2.6.6.3 Supplies of water.

It is anticipated that a low-capacity private supply well will be constructed at the O&M building. The well would be located sufficiently far from the O&M building to be in conformance with applicable regulations. The well is anticipated to be similar to a residential well and could be constructed by any State of Wisconsin licensed well driller. Any permits required for construction of the well or pump installation would be obtained by the driller and pump installer. Procurement of a well driller and pump installer would be the eventual responsibility of the Project construction contractor.

2.6.6.4 Sewer requirements.

The Project O&M building will not be connected to a municipal sanitary sewer. It is anticipated that a private septic system would be installed in vicinity to the O&M building, located sufficiently far from the private supply well as to be in conformance with applicable regulations. The septic system is anticipated to be similar to a residential system and could be constructed by any licensed septic installer.

2.6.7 Describe construction procedures (in the sequence as they would occur), including erosion control practices (see Section 3.1).

Construction is expected to take approximately 15-18 months and would include the major phases of mobilization, construction grading and site preparation, installation of drainage and erosion controls, PV panel/tracker assembly, and solar field construction. Project construction is anticipated to commence as early as the first quarter of 2025 and is expected to be completed by the conclusion of the second quarter of 2026.

Construction activities are expected to take place as described below.

Phase 1 – Pre-Construction

- Seeding prior to mobilization, enabling a cover crop to be established within the Project Study Area.
- Installation of silt fence along the perimeter of the construction area and near proposed impervious areas.
- Installation of stabilized construction entrances to reduce tracking of sediment off-site.
- Installation of sediment basins and stabilized rock outlets at locations determined during the detailed engineering and design phase of the Project.
- Preparation of temporary parking, storage, concrete wash-out, and mobile fueling areas.

Phase 2 - Construction

- Clearing and grading of the site according to the proposed conditions.
- Excavation of the O&M building footprint. Forming and pouring of the foundation.
- Installation of a well, leach field, and septic system, in addition to necessary piping or plumbing.
- Forming and pouring of the floor.
- Framing the building and installation of windows and doors.
- Installation of siding and roofing.
- Mechanical and electrical buildout.
- Finishing the interior.
- Grading and paving of parking lot.

Final grading, seeding, and restoration efforts.

2.6.8 Describe associated permanent storm water management facilities that will be constructed, or expansion/modification of existing storm water treatment facilities, to comply with applicable post-construction performance standards in Wis. Admin. Code §§ NR 151.121 through 128. Identify the locations of the point(s) of collection and discharge.

Subcatchments A3-S1 and A3-S7 are the northernmost catchments in the Project area and will house the O&M building, Project substation, and a small parking lot. The area is accessible from County Highway B, just south of the junction with Jones Drive. It is anticipated that stormwater management controls will be required for these catchment areas to provide both stormwater detention and peak flow attenuation. These anticipated controls will be sized and located during

the detailed engineering and design phase of the Project. The overall Erosion Control and Stormwater Management Narrative is in Appendix V.

2.7 Battery Storage

If the proposed project would include a large-scale Battery Energy Storage System (BESS) or plans to include one in the future, provide the following information. State clearly if the project is seeking authorization to construct a BESS in the current solar electric generation facility docket. Provide all of the environmental impact information for the BESS if one is being proposed, identical to the environmental impact information provided with all other project facilities.

2.7.1 Describe the location of the proposed BESS, including a map that shows its placement within the other project facilities

The Project is seeking authorization to construct an approximately 50 MW / 200 MWh as a facility associated with the solar generation. The BESS may be centralized nearby the Project Substation (AC-coupled) or spread throughout the solar field (DC-coupled). The BESS will be housed in standard ISO shipping containers or other outdoor-rated modular enclosures. These enclosures will be outfitted with auxiliary systems (such as controls/monitoring, HVAC, and fire suppression).

AC-coupled BESS enclosures would be centralized with a footprint of approximately 10 acres (or smaller). Adjacent to the enclosures would be rows of skid or pad-mount transformers and power conversion systems (PCSs; bi-directional inverters). The PCS will be connected to the transformers, which will then connect to a common string which will connect directly to the Project Substation. DC-coupled BESS enclosures would be placed throughout the solar field near inverters and electrically connect to the solar inverters. Appendix B depicts an AC-coupled BESS for the Project.

2.7.2 Explain what criteria was used to decide whether to use a BESS, and provide information on how its inclusion would affect the electrical design of the project and MISO interconnection process.

BESS inclusion criteria include regulatory and permitting considerations, market conditions (capacity, ancillary services, etc.), as well as capital, operations and maintenance expenditure. A BESS can shift solar generation output, peaking at solar noon, to peak demand hours in the evening as well as smooth project intermittency on cloudy days.

The BESS is expected to be added with the surplus energy process to existing solar queue J1629 (Ursa Solar). A DC-coupled system would have minimal effect on the overall Project electrical design as all major medium and high voltage equipment would be the same as a solar only project. An AC-coupled system would introduce PCSs and an additional medium voltage breaker in the Project substation to connect the BESS electrically to the Project medium voltage bus.

2.7.3 Identify the manufacturer and model of battery systems to be used. (It is acceptable to identify several potential units). Include technical specifications.

The Project is currently battery integrator/manufacturer agnostic. Several integrators will be considered commercially and technically during detailed design for best project fit. Examples of battery systems that will be under consideration and their datasheets are in Appendix F.

2.7.4 Provide information on how the BESS would be installed, any changes to project impacts through its inclusion, and ongoing operations and maintenance actions it would require.

Battery systems under consideration are containerized – standard shipping containers or outdoor-rated modular enclosures – and will be lifted into place by crane. Containers will contain racks of batteries electrically connected via a DC-combiner. Racks are typically loaded by forklift. Modular enclosures generally include battery modules pre-populated at the factory.

A BESS would slightly increase impervious surface coverage, but with minimally impact to visuals – containers are generally approximately 8’ or less in height. BESS HVAC will contribute additional noise to the Project, which has been modeled as part of the noise study done for this application. AC-coupled PCSs will also contribute noise when operating. Overall noise levels from the Project will remain relatively low. A pre-construction noise study (Appendix P) indicates typical operation noise emissions from the Project are predicted to be less than 41.2 dBA at all modeled location which meets the criteria of Wisconsin Administrative Code PSC section 128.14 for both daytime and nighttime periods. Based on final equipment selection, the model of noise emissions from the Project will be updated and used to determine if any additional noise mitigation measures are required.

The battery integrators (manufacturers) design their products to meet to the National Fire Protection Association (NFPA) 855 Standard for the Installation of Stationary Energy Storage Systems. Some integrators choose to include fire suppressants to extinguish fires. Fire suppression agents such Stat-X, F-500, and FM200 hinder the chemical fire. Fire system monitoring and, if equipped, suppression system agent replacements will occur as required during regular maintenance.

A BESS system will include 24/7 monitoring at the Project control center. Any alarms or anomalies can be investigated with data from the multitude of sensors and a technician can be dispatched to the project site if required. Data trended overtime can also predict anomalies or failures before they occur. O&M activities for the solar and BESS will be coordinated. Site visual inspections and checks will add the BESS equipment which will also be added to the preventative maintenance program.

Lithium-ion batteries degrade overtime. Cell manufacturers provide curves that are used to predict the degradation based on system cycling and other factors. To maintain battery capacity throughout the Project life the BESS will be augmented periodically. Augmentation may include adding additional battery racks in containers with free space or adding additional enclosures.

2.7.5 Discuss any safety requirements specific to the BESS both on site and for local first responders.

In stationary BESS applications, battery integrators will design to meet UL 9540 and UL 1973 for overall safety of the system and battery modules. Testing of thermal runaway of modules/racks/enclosures and anti-deflagration occurs to meet standards. Additionally, NFPA 855 requires a Hazard Mitigation Analysis (HMA) process. The HMA results will inform the site-specific Emergency Response Plan (ERP). The ERP will include safe approach distances, delineation of responsibilities, and promote defensive firefighting of surrounding equipment. Batteries store energy chemically with an inherent risk of fire and deflagration hazards, but these can be appropriately mitigated in with equipment engineering/design, HMA, and ERP.

2.7.6 Describe construction procedures (in the sequence as they would occur), including erosion control practices (see Section 3.1).

The estimated Project construction schedule presented in Table 3.1.1 will remain the same with the addition of a BESS. The overall site construction activity – mobilization, perimeter erosion control measures, access road construction, conduit installation, grading, etc. – will occur before installation of the BESS. A battery system would lend to the installation of additional conduit and equipment foundations, setting of containers as described in Section 2.7.4, as well as pull and termination of additional cables for the BESS within the same overall project schedule as resources permit and prerequisites are completed.

2.7.7 *Describe associated permanent storm water management facilities that will be constructed, or expansion/modification of existing storm water treatment facilities, to comply with applicable post-construction performance standards in Wis. Admin. Code §§ NR 151.121 through 128. Identify the locations of the point(s) of collection and discharge.*

As stated in Section 2.4.6, it is anticipated that stormwater management controls will be required near the proposed substation area to provide both stormwater detention and peak flow attenuation. These controls would be designed and sized appropriately in the event an AC-coupled BESS is installed near the Project substation for both the BESS and substation. In the event of a DC-coupled BESS, containers will be sporadic and additional facilities will likely not be required but will be investigated during detailed design.

2.7.8 *If applicable, describe any risk analysis the applicant conducted when siting the BESS and Collector Substation within a "potential impact radius" of any natural gas pipelines in the area. Provide a description of how any risks to facilities could be mitigated*

The surveying completed at the time of writing this document has not indicated natural gas pipelines within the vicinity of the Project/collector substation as well as nearby centralized BESS area and no additional mitigation is required.

3.0 Construction Sequence and Workforce

3.1 Construction Sequence and Schedule

3.1.1 *Provide the construction schedule for the proposed project, identifying any potential seasonal or regulatory constraints. Include a timeline showing construction activities from beginning of construction to in-service. Identify all critical path items.*

The estimated Project construction schedule is presented in Table 3.1.1.

Table 3.1.1 Estimated Project Construction Schedule

Activity	Estimated Start	Estimated Completion
Start of Construction	Q4 2024	

Activity	Estimated Start	Estimated Completion
Site Preparation (resource protection, erosion control and tracking pads)	Q4 2024	Q2 2025
Vegetation Removal	Q4 2024	Q2 2025
Staging and Laydown Area	Q4 2024	Q1 2025
Access Road Construction	Q4 2024	Q3 2025
Racking Foundations	Q1 2025	Q3 2025
Fencing Installation	Q2 2025	Q3 2025
Install Racks	Q2 2025	Q4 2025
Install Modules	Q2 2025	Q4 2025
Install Inverters	Q1 2026	Q2 2026
Substation Construction	Q3 2025	Q2 2026
Gen-Tie Line Construction	Q1 2026	Q2 2026
BESS Construction	Q3 2025	Q4 2025
Revegetation	Q2 2026	Q2 2026
Commissioning	Q2 2026	Q2 2026
Commercial Operations Date		Q3 2026

3.1.2 Provide a description of the staging and construction sequence required for building a typical solar array. Include the delivery of materials.

The onset of construction for every solar array in the Project will be the initial mobilization of personnel and equipment to the Project followed by preparation of the Project laydown / staging area and job trailers. Following these efforts, the typical array construction sequence will be implemented repeatedly as construction steps through the Project. The typical construction sequence for Project array areas is as follows:

1. Install tracking pads at construction entry/exit points, project staking, install sensitive resource protection fencing, avoidance signage and stormwater protection
2. Vegetation removal. Only minimal woodlot tree removal is anticipated.
3. Access road construction and minor grading of array areas
4. Delivery of racking piles
5. Preparation of inverter locations
6. Delivery of inverters and transformers
7. Installation of racking piles
8. Delivery of medium voltage cables
9. Installation of inverter and transformer
10. Installation of medium voltage cables

11. Delivery of racking systems
12. Installation of racking systems
13. Delivery of solar panels
14. Installation of solar panels
15. Connection of panel arrays to inverter
16. Revegetation of array area soils
17. Connect MV cable to Generator Step-up Transformer (GSU)
18. Inspections, testing and commissioning
19. Commercial operations

Just as there are tasks that precede array construction, there are tasks that occur simultaneously with array construction, such as substation construction and gen-tie construction. Several tasks follow construction of the entire set of arrays, and these include commissioning of the Project and commercial operation.

3.1.3 Provide an estimate of time required to complete construction at a typical solar array.

Construction of a solar farm typically occurs on multiple solar arrays at the same time. The various stages of array construction progress through the Project. Construction of a standalone solar array typically requires three to four months.

3.1.4 Provide a description of the staging and construction sequence for any other facilities to be constructed.

In addition to the solar arrays the Project will include a project substation, BESS, O&M building, and Gen-Tie Line. The transmission line owner will be constructing a switchyard at the POI adjacent to the Project substation. Overall Project staging is listed in Section 3.1.1. General Project staging is listed in Section 3.1.2, O&M construction staging is discussed in Section 2.6.7, and BESS construction staging is listed in Section 2.7.6.

3.1.5 If grading, land leveling, or any other activity that would result in a change in topography or vegetative or non-vegetative soil cover will occur provide the following information as fully as possible. If technical details are not available, discuss the goals and practices generally:

In the existing agricultural fields, grading will largely be limited to smoothing the site and removal of residual furrows (if any) created during farming activities in previous growing seasons. Changes to site grade elevations and stormwater flow paths will be minimal.

3.1.5.1 Indicate the maximum area (sq. ft. or acres) of disturbance that would occur at a given time.

Most of the Project areas are existing agricultural fields that are cultivated in row crops. Several fields are presently in alfalfa. It is anticipated that minor grading to smooth remnant furrows would occur on fields on the order of 40 to 80 acres. Appropriate erosion control measures will be implemented prior to grading activities.

3.1.5.2 Describe erosion and sediment control practices (e.g. sedimentation basins) that by design will be employed to result in a discharge of no more than 5 tons per acre per year of the sediment load carried in runoff from initial construction to final grading.

Wisconsin Administrative Code NR section 151.11 requires that BMPs shall be utilized to prevent sediment discharges of greater than 5 tons per acre per year, or to the maximum extent practicable. Initially, crops will be harvested across the Project Study Area, leaving the exposed soils bare. Establishment of a cover crop is proposed prior to construction to minimize erosion potential. With vegetation established prior to construction and limited grading activity occurring, most of the drainage areas will meet sediment discharge performance standards by use of silt fence alone. Sediment basins may be required in areas where significant impervious surfaces are incorporated, including near the proposed substation area in the northern portion of the Project Study Area, or in drainage areas with more significant slopes and longer flow paths. These areas will be assessed individually during the detailed engineering and design phase of the Project to determine appropriate basin location and configuration, and if additional stormwater management controls such as diversion channels or berms are required.

Multiple erosion controls measures will be implemented during the Project to meet the requirements of Wisconsin Administrative Code NR section 216 and Wisconsin Administrative Code NR section NR section 151. The following sediment and erosion control BMPs will be used at the site:

- Temporary silt fence will be installed around the perimeter of the Project Study Area prior to commencement of soil disturbance. A double row of silt fence is proposed surrounding wetlands and waterways. Temporary silt fence will also be installed surrounding construction laydown areas. Sediment deposits must be removed when they have accumulated to half of the height of the fence. Torn, degraded, trampled, or otherwise compromised silt fence will be properly replaced.
- Stabilized construction entrances, underlain by geotextile fabric, will be used during the Project. The stabilized entrance will consist of stone of a specific, to-be-determined size pending detailed engineering, maintained to a thickness of 12 inches dependent on soil conditions. The stabilized entrance will be maintained by scraping or top-dressing with

additional aggregate. If conditions during construction are such that the sediment is not removed from vehicle tires by tracking pads, tires shall then be washed using pressurized water at on-site wash areas before entering public roads.

- If needed, temporary construction laydown areas consisting of gravel-covered staging and parking areas will be designated by the property owner. Storage of equipment and construction materials shall be performed according to applicable federal and state standards.
- Perimeter controls will be installed around stockpiles at the commencement of construction activities.
- Sediment basins will be constructed in drainages areas where a potential for excessive soil loss is identified during the detailed engineering and design phase of the Project. This may include the proposed substation area in the northern portion of the Project Study Area.
- If needed, a concrete washout area, fueling area, and vehicle wash area will be located in the vicinity of the designated construction entrance or laydown area. Concrete washout water will be contained and disposed properly. An impervious surface (such as polymer barrier) will be utilized surrounding mobile fueling tanks and fueling areas.
- Dust control measures shall be implemented during construction, including but not limited to watering down exposed dirt and gravel access roads, as needed.
- The Project Study Area will be seeded prior to the commencement of construction to establish vegetation in the existing agricultural lands. Racking and panel installation will be completed using preferential pathways to limit the disturbance of the new vegetation.
- Existing trees or vegetation indicated to remain shall be avoided and fenced off to avoid incidental impacts. The contractor shall avoid damaging existing vegetation to minimize potential erosion.
- Dewatering activities are not planned as part of the Project. If dewatering becomes necessary, water will be pumped into temporary settling basins located in upland areas. Dewatering directly into field tiles, storm sewers, or waters of the state is prohibited.
- If construction activity will not occur in an area for 14 calendar days, a cover crop of an annual grass species that germinates quickly will be applied to reduce the risk of soil erosion across the Project Study Area per Wisconsin Administrative Code NR section 151.11(8)(d). Oats (131 lbs/acre) will be used for a spring or summer seeding, and winter wheat (131 lbs/acre) will be used for a fall seeding. This cover crop will establish quickly, providing additional erosion control during construction along with protection of final native vegetation during its establishment period.

- In areas where construction activity has temporarily ceased and will resume after 14 days, a temporary stabilization method may be used (e.g., “Land Application of Additives for Erosion Control” and/or “Mulching for Construction Sites” [WDNR Conservation Practice Standard Nos. 1050 and 1058, respectively]).

The temporary erosion control measures shall remain in place until vegetation within the Project Study Area is permanently stabilized at a minimum of 70 percent uniform cover.

3.1.5.3 Describe any structural practices that will be used to divert flow away from exposed soils, store runoff or otherwise limit runoff and the discharge of sediment.

As discussed in Section 3.1.5.2, sediment basins will be constructed in drainage areas where a potential for excessive soil loss is identified during the detailed engineering and design phase of the Project. This may include the proposed substation area in the northern portion of the Project Study Area. Other structural modifications are not planned as a part of the Project.

3.1.5.4 Describe to what extent final grade will affect predevelopment drainage patterns.

As the proposed solar array area is relatively flat, much of the current topography is suitable for the placement of PV panels with little site preparation or improvements required. For areas requiring grading, necessary stormwater pollution prevention measures will be installed, the necessary grading will then be performed, then the groundcover will be established. Where grading is required, topsoil will be stripped and segregated for replacement on top of the final graded surface in order to maintain soil quality and stratification.

A minimal amount of grading will be required for roads and access ways between the solar arrays, and for electrical equipment pads. The proposed solar array area consists primarily of open farmland clear of existing trees, with minimal tree clearing proposed.

Due to soil types in the area, there is drain tile present in some of the fields. Prior to construction, the Project will obtain drain tile maps from landowners as well as conduct a survey to identify drain tile potentially impacted by the Project. To the extent construction affects existing drain tile systems, the Project will repair, replace or re-route drain tile to maintain necessary drainage in adjacent agricultural fields

3.1.5.5 Describe how these preventative measures will be incorporated into the project:

- *Maintenance of existing vegetation, especially adjacent to surface waters whenever possible.*
- *Minimization of soil compaction and preservation of top-soil.*
- *Minimization of land-disturbing construction activity on slopes of 20 percent or more.*

Array areas are primarily being developed in areas that are presently active agricultural fields. As such these areas are vegetated with row crops during the growing season and unvegetated before spring planting and after fall harvest. Implementation of the vegetation management plan will reduce erosion and sediment transport from these fields as a result of perennial vegetation cover following development. Areas outside of the arrays, such as wetland and woodlots will remain vegetated with the plants presently growing in these areas. The Project is practicing avoidance of both wetlands and waterways. Wetland fringes adjacent to waterways within agricultural fields will not be altered and remain essentially unchanged.

Soil compaction can impact on the establishment of herbaceous vegetation and on the health of existing woody vegetation. It is far easier to protect a tree from damage than to repair or replace it. Tree protection methods will typically include some sort of fencing barrier that is set up around the perimeter of the root zone protecting this area from equipment compaction and/or damage to the trunk of any tree located in or around construction activities. In addition to protecting individual tree and shrub species, tree protection BMPs can also be used for larger areas of vegetation located within the limits of construction. These larger areas of vegetation may include existing wood line edges, hedge rows, and shrubby growth areas, such as old fields and successional growth, that are to be preserved.

Areas subject to heavy equipment traffic or areas of high equipment traffic volume should be treated by plowing or ripping to loosen soils prior to revegetation. In most cases conventional farm implements could be sufficient to treat compacted soils, unless deep ripping would be required. Following plowing or ripping, soils would need preparation for seeding.

Excavations for trenches will be implemented in such a way as to stage topsoil so the excavated soils can be backfilled in reverse order. Soils from below the topsoil shall be backfilled and compacted first, followed by topdressing with the staged topsoil. This topdressing will be followed by grading to pre-excavation grades. In that way, soil health will be reasonably maintained for growth of the Project seed mixes.

Prior to initiation of construction, the Project will be seeded with a cover crop to decrease erosion and stormwater runoff for the developed area.

In order to increase the energy yield of the solar arrays, the Project is avoiding areas of steep slope. A ten degree limit was established as a constraint for selecting locations for Project solar arrays. These areas will be allowed to continue as presently vegetated.

3.2 Workforce

3.2.1 Provide information on the workforce size and skills required for project construction and operation.

Construction of the Project will require equipment operators, delivery drivers, laborers, craft workers and onsite management personnel. Civil equipment such as dozers, backhoes, cranes, front end loaders, motor graders and rollers, pile-driving equipment skid steers and telehandlers would be run by equipment operators. Skilled laborers would primarily be involved in installation of racking systems and place modules. During the peak of construction approximately 200 to 300 workers are anticipated to be working on the Project.

3.2.2 Estimate how much of the expected workforce would come from local sources.

The economic impact study completed for the Project estimated that there will be 146 new local jobs during construction for Columbia County and 221 new local jobs during construction for the entire State of Wisconsin. The study estimated that there will be 14.5 new local long-term jobs for Columbia County and 20.1 new local long-term jobs for the entire State of Wisconsin.

3.3 Construction Equipment and Delivery Vehicles

Provide a description of the types of construction equipment needed to build the project and the types of delivery vehicles that would be used. For large equipment and vehicles include:

3.3.1 Types of construction equipment and delivery vehicles.

The Project will use construction equipment and delivery vehicles that are commonly used in all types of energy projects.

Typical construction equipment will be used, such as:

- Scrapers,
- Bulldozers,
- Dump trucks,
- Watering trucks,

- Motor graders,
- Vibratory compactors, and
- Backhoes.

Specialty construction equipment that may be used during construction will include:

- Skid steer loader,
- Vibratory pile driver,
- Medium duty crane,
- All-terrain forklift,
- Concrete truck and boom truck,
- High reach bucket truck, and
- Truck-mounted auger or drill rig.

Langdon Mills Solar estimates that there will be between 25 and 35 trucks used daily for equipment delivery during construction. Light duty trucks will also be used daily for transportation of construction workers to and from the site.

3.3.2 Gross vehicle weight (loaded and unloaded) for all vehicles using local roads.

Other than the delivery vehicles for the main set-up transformers in the Project substation and BESS, Langdon Mills Solar believes all the vehicles using local roads will be legal in terms of size and weight. If there becomes a need for a larger vehicle, the contractor will work with state and local authorities to obtain the applicable oversize-overweight permits and provide more vehicle details closer to delivery dates. The anticipated delivery vehicle for the main step-up transformer and BESS at the Project collection substation is estimated to have a gross vehicle weight of approximately 309,500 pounds.

3.3.3 For vehicles used for delivery, include:

As mentioned above, the solar equipment delivery vehicles will primarily use standard size and weight semitrucks and trailers. The delivery vehicle for the main substation transformers can vary, and drawings will be provided during any applicable overweight/oversize permit approval process.

3.3.3.1 Overall vehicle length on local roads.

The information for a typical transformer delivery vehicle is as follows:

- The expected maximum length of vehicle is 75 feet

- The typical front turn radius of the delivery vehicle is 52 feet.

Other vehicles used for delivery will be standard over-the-road vehicles having standard characteristics.

3.3.3.2 Minimum ground clearance.

For a typical transformer delivery vehicle, the minimum ground clearance is 6-inches, when no overhead obstructions are present and the deck can be raised and lowered to accommodate bumps and dips in the road surface. Other vehicles used for delivery will be standard over-the-road vehicles having standard characteristics.

3.3.3.3 Maximum slope tolerance.

For a typical transformer delivery vehicle, the maximum allowable slope is 7%. Other vehicles used for delivery will be standard over-the-road vehicles having standard characteristics.

3.3.4 Roads and Infrastructure. Estimate the potential impacts of construction and delivery vehicles on the local roads. Provide the following:

3.3.4.1 Describe methods to be used to handle heavy or large loads on local roads.

No oversized/overweight vehicles are expected to be used for construction of the solar panels or their supports. A few oversized/overweight vehicles will be needed for the substation transformers and BESS.

Typical construction and delivery vehicles such as dump trucks (e.g., for aggregate delivery), and flat bed and enclosed tractor-trailer for equipment and material deliveries will constitute most of the Project traffic. The Project will also use light-duty pickup trucks or cars for personnel access to the Project site. A small number of oversized/overweight deliveries will be required for main substation transformers. As such, the potential impact of construction and delivery on the local roads are minimal.

3.3.4.2 Probable routes for delivery of heavy and oversized equipment and materials.

The main haul route for construction materials into the Project Study Area will likely be on state roads. From the north deliveries will follow IH 90 to SR 16, and from there to SR 146 north to the Project Study Area. From the south deliveries will come from SR 16 to northbound on SR 146. Some county roads within the Project Study Area will be used to deliver equipment and materials to the laydown area(which is adjacent to the substation and BESS) and directly to the construction sites. The heavy equipment for the substation and BESS would likely be delivered

directly to the laydown area adjacent to the substation and BESS areas. Oversize/overweight permits will be obtained for the final route prior to delivery. The locations of haul routes are shown on Figures 3.3-1 and 3.3.2 in Appendix A.

3.3.4.3 Potential for road damage and any compensation for such damage.

Since the trips are expected to use largely standard size and weight vehicles, Langdon Mills Solar does not anticipate road damage during the construction phase of the Project or the need for road use agreements. Langdon Mills Solar will adhere to road use permit requirements. It is possible that a road use agreement will be negotiated with Towns and County that addresses possible damage to roads used for the Project material delivery and construction.

3.3.4.4 Probable locations where local roads would need to be modified, expanded, or reinforced in order to accommodate delivery of equipment.

Langdon Mills Solar does not anticipate that local existing roads need to be modified, expanded, or reinforced to accommodate delivery of equipment.

3.3.4.5 Include an estimate of whether or not trees near or in road ROW might need to be removed.

It is not expected that trees in the road ROW would need to be removed to accommodate Project deliveries or construction.

3.3.4.6 Provide an estimate of likely locations where local electric distribution lines would need to be disconnected in order to allow passage of equipment and materials.

No disruption of existing distribution lines is anticipated to allow for passage of Project equipment or materials.

3.3.4.6.1 Describe how residents would be notified before local power would be cut.

No disconnection of local electric distribution lines will be necessary to allow for delivery of equipment and materials.

3.3.4.6.2 Estimate the typical duration of a power outage resulting from equipment or materials delivery.

No power outages will be required for the delivery of equipment and materials.

3.3.5 Construction Traffic. Describe any anticipated traffic congestion and how congestion would be managed, minimized or mitigated. Include:

3.3.5.1 List of roads most likely to be affected by construction and materials delivery.

Many of the deliveries and worker commuter trips will remain exclusively on state roads. Typically, only the last few miles will occur on Columbia County roads and other local roads. Most of the trips off the state road system will occur on County Road A, County Road B and County Road H. Few trips will occur on local roads in the Project Area.

Traffic congestion will be minimal, with 200-300 workers on site at the peak construction. Deliveries will occur during off peak times. As such, there is no need for traffic mitigation. To the extent site conditions allow, delivery trucks will be off loaded near the point of use to minimize double handling or adding to the amount of trucking. Prior to any deliveries, a traffic control plan will be developed and reviewed with the Town, County, or WISDOT officials as appropriate.

Signage will be installed to guide trucks to the appropriate roads after reviewing with local officials. Trucks will not be allowed to stage on or block public roads. If trucks cannot exit the road in a timely fashion, they will be directed to a designed staging area.

Major component deliveries will be required to stagger delivery times and dates, so the site teams are not overwhelmed with a surge of trucks at one time.

3.3.5.2 Duration of typical traffic disturbance and the time of day disturbances are most likely to occur.

Construction delivery traffic will mostly occur daily during daylight hours. Deliveries will begin early morning and continue to mid-late afternoon. Smaller vehicles for personnel arriving onsite may occur prior to or after daylight hours. Trucks will be directed off major roads, onto secondary roads or the construction site, to minimize the potential of traffic congestion. Traffic delays should be limited to the time it takes for delivery trucks to turn on or off public roads. The delivery and construction timings may be adjusted as needed to maintain the Project's construction schedule.

4.0 Project Maps, Aerial Imagery, Photo Simulations, and GIS Shapefiles

Aerial Imagery: Recent aerial imagery is required for every project. Aerial imagery submitted with an application should be no older than three years – more recent in rapidly developing areas. Aerial images are typically used as a base for most maps and should be provided at a scale of at least 1:4800. Physical aerial photographs are not acceptable. Orthorectified imagery created using GIS is required – reduced size photos are not adequate. All spatial data submitted must be compatible with the most current version of ESRI ArcGIS.

In addition to providing the maps listed below, all GIS data used to create those maps must also be submitted with the application (see Section 4.2 for a list of GIS shapefiles required and pages vi-vii for instructions on GIS map projections). The extent of the aerial imagery must be inclusive enough to show the landscape context within which the proposed facilities would be placed. Typically, this requires extending the map extent to at least two miles beyond any project boundary.

4.1 Project Area Maps

Basic (background) features for both the general and the detailed project area maps must include: recent aerial imagery (no older than three years), county boundaries, major roads, waterbodies and waterways, and municipality boundaries. All features should be labeled appropriately. In addition the maps should contain the following features:

The required project maps are in Appendix A.

4.1.1 General Project Area Map. (The extent of this map should show the entire project area and reach at least 1 mile beyond the project area boundary. Clearly show:

- *The boundaries of the project area,*
- *All proposed and alternative solar array sites (symbolized differently and identified by number),*
- *Any new substation facilities or required expansion of an existing substation,*
- *O&M Building and facilities,*
- *Battery Storage Facilities,*
- *Distribution and transmission interconnection,*

- *All access roads, distinguishing between temporary and permanent (if applicable).*

Figure 4.1.1 is in Appendix A.

4.1.2 Detailed Project Area Map. (The scale for this map should be larger than that of the general project map so that the added detail is clearly visible.) Clearly show:

- *All the features listed for the General Project Area Map,*
- *All collector circuits both underground and overhead, symbolized by the installation method,*
- *Existing utility facilities within and up to one mile of the project area boundary (electric transmission and distribution, pipelines, etc.),*
- *Industrial/commercial facilities within and up to one mile of project area boundary,*
- *All residences (identified as either participating or non-participating) within and up to one mile of project area boundary,*
- *Daycare centers within and up to one mile of project area boundary,*
- *Hospitals or other health care facilities within and up to one mile of project area boundary.*

(If new residences, day-care centers, hospitals, or commercial or industrial facilities have been built since the date of the aerial image base map, note those features accurately on the detailed project area map.)

Figure 4.1.2 is in Appendix A.

4.1.3 Topographic Maps

Provide topographic maps at 1:24,000 or larger scale showing: project boundary, all solar array sites (proposed and alternative), substation facilities, collector circuits, access roads, and O&M building.

Figure 4.1.3 is in Appendix A.

4.1.4 Substation

4.1.4.1 Provide a map showing the following features:

- *The location, dimensions (in feet and acres), and layout of any new substation or proposed additions to an existing substation.*
- *Recent aerial images of the substation site.*
- *The location of all power lines entering and leaving the substation, including any turning structures. Show details in a separate diagram of any turning*
- *structures that might impact adjacent land owners (size, type of structure, guying, etc.).*
- *For new substations, show the location of the access road, other permanent impervious ground surfaces (e.g. gravel, asphalt, concrete, etc.) and the location of permanent storm water management features (i.e. pond, swale, etc.). For expansion of existing substations, show details on changes to access roads that may be required (width, length, location, etc.), as well as any other ground disturbing construction activities.*
- *Show parcel data including the name of landowners for the substation site or substation addition. Include adjacent landowners.*
- *Show topographic contours of the property.*

Figure 4.1.4 is in Appendix A.

4.1.4.2 Provide an engineering diagram/s of the substation and substation equipment including any turning structures and interconnection facilities.

Substation engineering diagrams are in Appendix B.

4.1.5 O&M Building

4.1.5.1 Provide a map showing the O&M building, parking area, roads, other impervious ground surfaces (e.g. gravel, aggregate, asphalt, concrete, etc.), permanent storm water management areas, and any other facilities. Include, as a background, a recent aerial image of the property.

Figure 4.1.5 is in Appendix A.

4.1.5.2 Provide an engineering drawing of the O&M building.

O&M building engineering drawings are in Appendix B.

4.1.6 Battery Storage

4.1.6.1 Provide an engineered drawing of the battery storage area, fencing, impervious ground surfaces, access roads, and permanent storm water management areas.

Figure 4.1.6 is in Appendix A.

4.1.7 Natural Resources and Land Use/Ownership Maps

4.1.7.1 Wetland and waterway maps. See section 8.3 for the map sets to provide.

Figure 4.1.7.1 is in Appendix A.

4.1.7.2 Land ownership maps, minimum scale 1:10,000 (map extent to one mile from the project boundary). Show the following features:

- *Current parcel boundaries and landowners*
- *Roads*
- *Municipal boundaries*
- *Project boundary*
- *Solar arrays (proposed and alternative); (symbolized differently and identified by number),*
- *Access roads*
- *Collector circuits*
- *Substation*
- *O&M building*
- *Battery storage*
- *Generator tie line*
- *Topographic contours*
- *Residences, including identification of participating and non-participating*

Figure 4.1.7.2 is in Appendix A.

4.1.7.3 Public lands. Show the following features:

- *All publicly owned lands inside the project boundary and within two miles of the project area (parks, trails national/county/state forests, etc.). Public lands should be clearly labeled.*
- *Project boundary*
- *Solar arrays (proposed and alternative); (symbolized differently and identified by number),*
- *Access roads*
- *Collector circuits*
- *Substation*
- *O&M building*
- *Battery storage*
- *Generator tie line*

Figure 4.1.7.3 is in Appendix A.

4.1.7.4 Land cover. Show the following features:

- *The distribution of vegetative communities within the project area using the land cover categories in Section 5.3*
- *Project area boundary*
- *Solar arrays (proposed and alternative); (symbolized differently and identified by number),*
- *Access roads*
- *Collector circuits*
- *Substation*
- *O&M building*
- *Battery storage*
- *Generator tie line*

Figure 4.1.7.4 is in Appendix A.

4.1.7.5 Flood Insurance Rate maps (FIRM) (within the project boundary). Provide flood insurance maps if the site is within one-half mile of a floodplain.

Figure 4.1.7.5 is in Appendix A.

4.1.7.6 Soil survey maps (within the project boundary)

Figure 4.1.7.6 is in Appendix A.

4.1.7.7 Bedrock maps (within the project boundary). Map showing depth to bedrock for the entire project area.

Figure 4.1.7.7 is in Appendix A.

4.1.8 Community Maps

4.1.8.1 Zoning maps. Provide a map or maps of the project area showing existing zoning (e.g. agriculture, recreation, forest, residential, commercial etc.). Map should show existing zoning within and up to 0.5 miles of the project area boundary.

Figure 4.1.8.1 is in Appendix A.

4.1.8.2 Sensitive sites. Additional map (if necessary) showing proximity to schools, day care centers, hospitals, and nursing homes within and up to 0.5 miles of the project area boundary.

Figure 4.1.8.2 is in Appendix A.

4.1.8.3 Airports. Include the following features:

- *All runways for public airports within and up to 10 miles of the project area boundary.*
- *All runways for private airports within and up to 10 miles of the project area boundary.*
- *All landing strips within and up to two miles of the project area boundary.*
- *Project area boundary.*
- *Both proposed and alternative solar array sites.*

Figure 4.1.8.3 is in Appendix A.

4.1.9 Communication Infrastructure

4.1.9.1 Identify radio, television, microwave towers, and any NEXRAD or Doppler weather radar installations on a map and show the results of the line of sight

analysis. Include communications and NEXRAD/Doppler installations within a one-mile radius of the project area.

Figure 4.1.9 is in Appendix A.

4.2 GIS Data

Provide GIS data with attributes as listed and described below. GIS attribute table information should be clearly labeled to identify fields and feature names.

The GIS shapefiles are listed in Appendix W, as outlined below. All of the Project maps were prepared in ESRI Arcmap 10.8 or higher and the shapefiles were provided via SFTP delivery to the PSCW.

4.2.1 Project area boundary

4.2.2 Proposed solar array site components including:

4.2.1.1 Perimeters of fenced areas identified by number (polygon). Include area in acres.

4.2.2.2 Solar arrays identified by number (polygon). Include area in acres.

4.2.2.3 All inverters (point).

4.2.3 Alternative solar array site components including:

4.2.3.1 Perimeters of fenced areas identified by number (polygon, include area in acres).

4.2.3.2 Solar arrays identified by number (polygon, include area in acres).

4.2.3.3 All inverters (point).

4.2.4 Access roads, differentiate between permanent and temporary, for proposed solar arrays (polygon).

4.2.5 Access roads, differentiate between permanent and temporary, for alternative solar arrays (polygon).

4.2.6 Underground collector circuits (line). Include number of conductors, voltage, and the installation method.

4.2.6.1 Bore pits for trenchless installation (point).

4.2.7 Overhead collector circuits (line). Include voltage.

None are used in the Project.

4.2.8 Generator tie line (line). Include voltage.

4.2.9 Generator tie line structures (point).

4.2.10 Laydown areas (polygon).

4.2.11 Temporary matting (polygon).

4.2.12 Electric distribution lines within and up to one mile of the project area boundary (line). Include voltage of each line and phases present (e.g. A, B, and/or C).

4.2.13 Electric transmission lines within and up to one mile of the project area boundary identified by voltage (line). Include voltage.

4.2.14 Natural gas high-pressure pipelines within and up to one mile of the project area boundary (line).

4.2.15 New substation components including:

4.2.15.1 Perimeter of entire parcel acquired or to be acquired (polygon).

4.2.15.2 Perimeter of substation (polygon).

4.2.15.3 All interior line work, including collector circuits, buswork, and high voltage connections (line).

4.2.15.4 All interior facilities, including transformer, switchgear, buildings, etc. (polygon).

4.2.15.5 Access road (polygon).

4.2.15.6 Other facilities such as a retention pond or storm water management (polygon).

4.2.16 Expansion of an existing substation components including:

4.2.16.1 Perimeter of original substation and of expanded area (polygon).

4.2.16.2 Boundary showing any new land acquisition (polygon).

4.2.16.3 All new power lines and reconfigured line work (line).

4.2.16.4 All collector circuits entering the substation (line).

4.2.16.5 Any modified interior facilities (polygon).

4.2.16.6 Other facilities such as permanent storm water management features (polygon).

4.2.17 O&M Building components including:

4.2.17.1 Perimeter of property acquired (polygon).

4.2.17.2 Perimeter of building (polygon).

4.2.17.3 Perimeter of other buildings (polygon).

4.2.17.4 Perimeter of parking lot (polygon).

4.2.17.5 Access road (polygon).

4.2.17.6 Other facilities such as permanent storm water management features *(polygon).*

4.2.18 Battery Energy Storage System components including:

4.2.18.1 Perimeter of entire parcel acquired or to be acquired (polygon).

4.2.18.2 Perimeter of Battery Energy Storage System (polygon).

4.2.18.3 Access Road (polygon).

4.2.18.4 Other facilities such as permanent storm water management features (polygon).

4.2.19 Wetlands and waterways in the project area:

4.2.19.1 Delineated wetlands (polygon). See Section 8.

4.2.19.2 Field identified waterways (polygon). See Section 8.

4.2.20 Land owners/buildings:

4.2.20.1 All residences within and up to one mile of the project area boundary (point).

4.2.20.2 All parcels within and up to one mile of the project area boundary (polygon).

4.2.20.3 All industrial/commercial facilities within and up to one mile of the project area boundary (point). Include facility name, ownership name, and address.

4.2.20.4 All sensitive sites, including schools, daycares, hospitals, nursing homes, places of worship, and cemeteries within and up to one mile of the project area boundary (point) Include facility name, ownership name, and address.

4.2.20.5 Confined animal operations (point):

4.2.20.6 All other buildings within and up to 300 feet of the project area boundary (point). Include type of building.

4.2.21 All known/mapped culverts within the project area boundary (line).

4.2.22 All known/mapped drainage system features (e.g. field drains and ditches, main district drain, drain laterals) within the project area boundary (line).

4.2.23 All public lands within and up to two miles of the project area boundary (polygon).

4.2.24 All participating properties enrolled in the Conservation Reserve Program within the project area (polygon). Information would be dependent on

authorization from landowners to release CRP information.

4.2.25 All properties known to be enrolled in a conservation easement within the project area boundary (polygon). Include entity that holds rights to conservation easement (e.g. state/federal government, private land trust, etc.).

4.2.26 All communication infrastructure in and near the project area boundary (point). Include radio, television, microwave towers, and any NEXRAD or Doppler weather radar installations located within and up to one mile of the project area.

4.2.27 All public and private airport runways and landing strips within and up to 10 miles of the project area boundary (line). Include facility name and public status.

4.2.28 Land cover/Vegetative communities (polygon). Do not use obsolete DNR Land Cover data). See Section 5.3.

4.2.29 Land cover within each fenced area (polygon). Include acreages of each dissolved land type identified by fence area number.

4.2.30 Local zoning designations within and up to one mile of the project.

4.3 Photo Simulations

Photo simulations are required. Simulations should seek to provide an accurate representation of what the project area would most likely look like after the project is completed. In order to be certain that any photo simulations provided in an application will be useful, please consult with PSC staff before preparing and submitting photos.

Project photo simulations were prepared at ten locations near the Project Study Area. Prior to documenting existing conditions and simulating proposed conditions, the PSCW was consulted regarding possible photo-simulation locations via emails. An initial email was transmitted to the PSCW on July 12, 2022, and an emailed approval of the study was received on July 12, 2022 (Appendix G). Existing conditions were documented on September 6, 2022.

In accordance with Section 4.3 of the AFR, photo simulations were prepared that seek to provide an accurate representation of what the Project area would most likely look like after the Project is completed. A digital terrain model of the existing site conditions was generated (taken from ground surveys data) and a 3D model of the proposed structures was developed on that virtual landscape. Precise information on the location of each photo's perspective was built into the modeling space.

Photographic visualizations were initially planned to be generated at six locations. Four additional locations were added based on the limited visual landscape observed in the field.

Proposed conditions visualizations are presented in a visual package that also presents the existing conditions at the time of photography from the same location. Technical camera data and site location maps showing camera locations and angles to provide orientation are included in the information in Appendix G. The photo simulations present the proposed configuration of the structures without mitigation.

Photo Simulations were prepared at the following locations:

- Viewpoint 1 looking east from the intersection of CTH B and CTH G
- Viewpoint 2 looking northwest from the intersection of CTH A and CTH G
- Viewpoint 3 looking north from the intersection of CTH G and STH 146
- Viewpoint 4 looking northeast from the western intersection of CTH A and STH 146
- Viewpoint 5 looking southwest from the intersection of STH 146 and Hollnagel Road
- Viewpoint 6 looking southwest from STH 146 south of Cambria Cemetery
- Viewpoint 7 looking east from the intersection of Kuehn Road and Roberts Road
- Viewpoint 8 looking northeast from the intersection of CTH B and Kuehn Road
- Viewpoint 9 looking southeast from the intersection of CTH B and Old B Road
- Viewpoint 10 looking northeast from the eastern intersection of CTH A and STH 146

5.0 Natural and Community Resources, Description and Potential Impacts

5.1 Site Geology

5.1.1 Describe the geology of the project area.

The Project area landforms, including of numerous drumlins and flutes, have been molded by glacial activity. The surface glacial geology is primarily categorized as till of the Holy Hill

Formation, Horicon Member[1]. The soils are considered till deposited by the Green Bay Lobe, generally at least 10 feet thick. The till is anticipated to be brown to reddish-brown and consists of gravelly, clayey, silty sand. In topographic low areas and depressions between the glacial drumlins, peat deposits are mapped, overlying the glacial till. The peat in the area is reported to vary between 3 and 15 feet in thickness.

The state bedrock map categorized the bedrock at the Project as Ordovician and Cambrian sandstone and dolomite with limestone and shale within the St. Peter formation (Ancell Group), Shakopee and Oneota formations (Prairie du Chien Group), and the Trempealeau Formation[2].

Observation of aerial imagery shows elongated soil deposition patterns consistent with glacial movement on a northeast to southwest trend. It is anticipated that the peat deposits are contiguous with the wetland areas around the Site.

5.1.2 Geotechnical report on soil conditions.

A preliminary geotechnical investigation was performed on a larger study area investigating approximately 5,000 acres of land, of which the present Project Study Area accounts for a subset of that area. The investigation included a total of 45 soil borings of which 21 were located within the Project Study Area.

The objectives of the preliminary geotechnical investigation included recommendations for the following:

- Design and construction of shallow foundations, including subgrade preparation;
- On-site soils for structural fill;
- Site preparation and earthwork including backfill materials, compaction specifications, and further testing for array, shallow foundations, roadways, trenches, and fill areas;
- Preliminary L-Pile parameters and unit skin friction estimated from subsurface findings. Depth range, L-Pile model, effective unit weight (pcf), cohesion (psf), modulus strain factor, internal friction angle (deg), and lateral subgrade modulus are provided;

[1] Hooyer, T, Mode, W., Clayton, L., Quaternary Geology of Columbia, Green Lake, and Marquette Counties, Wisconsin. Map. [ca 1:100,000]. Madison, WI: University of Wisconsin – Extension Geological and Natural History Survey, 2021

[2] Mudrey Jr., M.G., Brown, B.A., Greenberg, J.K., Bedrock Geologic Map of Wisconsin. Map. [ca 1:1,000,000]. Madison, WI: University of Wisconsin – Extension Geological and Natural History Survey, 1982

- General site access road design and construction recommendations, including road cross sections and material; and,
- Preliminary soil infiltration rates.

At the time of the preliminary geotechnical exploration, a detailed site layout had not been developed for the Project. Soil borings were performed at very wide spacings across the Project Study Area to obtain a general understanding of the subsurface conditions for a permit level scope and approval. It is anticipated that subsequent geotechnical exploration(s) will be performed at locations of the point of interconnects, electrical equipment pads, access roads, and stormwater management devices when the site layout is determined prior to construction.

The complete geotechnical report prepared by TRC detailing the procedures and outcomes of the preliminary investigation can be found in Appendix H (Geotechnical Report).

5.1.2.1 Provide a summary of conclusions from any geotechnical report or evaluation of soils in the project area including:

- *Results of soil borings including a review of soil bearing capacity and soil settlement potential.*
- *Results of soil borings and test pits for Site Evaluation for Storm Water Infiltration (Wisconsin Technical Standard 1002).*
- *Depths to seasonal high groundwater,*
- *Results of any infiltration rate measurements, such as for permanent storm water infiltration basins or other practices.*
- *Identify any soil conditions related to site geology that might create circumstances requiring special methods or management during construction.*

Topsoil was observed at the ground surface at each soil boring location at thicknesses ranging from 6 and 24 inches. For 14 of the 21 borings completed within the Project Study Area, soils below topsoil consisted of soft clays or loose sands to depths of approximately 5 feet below ground surface (bgs) overlaying loose to very dense glacial till, classified as silty sands with trace to little gravel and clay. The sandy glacial till material extended to the boring termination depths. Gravel inclusions generally increased with depth within these borings. For the remaining 7 borings within the Project Study Area, soils below topsoil predominantly consisted of soft lean clays or clayey silts to depths between approximately 8 and 12 feet bgs. Underlying soils typically consisted of glacial till, classified as sands and gravels with varying clay content. The glacial till soils extended to the boring termination depths.

An allowable bearing capacity of 1,600 psf is recommended based on the shallow, lower strength cohesive soils encountered at several soil borings. Considering the large Project Study

Area, and variable conditions observed at the soil borings, higher bearing capacities could be available at specific locations. Under these loading conditions, less than 1 inch of settlement is expected for small mat foundations (e.g., 10 feet by 10 feet). Based on the observed soil conditions, differential settlements are expected to be half of the total settlements indicated above. This settlement is based on foundation loading and not on frost impacts.

Design infiltration rates, assuming vegetative cover, range from 0.04–3.60 inches per hour based on the soil textures encountered during the preliminary geotechnical exploration and Wisconsin Department of Natural Resources Technical Standard 1002. Test pits and in-situ testing to evaluate storm water infiltration rates were not performed during the preliminary geotechnical exploration because a detailed site layout, including locations of stormwater management devices, had not been determined at the time of exploration. It is expected that upon finalizing the site layout and stormwater management systems, field and laboratory testing will be performed to determine location-specific infiltration rates.

Soil moisture conditions observed at the time of the preliminary geotechnical exploration were moist to wet. Free groundwater and/or wet soil conditions was encountered in 5 of the 21 soil borings at depths between 3 and 13 feet bgs. At soil boring B-22, groundwater was observed at approximately 44 feet bgs. The depth to groundwater was deeper than the boring termination depth at most of the boring locations. Observed groundwater depths and estimated design groundwater depths for each boring location are provided in the complete Geotechnical Report. Based on the conditions encountered during the subsurface exploration, some portions of the Site are subject to shallow seasonal or perched groundwater. In addition, groundwater can fluctuate due to seasonal and annual changes based on variations in rainfall, runoff, evaporation, dewatering and other activities.

The design frost depth is estimated to be 4 feet bgs based on the local building regulations. The silty and sandy soils observed within the frost depth zone present a moderate to high frost susceptibility. Structures founded on soils above the frost depth may be exposed to differential movements when the soil freezes and thaws in addition to low bearing conditions during spring thaw. Recommendations and considerations for design and construction of the proposed structures are provided in the Geotechnical Report.

The laboratory soil resistivity results ranged from 2,155 to 4,116 ohm-centimeters and field electrical resistivities ranged from 2,145 to 24,896 ohm-cm. Based on these results and the resistivity correlations presented in the Geotechnical Report, the corrosion potential to buried metallic improvements may be characterized as very mildly to severely corrosive. Protection of piles or other steel components in contact with native soils, using methods such as galvanization, will likely be required.

5.1.2.2 Depth to bedrock

- *Identify any sites where panel supports or foundation construction must be modified because of the presence of bedrock.*
- *Describe construction methods and foundation issues associated with situations where bedrock formations are near the surface.*
- *Discuss the likelihood or potential that construction on bedrock formations may negatively impact private wells within two miles of solar array sites.*

The depth to bedrock varies across the area based on the reviewed geologic resources referenced in the Geotechnical Report. Generally, the Site is located in areas where bedrock is mapped to be between the ground surface and 50 feet below the ground surface (bgs). Depth to bedrock increases to the southeastern portion of the Project Study Area, reaching approximately 100 feet.

Based on the subsurface conditions encountered in the borings, driven post foundation systems can be supported in the natural soils encountered at the Site. Soft to stiff clays and loose to dense sands will likely be encountered during post driving. Depending on the location and depth of excavations and pile driving, some difficulties are anticipated based on the conditions observed in the boring logs. Dense to very dense glacial till with cobbles and boulders and/or weathered bedrock were encountered at the soil borings at depths between 5 and 18 feet bgs. Cobbles, boulders, and bedrock slabs may be present at shallower depths throughout the Project Study Area even if they were not observed at the soil borings during this geotechnical exploration. Auger or sampler refusal, as shallow as 8 feet bgs, was encountered in numerous soil borings across the Project Study Area. It should also be noted that hollow-stem-auger drilling methods can typically penetrate dense subgrade materials with greater ease than pile drivers and excavation equipment.

If difficulties and/or refusal is encountered with driven posts, or if insufficient bearing and/or lateral capacity is encountered due to the shallow lower strength cohesive soils, the designer should be prepared to use alternative methods for achieving embedment and/or adequate axial and lateral resistance, including, but not limited to the following:

- The use of predrilling or spudding with a heavy steel beam to break up dense soils, cobbles, and boulders to achieve adequate post embedment for vertical and lateral support;
- The use of heavier-grade, larger-diameter posts to achieve vertical and lateral capacities;
- The use of screw piles or helical piles to achieve vertical and lateral capacities; and,

- The use of shallow spread footings or ballast foundations where adequate embedment cannot be achieved.

Recommendations for the structural design, testing, and construction of driven post foundations are provided in greater detail in the Geotechnical Report.

It is expected that driven posts and deeper substation foundations will contact shallow bedrock formations located within the Project Study Area. These foundations will not extend near the underground aquifer where wells are anticipated to be set, thus the likelihood that construction on these bedrock formations will negatively impact surrounding private wells is minimal. Installation of foundations will not have an impact on the capacity of the underlying aquifer to transmit groundwater to wells or other aquatic receptors. Foundations will not require pressure grouting of the bedrock, such as at a dam foundation that would be designed to solidify rock fractures and thus decrease the water carrying capacity of the rock. Nor would they require injection of mud slurry to seal a section of the rock, making it essentially impervious to the movement of water. Neither will foundations have impacts on the recharge capacity of the Project Study Area soils or the capacity of the aquifer to be recharged from precipitation. Foundations will not adversely impact the local bedrock aquifers. The foundations will not create areas of impervious ground cover (areas that do not conduct water) that could decrease recharge and result in lower water tables. In addition, the photovoltaic arrays being proposed for the Project will use mono/polycrystalline panels (not thin film panels) so groundwater contaminants will not be produced when storm water comes into contact with the panels.

It is also possible that development within the Project Study Area could positively impact water quality of nearby private wells. The land cover over most of the Project Study Area has historically been plowed agricultural fields to which pesticides and fertilizers were routinely applied. Following construction of the Project, a non-supplemented native pollinator mix would instead be planted within the green space between the arrays and other site features. Doing so will reduce the overall quantity of pesticides and fertilizers being applied in the area and will make it less likely that these harmful chemicals will reach surrounding private wells. In addition, eliminating the need to routinely plow the land will improve the soil's A-horizon (i.e. topsoil) and make it less susceptible to erosion, which could also positively impact water quality in the surrounding area wetlands and streams.

5.2 Topography

5.2.1 Describe the general topography of the project area.

The Project is located in an area of rolling glacial terrain characterized by semi linear elongate hills aligned in a northeast – southwest orientation with local topography ranging from less than

870 feet above mean sea level (MSL) to over 1,040 feet MSL. Lower area generally occurring between the elongate hills and along the valley of the Middle Branch Duck Creek. Project Study Area topography is shown on Figure 4.1.3 in Appendix A.

5.2.2 Describe expected changes to site topography due to grading activities.

In the existing agricultural fields, grading will largely be limited to smoothing the site and removal of residual furrows (if any) created during farming activities in previous growing seasons. Changes to site grade elevations and stormwater flow paths will be minimal. Significant changes to Project topography are not planned.

5.3 General Project Area Land Cover

5.3.1 Identify and describe the landscape within the general project area, including a list of dominant plants in the land cover categories listed in this section. Land cover may be based on GIS data, recent aerial imagery, and/or on-site evaluation not greater than two years old.

Dominant land cover type associated with the Project Study Area include agricultural croplands with lessor amounts of forests, wetlands and grasslands. In addition, there are minor amounts, (less than 1 percent) of open water (Table 5.3.1-1). Land cover was obtained from reviewing 2021 aerial photographs, field observations during wetland delineations and WDNR Wiscland 2.0 Land Cover Database. Land cover was mapped in a Geographic Information System (GIS) application. A map of the land cover is shown in Figure 4.1.7.4 in Appendix A. The following table summarizes the land cover types, approximate acreage, and percentages of the total area within the Project Study Area.

Table 5.3.1-1 Project Study Area Land Cover

Land Cover Type	Area (Acres)	Percent of Total
Agriculture	1,915	82.85%
Grassland	37	1.59%
Forest	112	4.87%
Open Water	15	0.65%

Land Cover Type	Area (Acres)	Percent of Total
Wetland	232	10.04%
TOTAL	2,311	**100.0%**

5.3.1.1 Agricultural

- *Row/traditional crops*
- *Specialty crops/other*
- *Prime farmland*

Agricultural crops grown in the Project Study Area are limited to traditional crops and were dominated by row crops such as corn (*Zea mays*) and soybeans (*Glycine max*). Areas planted in alfalfa (*Medicago sativa*) were also noted. No specialty crops were observed growing in the Project Study Area. The most common non-agricultural plants observed within the agricultural fields included yellow foxtail (*Setaria pumila*), Giant foxtail (*Setaria faberia*), Foxtail millet (Setaria italica), common ragweed (*Ambrosia artemisiifolia*), giant ragweed (*Ambrosia trifida*), chufa (*Cyperus esculentus*), flower of the hour (*Hibiscus trionum*), velvetleaf (*Abutilon theophrasti*) and lambs quarters (*Chenopodium album*).

5.3.1.2 Non-Agricultural upland

- *Prairie/grasslands/pasture/fallow field*
- *Upland forests*

The dominant grass species most often observed in fallow areas between agricultural fields was smooth brome (*Bromus inermis*). Other upland grassy fallow areas were observed to be variously dominated by red fescue (*Festuca rubra*), wild parsnip (*Pastinaca sativa*), giant foxtail (*Setaria faberi*), yellow foxtail (*Setaria pumila*) and common milkweed (*Asclepias syriaca*)

Upland forests were variously dominated by a mixture of shagbark hickory (*Carya ovata*), red oak (*Quercus rubra*), white oak (*Quercus alba*), black cherry (*Prunus serotina*) and black walnut (*Juglans nigra*).

5.3.1.3 Wetlands (Eggers and Reed Classification type)

The wetland and waterway delineation field investigation were conducted by TRC wetland scientists between September 27 and October 22, 2021. Additional new areas were delineated

by TRC scientists between June 7 and June 21, 2022. A total of 25 wetlands and wetland complexes were delineated within the Project Study Area. Within these wetlands and wetland complexes six Eggers and Reed Classification types were observed in addition to farmed wetlands that are not an Eggers and Reed Classification type. By area, the most common type of wetland cover type was Fresh (Wet) Meadow (127.80 acres), followed by Floodplain Forest (30.17 acres), Shallow Marsh (11.70 acres), Shrub-Carr (10.05 acres), Hardwood Swamp (3.16 acres) and Deep March (0.22 acres). Areas of farmed (atypical) wetland cover accounted for 49.02 acres. The wetland and waterway delineation report are in Appendix U.

Areas of Fresh (Wet) Meadow cover type within the Project wetlands were generally dominated by reed canary grass. Additionally, smaller areas were also dominated by blue-joint grass (*Calamagrostis canadensis*), fall panic grass (*Panicum dichotomiflorum*), yellow foxtail (*Setaria pumila*), tall goldenrod (S*olidago gigantia*), Canada goldenrod (S*olidago canadensis*), creeping bent grass (*Agrostis stolonifera*), yellow nut sedge (*Cyperus esculentus*), lake sedge (*Carex lacustris*), hummock sedge (*Carex stricta*), dark-green bulrush (*Scirpus atrovirens*) and water smartweed (*Persicaria amphibia*).

Areas of Floodplain Forest cover type within the Project wetlands were variously dominated by box elder (*Acer negundo*), quaking aspen (*Populus tremuloides*), green ash (*Fraxinus pennsylvanica*), black willow (*Salix nigra*), red oak (*Quercus rubra*), silver maple (*Acer saccharinum*) and swamp white oak (*Quercus bicolor*). Areas of Shallow Marsh cover type within the Project wetlands were variously dominated by narrowleaf cattail (*Typha angustifolia*), hybrid cattail (*Typha x glauca*) American bur-reed (*Sparganium americanum*) and reed canary grass.

Areas of Shrub-Carr cover type within the Project wetlands were variously dominated by sandbar willow (*Salix interior*), silky dogwood (*Cornus amomum*), red osier dogwood (*Cornus sericea*), Bebb's willow (*Salix bebbiana*) peach-leaved willow (*Salix amygdaloides*), and elderberry (*Sambucus nigra*). Areas of Hardwood Swamp cover type within the Project wetlands were variously dominated by swamp white oak, American elm (*Ulmus americana*), silver maple, box elder and red oak.

The Deep Marsh was located within the interior of a large wetland complex and vegetation was not inventoried. Wetland vegetation observed in farmed wetland included yellow foxtail, barnyard grass (*Echinochloa crus-galli*), witch grass (*Panicum capillare*), fall panicum and dark-green bulrush.

5.3.1.4 Developed land

- *Residential*
- *Commercial/Industrial*

Areas of primarily residential land cover, such as subdivision, do not occur within the Project Study Area. Residential areas within the Project Study Area are generally limited to dwelling associated with farmsteads. A small number of residential parcels unassociated with farmsteads occur scattered in proximity to the Project Study Area. Plants associated with residential dwellings are dominated by cool season grasses such as Kentucky bluegrass (*Poa pratensis*) and red fescue (*Festuca rubra*).

Areas of commercial / industrial land cover do not occur within the Project Study Area.

5.4 Land Cover Impacted by Proposed Project Facilities

Complete the PSC Solar Impact Table (comprised of 2 tabs) provided with these AFRs. Provide the tables in Microsoft Excel format and PDF. The PSC Solar Impact Table (comprised of 2 tabs) has instructions on completion and the type of information needed located in footnotes. Generally, the applicant should provide information on impacts by facility type on Tab 1 and by proposed and alternative fenced array areas with unique identifiers (e.g. number) for each fenced array area in Tab 2. Provide the estimated power capacity (MW) for each fenced array area. Provide land cover impacts for each solar panel fenced array area.

As described in Section 5.3, land cover was obtained from the reviewing 2021 aerial photographs, field observations during the wetland and waterway delineations and WDNR Wiscland 2.0 Land Cover Database. The boundaries of various land cover types were mapped in a Geographic Information System (GIS) application. Project design elements designed in CAD were imported into the GIS database as shapefiles and used to calculate the various statistics requested in PSC AFR Table 1 and PSC AFR Table 2. There were no delineated wetlands or waterways within Project array fence areas, including both Primary and Alternate Array areas. The only impacts to land cover outside of array fence areas are from project access roads and collector line installations. In areas where collector lines are required to traverse wetlands or waterways, directional drilling methods are planned to avoid impacts. Project lands will be revegetated as described in the revegetation plan in Appendix J. The PSC solar impact tables are in Appendix I.

All the wetlands and waterways in the Project Study Area were field delineated and are listed in the WDNR Table 2. The Project is committed to avoiding both temporary and permanent impacts to wetlands and waterways, and the locations of which were and continue to be used as design constraints. As such WDNR Table 1, which is an inventory of wetland and waterway impacts, was not included in this Application, as there are neither temporary nor permanent impacts planned. The WDNR Table 2 is in Appendix U.

5.5 Invasive Species

5.5.1 Describe locations where invasive species, forest pests, or diseases have been observed in the project area (e.g., invasive plants, oak wilt, etc.). State if invasive species surveys have occurred or would be conducted. If invasive species surveys have been conducted, provide documentation showing where surveys occurred and locations of invasive species found, indicating which species.

Forest pests and diseases were not observed during the course of the field investigations of the Project Study Area. Invasive plants were observed in both upland and wetland habitats. Mapping of invasive species locations was not undertaken. Invasive species were not observed to be concentrated in specific areas. Rather, invasive and non-native species were observed in most of the parcels investigated. The observed invasive and non-native species included barnyard grass (*Echinochloa crus-galli*) Canada thistle (*Cirsium arvense*), climbing nightshade (*Solanum dulcamara*), common buckthorn (*Rhamnus cathartica*), common burdock (*Arctium minus*), common chickweed (*Stellaria media*), common teasels (*Dipsacus* spp.), crack willow (*Salix fragilis*), dandelion (*Taraxacum officinale*), flower-of-the-hour (*Hibiscus trionum*), foxtail or bristle grasses (*Setaria* spp.), garlic-mustard (*Alliaria petiolata*), great plantain (*Plantago major*), hairy crabgrass (*Digitaria sanguinalis*), honeysuckle (*Lonicera* spp.) hybrid cattail (*Typha x glauca*), Japanese barberry (*Berberis thunbergii*), Japanese hedge parsley (*Torilis japonica*), jimsonweed (*Datura stramonium*), Kentucky bluegrass (*Poa pratensis*), narrowleaf cattail (*Typha angustifolia*), orchard grass (*Dactylis glomerata*), rambler rose (*Rosa multiflora*), red, white and hybrid clover (*Trifolium* spp.), reed canary grass (*Phalaris arundinacea*), curly dock (*Rumex crispus*), smooth brome (*Bromus inermis*), spreading bent grass (*Agrostis stolonifera*), white mulberry (*Morus alba*), and wild parsnip (*Pastinaca sativa*).

5.5.2 Describe mitigation actions during construction that would be used to prevent the introduction or spread of invasive species, forest pests, or diseases.

Field equipment that is used in areas of verified invasive species will be inspected and cleaned prior to mobilization from the parcel where the invasive species occur. Cleaning methods could entail physical means such as brushing, pressure washing or steam cleaning. Soils used as Project fill will be sourced from within the Project Study Area or from another local source documented to not have invasive species growing in the source location.

Langdon Mills Solar will require the installation contractor to plant a cover crop of annual non-weedy, non-invasive plants prior to construction to limit the colonization of the Project by invasive species. A proposed cover crop is specified in Attachment D of the Vegetation

Management Plan in Appendix D. Planting a cover crop will also reduce the potential for soil erosion.

5.5.3 Describe planned ongoing invasive species monitoring and management for the project during operations.

Invasive species management will be implemented prior to revegetation efforts to increase the effectiveness of establishing the desired species. A contractor-implemented pre-revegetation plan will be required from the installation contractor prior to initiation of construction. The required plan will address invasive species management efforts during construction. The Project will prepare a long-term invasive species management plan that addresses management of invasive species during the operational phase of the Project.

5.6 Vegetation Management and Site Restoration

5.6.1 Provide a vegetation removal plan that discusses the types and locations where vegetation would be removed (e.g. herbaceous, agricultural crop clearing, shrub/forest clearing, etc.), the timing of vegetation removal, and the equipment to be used.

Dominant land cover type associated with the Project include croplands with minor amounts of grasslands, forest, open water, and wetlands. In the existing agricultural fields, grading will largely be limited to smoothing the site and removal of residual furrows created during farming activities in previous growing seasons. Changes to site grade elevations and stormwater flow paths will be minimal, and isolated pockets of tree clearing will occur in several parcels.

Trees will be removed using heavy equipment such as dozers, track hoes, skid steers with grapples, and tri-axial trucks for hauling felled trees or logs. Prior to any clearing and earthmoving activities, Stormwater BMPs will be implemented to minimize soil erosion during site clearing and vegetation removal. Tree clearing efforts are best suited during winter from October 1 to March 31. The proposed areas to be cleared will be initially stabilized with temporary cover crop seed and followed by permanent seed mixes upon final stabilization of the Project, as detailed in the Vegetation Management Plan (Appendix J).

Prior to using any heavy equipment on-site or off-site, the following operational considerations shall be considered to the best extent possible to minimize any concerns associated with the spread of invasive insects, species, diseases, and fire hazard. These operational considerations may include but are not limited to checking the soil conditions for susceptibility to compaction, rutting, and puddling; selecting appropriate entry points or integrating stabilized construction entrances for heavy equipment being used; determining the frequency and duration of site activities; planning for the preferred operating season; and protecting habitat and wildlife.

Furthermore, the concerns noted above shall be addressed by confirming that site soil conditions are firm enough to operate heavy equipment and prevent erosion issues, site entrances are properly located and stabilized, site activities are well planned, and all efforts have been made to minimize the spread of any invasive species or hazards. Some additional site protection/prevention measures may include delineating work areas with high visibility flagging, adding informational signage, and installing temporary tree protection fencing to assist equipment operators during operational activities.

5.6.2 Provide a detailed revegetation and site restoration plan that discusses the following items. If site specific details are not finalized at the time of application, describe the concepts to be used and a methodology for discussing impacts with PSC and DNR staff:

The Vegetation Management Plan covers activities associated with clearing and pruning for shading of the solar array panels; invasive plant species management; proposed revegetation plantings; plant species monitoring; appropriate strategies, procedures, requirements, and measures to be implemented. This Plan also describes appropriate strategies for protecting trees, installing visual mitigation plantings for screening where appropriate, using native plants and pollinator-friendly species, and procedures for controlling invasive plants and noxious weed, maintaining vegetation, and monitoring methods over the lifetime of the Project.

As for all vegetation management and site restoration activities for the Project, this Plan shall serve as a useful tool in providing a consistent and predictable implementation of activities aimed to improve the overall health and quality of the surrounding landscape environment. Continued maintenance and management of site vegetation will encourage early successional growth to occur which helps to mitigate and minimize invasive plant species, increase biodiversity, and protect existing wildlife habitats.

Conceptual Approach:

- Landscape Requirements and Measures – Use, Action, Impacts, Mitigation/Restoration
- Landscape Treatments – Visual, Environmental, Habitat

Methodology:

- Provide a framework for landscape activities for various conditions
- Ensure that the impacts are mitigated appropriately and significantly improved
- Implement a sustainable approach for all landscaping activities
- Integrate mitigation measures
- Conservation using native and local ecosystem plant material where possible

5.6.2.1 Types of revegetation proposed for impacted areas.

To the extent possible, the Project will implement vegetation management and landscaping measures including:

- Planting of temporary vegetation and long-term vegetation,
- Planting of solar array groundcover and pollinator-specific groundcover,
- Invasive weed control,
- Protection of woody vegetation,
- Limited tree clearing, and
- Vegetation monitoring, maintenance, and management.

The visual mitigation and landscaping screening will provide optional levels of planting schemes using a mix of eastern red cedar (*Juniperus virginiana*), white spruce (*Picea glauca*), native evergreen tree plantings that may or may not include flowering dogwood (*Cornus florida*) and downy shadbush (*Amelanchier arborea*), and native ornamental trees and native pollinator-friendly shrubs including red chokeberry (*Aronia arbutifolia*), silky dogwood (*Cornus amomum*), common witch hazel (*Hamamelis virginiana*), common winterberry (*Ilex verticillate*), and/or highbush-cranberry (*Viburnum opulus*).

5.6.2.2 Provide seed mixes, or example seed mixes if not known at time of application, and if seed mixes would be pollinator friendly.

Permanent seed mixes are provided in the Vegetation Management Plan and include a native/naturalized shortgrass prairie seed mix for under the PV Panels, and native/naturalized pollinator-friendly seed mix for surrounding areas along the perimeter fence and pocket areas.

A pollinator-specific seed mix will be used and is incorporated to provide additional ecological benefit and enhance visual aesthetics of the Project. This seed mix will be sown in select areas along the fence line perimeters, access roads, and other places where pockets of space are created due to odd angles in the fence line perimeter, solar array configurations, or buffer areas. Since this seed mix is intended for areas away from panel arrays, the species selected can be allowed to grow taller than the ground cover maintained within the solar array.

Additionally, coordination efforts were made with WDNR Staff regarding permanent seed mix types to ensure the seed mixes proposed are appropriate. Also included within the Plan are seed mixtures for various site conditions and activities that include hydric soils under PV panels, wetland restoration, reforestation, and temporary cover crops.

5.6.2.3 Vegetation monitoring and management protocols for subsequent years after construction. Include expected timing of actions such as mowing.

Maintenance responsibilities include approved cultivating, mowing, spraying (when necessary), weeding, watering, tightening of tree strap guys, pruning, fertilizing, mulching, and any other operations necessary to maintain plant viability. Vegetation maintenance shall begin immediately after planting and periodically continue as needed throughout the lifetime of the Project to ensure that sustainable site practices are met and healthy vegetation on site is maintained.

Maintenance responsibilities shall be implemented over the lifetime of the Project from the onset of construction through decommissioning. Maintenance services and practices will vary in need, type, and intensity during the lifecycle of the Project. Mowing regimens will vary as well depending on the time of year and rainfall intensity, though mowing will occur as infrequently as vegetation growth will allow. Additionally, pruning efforts should lessen over time if proper pruning practices and standards are implemented.

The long-term ground cover was selected to eliminate the need for frequent mowing. The primary objective of mowing is to keep the vegetation below two feet in height to avoid panel shading. It is recommended that a minimum of one to two mowings occur each year to maintain a healthy viable groundcover stand throughout the Project. Mowing will be needed to control annual weeds that are typical after a ground disturbance. The purpose of the mowing is to prevent annual weeds and any long-lasting perennial weeds from seeding out and competing with the desired/planted ground cover. These mowings typically occur at least twice the first year and less frequently after that, with the timing and frequency of mowing adjusted in response to vegetation growth, weather patterns, and other influences.

The first annual mowing should be at no less than three inches in early spring around the time new growth begins and the second annual mowing should occur once maximum heights are reached. Mowing heights can vary between five and ten inches during the second mowing to achieve the goals of preferred height limitations and maximizing benefits to wildlife. It is recommended that a 10-inch mowing height be used whenever possible for the second mow to align with the recommended mowing heights suggested by the seed manufacture. However, shorter mowing heights of five to six inches may be needed if panel shading issues are still a concern. Occasionally, a third mowing may be needed during wetter and hotter growing season conditions. Generally, annual mowing should be scheduled to occur prior to July 31 to avoid weedy species from being able to produce seed, and all mowing should be completed by August 31st.

5.6.2.4 Invasive species management

The monitoring regime will include identifying the presence of invasive or unwanted species. During the first two growing seasons following planting of the long-term ground cover, the Project is most vulnerable to invasive and/or noxious weed species infestation due to existing soil disturbance. Should any invasive species be identified within the Project area, the invasive species shall be removed according to methods most likely to be effective in controlling that species and, where necessary, supplementing its replacement with an approved vegetation and seed mix identified for the Project area or an approved equal alternative option. A list of the invasive species identified by WDNR is referenced in Vegetation Management and Site Restoration Plan Attachment B in CPCN Appendix J (Wisconsin Department of Natural Resources n.d.).

Invasive Species Control:

This Plan proposes to implement supplemental shrub plantings dependent upon the results of the Invasive Species Control Plan (ISCP) and the growth rate of native tree seedlings and sprouts. Invasive species control efforts will include a fall and spring targeted herbicide treatment as detailed in the Vegetation Management and Site Restoration Plan. According to the Plan, Langdon Mills Solar may select to implement supplemental shrub plantings, if feasible or shading is not a concern, in the fall of the second growing season.

The ISCP has not been conducted at this time and is intended to be conducted prior to construction and initial clearing activities. See Vegetation Management and Site Restoration Plan Attachment C: Invasive Plant Species Monitoring and Vegetation Control for additional information in CPCN Appendix J.

5.7 Wildlife

5.7.1 Describe existing wildlife resources and estimate expected impacts to plant and animal habitats and populations.

Based on observations of the Project Study Area during the wetland delineation field study, the Project Study Area consists of mostly active agricultural land which provides nominal habitat for native wildlife and plants. The natural plant communities scattered throughout the Project Study Area are more likely to provide suitable habitat for a variety of common Wisconsin wildlife and plant species. The various wetlands (fresh (wet) meadow, shallow marsh, shrub-carr, and hardwood swamp), mixed hardwood woodlands, and riparian corridors offer opportunities for foraging and shelter. Wildlife may utilize agricultural land to traverse through the surrounding landscape.

Typical mammals found in these natural habitats in central Wisconsin include white-tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), common raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*), eastern gray squirrel (*Sciurus carolinensis*), groundhog (*Marmota monax*),

opossum (*Didelphis virginiana*), rabbits (Sylvilagus floridanus), and deer mice (*Peromyscus maniculatus*), among others.

Numerous bird species may also be found in the Project Study Area and their presence varies depending on time of year. Typical breeding bird species likely to occur within the Project Study Area include red-tailed hawk (*Buteo jamaicensis*), horned lark (*Eremophila alpestris*), tree swallow (*Tachycineta bicolor*), American robin (*Turdus migratorius*), gray catbird (*Dumetella carolinensis*), common yellowthroat (*Geothlypis trichas*), song sparrow (*Melospiza melodia*), and red-winged blackbird (*Agelaius phoeniceus*).

The Project is anticipated to have minimal impact on wildlife species and their preferred habitats since the majority of the Project Study Area consists of active agriculture. Wildlife may utilize agricultural fields to travel between preferred habitats, which are typically field edges, fallow fields, forests, and wetlands. Undeveloped natural habitat within the Project Study Area is primarily limited to the edges of fields and along riparian corridors. The Project will have minimal impact on wildlife species or their preferred habitats since all surface waters and the majority of wooded areas are avoided by the Project footprint. Additionally, the majority of impact from construction and operation will be on actively tilled agricultural land.

After construction is complete, Langdon Mills Solar will revegetate disturbed areas within the Project with a mix of vegetation as discussed in detail above in Section 5.6. A pollinator-friendly seed mix will be incorporated in select open spaces between solar production areas and the perimeter fence. It is anticipated that revegetation of the disturbed areas within Project Study Area with a permanent cover will sustain habitat for some wildlife species including pollinating insects, birds, and small mammals.

The Project substation will require a six- to eight-foot-high fence, which in limited selected areas would include three strands of barb wire at the top, as required by applicable electrical safety codes. On-site staff will monitor the arrays for wildlife as they are completing their daily and/or weekly tasks within the arrays. If any wildlife becomes trapped within the array or a fence, Langdon Mills Solar will coordinate with local and state authorities, if necessary, to assist with the safe removal of any wildlife.

Based on the predominance of agricultural lands within the planned array areas within the Project Study Area, which provide nominal wildlife habitat and natural plant communities, Langdon Mills Solar does not anticipate any adverse impacts to plant and animal populations.

5.7.2 Wildlife pre-construction surveys. (See Habitat Surveys and Biological Assessments in the Introduction)

5.7.2.1 Provide a summary of pre-application consultation meetings held with DNR and/or USFWS for the purposes of determining whether or not any pre-construction wildlife studies would be required for the project.

The USFWS Information for Planning and Consultation (IPaC) tool was used to identify sensitive species, habitat and protected areas potentially affected by Project activities. A formal request for a federal threatened and endangered species list was made through the IPaC portal and received on July 20, 2022. The Project Study Area may contain suitable habitat for five listed species. No critical habitats were located within the Project.

A Certified Endangered Resources (ER) Review was submitted to the WDNR on July 20, 2022. A WDNR ER Review response (ERR Log# 21-722) was received on July 28, 2022 (see Section 5.8).

Further details regarding potential state and federally listed species have been provided in Confidential Appendix K.

5.7.2.2 If, after consultation with DNR or USFWS, wildlife pre-construction studies are required, provide the following:

- *A copy of the approved survey methodologies for any studies including the species of interest, dates of surveys, and a schedule for releasing data and reports to the PSC and DNR.*
- *Copies of all data collected for all pre-construction studies (data should be provided using a format acceptable to DNR and PSC staff).*
- *Final report/s or analyses prepared using the data collected.*

After consultation with the WDNR and USFWS, it was determined that no pre-construction studies are required for the Project Study Area.

5.7.2.3 Provide any monitoring and response protocol for wildlife accessing the solar arrays.

Monitoring and response protocols for the Project have not been requested by either the WDNR or USFWS. On-site staff will monitor the arrays for wildlife as they are completing their daily and/or weekly tasks within the arrays as described in Section 5.7.1.

5.8 Endangered Resources

Endangered resources include any state or federally listed species (e.g. threatened, endangered), special concern species, and/or natural communities. Location specific information for endangered resources is considered sensitive and should be filed confidentially on ERF with a public redacted version also provided. As the location is defined by the project area, all species names should be redacted or generalized to taxa group wherever referenced throughout all application materials. In addition, any required/recommended actions or no impact justification should also be redacted wherever referenced throughout all application materials.

5.8.1 Provide a copy of the completed DNR endangered resources screening (i.e. ER Review or ER Verification Form) and all supporting materials.

A Certified Endangered Resources (ER) Review was submitted to the WDNR on July 20, 2022. A WDNR ER Review response (ERR Log# 21-722) was received on July 28, 2022. Confidential and public versions of the certified ER Review are provided as Appendix K. The ER Review summarizes all state-listed rare species, natural communities, and other natural features with records within one-mile of the Project Study Area. Appropriate follow-up actions will be coordinated with WDNR, as necessary.

Langdon Mills Solar's consultant requested an Official Species List report for the Project from the USFWS. Langdon Mills Solar then received a response (Technical Assistance Letter) from U.S. Fish and Wildlife Service (USFWS) online IPaC review system on July 20, 2022 that identified threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of the Project and may be affected by the Project. The species list fulfills the requirement for obtaining a Technical Assistance Letter from the U.S. Fish and Wildlife Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). As a follow up to the Technical Assistance Letter, a final determination letter for the remaining species listed will be submitted to the regional USFWS office to determine if the Project will result in the prohibited take. The Official Species List included five federally listed species that may occur in the vicinity of or may be affected by the Project, including one mammal species, one avian species, two insect species and one plant species. Federally- and state-listed species information is in the Confidential Appendix K.

5.8.2 *Discuss how any DNR-required actions to comply with endangered species law would be incorporated into the project construction or operation. Include discussion of how any USFWS permits or required actions would be incorporated into the project.*

No endangered species actions are required by WDNR for the Project.

5.8.3 *Discuss how any DNR-recommended actions to comply with endangered species law would be incorporated into the project construction or operation. Include discussion of how any USFWS recommended actions would be incorporated into the project.*

The WDNR ER Review provided follow-up recommendations for two species, an insect and a reptile. A third species was also mentioned in the ER Review, a lizard.

5.9 Public Lands and Recreation

5.9.1 *State properties, including but not limited to:*

5.9.1.1 Wildlife Areas

Paradise Marsh State Wildlife Area is located less than one half mile to the southeast of the Project Study Area. The property is a total of 1,558 acres in Columbia County. Approximately 1,270 of those acres are wetland areas, there are also 260 acres of grassland and 60 acres of wooded habitat. Given the large amount of wetland, grassland and wooded habitat, this area is used by many different species of wildlife and migratory waterfowl. The primary purpose of creating this area of land is to improve habitat conditions for waterfowl. By reducing drainage of the marsh, and providing undisturbed nesting areas, this is possible.

Jennings Creek State Wildlife Area is located approximately one mile to the Southwest of the Project Study Area. This 530-acre property was established in 1947. Hunting and fishing opportunities are provided to the public within this space. Jennings Creek runs through the property East to West.

Springvale Wet Prairie State Natural Area is located approximately 1.3 miles to the Northwest of the Project Study Area and has been owned by the WDNR since 2007. The area is best described as an open wetland complex and wet prairie. It also consists of sedge meadows, allowing for an abundance of plant species diversity. A unique land characteristic is a mound that resides within the property, providing a rich habitat for calcium-loving plants. Duck Creek runs throughout the entirety of this area as well as two undisturbed springs and spring runs.

Peter Helland Wildlife Area is located approximately 1.8 miles to the Northwest of the Project Study Area. This 3,543-acre property consists of 2,700 acres of wetland, as well as many grasslands, wooded habitats, and some shrub and agricultural lands. In addition, the North Branch of Duck Creek runs through the property. This property lies in a basin that was carved out and formed by glaciers. The property is now used today for hunting as well as goose management; a satellite unit for Horicon Marsh also resides here.

5.9.1.2 Fisheries Areas

Located approximately 0.1 to 0.2 miles to the south of the Project, Jennings Creek is a Class II trout fishery. Class II trout streams require stocking to maintain the fishery. There are no other state fishery areas in the Project of within 2 miles of the Project.

5.9.1.3 State Parks and Forests

There are no state parks or forests within or immediately adjacent to the Project.

5.9.2 Federal properties, including but not limited to:

5.9.2.1 Wildlife Refuges

There are no federal wildlife refuges within or immediately adjacent to the Project.

5.9.2.2 Parks

There are no federal parks within or immediately adjacent to the Project.

5.9.2.3 Scenic Riverways

There are no scenic riverways within or immediately adjacent to the Project.

5.9.3 County Parks

There are no county parks within or immediately adjacent to the Project. The Village of Cambria has a city park, Cambria Park, Tarrant Lake, located approximately 1.5 miles to the northeast of the Project Study Area. Direct impacts to the park are not anticipated. Based on a review of

topography between the park and the Project, it is not anticipated that the Project would be visible from the park.

5.9.4 Recreation Trails

The only recreational trail within the Project Study Area is a snowmobile trail that traverses through the Project in a generally north-south direction. The trail makes use of existing bridges over waterways and farm ditches. Land use agreements with local landowners provide for a 16 and one-half foot wide corridor without specific trail locations. The trail is operated in the months of December, January, February and March.

During the design of the solar array and fence locations, consideration was given to reasonably maintain access to the bridges used by the trail and to account for an iteration of the trail in a location similar to the most recent iteration. Finalization of snowmobile access on Project-controlled property will be determined at a later date.

5.9.5 Identify the owner/manager of each recreation resource.

The Paradise Marsh State Wildlife Area, Jennings Creek State Wildlife Area, Springvale Wet Prairie State Natural Area, and the Peter Helland Wildlife Area are managed by the WDNR. Cambria Park and Tarrant Lake are managed by the Village of Cambria.

The lands on which the snowmobile trail is located continue to be owned by the respective parcel landowners. Land use contracts that allow for access are between Columbia County and the respective landowners. The trail is maintained by local clubs and the section of the trail within and in the vicinity of Project is maintained by the Cambria Moonlighters (Moonlighter Club). The Moonlighter Club is responsible for marking the trails, and the Columbia County Association publishes a trail map every 2 years.

5.9.6 Provide any communications with these owners/managers.

Langdon Mills Solar has not reached out to the WDNR regarding Paradise Marsh State Wildlife Area, Jennings Creek State Wildlife Area, Springvale Wet Prairie State Natural Area, or the Peter Helland Wildlife Area due to the lack of impacts that are anticipated from the Project.

Langdon Mills Solar has not reached out to Cambria regarding Cambria Park, Tarrant Lake because of the lack of impacts to the park.

In regard to the snowmobile trail, there have been verbal communications between Moonlighter Club members and the Project Land Agent. In addition, there have been emailed requests for trail information and emailed responses providing the requested information from the Moonlighter Club.

5.9.7 Discuss how short and long-term impacts to these resources would be avoided and/or minimized.

Short-term negative impacts to Paradise Marsh State Wildlife Area, Jennings Creek State Wildlife Area, Springvale Wet Prairie State Natural Area, the Peter Helland Wildlife Area, and Cambria Park are anticipated to be limited to increased traffic in the general Project area associated with construction workers travelling to and from the Project site during construction and delivery vehicles bringing materials to the Project. Long-term negative impacts to these resources are not anticipated. Long-term positive impacts could include an increased pollinator habitat and diversity of local pollinator habitat, the cessation of annual applications of herbicides and pesticides on lands actively maintained for agricultural production, the probable decrease in local soil erosion and transport of nutrients to area waterways.

Once the snowmobile trail area is no longer farmed, woody vegetation could begin to colonize the trail corridor. According to the Moonlighter Club, once a certain area would no longer be farmed and the landowner was not effectively controlling vegetation through agricultural practices, the Moonlighter Club would take on the responsibility of maintaining an area through mowing brush and grass once the Project is constructed. Any final allowed use of snowmobiles on Project-controlled land will be determined at a later date.

5.9.8 Describe any measures that would be taken to mitigate or minimize impacts to aesthetics and tourism in the areas surrounding the project.

The Project is not anticipated to have any impacts on tourism or visual aesthetics on the above-mentioned areas near the Project.

5.10 Contaminated Sites

List all contaminated sites and solid waste sites within the project area, and in a separate list, all contaminated sites and solid waste sites within two miles of the project area boundary.

5.10.1 Using the Wisconsin Remediation and Redevelopment Database (WRRD) identify any contaminated sites (open and closed) within the project area and within two miles of the project area.

Within the Project Study Area there were no open or closed contaminated sites. Sites were listed for lands within two miles. Table 5.10.1 lists the open and closed contaminated sites within two miles of the Project Study Area as identified from the WRRD.

Table 5.10.1 BRRTS Listings Within 2-miles of the Project Study Area

Site Name	BRRTS #	Facility ID	Site Status
KLOOSTRA FUELING FACILITY	0211104695		Closed
FRIDAY CANNING FIELD SHOP WEST	0311002479		Closed
SLINGER FARM	0311258421		Closed
DEL MONTE FOODS PLT #108	0311248281	111003530	Open
FRIDAY CANNING CO	0311001337/ 0211001612	111013210	Closed
CAMBRIA LUMBER YARD	0311193823		Closed
CAMBRIA BULK PLT	0311284369		Closed
CAMBRIA FIRE STATION	0311002227		Closed
RUDYS STANDARD	0311248426		Closed
TONNS SERVICE	0311193981		Closed
JOHNSON PROPERTY	0311198743		Closed
RIO FARMERS UNION COOP	0311000446	111059190	Closed

5.10.2 Using the Historic Registry of Waste Disposal Sites and identify any Environmental Repair and Solid Waste disposal sites within the project area and within two miles of the project area.

Table 5.10.2 lists the Environmental Repair and Solid Waste disposal sites within 2 miles of the Project Area as identified from the WNDR Historic Registry of Waste Disposal Sites.

Table 5.10.2 Environmental Repair and Solid Waste Listings Within 2-miles of the Project Area

Site Name	Object ID	Site ID	Site Status
KLOOSTRA FUELING FACILITY		4621500	Closed
CAMBRIA METAL STRIPPERS	111049620		Closed
SENECA FOODS CORP CAMBRIA	111013210		Closed
COURTLAND TN	111039940	1600300	Closed
CAMBRIA VIL	111067440		Operating

5.10.3 If contaminated materials are known to exist on-site, list and describe:

- *The type of contaminant(s) known to exist on-site.*
- *The location of the contaminant(s).*
- *The media in which the contaminant is located within (i.e., soil, water, etc.).*
- *The estimated concentration of the contaminant(s).*
- *The estimated volumes of the contaminant(s).*

Contaminated materials are not known to exist within the Project Study Area. A Construction Contingency Plan will be developed prior to construction of the Project to document removal procedures if found.

5.10.4 If contaminated materials are newly discovered on-site, specify:

- *The procedure for screening materials.*
- *The location where materials be tested.*
- *The protocols that would be followed.*
- *Whether construction work would be impacted.*

Contaminated materials are not anticipated to exist on-site; however, if they are encountered during construction, steps outlined in the Construction Contingency Plan would be implemented.

5.11 Floodplain

5.11.1 Identify any work occurring in floodplains or known flood-prone areas (e.g. agricultural field ponding).

Mapped floodplains occur along sections of the Middle Branch Duck Creek and unnamed tributary to Beaver Creek within the Project. These FEMA mapped floodplains are being avoided by the Project, with the Project array fence lines located outside of mapped floodplains, resulting in arrays and equipment being located outside of floodplains. Floodplains are shown on Figure 4.1.7.5 in Appendix A.

Agricultural field ponding areas associated with farmed wetlands are being avoided by avoiding all wetlands within the Project.

5.11.2 Discuss if impacts to the floodplain have been evaluated, and how impacts to the floodplain will be avoided or minimized.

The mapped FEMA floodplains are being avoided, and as such impacts to floodplains are not anticipated. The runoff character of the Project soils is not anticipated to be impacted by the Project. The vegetation planned to be planted under and between solar arrays is anticipated to reduce runoff and increase infiltration, which should reduce overland flows to floodplains, and as such, indirect negative impacts to floodplains are not anticipated.

5.11.3 Provide information on any discussions that have occurred with the application floodplain zoning authority, and how the project will comply with local floodplain ordinance(s).

Discussions with floodplain zoning authorities have not been initiated because the Project is avoiding mapped floodplains and impacts are not anticipated.

5.12 Local Zoning and Safety

Utilities (CA)

5.12.1 Provide copies of any zoning ordinances affecting the project area and within two miles of the project boundary. Provide only the page(s) directly citing ordinance language.

5.12.2 Describe any zoning changes needed for the project.

5.12.3 Describe zoning changes that the applicant has requested of local government for the proposed project. Include:

5.12.3.1 The name of the entity responsible for zoning changes.

5.12.3.2 Description of the process required to make the zoning change.

5.12.3.3 The outcome or expected outcome for requested zoning changes.

5.12.3.4 Township road safety and use plans.

5.12.3.5 Provide details on any plan or permit requirement pertaining to local road safety, use, or repair.

5.12.4 Other conditional use permits

5.12.4.1 Provide details on any other conditional use permit required by local government.

Sections 5.12.1 – 5.12.5 are for utilities and were omitted.

Utilities and IPPs (CPCN)

5.12.6 Provide a list of potential local issues normally associated with zoning, road use and safety, or other condition uses.

The Project is located in the Towns of Springvale and Courtland. Columbia County zoning of lands within the Project Study Area are zoned A-1 Agriculture and one parcel is zoned A-4 Agricultural Overlay, which is a planned location for a collection line easement.

5.12.6.1 Provide copies of all correspondence to and from local government pertaining to issues of zoning, safety, or local road use safety plans.

Project representatives have met with representatives of the Town of Springvale, the Town of Courtland and Columbia County to discuss local concerns. The Project continues to negotiate with representatives of these local governments to establish JDAs. Project outreach efforts are presented in Section 7.2.

5.12.6.2 Provide a discussion of how local concerns would be accommodated.

Langdon Mills Solar has coordinated with the greater community, the Towns of Courtland and Springvale, and Colombia County officials to discuss and address the reasonable concerns of

local stakeholders. Project representatives will continue to work with representatives of the Towns and the County to identify and resolve local concerns. Project representatives are working with the Towns and County to establish JDAs regarding additional commitments of Langdon Mills Solar in regard to these issues. To the extent a JDA is not executed, Langdon Mills Solar will cooperate throughout Project construction and operation to accommodate all reasonable local concerns.

5.12.7 Describe any impacts the proposed project would have on existing infrastructure including electric distribution lines and gas pipelines.

The proposed Project as designed, will have no impacts on existing infrastructure. Electric distribution lines will not be impacted by the Project. No natural gas, crude oil, hazardous liquids, or other pipelines were identified in the Project Area; therefore, no impacts from the Project will occur.

5.13 Land Use Plans

Provide information from all land-use plans adopted by local governments that pertain to the project area, extending out two miles from the project boundary. Only submit those pages relevant to the project siting or operation. Do not submit multi-page ordinances, land use plans, etc. unless the entire document would be helpful for context. Include a list of website addresses to the source documents. Include not only general land-use plans, but also other relevant planning documents such as:

5.13.1 County Recreation Plans

5.13.2 Farmland Preservation Plans

5.13.3 Highway Development Plans

5.13.4 Sewer Service Area Plans

Copies of the Town of Courtland zoning ordinance, the Columbia County zoning ordinance (chapter 12), the Columbia County shoreland wetland protection ordinance, the Columbia County floodplain ordinance, the Town of Courtland comprehensive plan, the Town of Springvale comprehensive plan, the Columbia County comprehensive plan, the Columbia County farmland preservation plan, and the Columbia County road plan are in Appendix L, and linked below. No other land-use documents within a two-mile radius have any impact on the Project.

- Columbia County –Zoning and Land Use Ordinances (Chapter 12 sections as mentioned above)
  https://www.co.columbia.wi.us/columbiacounty/planningzoning/PlanningZoningHome/ZoningLandUseOrdinances/tabid/3652/Default.aspx
- Town of Springvale Comprehensive Plan
  https://www.co.columbia.wi.us/columbiacounty/portals/3/Springvale/AdoptedPlan/Adopted.pdf
- Town of Courtland Comprehensive Plan
  https://www.co.columbia.wi.us/columbiacounty/Portals/3/Courtland/MSA%20Plan/chapter%20pdf/TownofCourtlandComprehensivePlan.pdf?ver=2004-03-29-115454-000
- Columbia County Farmland Preservation Plan
  https://www.co.columbia.wi.us/columbiacounty/Portals/3/Farmland%20Preservation/Certified%20Documents/Certif%20Plan.pdf?ver=2013-10-02-110436-907
- Columbia County Road Plan
  https://www.co.columbia.wi.us/columbiacounty/Portals/12/2022_2031%20County%20Road%20Plan.pdf?ver=2022-03-23-113511-633

5.14 Archaeological and Historic Resources

Confidential information includes only the specific location and other sensitive details of archaeological and human burial sites (e.g., maps). Confidential information should be submitted on ERF as a confidential version in addition to a redacted public version. Depending on the outcome of this review, the Commission may be required to consult with the State Historic Preservation Office (SHPO). SHPO consultation may take up to an additional 30 days. The Guide for Public Archeology in Wisconsin (Dudzik et al. 2012) (Guide), provides information about best management practices.

TRC archaeologists conducted a literature and archives review of the Project. The purpose of the review was to determine if any cultural resources were reported within the Project boundaries and might be affected by construction of the Project. The Project is in Sections 12, 13, 24, and 25 of T12N, R11E in Springvale Township, and in Sections 7, 9-11, 13-24, 27-30 of T12N, R12E in Courtland Township, Columbia County, Wisconsin.

Literature and archive research determined that no known archaeological sites or cemeteries overlap the Project. For a detailed description of the methodology used to conduct this research see the Literature and Archives report, Appendix M. Research determined that no reported historic structures are located within the Project boundary, however, TRC Wetland Survey Staff

noted a historical marker for the Zion Welsh Church. This marker is not listed on any state or federal registers.

5.14.1 Provide maps or GIS files and a description of all archaeological sites, historic buildings and districts, and human burial sites within or near the proposed project area.

The description of all archaeological sites, historic buildings and districts, and human burial sites are presented in the Literature and Archives report (Appendix M). The GIS staff will provide the PSCW with the appropriate cultural files.

5.14.2 For archaeological sites and historic buildings or districts, determine the boundaries, historic significance, and integrity of each resource. Additional field surveys may be required to make these determinations.

TRC archaeologists conducted a literature and archives review of the Project. The purpose of the review was to determine if cultural resources were reported within the Project boundaries that would be affected by construction of the Project.

The results of the literature and archives research determined that no known cultural resources, listed on the State or Federal registers, overlap the Project. Five burial sites or cemeteries and 11 historic buildings or structures are reported within one mile of the Project area; however, these cultural resources will not be affected by the Project as it is currently designed.

Environmental TRC staff, during a survey of wetlands within the Project, noted a historical marker in the northeast corner of the CTH B/Kuehn Rd intersection. The marker notes the location of the first church built by the first Euro-American settlers of the area. This marker is not listed on any state of federal registers. The marker states: “This Marks the Site of the Zion Welsh Church 1847-1930.” The 1861, 1873, and 1925 historic atlases note a church at this location. This marks the location of the Zion Church, which was the first church built in the area. The word “Welsh” on the sign refers to the immigrant population that built and congregated at the church.

In 1845, a group of Welsh immigrants traveled from Liverpool, England, through New York, New York and found their way to Wisconsin in September. A single large log cabin was built and the community wintered together in the large log cabin. In the spring of 1846 individual cabins were built and soon after the community construct three community churches, the first was the Zion Church. The church structure was originally a small structure, likely log and timber built, but was replaced with a larger brick building in 1847. This would become an important church

within Central Wisconsin, supervising 21 Welsh churches. The church stood at this location until 1930 when it was razed.[3]

The proposed Project overlaps the historical marker for the Zion Welch Church, which notes the location of the first church built by the Euro-American settlers of the area. This cultural resource is potentially eligible for listing on the NRHP based Criteria A, C and D, but has not been evaluated.

5.14.3 Identify the potential project effects on each resource.

The proposed Project Study Area overlaps the historical marker for the Zion Welch Church, which notes the location of the first church built by the Euro-American settlers of the area. This cultural resource is potentially eligible for listing on the NRHP, Criteria A, C and D, based on criteria described in 36 CFR § 60.4:

a. That are associated with events that have made a significant contribution to the broad patterns of our history; or
c. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
d. That have yielded or may be likely to yield, information important in history or prehistory.

This cultural resource has not undergone field investigations. The Project has the potential to disturb unknown subsurface archaeological deposits located within the adjacent farm field. The Project will avoid this cultural resource by creating an approximately 1-acre buffer within the northeast corner of the intersection at which the marker is located. Although the current Project Study Area shows the entire parcel within the project, the marker and buffer area will be avoided.

[3] "Cymru Am Byth" 2022 "Cymru Am Byth". Published by University of Wisconsin – Madison. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/http://images.library.wisc.edu/WI/EFacs/WILocHists/HistoryCambria/reference/wi.historycambria.i0008.pdf. Accessed January 7, 2022

5.14.4 Describe modifications to the project that would reduce, eliminate, avoid, or otherwise mitigate effects on the resources.

The proposed Project overlaps the historical marker for the Zion Welch Church. The marker notes the approximate location of the church within the northeast corner of the intersection of CTH B and Kuehn Road. The Project has the potential to disturb unknown subsurface archaeological deposits located within the adjacent farm field. This cultural resource is the first church built by the first Euro-American settlers of the Welch Prairie area. The Project will protect the potential subsurface archaeological deposits associated with the church by creating an approximately 1-acre buffer near the marker.

5.14.5 For human burial sites, obtain a Burial Site Disturbance Authorization/Permit from WHS for all human burial sites that would be affected by the project.

TRC archaeologist conducted a review of all burial sites within Columbia County. There are no known burial sites within the Project Study Area. The description of all human burial sites in close proximity to the Project Study Area are presented in the Literature and Archives report (Appendix M).

5.14.6 Provide an unanticipated archaeological discoveries plan. The plan should outline procedures to be followed in the event of an unanticipated discovery of archaeological resources or human remains during construction activities for the project.

TRC has developed an Unanticipated Archaeological Discoveries (UAD) plan (Appendix N).

5.14.7 Notify Wisconsin Tribal Historic Preservation Officers of any Native American human burial sites and significant prehistoric archaeological sites that could be impacted by the project. Provide copies of all correspondence.

No burial sites, significant, or potentially significant archaeological sites will be affected by the current Project design, thus no Tribal Historic Preservation Officers were notified of the Project.

5.15 Agricultural Impacts

5.15.1 Identify current agricultural practices in the project area.

Agricultural activities within the Project Study Area are dominated by row crop production of corn (*Zea mays*) and soybeans (*Glycine max*). Additionally, areas planted in alfalfa (*Medicago sativa*) were also noted.

5.15.2 Identify the location of known agricultural drainage systems (tiles, ditches, laterals), irrigation systems, erosion control and water management practices and facilities in the project area that could be impacted by construction activities or the location of the proposed facilities.

Langdon Mills Solar will work with local landowners to review the readily available tile maps at the time of final engineering design. Designers will also review current and historical aerial photographs for possible signs of agricultural tile lines. Langdon Mills Solar will work with landowners to identify the locations of irrigation lines at the time of final design to assure that irrigation lines will not be impacted by the site design.

If it is determined that construction activities have impacted a tile line on property not controlled by Langdon Mills Solar, Langdon Mills Solar will repair the tile line to as good or better condition than before construction.

5.15.3 Identify any farming operations such as herd management, specialty crop production, field and building access, organic farming, etc. that could be impacted by the construction of the project.

There are no areas of herd management that would be impacted by the Project. Neither areas of specialty crops nor organic farming occur within or adjacent to the Project. The Project will not isolate active agricultural fields or buildings.

5.15.4 Identify the amount (in acres) of designated prime farmland that would be removed from agricultural use during the operational life of the solar project.

Based on NRCS mapping of soils within the Project Study Area approximately 1,192 acres, or 51 percent was mapped as prime farmland. An additional 470 acres were mapped as either Prime Farmland if drained or prime farmland if drained and protected from flooding. These categories account for approximately 20 percent of the Project Study Area. Approximately 1,662 acres of prime farmland will be removed from agricultural cultivation.

5.15.5 Describe how damage to agricultural facilities and interference with farming operations would be minimized during construction.

The Project is being developed on agricultural fields beyond the footprint of existing agricultural buildings. Demolition of agricultural buildings or of structures adjacent to agricultural buildings is not part of the Project. Neither damage to agricultural facilities nor farming operations is anticipated. There could be minor inconveniences resulting from construction traffic to over the road movement of agricultural implements. However, this is anticipated to be minor and similar to other traffic using local roads.

5.15.6 Describe how damage to agricultural facilities would be identified and repaired.

Damage to agricultural facilities is not anticipated.

5.15.7 Identify any farmland affected by the project that is part of an Agricultural Enterprise Area.

Project parcels are not part of an Agricultural Enterprise Area.

5.15.8 Identify any farmland in the project area that is part of a Drainage District, and identify the Drainage District if applicable. The following items apply when any part of a project is located within a Drainage District.

No part of the Project is within a drainage district. Drainage District 23 is located northeast of the Project Study Area, based on mapping of the District on the DATCP interactive web map.

5.15.8.1 Describe any permits needed from a Drainage District Board for construction and operation of the proposed project, and the status of any permits.

The Project is not located within a drainage district.

5.15.8.2 Identify if and where any culverts would be installed in areas of the Drainage District.

The Project is not located within a drainage district, and as such there are no plans to install culverts within a drainage district.

5.15.8.3 Provide any correspondence with State Drainage Engineer regarding the project.

The Project is not located within a drainage district.

5.15.9 Identify any lands within the project boundary that are enrolled in agricultural conservation or agricultural tax incentive programs.

Parcels within the Project are not enrolled in agricultural conservation programs or tax incentive programs.

5.15.10 Discuss induced voltage issues as they relate to the project arrays, collector circuits, and generator tie line. Provide the following information:

5.15.10.1 Identify the location of confined animal dairy operations within one-half mile of any proposed transmission or distribution centerline or other project facilities.

There are no confined animal dairy operations (CAFO) within one-half mile of the Project based on a review of the WDNR searchable database of CAFO WPDES permittees.

5.15.10.2 Identify the location of agricultural buildings located within 300 feet of any proposed transmission or distribution centerline or other project facilities.

There are no agricultural buildings located within 300 feet of any proposed transmission or distribution centerlines. The only proposed transmission line is the Gen-Tie Line, and there are no agricultural structures within 300 feet.

Eleven agricultural buildings are located within 300 feet radius of proposed array areas along County Road B, Kohnke Road, Kuehn Road, Howell Road, County Road G, Wingers Road, Willard Road, Hollnagel Road and County Road A.

5.15.10.3 Discuss induced voltage issues related to the project and its transmission or distribution line routes.

The Project is being designed and will be built in accordance with applicable federal, state and local electrical codes and guidelines. As such, the Project does not consider stray voltages to be a significant risk to neighboring agricultural facilities.

5.15.10.4 Discuss any plans to conduct stray voltage testing pre- and post-construction

Langdon Mills Solar will comply with any PSCW-ordered stray voltage testing both pre- and post-construction.

5.16 Airports and Landing Strips

5.16.1 Airport, Landing Strips, and Helipads

The FAA requires evaluation of any projects that exceeds 200 ft above the ground, projects within 20,000 ft of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with at least one runway more than 3,200 ft, within 10,000 ft of a public use or military airport which exceeds a 50:1 surface from any point on the runway of each airport with its longest runway no more than 3,200 ft., within 5,000 ft of a public use heliport which exceeds a 25:1 surface or any project on a public use airport or heliport. The 100:1 and 50:1 represent imaginary surfaces corresponding, for example, to one foot vertical to every 100 feet horizontal distance. At a distance of 2,000 feet, a structure of greater than 20 feet in height would require evaluation for the 100:1 slope. The Project was screened for airports within ten miles.

5.16.1.1 Identify all public and private airports, landing strips, and helipads within 10 miles of the project facilities (both for solar arrays and the nearest generator tie line structure).

The FAA Circle Search for Airports tool and land use within approximately ten miles of the Project was reviewed for the locations of airports. The tool revealed one public airport within ten miles of the Project, Gilbert Field. Additionally, seven private airfields were identified within ten miles of the Project (Figure 4.1.8.3 in Appendix A).

5.16.1.2 Describe each of the airports, landing strips, and helipads with a description of the runways/landing zone and type of use.

The following airport landing strips, and helipads are located within ten miles of the Project.

- Gilbert Field Airport (94C) is located approximately 5.1 miles to the southwest from the closest point of the Project. This airport has one turf runway in fair condition. Runway 09/27 is approximately 1,092 feet in length and is oriented east-west. The runway is public use for light general aviation.

- Bancroft East Airport is north of CTH B approximately two miles west of the Project. The airfield is approximately 2,500 feet long grass runway and is private.
- Higgins Field is south of CTH B approximately 2.8 miles southwest of the Project. The airfield is approximately 2,500 feet long grass runway and is private.
- Mill House Field is north of CTH G at Twitchell Road approximately 5.8 miles west of the Project. The airfield is approximately 1,600 feet long grass runway and is private.
- Beaver Dam Lake Seaplane is located approximately 6.7 miles to the east of the project on the northwest end of Beaver Dam Lake. The airfield is a private seaplane base.
- Prescott Field is northeast of STH 16 at E. Old Hwy 16 approximately 7.3 miles west of the Project. The airfield is approximately 1,900 feet long grass runway and is private.
- An unnamed airfield west of STH 73 and south of Moriah Road approximately eight miles southeast of the Project. The airfield is approximately 700 feet long grass runway and is private.
- Knutson Field is west of STH 22 approximately 8.5 miles west of the Project. The airfield is approximately 2,400 feet long grass runway and is private.

5.16.1.3 Describe any potential for impacts to aircraft safety and potential facility intrusion into navigable airspace.

The closest public airport to the Project is Gilbert Field, located approximately 5.1 miles to the southwest from the closest point of the Project. The closest private airfield is Bancroft East Airport located approximately two miles to the west of the Project. Based on the heights of the equipment planned for the Project, there will be no impact on navigable air space at either location.

The tallest structures that will be constructed for the Project are anticipated to be the turning structures at the POI. These structures will be no taller than the existing structures on the 345 KV the ATC South Fond Du Lac SW YD 345kV T-Line. The POI is approximately eight miles from Gilbert Field. At that distance, these structures are not anticipated to have an impact on navigable air space.

5.16.1.4 Describe any mitigation measures pertaining to public airport impacts.

There will be no impacts to public airports form the Project, and as such there are no planned mitigation measures.

5.16.2 Commercial Aviation

5.16.2.1 Identify all commercial air services operating within the project boundaries (i.e. aerial applications for agricultural purposes, state programs for control of forest diseases and pests (i.e. Gypsy moth control).

The DATCP Lymantria dispar (formerly Gypsy Moth) treatment interactive web map was consulted and there are no treatment sites within Columbia County or any of the adjoining counties.[4]

5.16.2.2 Describe any potential impact to commercial aviation operations.

Given that agricultural activities will cease on the parcels being developed for solar arrays and the limited height of the array panels, impacts to commercial aviation operations are not anticipated.

5.16.2.3 Describe any mitigation measures pertaining to commercial aviation.

Given that impacts to commercial aviation operations are not anticipated, mitigative measures are not planned.

5.16.3 Agency Consultation

5.16.3.1 Identify any potential construction limitations and permit issues.

In accordance with the FAA Notice Criteria Tool evaluation of the Project there are no construction limitations or FAA permit issues. Should any limitations arise, an FAA Notice of Proposed Construction or Alteration Form 7460-1 would be created and filed with the FAA.

[4] Wisconsin Department of Agriculture, Trade and Consumer Protection Lymantria dispar Treatment Sites web page. Accessed July 2021 WI Gypsy Moth Treatment

5.16.3.2 Provide a summary of the status of any FAA determinations with details on mitigation actions or how any unresolved problems with aircraft safety are being addressed (including generator tie line structures)

FAA determinations with details on mitigation or how any unresolved problems with aircraft safety are being addressed as needed. Notice Criteria Tool screening of the Project indicated there is no requirement for filing for a Project review form with the FAA and as such no need for mitigations.

5.16.3.3 Provide a list of any structures, including generator tie line structures, requiring WisDOT high structure permits, and the status of any such permits.

The Wisconsin Department of Transportation under Wis. Stat. sec. 114.135 (7) Stats. has authority to control construction of "buildings, structures, towers and other objects by the secretary of transportation shall be limited to those objects that would either extend to a height of more than 500 feet above the ground or surface of the water within one mile of the location of the object, or above a height determined by the ratio of one foot vertical to 40 feet horizontal measured from the nearest boundary of the nearest public airport or spaceport within the state; however, this power and authority shall not extend to objects of less than 150 feet in height above the ground or water level at the location of the object or to objects." The Project is located sufficiently distant from all airports such that there are no structures, including gen-tie line structures, that require such permits. Status will be given on permits if any are needed.

5.17 Communications Towers

5.17.1 Provide an analysis or supportive data to predict whether or not any aspect of the proposed project would interfere with:

For the following sections, include in the assessment all facilities that make up the solar arrays as well as any structures that are part of a necessary generator tie line for the project.

5.17.1.1 Cell phone communications

5.17.1.2 Radio broadcasts

5.17.1.3 Internet (WiFi)

5.17.1.4 Television

5.17.1.5 Doppler radar network

Data was obtained from Homeland Infrastructure Foundation - Level Data and was mapped on Figure 4.1.9.1 for a one-mile buffer around the Project. Only one communication structure was located within the buffer.

TRC used the Manitoba Research Center's Field and Corona Effects (FACE) software to model the Gen-Tie Line and study the electrical field impacts in the area of the Project substation. This software uses standard Institute of Electrical and Electronics Engineers (IEEE) methods for calculations. The results of the Project modeling and evaluation are summarized in a technical memo in Appendix O. A worst case was assumed for height of project gen-tie structures, and it was determined that there would be no impact on communication infrastructure from the Project.

5.17.2 Describe mitigation measures should interference occur during project operation for any of the communications infrastructure listed above.

It was concluded that mitigation measures will not be required because simulation of a worse case design (gen-tie located higher in elevation than the probable design that will be implemented) did not result in interference.

5.18 Electric and Magnetic Fields (EMF)

Provide an estimate of the magnetic profile created by any necessary overhead collector circuits and electric transmission facilities (generator tie line). Estimates should be made using the following criteria:

- *Show the predominant electric line configurations proposed for the project (H-frame, single-pole delta, double-circuit, etc).*
- *Show any existing lines that would be affected by the proposed collector circuits or generator tie-line and a post-construction diagram that incorporates the new existing lines.*
- *Assume all panels are working and project is producing at maximum capacity.*

- *Show EMF profile at 0 ft., 25 ft., 50 ft., and 100 ft. from the centerline of each circuit type modeled.*

As stated in Section 5.17, TRC used the Manitoba Research Center's FACE software to model the gen-tie and study the electrical field impacts in the area of the Project substation. This software uses standard IEEE methods for calculations. The modeling demonstrated that the magnetic field generated by the modeled Gen-Tie Line will not be significant and will not adversely impact adjacent areas. The results of the Project modeling and evaluation are summarized in a technical memo in Appendix O.

5.19 Noise

Pre- and post-construction noise studies are required for all electric generation projects. Noise measurement studies must be approved by PSC staff.

5.19.1 Provide existing (ambient) noise measurements and projected noise impacts from the project using the PSC's Noise Measurement Protocol

Existing noise measurements and impacts are shown in the tables below for the following monitoring locations:

- MP-1: Hollnagel Road
- MP-2: Substation fence line (adjacent to the proposed BESS)
- MP-3: Road B, off Old B Road
- MP-4: Jones Drive
- MP-5: Road A, off Road 146
- MP-6: Road A, off Jung Rd
- MP-7: Road G, off Road 146

Baseline measurements were taken during morning, midday, evening and night in accordance with the PSCW measurement protocol for sound and vibration. Projected noise impacts are based on continuous operation of inverters, transformers, BESS inverter, and BESS HVAC system, as detailed in Appendix P, Noise Study. Table 5.19-1 Summarizes ambient and modeled noise levels.

Table 5.19-1 Ambient and Modeled Noise Levels

Site ID	Ambient Sound Level (LA_{90})	Solar Array Noise Level (dBA)
Morning (6 AM – 8 AM)		
MP-1	34.9	32.2
MP-2	41.6	27.1
MP-3	35.5	41.2
MP-4	37.0	39.7
MP-5	32.5	35.3
MP-6	39.9	38.6
MP-7	36.7	13.8

Site ID	Ambient Sound Level (LA_{90})	Solar Array Noise Level (dBA)
Midday (12 PM – 2 PM)		
MP-1	39.9	32.2
MP-2	45.6	27.1
MP-3	35.4	41.2
MP-4	36.6	39.7
MP-5	31.3	35.3
MP-6	47.8	38.6
MP-7	40.9	13.8

5.19.2 Provide copies of any local noise ordinance.

Columbia County and the Towns of Courtland and Springvale do not have a solar energy project noise ordinance or other applicable noise ordinance.

5.19.3 Provide equipment manufacturer's description of noise attenuating methods and materials used in the construction of proposed facilities.

Where available, equipment manufacturers specify that their designs ensure compliance with relevant NEMA enclosure requirements for audible sound level, resulting in sound power levels used in predictive modeling as described in Appendix P, Noise Study.

5.19.4 Describe how noise complaints would be handled.

Langdon Mills Solar anticipates that there will not be complaints regarding noise during the operational phase of the Project. Should a noise complaint arise, Langdon Mills Solar will work to determine the source of nuisance noise. Langdon Mills Solar will work with that resident in an attempt to reach common ground and determine a reasonable solution.

5.19.5 Discuss any mitigation measures that would be used to address noise complaints during the operation of the project.

Noise complaints are not anticipated during the operational phase of the Project. If an unanticipated condition arises wherein noise levels require some measure of mitigation, Langdon Mills Solar will develop a plan to buffer the noise source with localized plantings and/or barriers.

5.20 Solar Panel Glint or Glare

5.20.1 Provide an analysis showing the potential for glint or glare from a typical project solar panel, as well as from the project as a whole. Include the following:

- *The analysis should list the basic assumptions used and the methodology/software used for creating the glint or glare analysis.*
- *The analysis should evaluate impacts to aircraft and air traffic controllers from any impacted airports.*
- *The analysis should also examine the risk of glint or glare to local residents and road users in the project area.*
- *The analysis software may indicate that proposed array areas are large enough to impact the accuracy of glare results. If this warning is encountered in the modeling, the applicant should break the affected array areas into smaller*
- *sub-arrays and perform the glare analysis using these smaller sub-arrays.*
- *The analysis software may model different amounts of glare at observation points with different elevations. For any stationary observation points that could have human occupancy at higher elevations (e.g. a second story of a residence), the applicant should model multiple elevations for those stationary observation points.*
- *The analysis software may model different amounts of glare depending on the assumed heights of the solar panels. The applicant should model panel elevations for at least two different solar panel heights to establish a range of potential glare results.*
- *The analysis software may model different amounts of glare depending on the assume rest angle of the solar panels. The applicant should*

model at least two resting angle configurations, including one configuration with a resting angle set at between zero and five degrees.

A glare analysis for the Project is included in Appendix Q. The glare analysis was completed using methods developed by Sandia National Laboratories and described in the Solar Glare Hazard Analysis Tool (SGHAT) User's Manual. The SGHAT-compliant software used in this analysis is under license to TRC by ForgeSolar. Photovoltaic systems are modeled in ForgeSolar as a contiguous planar polygon footprint with customizable parameters. During the analysis, sunlight is modeled to be reflected over each PV array on a minute-by-minute basis according to the system parameters. The ForgeSolar system then checks whether the resulting solar reflections intersect the receptors to be evaluated.

Modeling completed in ForgeSolar uses the following general limitation: glare analysis uses a sunlight irradiance profile of a typical clear sunny day, every day, all year round; the analysis does not consider obstacles (either natural or artificial) between the reflectors and receptors (e.g., building, topography, vegetation); and the ocular hazard prediction depends on a number of environmental, optical, and human factors that were assumed and can be uncertain.

Potential ocular hazards range from temporary after-image to retinal burn depending on the retinal irradiance and subtended angle. The SGHAT classifies solar glare into three categories, denoted as "green," "yellow," or "red" glare.

- Green glare is the mildest of the classifications and has low potential to cause after-image and no potential to cause retinal burn.
- Yellow glare is a moderate level of glare and has some potential for temporary after-image and no potential to cause retinal burn.
- Red glare is a serious and significant form of glare with potential to cause retinal burn and/or permanent eye damage.

The solar glare analysis for the Project was modeled at a height of 3 feet and at 16 feet above ground surface. These two heights represent two extremes for the panel heights to assist in providing a range in potential glare from the proposal panels since the equipment has yet to be chosen. It is expected that the height of the racking unit will fall within this range of heights and the analyzed heights will be more representative of the upper and lower edges of the panels when the panel is at its steepest angle. The system was also modeled for both a 5° resting angle and 45° resting angle.

Forty-seven residential locations, fifteen roadway segments, and one airport were evaluated for glare from the Project. At a resting angle of 5°, 37 of the 47 residential locations were modeled as having observed glint/glare (either green, yellow, or both green and yellow glare) and 12 of the 15 roadway segments were modeled to observed glint/glare from arrays. Green glare was observed along the runway approach for Gilbert Field, located approximately 5.75 miles south of the Project. No red glare was observed at any of the receptor locations for the 5° resting angle.

The Project site was additionally modeled at a resting angle of 45° for both the minimum and maximum panel heights. Compared to the 5° resting angle configuration, glare was significantly reduced in these configurations. At a resting angle of 45°, 5 of the 47 residential locations were modeled as having observed glint/glare (either green, yellow, or both green and yellow glare) from the Project. In addition, 4 of the 15 roadway segments observed glint/glare from arrays. Glare was not observed along the runway approach for Gilbert field in this resting angle configuration at both heights. No red glare was noted to be observed at any of the receptor locations.

In each of the configurations analyzed, it is likely that some of the glare modeled to be observed at receptor locations from specific arrays will not be visible in the field due to existing physical or topographical obstructions. As noted above, ForgeSolar does not take obstructions into account in their analysis. These obstructions may include existing forested areas or tree lines, buildings, or hills located between the array and receptor that was modeled to be impacted. In general, the following trends were noted through the analysis. In both resting angle configurations, the amount of glare decreased as the height of the panel increased. In addition, the amount of glare modeled significantly decreased as the resting angle set for the system increased. In each of the evaluated configurations, identified glare was estimated to have a retinal irradiance significantly less than an observer viewing unfiltered sun.

5.20.2 In the event of an inquiry or complaint by a resident in or near the project area, describe what modeling or other analysis would be used to evaluate the possibility of unreasonable panel glint or glare at the residence.

In the event of a complaint about glare by a resident within or outside the Project Boundary, ForgeSolar modeling will likely be used to assess the extent and time of day of the glare. This may include utilizing more defined observation point parameters and a smaller section of arrays in which glare was noted from. Following the investigation, Langdon Mills Solar will determine if a reasonable and feasible solution exists to resolve the glare issue and work with the landowner, as needed, to reach an acceptable solution.

5.20.3 Describe mitigation options available to reduce unreasonable panel glint or glare.

Though this study identified glare to be generated at in each of the configurations modeled, the glare estimated represents the “worst-case scenario” due to the program limitations detailed above. It is likely that the glare predicted by this analysis is an over-estimate of the actual glare visible by observers.

As the Project is proposed to utilize single-axis tracking systems, the potential for glare is less than if the project utilized a fixed-tilt system. In addition, as seen in the results, glare can be further mitigated by using steeper resting angles for the system to backtrack to.

Glare may be further mitigated with vegetative screenings or privacy fencing along the perimeters of the array. If vegetative screening is used, care should be taken to utilize plantings that will continue to block views during the winter as well as the summer months, as glare was modeled throughout the year.

Finally, as noted in Appendix Q, the Project design includes both Primary and Alternate Arrays. Alternate Arrays are designated as Array 02-1, 04, 06-07, 18-1, 19-2, 19-2, 19-3, 20-1, 20-2, 20-3, 21, 23-1, 23-2, 24, 26-1, 31-1, and 32. Several of these arrays, when modeled, were shown to have the potential of producing glare. Those panels are not currently anticipated to be built or be part of the Project if the PSCW approves building in the Primary area.

6.0 Local Government Impacts

6.1 Joint Development and Other Agreements

6.1.1 Provide a summary of major agreement items agreed upon in any Joint Development Agreements (JDA) or other type of agreement including:

Langdon Mills Solar continues to negotiate one or more Joint Development Agreements (JDA) with Columbia County, the Town of Springvale, and the Town of Courtland. Should one or more JDAs be successfully negotiated and executed, a copy of the same will be entered into the CPCN record.

6.1.1.1 All services to be provided by the city, town, and/or county during construction and when the plant is in operation (e.g. water, fire, EMS, police, security measures, and traffic control).

It is anticipated that Cambria would be providing fire and EMS response to the Project should these be required. The Columbia County Sheriff Department is anticipated to provide policing of the roadways in the Project vicinity. Contact information for the Project's operations team will be provided to all local first responders.

Traffic during Project construction is not anticipated to cause significant undue congestion of local roadways and as such will not require intervention of local authorities. Large components, such as the GSU, substation infrastructure and the BESS could require oversized vehicles. Should a contractor require disruption of a local roadway during delivery or construction, it will

be the responsibility of the contractor to adhere to all applicable WisDOT standards on traffic management, such as traffic control signage and flag persons.

The Project is anticipated to employ three full time employees and as such there will not be an impact on local road congestion post Project operation. Other than observance of state and local driving ordinances by drivers in vicinity of the Project, traffic control will not be required when the Project is in operation.

The Project solar arrays, substation, BESS and O&M building will be surrounded by security fences. It is anticipated that the substation will have a security camera system and motion activated lights at the O&M building and the substation control house. Down-facing security lights are anticipated in the substation and adjoining switchyard. Project security lighting would be designed to minimize adverse impact on the community. A need of security beyond these fences is not anticipated.

Water and sewer at the Project O&M building will be provided by private infrastructure including on-site private well and septic systems. Connections to local infrastructure are not planned.

6.1.1.2 Specifically, address community and facility readiness for incidents such as fires.

The Project is not anticipated to create additional demands on police or fire resources. Solar farms are generally passive uses of the landscape with minimal onsite presence that does not represent a stress on road congestion, traffic safety or worker safety.

Langdon Mills Solar has been in contact with the Cambria Fire Chief to discuss the Project, including details about fire fighters' access requirements for response to the Project during operation. Project gates will have knock boxes for fire department access. Project roadway turn arounds are designed to provide sufficient space for fire department vehicles. Following construction, the Project will provide training to local first responders to familiarize them with the Project and appropriate methods to respond to various contingencies.

6.1.2 Provide a copy of all agreements with local communities (e.g. JDA, road use).

See response to Section 6.1.1.

6.2 Infrastructure and Service Improvements

6.2.1 Identify any local government infrastructure and facility improvements required (e.g. sewer, water lines, drainage districts, police, and fire).

Local government infrastructure improvements are not required or planned for the Project.

6.2.2 Describe the effects of the proposed project on city, village, town and/or county budgets for these items.

During the construction phase of the Project there will be a contribution to the local economies from an increase in local jobs and local spending by construction workers. Three full time employees are anticipated to work for the Langdon Mills Solar during the lifetime of the Project and continue to contribute to the local economies. Solar leases for Project array lands and collection line easements will contribute to the local incomes. It is anticipated that there will be a net benefit to the local government budgets due to the payment of Shared Revenue Utility Payments on an annual basis while the Project is operational. Details of the Project economic impact are presented in Appendix R.

6.2.3 For each site provide an estimate of any revenue to the local community (i.e. city, village, town, county) resulting from the project in terms of taxes, shared revenue, or payments in lieu of taxes.

From the Shared Revenue Utility Payment, local governments are going to receive a total of $4,000 per megawatt, which in total is $800,000 annually paid to local governments, to be shared by Columbia County, the Town of Springvale, and the Town of Courtland. Based on the application of the formula required by Wisconsin statutes, approximately $466,600 would be paid to Columbia County annually and $333,400 would be paid allocated to be shared between the two towns. The split of revenue between the towns is yet to be determined and will be decided based upon the final location of Project panels. Over the anticipated lifespan of the Project, which is anticipated to be 35 years, the total shared revenue would be $28,000,000.

6.2.4 Describe any other benefits to the community (e.g. employment of local residents, reduced production costs, goodwill gestures).

The Project economic impact study (Appendix R) estimated over $12.7 million in new local earnings during construction for Columbia County and over $19.1 million in new local earnings during construction for the State of Wisconsin. The study estimated that there will be over $579,000 in new local long-term earnings for Columbia County annually and over $1.1 million in new local long-term earnings for the State of Wisconsin annually.

The economic impact study (Appendix R) estimated that there will be approximately 146 new local jobs during construction for Columbia County and approximately 221 new local jobs during construction for the State of Wisconsin. The economic impact study estimated that there will be approximately 14.5 new local long-term jobs for Columbia County and approximately 20.1 new local long-term jobs for the State of Wisconsin.

6.2.5 Provide information on the direct, indirect, and induced state and local economic impacts during and after construction.

The economic impact study (Appendix R) estimated that there will be approximately 146 new local jobs during construction for Columbia County. Of that approximately 146 new jobs in Columbia County, 108 would be direct impacts from project development and onsite labor, 28 indirect impacts from module and supply chain jobs and 10 induced jobs. Of that approximately 221 new jobs in Wisconsin, 140 would be direct impacts from project development and onsite labor, 44 indirect impacts from module and supply chain jobs and 37 induced jobs.

The economic impact study (Appendix R) estimated that there will be approximately 14.5 new local long-term jobs for Columbia County. Of that approximately 14.5 new jobs in Columbia County, 0.8 would be direct onsite labor, 11 indirect impacts from module and supply chain jobs and 2.7 induced jobs. Of that approximately 20.1 new long-term jobs in Wisconsin, 0.8 would be direct onsite labor, 11.8 indirect impacts from module and supply chain jobs and 7.5 induced jobs.

7.0 Landowners Affected and Public Outreach

7.1 Contact lists

Provide a separate alphabetized list (names and addresses) in Microsoft Excel for each of the groups described below:

7.1.1 Property owners and residents within the project boundary and a separate list of property owners and residents from the project boundary out to a distance of one mile. It is strongly recommended that applicants consult with PSC staff in order to ensure that the format and coverage are appropriate considering the project type, surrounding land use, etc.

The lists of property owners and residents within the project boundary and property owners and residents from the project boundary out to a distance of one mile is in Appendix X.

7.1.2 Public property, such as schools or other government land.

The list of public property owners or other government land out to a distance of one mile is in Appendix X.

7.1.3 Clerks and chief officers of cities, villages, townships, and counties affected by the proposed project; and the contact for the Regional Planning Commission relevant to the project area. Also include on this list the main public library in each county the proposed facilities would occupy.

The list of clerks for the Towns of Courtland and Springfield, Columbia County and the Columbia County Planning Commission are in Appendix X. The Cambria Jane Morgan Memorial Library and the Wyocena Public Library are listed in Appendix X.

7.1.4 Local media for the project area, at least one print and one broadcast.

The information for the Portage Daily Register and Channel3000.com are in Appendix X.

7.1.5 Tribal government representatives for Native American Tribes that hold off-reservation treaty rights in Ceded Territory. This only applies to projects within the following counties: Douglas, Bayfield, Ashland, Iron, Vilas, Forest, Florence, Marinette, Oconto, Menominee, Shawano, Langlade, Oneida, Price, Sawyer, Washburn, Burnett, Polk, Barron, Rusk, Taylor, Lincoln, Marathon, Portage, Wood, Clark, Chippewa, Eau Claire, Dunn, and St. Croix County.

The following Tribes hold off-reservation treaty rights in Ceded Territory:

- *Bad River Band of Lake Superior Chippewa Indians*
- *Lac Courte Oreilles Band of Lake Superior Chippewa Indians*
- *Lac du Flambeau Band of Lake Superior Chippewa Indians*
- *Red Cliff Band of Lake Superior Chippewa Indians*
- *St. Croix Chippewa Indians of Wisconsin*
- *Sokaogon Chippewa Community (Mole Lake Band of Lake Superior Chippewa Indians)*

The Project is not located within the Ceded Territory.

7.2 Public Outreach and Communication

7.2.1 List and describe all attempts made to communicate with and provide information to the public. Describe efforts to date and any planned public information activities.

Langdon Mills Solar has been committed to providing transparency and an open line of communication to the local community regarding available Project related information. Outreach efforts have been conducted through in-person meetings, launching digital platforms such as a Project Website and Project Facebook page, advertisements in the local newspaper, and hosting weekly office hours at a Local Office in downtown Cambria, Wisconsin. Detailed information on those efforts is provided below.

Landowners – Project representatives have been meeting with participating landowners since February of 2020. Starting in October of 2021, Project representatives have been conducting in-person meetings every month or second month to provide Project updates and allow Project representatives to answer any questions the participating landowners may have. Over the last year, landowners have also received communications from Project representatives notifying them about studies or surveys to occur on their property, invites to in-person events, and brief Project updates.

At the beginning of November 2021, Langdon Mills Solar employed a local representative who is a participating landowner, local farmer, long-time community member, and well versed in the process of developing large-scale renewable energy projects in Wisconsin. The local representative has been hosting office hours since January 2022 at 123 W. Edgewater, St. Cambria, Wisconsin on Wednesdays from 8:00 AM to 12:00 PM and Thursdays from 1:00 PM to 5:00 PM. He is also available by appointment when contacted through the Project email at info@langdonmillssolar.com and local Project phone number at 920-319-5376.

Local Residents – Langdon Mills Solar is committed to engaging with both participating and non-participating landowners in the Project community to address their questions and concerns about a large-scale solar development in the Towns of Courtland and Springvale. On September 7, 2021, a Project representative attended a Town of Courtland Board Meeting to introduce the Project to the board and answer questions. On February 28, 2022, Langdon Mills Solar hosted an Open House at the Community Center in Cambria, Wisconsin. Prior to the event, a postcard mailing was sent out to participating landowners, adjacent and non-participating landowners within one-quarter mile of the Project footprint, and key community stakeholders. Approximately 150 members of the community attended the event to learn more about Langdon Mills Solar – storyboards and handouts provided at the Open House are included in Appendix S.

Langdon Mills Solar has also provided Project information and updates via advertisements in the Portage Daily Register and Beaver Dam Daily Citizen, as well as mailings to the host community. On April 11, 2022, Project representatives attended a Town of Springvale Board

meeting, in which community members and board members had the opportunity to ask questions of the representatives. After providing a brief introduction and update to the board, Project representatives welcomed questions for a 90-minute Q&A session. Langdon Mills Solar continues to welcome questions and concerns via the several platforms Project representatives manage to properly respond to the community in a timely and comprehensive manner. Project representatives will continue to host weekly office hours, oversee the Project email and Project phone number, and communicate with the host community throughout Project development, construction, and operation.

Local Units of Government – Langdon Mills Solar has made contact with and/or met with the following town and county elected officials, staff, and representatives to inform and update them on Project activities, to negotiate a JDA, and to answer questions and respond to concerns related to the Project:

- Town of Courtland: Clerk, board members, and outside counsel
- Town of Springvale: Clerk and board members
- Columbia County: Clerk and Corporation Counsel

Community Outreach:

- **July 2021:** Langdon Mills Solar met with members of the Town of Courtland and Columbia County to inform them about the proposed Project.
- **August 2021:** Langdon Mills Solar attended a Town of Courtland Board Meeting for a brief introduction of the Project with Q&A included at the end.
- **September 2021:** Langdon Mills Solar attended the Town of Courtland Board Meeting to introduce the Project and answer questions.
- **September 2021:** Langdon Mills Solar representatives met with the Columbia County Economic Development Executive Director to inform her about the potential for the Project.
- **January 2022:** Langdon Mills Solar mailed out postcards via the US Postal Service to inform the community about an upcoming Informational Open House in Cambria for Langdon Mills Solar. The postcard was mailed out to those within one-quarter mile of the Project, participating landowners, and key stakeholders. The postcard is included in Appendix P.
- **January 2022**: Langdon Mills Solar advertised local office hours and location in the Portage Daily Register and Beaver Dam Daily Citizen in preparation for the office launch in late-January. Office Hour Ads are included in Appendix P.
- **January 2022**: Launched local office in downtown Cambria, Wisconsin. Location: 123 W Edgewater St., Cambria, Wisconsin. Office hours are held every Wednesday: 8:00 AM – 12:00 PM; and every Thursday: 1:00 PM – 5:00 PM.
- **January 2022**: Langdon Mills Solar launched its online and social media campaign by

going live with the Project Website (www.langdonmillssolar.com) and Facebook page (www.facebook.com/LangdonMillsSolar) to provide community access to Project information, Project resources and FAQ's, Project contact information, and solar industry related information.

- **February 2022**: Langdon Mills Solar held an Informational Open House at the Cambria Community Center. Project storyboards and handouts were available as a resource to review, while Project representatives were available to answer questions from members of the community. Local residents were informed of the Informational Open House via ads posted in the Portage Daily Register and Beaver Dam Daily Citizen; postcard mailing via the US Postal Service to residents within one-quarter mile of the Project; postcard mailing to key Project stakeholders; the Project Facebook page; and the Project Website. Approximately 150 people attended the Informational Open House.
- **February 2022:** Langdon Mills Solar contacted Kelly Hoffmann, Legal Secretary, of Columbia County to inform the Columbia County Board about the upcoming Langdon Mills Solar Informational Open House in Cambria, Wisconsin.
- **February 2022**: Langdon Mills Solar delivered an Informational Open House postcard invitation to Cambria-Friesland School District. Randolph School District received their invitation via email.
- **March 2022:** Thank You postcards were sent via the US Postal Service to attendees of the February Informational Open House. Attendees that provided their mailing address via a sign-in card, received the Thank You postcard. The postcard is included in Appendix P.
- **March 2022:** Langdon Mills Solar met with the Executive Director of the Columbia County Economic Development Corporation to provide her with a Project update, discuss the local outreach to the host community, and provide information about the Economic Benefits of Langdon Mills Solar.
- **March through April 2022:** Langdon Mills Solar launched a 5-week advertisement campaign in the Portage Daily Register and Beaver Dam Daily Citizen. Once a week, the Project paid for a half-page or full-page advertisement in both publications to advertise Project information to educate and inform the community. Topics consisted of Frequently Asked Questions, the regulatory process for large-scale solar development in Wisconsin, solar on row-crop farms, and general information about the Project. The campaign started in early March and was completed in the middle of April. The advertisements are included in Appendix P.
- **April 2022:** Langdon Mills Solar joined the Cambria-Friesland Area Chamber of Commerce.
- **April 2022**: Langdon Mills Solar attended the monthly board meeting for Springvale Township. Langdon Mills Solar was included in the agenda to offer a Project Update to the board and engage in Q&A with board members and residents of the community. Approximately 50 people attended this board meeting.

- **April 2022:** Langdon Mills Solar met with the Executive Director of the Columbia County Economic Development Corporation to formally introduce a representative from Samsung C&T America. Representatives provided an update on the Project and discussed local sponsorship opportunities and community engagement for the Project.
- **April 2022:** Langdon Mills Solar conducted direct mailing via the US Postal Service. Every residence within Columbia County received this mailing. The one-page informative mailing provided details about the development of Langdon Mills Solar – where to find Project information; insight to the regulatory process for large-scale solar developments in Wisconsin; and a discussion of fire risk, wildlife, and local Project benefits. The direct mailing is included in Appendix P.
- **May 2022:** Langdon Mills Solar hosted a virtual meeting with the Fire Chief from the Cambria Fire Department. The meeting consisted of a presentation about the Project, high-level discussion on the components of a solar facility, conversations about access roads within the facility and lock boxes for Fire Department access, and time for Q&A.
- **May 2022**: Langdon Mills Solar contacted the Superintendents from the Cambria-Friesland School District and the Randolph School District to inform them about the proposed Project in the community. The representative discussed information on the potential of a Community Fund for the school districts located in the Project area. After the contact was made via phone, the Project representative emailed both Superintendents a draft of the JDA.
- **June 2022:** Langdon Mills Solar mailed out a postcard via the US Postal Service to residents within one-quarter mile of the Project, participating landowners, and key Stakeholders in the community. The postcard was to inform the community about the recent submission of the Langdon Mills Solar Engineering Plan to the PSCW and WDNR. The postcard included in Appendix P.
- **June 2022:** Langdon Mills Solar sent a letter via the US Postal Service to residents within one-quarter mile of the project, participating landowners, and key stakeholders in the community. The letter was to update the community about the transition of Langdon Mills Solar from one 400-MW project, to now a phased project – with two 200-MW components. The letter provided an updated timeline for permitting, construction, and operations, which was also updated on the Project website.
- **June 2022:** Langdon Mills Solar met with Senator John Jagler to introduce the Project and answer any questions.
- **June 2022:** Langdon Mills Solar met with Representative Mark Born to introduce the Project and answer any questions.
- **June 2022:** Langdon Mills Solar met with Senator Joan Ballweg to introduce the Project and answer any questions.
- **June 2022:** Langdon Mills Solar met with Representative Jon Plumber to introduce the Project and answer any questions.
- **June 2022:** Langdon Mills Solar attended the Cambria-Friesland Career Coalition

presentation hosted at the Community Room in downtown Cambria. The meeting consisted of an Industry 4.0 presentation given by Lab Midwest and Q&A session at the end.

- **June 2022:** Langdon Mills Solar contacted the WDNR to establish a connection and provide primary point of contact information to the department. Meeting to be scheduled.
- **June 2022:** Langdon Mills Solar contacted the Wisconsin Department of Agriculture Trade and Consumer Protection to establish connection and provide primary point of contact information to the department.
- **June 2022:** Langdon Mills Solar contacted the Wisconsin Office of the Governor to establish connection with the office and provide primary point of contact information to the office. Meeting to be scheduled.
- **September 2022:** Langdon Mills Solar provided a donation to the Randolph Community Corn Carnival to sponsor the event and support the local FFA chapter.
- **September 2022:** Langdon Mills Solar contacted Senator John Jagler to discuss the Project and schedule an in-person meeting for October 2022.
- **September 2022:** Langdon Mills Solar contacted Senator Joan Ballweg to discuss the Project and schedule an in-person meeting for October 2022.
- **September 2022:** Langdon Mills Solar contacted Representative Mark Born to discuss the Project and schedule and in-person meeting for October 2022.
- **September 2022:** Langdon Mills Solar contacted Representative Jon Plumber to discuss the Project and schedule an in-person meeting for October 2022.
- **September 2022**: The Project anticipates holding a second Open House shortly after the CPCN application is filed, to allow the community to ask Project representatives about the filing.

7.2.2 Provide copies of public outreach mailings or website addresses for project pages.

Public outreach mailings and project handouts are included in Appendix S.

The Project website is www.langdonmillssolar.com

The Project Facebook page is www.facebook.com/LangdonMillsSolar

7.2.3 Describe plans and schedules for maintaining communication with the public (e.g. public advisory board, open houses, suggestion boxes, and newsletters).

Langdon Mills Solar will continue to offer transparency and an open line of communication to engage with the public in the following manner:

- Langdon Mills Solar will maintain a local office in Cambria with local office hours and the opportunity to make appointments.
- Langdon Mills Solar will manage the Project email (info@langdonmillssolar.com) and Project phone number (920-319-5376) to receive inquiries from the community.
- Langdon Mills Solar will host Open Houses to provide Project updates and opportunities for Project representatives to interact with community members.
- Langdon Mills Solar will attend meetings of local units of government as requested and/or as needed.
- Langdon Mills Solar will provide regular updates to the host community via letter and/or postcard mailings.

7.2.4 Identify all local media that have been informed about the project.

- February 10, 2022: Langdon Mills Solar representative gave a statement to Jonathan Richie of the Portage Daily Register
- Langdon Mills Solar advertised the local office hours and location in the Portage Daily Register and Beaver Dam Daily Citizen on January 25, 2022, February 1, 8, and 15, 2022.
- Langdon Mills Solar advertised the February 28, 2022, Informational Open House in the Portage Daily Register and Beaver Dam Daily Citizen on February 23, 25, and 28, 2022.
- Jonathan Richie, with the Portage Daily Register, wrote an article on the Project that was published in the Portage Daily Register and Beaver Dam Daily Citizen on March 1, 2022.
- Langdon Mills Solar published a half-page advertorial on solar and agriculture in the Portage Daily Register and Beaver Dam Daily Citizen on March 9, 2022.
- Langdon Mills Solar published a full-page advertorial on Project FAQs in the Portage Daily Register and Beaver Dam Daily Citizen on March 16, 2022.
- Langdon Mills Solar published a half-page advertorial on Project FAQs in the Portage Daily Register and Beaver Dam Daily Citizen on March 23, 2022.
- Langdon Mills Solar published a half-page advertorial on the PSCW regulatory process in the Portage Daily Register and Beaver Dam Daily Citizen on March 30, 2022.
- Langdon Mills Solar published a half-page advertorial on various Project elements in the Portage Daily Register and Beaver Dam Daily Citizen on April 6, 2022.
- June 30, 2022: Langdon Mills Solar contacted Michelle Baik with NBC 15 News via written outreach to establish communication between reporter and the media contact for the Project.
- June 30, 2022: Langdon Mills Solar contacted Jonathan Richie with the Portage Daily Register via written outreach to establish communication between reporter and the media contact for the Project.
- June 30, 2022: Langdon Mills Solar contacted Chris Hubbuch with the Wisconsin State Journal via written outreach to establish communication between reporter and the media contact for the Project.

7.2.5 *Describe the ongoing ways that the public would be able to communicate with plant operators or the company. Describe any internal process for addressing queries or complaints.*

Langdon Mills Solar will continue to offer open lines of communications throughout the remainder of development and into construction and operations of the Project. For the remainder of development and into construction, the local office located in downtown Cambria will remain open for community members to ask questions and document complaints. All complainants will receive a proper follow-up with a Project representative to ensure the issue has been resolved. Community members will also have the opportunity to ask questions or submit complaints to the Project email and Project phone number that have been operating throughout development.

During construction, a site manager will be assigned to oversee the operations of constructing the Project. The site manager will be the main point of contact for the Town of Courtland, Town of Springvale, Cambria Fire Department, the Village of Cambria, Cambria-Friesland School District, Randolph School District, Columbia County, and other businesses and/or entities in the host community.

When Project operations commence, members of the community will be provided contact information of the O&M manager, who will be the main point of contact throughout the operations of the Project. The contact information will be posted at the entrance points to the facilities, as well as provided to the entities listed previously. Any complaints or questions regarding the maintenance and operations of the facility can be directed to the O&M staff of the Project.

8.0 Waterway/Wetland Permitting Activities

Section 8.0 covers information required by DNR for waterway and wetland permits. The following subsections apply to both proposed and alternative solar array sites. Questions about this section should be directed to DNR Office of Energy staff.

8.1 Waterway Permitting Activities

This section should be consistent with the waterways included in DNR Tables 1 and 2 and associated maps. See page iii in this document on what to include in DNR Tables 1 and 2 regarding waterway resources.

8.1.1 *Identify the number of waterways present, including all DNR mapped waterways and field identified waterways, assuming all waterways are navigable until a navigability determination is conducted (if requested). Provide an overall project total, as well as broken down by the proposed site and the alternative site and their associated facilities.*

Section 8.2.1 describes the methods used to field map waterways and wetlands in the Project Study Area. All Project waterways were mapped in the field. The following table summarizes the waterways and their overall length and width at the ordinary high water mark (OHWM) within the Project Study Area:

Table 8.1.1-1

Waterway ID	Overall Length in Feet	Width at OHWM in Feet
ALS01	153	13
ALS02	8,041	14
ALS02A	484	4
ALS05	797	5
ALS06	1,135	5
ALS06A	271	5
ALS06B	558	5
ALS06C	705	5
ALS07	1,621	2
LGS01	332	8
LMS01	6,301	8
LMS02	211	5
LMS03	258	4
LMS04	77	5
LMS05	2,464	3.5
LMS06	239	4
LMS07	7,198	7
LMS12	1,993	6

Waterway ID	Overall Length in Feet	Width at OHWM in Feet
LMS13	1,399	7
LMS14	594	5
LMS15	4,582	5
LMS16	2,697	5
LMS17	4,116	6

8.1.2 Identify any waterways in the project area that are classified as Outstanding or Exceptional Resource Waters, Trout Streams, Wild Rice Waters, and Wild or Scenic Rivers.

No outstanding or Exceptional Resource Waters, Trout Streams, Wild Rice Waters, or Wild or Scenic Rivers occur within or adjacent to the Project Study Area. This was observed using the Surface Water Data Viewer provided by the WDNR.

8.1.3 State if you are requesting DNR staff perform a navigability determination on any of the DNR mapped waterways and/or field identified waterways that would be impacted and/or crossed by project activities. If a navigability determination is requested, provide the following information in a separate appendix with the application:

- *A table with columns for:*
  - *The crossing unique ID,*
  - *Waterbody Identification Code (WBIC) for each waterway (found in the Surface Water Data Viewer or in the GIS data for the DNR mapped waterways),*
  - *Latitude and longitude for each crossing,*
  - *Waterway name,*
  - *Waterway characteristics from field investigation, and;*
  - *Any other pertinent information or comments.*
- *Site photographs, clearly labeled with the photo number, direction, date photo was taken, and crossing unique ID. A short description of what the photo is showing, and any field observation must also be included in the caption.*

- *Project map showing the following:*
  - *Aerial imagery (leaf-off, color imagery is preferred),*
  - *DNR mapped waterways (labeled with their unique ID),*
  - *Field identified waterways (labeled with their unique ID),*
  - *the location of each site photograph taken (labeled with the photo number),*
  - *the project area, and;*
  - *Call out box/symbol for each DNR mapped waterway crossing where the navigability determination is requested (labeled with their unique ID).*

A navigability determination for the waterways mapped for the Project has not been requested nor will a navigability determination be requested. All mapped Project waterways were treated as navigable.

8.1.4 For both the proposed and alternative sites and their associated facilities, provide the following:

8.1.4.1 The number of waterways that would be crossed by collector circuits and specify the installation method (e.g. X waterways would be bored, Y waterways would be trenched, etc.).

A total of five waterway crossings are proposed using HDD/boring methods. None of the proposed waterway crossings are planned to be located within the Primary or Alternate Array fences. There are no plans to trench waterways for installation of collector lines.

8.1.4.2 The number of waterways that would be traversed with equipment for temporary access roads, and how that crossing would be accomplished (e.g. temporary clear span bridges (TCSB), use of existing bridge or culvert, etc.).

Temporary access roads are not planned for the Project. No waterways will be traversed with equipment for temporary access roads.

8.1.4.3 The number of waterways that would be impacted for permanent access roads, and how that crossing would be accomplished (e.g. placement of culvert, ford, permanent bridge, etc.).

There are no planned waterway crossings planned for permanent access roads. And as such, no waterways will be impacted for permanent access roads.

8.1.4.4 The number of waterways that would be impacted and/or crossed by fence installation and footings.

Waterways are not planned to be impacted by fence installation or footings. Waterways will not be crossed by Project fences.

8.1.4.5 The number of waterways that would be impacted and/or crossed by other construction activities or facilities (e.g. placement of a storm water pond within 500 feet of a waterway, stream relocation, staging areas, etc.).

There are no plans for direct impacts to waterways from other construction activities at either the Primary or Alternate Array areas. Stormwater ponds are not planned to be located within 500 feet of any mapped waterways. Waterway crossings are only planned for the collection lines, and these crossings are planned to be implemented using directional drilling methods.

The Project staging area is planned for the same parcel as the O&M building, BESS and substation. The O&M building parcel is not traversed by a waterway, nor is the parcel within 500 feet of a waterway.

8.1.5 Provide the methods to be used for avoiding, minimizing, and mitigation construction impacts in and near waterways. This discussion should include, but not be limited to, avoiding waterways, installation methods (i.e. directional bore versus open-cut trenching or plowing), equipment crossing methods (i.e. for temporary access, the use of TCSB versus temporary culvert; for permanent access, the use of permanent bridge versus permanent culvert), sediment and erosion controls, invasive species protocols for equipment, etc.

The Project plans to avoid impacts to waterways. Collection line crossings of waterways will be directionally bored to avoid possible impacts. Impacts to waterways will continue to be avoided through final engineering and design. Sediment and erosion control practices designed in accordance with accepted WDNR practices will be put in place throughout the duration of the Project to address the discharge of sediment and other pollutants that are carried in runoff from construction areas. HDD equipment, trenching equipment, and backhoes will be power washed before mobilization to the Project area to prevent introduction of invasive species from off-site sources. The equipment will be manually cleaned of soils, seeds, plant parts, or invertebrates between work zones within the Project area. Cleaning will be prohibited in or near wetlands and waterways to prevent the spread of invasive species.

8.1.6 Describe fence crossings of waterways, including the location of support pilings (i.e. in waterway channel, at the top of the waterway banks) and the amount of clearance between the bottom of the fence and the ordinary high-water mark. Also describe any existing public use of the waterway and how this public use may be impacted by the fence crossing.

Waterways will not be crossed by Project fences. Public use of waterways will not be impacted by the Project.

8.1.7 For waterways that would be open-cut trenched, provide the following:

Open-cut trenches are not planned to cross waterways for construction of the Project.

8.1.7.1 State if any waterways are wider than 35 feet (measured from OHWM to OHWM).

Not applicable.

8.1.7.2 The machinery to be used, and where it would operate from (i.e. from the banks, in the waterway channel) and if a TCSB is needed to access both banks.

Not applicable.

8.1.7.3 The size of the trench (length, width, and depth) for each waterway crossing.

Not applicable.

8.1.7.4 The details on the proposed in-water work zone isolation/stream flow bypass system (i.e. dam and pump, dam and flume, etc.).

Not applicable.

8.1.7.5 The details on the proposed dewatering associated with the in-water work zone isolation/stream flow bypass system, including where the dewatering structure would be located.

Not applicable.

8.1.7.6 The duration and timing of the in-stream work, including the installation and removal of the isolation/bypass system and the trenching activity.

Not applicable.

8.1.7.7 How impacts to the waterway would be minimized during in-water work (e.g. energy dissipation, sediment controls, gradually releasing dams, screened and floating pumps, etc.).

Not applicable.

8.1.7.8 How the waterway bed and banks would be restored to pre-existing conditions.

Not applicable.

8.1.8 For waterways that would be directionally bored, provide the following:

8.1.8.1 Where the equipment would operate from (e.g. from upland banks, from wetland banks, etc.) and if a TCSB is needed to access both banks.

For directional boring crossings, entry points and exit points will be positioned at least 10 feet outside of the OHWM for the waterways and will be moved further away when appropriate to achieve the proper depth required for each bore and to avoid tree lines or other obstacles. Should wetlands be present along the banks of waterways, entry points and exit points will be positioned at least 20 feet beyond the delineated boundary of the wetlands.

TCSB are not planned for the Project. There are no Project areas that are isolated by waterways that would require a TCSB. Entry and exit points are accessible from existing public roads or Project access roads in adjacent array areas.

8.1.8.2 The location and size of any temporary staging and equipment storage.

Upland areas will be used for staging and storage adjacent to entry points for directional borings. Staging areas of approximately 200 feet by 50 feet are anticipated, although these may vary depending on the length of the bore. In no case will staging and storage areas be located within wetlands or extend below the ordinary high water mark of waterways.

8.1.8.3 The location and size of bore pits.

In general, bore pits will be located landward (upslope side) of the erosion control measures installed to protect a waterway that is to be bored under. Bore pits will be approximately 20 feet long, 10 feet wide, and 5 feet deep. Installation depths will be at least 5 feet below the bottom of the waterway crossing.

Soils excavated from bore pits will be stored upslope of the waterway adjacent to the boring with the appropriate installation of BMPs installed to protect the waterway. Topsoil material will be staged separately for restoration of the excavated area. After completion of the bore, the excavated subsoils will be used to backfill the pits. Once backfilled with subsoils, the area will be top dressed with the staged topsoil. Upon final grading of the restored soils to existing grades, the area will be re-seeded with a permanent seed mixture and appropriate erosion control devices will be installed (silt fence, erosion matting, etc.), if necessary.

8.1.8.4 Provide a contingency plan for bore refusal and a plan for the containment and clean-up of any inadvertent releases of drilling fluid (e.g. a frac-out).

The construction contractor will be required to develop plans for bore refusal, containment of inadvertent releases, and for review and approval prior to initiation of construction. The plans are anticipated to address the following:

- The locations of cultural and environmental resources will be identified to avoid impacts to protected resources;
- The locations of BMP placements will be identified to protect sensitive resources;
- The locations of drilling entry and exit areas, nearby work areas, the planned drilling route, and construction limits will be identified to avoid impacts to protected resources;
- Monitoring and reporting procedures of inadvertent releases will be outlined and field personnel will be required to understand and ready to implement the procedures; and
- Plan will identify appropriate response equipment available at the work site or in close enough proximity for rapid response.

Inadvertent Release Contingency response:

- If an inadvertent release is identified, drilling activities will be paused immediately, and the location and extent of the release will be determined;
- The contractor will immediately notify the designated members of the Project team;
- Contractor will mitigate the release per the approved plan and other additional appropriate measures if necessary to achieve mitigation of the release;
- Once the release is stabilized and any removal is complete to the extent practicable, conditions will be documented and reported as required; and
- Contractor will prepare a plan to mitigate the possibility of future releases from the drillhole.

Although generally not anticipated, if bore refusal occurs, a modified alignment would be attempted in the same general location. A bore hole in which refusal occurs would be grouted with an approved material.

8.1.9 For waterways that would have a TCSB installed across them, provide the following:

8.1.9.1 A description of the TCSB proposed, including dimensions, materials, and approaches.

The use of TCSB is not planned for the Project.

8.1.9.2 State if any waterways are wider than 35 feet, and/or if any in-stream supports would be used.

There are no waterways within the Project that are wider than 35 feet. No in-stream work is planned for the Project.

8.1.9.3 State how the TCSB placement and removal would occur (e.g. carried in and placed with equipment, assembled on site, etc.) and if any disturbance would occur to the bed or banks for the installation and removal, including bank grading or cutting.

Not applicable. TCSB are not planned for the Project.

8.1.9.4 The duration of the TCSB and when installation and removal would occur.

Not applicable.

8.1.9.5 Describe sediment controls that would be installed during the installation, use, and removal of the TCSBs.

Not applicable.

8.1.9.6 Describe how the TCSBs would be inspected during use, and how they would be anchored to prevent them from being transported downstream.

Not applicable.

8.1.9.7 State if the required five foot clearance would be maintained, or if the standards in Wis. Admin. Code NR 320.04(3) would be complied with.

Not applicable.

8.1.9.8 How the waterway banks would be restored when the TCSB is removed.

Not applicable.

8.1.9.9 Describe the proposed area of land disturbance and vegetation removal at waterway crossings. Include a description of the type of vegetation to be removed, and if this vegetation removal would be temporary (allowed to regrow) or permanent (maintained as cleared).

There are no plans to use TCSB in the Project design, and as such there are no plans to disturb vegetation adjacent to waterways for installation of TCSBs.

8.1.10 Describe the proposed area of land disturbance and vegetation removal at waterway crossings.

Include a description of the type of vegetation to be removed, and if this vegetation removal would be temporary (allowed to regrow) or permanent (maintained as cleared).

Where possible, boring pits will be located to avoid impacts to woody vegetation. Four out of the five waterway crossings (ALS02, ALS02, LMS01 and LMS05) begin and end either within what were active agricultural fields or within fallow upland field edge areas adjacent to what were active agricultural fields. These areas were typically dominated by ruderal weedy species.

It is anticipated that the vegetation in these areas would be temporarily cleared and once boring is complete, the area will be replanted in accordance with the Vegetation Management Plan .

The proposed HDD crossing of waterway LMS17, located west of CTH B south of the intersection with Bender Road is located in a wooded area. The commonly observed species in the area in both the entry point and the exit point and along the access paths are Silver maple, quaking aspen, cottonwood, swamp white oak, black cherry (*Prunus serotina*), green ash, American elm (*Ulmus americana*), common buckthorn, nannyberry (*Viburnum lentago*) and mutiflora rose (*Rosa multiflora*). This area would be revegetated following the Vegetation Management Plan and allowed to regrow with volunteer species from the adjacent wooded area.

8.1.10.1 If any of the following activities are proposed, provide the information as detailed on the applicable permit checklist:

- *New culvert placement: https://dnr.wi.gov/topic/waterways/documents/PermitDocs/GPs/GP-CulvertWPEDesign.pdf (General Permit) or https://dnr.wi.gov/topic/Waterways/documents/PermitDocs/IPs/IP-culvert.pdf (Individual Permit).*
- *New permanent bridge placement: https://dnr.wi.gov/topic/waterways/documents/PermitDocs/GPs/GP-ClearSpanBridge.pdf (General Permit, no in-stream supports) or https://dnr.wi.gov/topic/Waterways/documents/PermitDocs/IPs/IP-bridgeTempCross.pdf (Individual Permit, in-stream supports).*
- *New storm water pond placed within 500 feet of a waterway: https://dnr.wi.gov/topic/waterways/documents/PermitDocs/GPs/GP-StormwaterPond.pdf.*

Access roads throughout the Project have been designed to avoid crossing any surface waters. Culverts will only be required at driveway entrances or at low points across the site with significant stormwater flow. No culverts will discharge to navigable waters as defined in Wis. Admin. Code NR sec. 320.03(11), therefore, it is expected that WDNR permits for new culverts will not be required. The Project will not include the placement of any permanent bridges or storm water ponds within 500 feet of a waterway.

8.2 Wetland Permitting Activities

This section should be consistent with the wetlands included in DNR Tables 1 and 2 and associated figures. See page iii in this document on what to include in DNR Tables 1 and 2 regarding wetland resources.

8.2.1 Describe the method used to identify wetland presence and boundaries within the project area (i.e. wetland delineation, wetland determination, review of desktop resources only, etc.). If a combination of methods were used, describe which project areas utilized which method. The associated delineation report and/or desktop review documentation should be uploaded to the PSC's website as part of the application filing. State if wetlands mapped via desktop resources would be field confirmed, and when (if known).

The wetland and waterway delineation was conducted in accordance with the guidelines of the 1987 Corps of Engineers Wetland Delineation Manual[5] and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region[6] and in general accordance with WDNR guidelines. National Wetland Indicator status and taxonomic nomenclature is referenced from 2018 Corps of Engineers National Wetland Plant List Version 3.4 (NWPL). National Wetland Indicator status is based on the Northcentral and Northeast Region, Northern Great Lakes sub-region. Indicators of hydric soil are based on the Field Indicators of Hydric Soils in the United States guide Version 8.2[7].

Prior to conducting fieldwork, several maps were reviewed including the United States Geological Survey (USGS) 7.5' Quadrangle Map, Natural Resource Conservation Service

[5] Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

[6] U.S. Army Corps of Engineers. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0), ed. J.S. Wakeley, R. W. Lichvar, C.V. Noble, and J.F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

[7] United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2018. Field Indicators of Hydric Soils in the United States, Version 8.2. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils

(NRCS) Soil Survey Map, Wisconsin Wetland Inventory (WWI) Map, and aerial imagery. These sources were used to identify areas likely to contain wetlands and waterways.

Precipitation data from approximately 90 days prior to the field investigation were obtained from a weather station near the Project Study Area and compared with 30-year average precipitation data obtained from a NRCS WETS Table for Columbia County to determine if antecedent hydrologic conditions at the time of the site visit were normal, wetter, or drier than the normal range.

An aerial imagery and Farm Service Agency (FSA) crop slide review was conducted for agricultural areas having been farmed within recent years (typically the last 3-5 years). The review was conducted using the guidelines described in the Hydrology Tools for Wetland Identification and Analysis, Engineering Field Handbook, Chapter 19[8]. Interpretation of the aerial imagery and labels for signatures is also based in part on the guidance provided in the document Guidance for Offsite Hydrology/Wetland Determinations[9].

Areas within the Project Study Area which may support wetlands, identified as wetlands on reviewed maps, and/or have wetland hydrology signatures were evaluated in the field by TRC wetland scientists between September 27 and October 22, 2021. Additional new areas were delineated by TRC scientists between June 7 and June 21, 2022. Sample points were located in areas exhibiting wetland and upland characteristics to document the presence and/or absence of wetlands and to provide support for the delineated wetland boundaries. At each sample point, data were collected to document the vegetation and hydrophytic vegetation indicators, soil profile and hydric soil indicators, and wetland hydrology indicators.

Plant species were identified at each sample point and their wetland indicator status (obligate wetland (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), or upland (UPL)) was determined by referencing the NWPL, Midwest Region. Soil pits were dug to the depth needed to document a hydric soil indicator or confirm the absence of indicators. Soil color was determined using a Munsell soil color chart. The sample point plots and soil pits were evaluated for presence of wetland hydrology indicators.

[8] Natural Resources Conservation Service (NRCS). 2015. Hydrology Tools for Wetland Identification and Analysis, Chapter 19. In: National Engineering Handbook, Part 650 Engineering Field Handbook, U.S. Department of Agriculture, Washington D.C.

[9] U.S. Army Corps of Engineers and Minnesota Board of Water & Soil Resources (BWSR). July 1, 2016. Guidance for Offsite Hydrology/Wetland Determinations.

The wetland and other aquatic resources boundaries were delineated using hand-held GPS units with submeter accuracy. Wetland boundaries were generally determined by distinct to subtle differences in the abundance of hydrophytic vegetation and non-hydrophytic vegetation, presence versus absence of hydric soil indicators, and presence versus absence of wetland hydrology indicators.

8.2.2 Identify the number of wetlands present and by wetland type, using the Eggers and Reed classification. Provide as an overall project total, as well as broken down by the proposed site and the alternative site and their associated facilities.

Based on the on-site wetland delineation completed by TRC Environmental Corporation, 25 wetlands were delineated totaling 232.11 acres of wetlands within the 2,311-acre Project Study Area. Wetlands were classified according to the Eggers & Reed classification method and are included in Figure 4.1.7.1 (Appendix A). Of the 25 delineated wetlands, six distinct Eggers & Reed community types were mapped and included fresh (wet) meadows (127.89 acres), floodplain forest (30.17 acres), shallow marsh (11.60 acres), shrub-carr (10.05), hardwood swamp (3.16 acres), and deep marsh (0.22 acres). Of the classified wetlands many contain the modifier partially farmed whereas others were entirely delineated as farmed wetlands. In total 49.02 acres are farmed wetlands.

The primary array areas included no field delineated wetlands (Appendix A). No wetlands would be located inside the perimeter fences. Four wetlands would be crossed at a total of five locations by underground collection lines associated with primary array areas.

The Alternate Array areas include no field delineated wetlands (Appendix A). No wetlands would be located inside the perimeter fences. One wetland would be crossed in three locations by underground collection lines associated with Alternate Array areas.

8.2.3 Wetland functional values:

8.2.3.1 Discuss the existing functional values of the wetland present. Functional values include but are not limited to floristic diversity, fish and wildlife habitat, flood storage, water quality, groundwater discharge and recharge, public use, etc.

Wetland impacts are not planned for the Project. As such, wetland functional assessments using the Wisconsin Rapid Assessment Method (WRAM) Version 2.0 were not performed.

8.2.3.2 Discuss how the project may impact existing functional values of wetlands.

As there will be no direct impacts to Project wetlands, impacts to wetland functional values were not evaluated. The Project will voluntarily maintain wetland setbacks specified in county zoning ordinances. Long-term positive impacts to wetlands resulting from changes in land use practices on adjacent uplands could include a local increased pollinator habitat and the diversity of local pollinator habitat, the cessation of annual applications of herbicides and pesticides on lands formerly maintained for agricultural production and runoff from those lands into wetlands, and the probable decrease in local soil erosion and transport of nutrients to area wetlands and waterways. These possible changes could have positive impacts on wetland functional values.

8.2.3.3 Provide Wisconsin Rapid Assessment Methodology (WRAM) forms, or other assessment methodology documentation, if completed.

Not applicable.

8.2.4 Identify the any wetlands in the project area that are considered sensitive and/or high-quality wetlands, including, but not limited to:

8.2.4.1 Any wetlands in or adjacent to an area of special natural resource interest (Wis. Admin. Code § NR 103.04).

Jennings Creek, an area of special natural resource interest, is located ¼ mile south of the Project Study Area. There are no delineated wetlands within the Project Study Area that are adjacent to the part of Jennings Creek mapped as a special natural resource interest as mapped on the WDNR Surface Water Data Viewer.

8.2.4.2 Any of the following types: deep marsh, northern or southern sedge meadow not dominated by reed canary grass, wet or wet-mesic prairie not dominated by reed canary grass, fresh wet meadows not dominated by reed canary grass, coastal marsh, interdunal or ridge and swale complex, wild rice-dominated emergent aquatic, open bog, bog relict, muskeg, floodplain forest, and ephemeral ponds in wooded settings.

Five wetlands were classified as floodplain forests in wooded settings. These include ALW05, LGW01, LGW05, LGW07, and NYW04. Wetlands ALW06, ALW11, LGW04, LGW08, and NYW01 and are fresh (wet) meadows not dominated by reed canary grass. Part of wetland ALW20 has an area of deep marsh. Wetlands or parts of wetlands listed reside in the Project Study Area and are considered sensitive and/or high-quality wetlands.

8.2.4.3 Any wetlands with high functional values based on factors such as abundance of native species and/or rare species, wildlife habitat, hydrology functions, etc.

Functional values were not calculated for wetlands in the Project Study Area because the Project is practicing avoidance of both permanent and temporary impacts to wetlands. The WDNR ER Review did not identify rare species wetland habitat within the Project Study Area.

8.2.5 For both the proposed and alternative sites and their associated facilities, provide the following:

8.2.5.1 How many wetlands would be crossed by collector circuits and specify the installation method (i.e. X wetlands would be bored, Y wetlands would be trenched).

A total of eight wetland crossings (ALW05 [3x], ALW10 [2x], ALW20, LGW01 and LGW08) are proposed using HDD/boring. Of those eight crossings, zero crossings are located within the primary array areas and zero are located within the Alternate Array areas. There are no plans to trench collector lines through wetlands.

8.2.5.2 How many wetlands would have construction matting placed within them to facilitate vehicle access and operation and material storage. Also provide the total amount of wetland matting, in square feet.

There are no plans to cross wetlands with construction matting to facilitate vehicle traffic or for other reasons. Temporary impacts to wetlands from construction matting are not planned for the Project. There are no landlocked areas and all Project areas are accessible through uplands.

8.2.5.3 How many wetlands would be impacted for permanent access roads and indicate if culverts would be installed under the roads to maintain wetland hydrology.

There will be no impacts to wetlands from permanent access roads. Permanent access roads are planned to be located completely within uplands.

8.2.5.4 How many wetlands would be impacted and/or crossed by fence installation and footings.

Fences are not crossing any wetlands. As such, there will be no impacts to wetlands from fence installation or footings.

8.2.6 Describe if wetlands would be disturbed for site preparation activities (e.g. grading, leveling, etc.) in the array areas, and for the installation of the arrays and associated supports.

Neither temporary impacts nor permanent impacts are planned for site preparation activities.

8.2.7 Describe if wetlands will be disturbed for site preparation activities:

8.2.7.1 Grading, leveling, etc. in the array areas, and for the installation of the arrays and associated supports.

There will be no impacts to wetlands from site preparation activities. The Project plans to avoid both temporary and permanent impacts to wetlands.

8.2.7.2 If vegetation removal will be conducted in wetlands, describe how woody debris (i.e. brush piles, wood chips, etc.) would be handled and disposed of when clearing shrub and forested wetlands.

Neither permanent nor temporary impacts are planned for the Project. Debris will not need to be handled as none will be produced within the wetland areas.

8.2.8 Describe the sequencing of matting placement in wetlands and the anticipated duration of matting placement in wetlands. For matting placed in any wetland for longer than 60 consecutive days during the growing season, prepare and submit a wetland matting restoration plan with the application filing.

There are no plans to use construction matting within wetlands.

8.2.9 For wetlands that would be open-cut trenched, provide the following:

8.2.9.1 Provide details on the total disturbance area in wetland, including how total wetland disturbance was calculated. Include the size of the trench (length, width, and depth), where stockpiled soils would be placed (i.e. in upland, in wetlands on construction mats, etc.), and where equipment would operate.

There are no plans to excavate through Project wetlands.

8.2.9.2 Details on the proposed trench dewatering, including how discharge would be treated and where the dewatering structure would be located.

Not applicable. There are no plans to excavate through Project wetlands.

8.2.9.3 Duration and timing of the work in wetland.

Not applicable. There are no plans to excavate through Project wetlands.

8.2.9.4 How the wetland would be restored to pre-existing conditions.

Not applicable. There are no plans to excavate through Project wetlands.

8.2.10 For wetlands that would be directionally bored, provide the following:

8.2.10.1 How bored wetlands and associated bore pits would be accessed.

Bore pit locations on either side of wetlands would be accessed from adjacent upland locations. There are no land locked areas within the Project that require traversing through wetlands to access borehole entry or exit locations.

8.2.10.2 The location and size of any temporary staging and equipment storage.

Temporary staging and equipment storage will be located in upland areas in an area of up to 200 feet by 50 feet, depending on the length of the bore, which includes area to stage the bore pipe.

8.2.10.3 The location and size of bore pits.

In general, bore pits will be located landward (upslope side) of the erosion control measures installed to protect a wetland that is to be bored under. Bore pits will be approximately 20 feet

long, 10 feet wide, and 5 feet deep. Installation depths will be at least 5 feet below the bottom of the wetland crossing.

Soils excavated from bore pits will be stored upslope of the wetland adjacent to the boring with the appropriate installation BMPs implemented to protect the wetland. Topsoil material will be staged separately for restoration of the excavated area. After completion of the bore, the excavated subsoils will be used to backfill the pits. Once backfilled with subsoils, the area will be top dressed with the staged topsoil. Upon final grading of the restored soils to existing grades, the area will be re-seeded with a permanent seed mixture and appropriate erosion control devices will be installed (silt fence, erosion matting, etc.), if necessary.

8.2.10.4 Provide a contingency plan for bore refusal and a plan for the containment and clean-up of any inadvertent releases of drilling fluid (e.g. a frac-out).

The construction contractor will be required to develop plans for bore refusal, containment of inadvertent releases, and for review and approval prior to initiation of construction. The plans are anticipated to address the following:

- The locations of cultural and environmental resources will be identified to avoid impacts to protected resources;
- The locations of BMP placements will be identified to protect sensitive resources;
- The locations of drilling entry and exit areas, nearby work areas, the planed drilling route and construction limits will be identified to avoid impacts to protected resources;
- Monitoring and reporting procedures of inadvertent releases will be outlined and field personnel will be required to understand and ready to implement the procedures; and
- The plan will identify appropriate response equipment available at the work site or in close enough proximity for rapid response.

Contingency response:

- If an inadvertent release is identified, drilling activities will be paused immediately, and the location and extent of the release will be determined;
- The contractor will immediately notify the designated members of the Project team;
- Contractor will mitigate the release per the approved plan and other additional appropriate measures if necessary to achieve mitigation of the release;
- Once the release is stabilized and any removal is complete to the extent practicable, conditions will be documented and reported as required; and
- Contractor will prepare a plan to mitigate the possibility of future releases on from the drillhole.

Although generally not anticipated, if bore refusal occurs, a modified alignment would be attempted in the same general location. A bore hole in which refusal occurs would be grouted with an approved material.

8.2.11 Describe how fence installation would occur in wetlands, including the footing types (e.g. direct imbed, concrete, etc.), any associated wetland impact such as vegetation clearing, operation of equipment, etc.

There are no plans to install fences within or through wetlands.

8.2.12 For wetland vegetation that would be cleared or cut, provide the following:

8.2.12.1 The justification for why wetland trees and shrubs are proposed to be cleared, and what construction activity the clearing is associated with.

There are no plans to clear or cut wetland vegetation for the Project.

8.2.12.2 The timing and duration of vegetation removal

Timing and duration of woody wetland vegetation removal is not applicable as no vegetation is proposed to be removed from wetlands within the Project Study Area. No wetlands are to be impacted. Should woody vegetation removal be required, Langdon Mills Solar will adhere to the seasonal timing restrictions for avoiding clearing during the breeding season of listed endangered resources.

8.2.12.3 Describe the type of equipment that would be used, and if the vegetation removal would result in soil disturbance, including rutting and soil mixing.

Equipment will not be required as there will be no vegetation removal. As a result, soil will not be impacted or disturbed.

8.2.12.4 The type of wetland and type of vegetation to be cleared.

Information regarding the forms of vegetation and wetland type it resides in is not applicable because there is no vegetation removal planned.

8.2.12.5 If tree and shrubs removed would be allowed to regrow or be replanted, or if cleared areas would be kept free of trees and shrubs long-term.

Wetlands will be left as is and no removal, relocation or additional vegetation will be needed. Trees and shrubs would be allowed to regrow or be planted in the unlikely event of tree and shrub removal taking place. Should it be necessary, a replanting plan would be created.

8.2.12.6 Indicate the plan for removal and disposal of brush and wood chips.

Removal strategies are not applicable. As previously mentioned there will be no creation of debris within wetlands, including but not limited to brush and woodchips.

8.2.13 Indicate if any permanent wetland fill is proposed, such as for substation placement, permanent roads, fence or array footings, pole locations, etc. and provide the amount of permanent wetland fill.

Permanent wetland fill is not proposed for any of the wetlands within the Project Study Area.

8.2.14 Provide the methods to be used for avoiding, minimizing, and mitigation construction impacts in and near wetlands. This discussion should include, but not limited to, avoiding wetlands, installation methods (i.e. directional bore versus open-cut trenching, soil segregation during trenching, etc.), equipment crossing methods (i.e. use of construction matting, frozen ground conditions, etc.), sediment and erosion controls, invasive species protocols for equipment, etc. Additional guidance to prepare this discussion can be found here: https://dnr.wi.gov/topic/Sectors/documents/PAAsupp3Utility.pdf.

Impacts to wetlands have been avoided by Project design. Collection line crossings of wetlands will be directionally bored to avoid possible impacts. Impacts to wetlands will be avoided through final engineering and design. Sediment and erosion control practices designed in accordance with accepted WDNR practices will be put in place throughout the duration of the Project to address the discharge of sediment and other pollutants that are carried in runoff from construction areas. HDD equipment, trenching equipment and backhoes will be power washed before mobilization to the Project area to prevent introduction of invasive species from off-site sources. The equipment will be manually cleaned of soils, seeds, plant parts, or invertebrates between work zones within the Project area. Cleaning will be prohibited in or near wetlands and waterways to prevent the spread of invasive species. Wetlands will be clearly marked to facilitate avoidance.

8.2.15 Indicate if an environmental monitor would be employed during project construction and restoration activities. If so, describe the monitors roles and responsibilities, frequency of visits, etc.

The Project does not have plans to employ an environmental monitor.

8.2.16 Describe how all wetlands within the project area would be restored. This includes wetlands that would be encompassed within the arrays even if not directly impacted by project construction. This discussion should include details on the seeding plan, maintenance and monitoring, restoring elevations and soil profiles, restoring wetland hydrology, etc.

There are no plans for either permanent or temporary impacts to wetlands. The Project is avoiding wetlands and as such there are no plans for wetland restoration efforts. Wetlands will continue to function as before the Project.

8.3 Mapping Wetland and Waterway Locations, Impacts, and Crossings

Provide the following map sets, as detailed below, for each proposed facility. Each map set should include an overview or index page that includes page extents for the corresponding smaller-scale map pages within the remainder of the map set. The smaller-scale map pages, to show the project and resources in greater detail, should include page numbers to reference to the overview page and have consistent scales throughout the smaller-scale pages.

8.3.1 Topographic map set showing the following:

- *Solar arrays and all associated components, including but not limited to:*
  - *permanent and temporary access roads*
  - *fences*
  - *collector circuits (labeled with the installation method, i.e. directional bore, plow, open-cut trench, etc.).*
  - *Staging areas (labeled with identifying name/number) and all temporary work spaces*
  - *O&M Building and associated driveways, storm water management features, etc.*
  - *New and existing substations*

- *Distribution or transmission interconnection, including pole locations and all access roads (including off-ROW access roads), include identifying labels for each facility*
- *Generator tie line, including pole locations and all access roads, including off-ROW access.*

- *Delineated wetlands, labeled with the feature unique ID*
- *Wisconsin Wetland Inventory and hydric soils, if a delineation was not conducted.*
- *DNR mapped waterways, labeled with the feature unique ID.*
- *Field identified waterways, labeled with the feature unique ID.*
- *Locations of proposed storm water features (i.e. ponds, swales, etc.).*
- *Vehicle crossing method of waterways for both permanent and temporary access, labeled by the crossing method (i.e. TCSB, installation of culvert, installation of bridge, installation of ford, use of existing culvert, use of existing bridge, use of existing ford, driving on the bed).*
- *Placement of construction matting in wetlands.*
- *Excavation areas in wetlands (i.e. bore pits, open-cut trench, etc.).*

Project maps are in Appendix A. Figure 4.1.3 shows the Project Study Area topography with the requested details.

8.3.2 Aerial imagery map set showing the following:

- *Solar arrays and all associated components, including but not limited to:*
  - *permanent and temporary access roads*
  - *fences*
  - *collector circuits (labeled with the installation method, i.e. directional bore, plow, open-cut trench, etc.).*
  - *Staging areas (labeled with identifying name/number) and all temporary work spaces*
  - *O&M Building and associated driveways, storm water management features, etc.*
  - *New and existing substations*
  - *Distribution or transmission interconnection, including pole locations and all access roads (including off-ROW access roads), include identifying labels for each facility*

- *Generator tie line, including pole locations and all access roads, including off-ROW access.*

- *Delineated wetlands, labeled with the feature unique ID*
- *Wisconsin Wetland Inventory and hydric soils, if a delineation was not conducted.*
  - *DNR mapped waterways, labeled with the feature unique ID.*
  - *Field identified waterways, labeled with the feature unique ID.*
  - *Locations of proposed storm water features (e.g. ponds, swales, etc.).*
  - *Vehicle crossing method of waterways for both permanent and temporary access (i.e. TCSB, installation of culvert, installation of bridge, installation of ford, use of existing culvert, use of existing bridge, use of existing ford, driving on the bed).*
  - *Placement of construction matting in wetlands.*
  - *Excavation areas in wetlands (i.e. bore pits, open-cut trench, etc.).*

Project maps are in Appendix A. Figure 4.1.2 shows aerial imagery of the Project and the requested Project detail. Figure 4.1.7.1 shows the delineated wetlands and waterways. A Wisconsin Wetland Inventory map was not included because the entire Project Study Area was field delineated as described in Section 8.2.1.

8.3.3 A map showing which method(s) were used to identify wetland presence and boundaries within the project area (i.e. wetland delineation, wetland determination, review of desktop resources only).

Figure 4.1.7.1 in Appendix A shown the locations of delineated wetlands within the Project Study Area. The entire Project Study Area was field delineated. None of the Project was addressed using only desktop methods. The Project delineation report, which documents the methods and results, is in Appendix T.

9.0 DNR Information regarding Erosion Control and Storm Water Management Plans (not PSC requirements)

This section serves as guidance for development of Erosion Control and Storm Water Management Plans associated with DNR NR 216 Permits. These are not requirements for a PSC CPCN or CA.

9.1 Erosion Control and Storm Water Management Plans

DNR requires a detailed description of temporary and permanent erosion and sediment control measures to be utilized during and after construction of the project.

If the project would involve one or more acres of land disturbance, the applicant's request for permits under Wis. Stat. § 30.025 must identify the need for coverage under the Construction Site Storm Water Runoff General Permit [PDF] from DNR. The permit application itself must be submitted through DNR's electronic Water Permits system after the PSC order. This permit may also authorize construction site dewatering discharges under certain conditions.

The Storm Water Permit and Wis. Admin. Code ch. NR 216 require a site-specific Erosion Control Plan, Site Map, and Storm Water Management Plan. The permittee would be required to implement and maintain, as appropriate, all erosion and sediment control practices identified in the plans from the start of land disturbance until final stabilization of the site. Final stabilization means that all land-disturbing construction activities at the construction site have been completed and that a uniform perennial vegetative cover has been established with a density of at least 70 percent of the cover for the unpaved areas and areas not covered by permanent structures or equivalent stabilization measures.

The Erosion Control Plan, Site Map, Storm Water Management Plan, and any supporting documentation (such as modeling input/output, design specifications, geotech/soil report, site photos, etc.) must be submitted with the Storm Water Permit application through the DNR's ePermitting system.

> ***Erosion Control Plan*** *- See Wis. Admin. Code § NR 216.46 for details regarding information required in the Erosion Control Plan as part of a complete permit application. Sections include:*
>
> - *Site-specific plans.*
> - *Compliance with construction performance standards in Wis. Admin. Code § NR 151.11.*
> - *Details about the site and the project.*
> - *List and schedule of construction activities.*
> - *Site map(s) with site, project, and erosion and sediment control details.*
> - *Description of temporary and permanent erosion and sediment controls.*
> - *Compliance with material management, velocity dissipation, and inspection schedule requirements.*
>
> ***Storm Water Management Plan*** *– See Wis. Admin. Code § NR 216.47 for details regarding information required in the Storm Water Management Plan as*

part of a complete permit application. Sections include:

- *Compliance with applicable post-construction performance standards in Wis. Admin. Code § NR 151.121 through § NR 151.128.*
- *Description of permanent storm water management practices at the site and technical rationale.*
- *Groundwater and bedrock information if using permanent infiltration devices.*
- *Separation distances of permanent storm water management practices from wells.*
- *Long-term maintenance agreement for site vegetation and any other permanent storm water management features.*

As noted above, preparation of Erosion Control and Storm Water Management Plan is not a required part of this CPCN document, yet will be required following the PSCW order. The Project prepared an Erosion Control and Stormwater Management Narrative (Appendix V) that describes the stormwater and erosion control practices anticipated for the Project. The Project will prepare an Erosion Control and Storm Water Management Plan for submittal to the WDNR in accordance with regulations during the detailed design phase.