Springfield Solar Farm, LLC
Solar Electric Generation Facility
Environmental Assessment

Application for a Certificate of Public Convenience and Necessity of Springfield Solar Farm, LLC to Construct a Solar Electric Generation Facility in the Town of Lomira and the Village of Lomira, Dodge County, Wisconsin

Public Service Commission of Wisconsin Docket 9807-CE-100

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Division of Digital Access, Consumer, and Environmental Affairs

Office of Environmental Analysis

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1. Introduction

On October 02, 2020, Springfield Solar Farm, LLC (applicant), filed an application with the Public Service Commission of Wisconsin (PSC or Commission), to receive a Certificate of Public Convenience and Necessity (CPCN) for the authority to construct, install, operate and maintain a solar electric generating facility for 100 Megawatt (MW) Alternating Current (AC) (project). The project would be located in the Town of Lomira and the Village of Lomira, in Dodge County, Wisconsin.

The applicant's requests to receive the CPCN was filed with the Commission pursuant to Wis. Stat § 196.491 and Wis. Admin. Code § PSC 111. The application was determined to be complete on November 4, 2020. The applicant sent copies of the complete applications to the clerk of each municipality in which the project might be located and to the libraries in the wider project region on November 11, 2020.

1.1. Analysis for Wisconsin Environmental Policy Act Compliance

The proposed project is a Type III action under Wis. Admin. Code § PSC 4.10(3). Type III actions normally do not require preparation of an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) under Wis. Admin. Code § PSC 4.10(3). However, an evaluation of a specific Type III proposal may indicate that the preparation of an EA is warranted for that proposal.

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

When the EA is complete, a preliminary determination will be made on whether to undertake a full EIS before a final determination is made. At the time of the preliminary determination, the Commission shall make copies of the EA available to those persons that request it. The EA also describes ways of mitigating or avoiding some of the expected impacts and concludes with the evaluation of ten items described in Wis. Admin. Code § PSC 4.10(2)(d).

In accordance with Wis. Admin. Code § PSC 4.20(1m), public notice was given when the Commission commenced preparation of an EA. On December 17, 2020, Commission staff distributed an EA notification letter to persons with demonstrated interest in the proposed project, or who had requested to receive this type of information. The announcement was also distributed to area legislators, the county, Town, or municipal clerk for the project area, the county, Town, Village, or city chief executive officer in the project area, local news media, and

the regional planning commission. Clerks were requested to post the announcement publicly. The announcement described the proposed project, including a map, a Commission contact person, and indicated how comments may be submitted. The announcement specified a public comment period lasting at least 10 days, which began on the date that the announcement was distributed.

Commission staff solicited public comments about the proposed project during the EA scoping period from December 17, 2020 to January 15, 2021. All comments or concerns regarding the environmental assessment or review of the project have been taken into consideration during the analysis of the project. The comments received are discussed in a further section of this EA.

1.2. Environmental Assessment Scope

The Commission's Division of Digital Access, Consumer, and Environmental Affairs prepared this EA in cooperation with the Wisconsin Department of Natural Resources (WDNR) Office of Energy to determine if an EIS is necessary under Wis. Stat. § 1.11.

The scope of the EA is to review and describe the expected or potential impacts the construction and operation of the proposed project would have on the environment. This includes impacts to the local residents and community as well as natural resources. The EA also addresses potential ways impacts could be avoided or mitigated. The analysis in the EA is provided to the public, intervenors, and the Commissioners to inform comments and decisions regarding the proposed project.

1.3. CPCN Hearing and Intervenors

The Commission issued a Notice of Proceeding for the docket on December 10, 2020 indicating that a hearing would eventually be held on the proposed project. The Commission will issue a Notice of Hearing with details on the public and technical hearings. The public and technical hearings on the project are still to be scheduled, including any potential location. Due to the COVID-19 pandemic, recent hearings have been held over an internet web meeting platform, with the ability for the public to call in via telephone.

The following entities requested to intervene in the docket and were accepted:

- County of Dodge (the County moved to withdraw via motion on February 2, 2021)
- Town of Lomira
- Village of Lomira
- Village of Brownsville
- RENEW Wisconsin

1.4. Persons Contacted, Comments, and Permits

Wisconsin Admin. Code § PSC 4.20(2)(f) states that the EA shall include a list of other persons contacted and a summary of comments or other information received from them, including

information regarding whether the proposed project complies with the regulations of other governmental units.

Persons Contacted

No other persons besides staff at WDNR and the Commission were contacted or involved in the preparation of this EA.

Public Comments

Many comments were received during the EA notification letter comment period (EA scoping period). Commenters were concerned with a variety of issues including hazardous materials, herbicide use, stray voltage, wind damage, erosion, water runoff, property value, glare, noise, endangered species and wildlife, as well as safety regarding nearby natural gas pipelines.

Permit Compliance

The applicant must obtain all necessary permits and approvals before commencing construction activities. These permits may include but are not limited to the following:

- PSC CPCN for construction of large energy generation facility
- WDNR Wisconsin Pollutant Discharge Elimination System, Stormwater Runoff Permit, Wisconsin Endangered Species Law
- Wisconsin Department of Transportation heavy and oversized load permits
- Federal U.S. Army Corps of Engineers Clean Water Act Section 404
- U.S. Fish and Wildlife Service Federal Endangered Species Act Coordination
- Town of Lomira Shoreland Area, Land Use, Driveway Access, and various construction permits
- County of Dodge various construction permits

2. Project Description and Overview

In accordance with Wis. Admin. Code § PSC 4.20(2)(b), the EA includes an overview of the design of the facilities to be constructed, the construction process, and the project area. A map of the proposed project area from the EA notification letter is included as Appendix A.

2.1. Purpose and Need

Wisconsin Admin. Code § PSC 4.20(2)(a) directs the EA to describe the purpose and need for the proposed project. Under Wis. Stat. § 196.491(3)(d)2, the project is a wholesale merchant plant and is therefore exempt from the needs analysis that would be required of a state public utility. The applicant did not provide an estimated total cost for the project because that requirement is only applicable to public utility sponsored projects.

The Commission's review of CPCN applications for wholesale merchant plants is more limited than the review for projects proposed by public or investor-owned utilities. Under Wis. Stat. § 196.491(3)(d)2 and 3, a wholesale merchant plant CPCN need not demonstrate that its facility would meet the reasonable needs of the public for electricity and the Commission may not consider economic factors when evaluating the application. The Energy Priorities Law, Wis. Stats. § 1.12(4), ranks energy conservation and efficiency as its highest priority, with noncombustible renewable resources as the second highest priority.

2.2. Project Location

Land Ownership

The project would be constructed on 26 parcels of land owned by six different property owners under purchase option by the applicant. The total project study area is comprised of 935 acres. The project components, including solar arrays, access roads, and ancillary facilities would encompass a project boundary of approximately 884 acres. This total includes approximately 573.6 acres for the primary solar arrays, as well as an additional 146.4 acres for alternate solar array placement areas. Easements outside of the project boundary would be required for underground collector circuits (23.7 acres).

The applicant possesses purchase options for the parcels currently proposed to host the solar panels, access roads, substation, laydown yards, inverter/transformer skids, junction boxes, and the operation and management (O&M) building. They intend to purchase the project parcels for either the primary or alternate array areas currently under purchase options prior to construction, per the landowner agreements. They also have landowner agreements for easements for portions of the collection system, and would require permits from state and/or local departments of transportation to allow parts of the collection system to parallel and cross public road right-of-ways (ROW).

Physical Landscape

The majority of land cover and land use in the general area is row crops and pasture. The project area would be mostly flat, ranging from elevations approximately 990 feet above mean sea level (msl) to 1,120 feet msl. The western edge of the project would drop slightly down to Kiefer (Kummel) Creek at approximately 980 feet msl. The project area would be located in northeastern Dodge County. Soils are described as nearly level outwash and lake plains to undulating and rolling on till plains derived from lime-rich tills overlain in most areas by a silt-loam loess cap.

Dodge County lies within the Eastern Ridges and Lowlands of the Central Lowland Physiographic Province of the United States. The Central Lowland features flat lands with geomorphic remnants of glaciation. The project would be located in the Southeast Glacial Plain of Wisconsin, underlain by limestone and dolomite with some sandstone and shale, generally covered by a thick layer of glacial deposits that originated during the last part of the Wisconsin

Glaciation. Depth to bedrock in most of the project area would be between 12 to 26 feet below the surface.

Brownfields

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

The applicant stated it identified 39 brownfield sites within five miles of the point of interconnection using Open and Closed Boundaries from the WDNR Bureau of Remediation and Redevelopment. Two of the brownfield sites are considered General Property Sites associated with automobile dealerships in Lomira, Wisconsin. Of the remaining sites, nine are Emergency Response Plans (ERP) sites, 20 are leaking underground storage tank (LUST) sites, and eight are spills sites. All of these sites are very small (less than five acres), located within Lomira or Brownsville, or associated with active nonmetallic mining pits (stone). The applicant further noted that its large solar arrays would require extensive land, therefore brownfields are not typically utilized for siting purposes and they eliminated brownfields from consideration for the project. Commission staff reviewed the WDNR Wisconsin Remediation and Redevelopment Database, which identified a number of small open and closed sites in mostly urban areas near the project area.

Minor Siting Flexibility

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

The minor siting flexibility order condition requires that the applicant consult with Commission staff when proposing a change in siting. If the review determines that the proposed change requires Commission approval, the applicant must request authorization in the form of a letter containing details on the following items:

- Scope of the change
- Reason for the change
- Incremental differences in any environmental impacts
- Communications with potentially affected landowners
- Documentation of discussions with other agencies regarding the change

- Maps of the approved route and the proposed change, including property boundaries and natural features

Minor siting flexibility requests are reviewed by Commission staff. Approval is delegated to the Administrator of the Division of Energy Regulation and Analysis with the advice and consent of the Administrator of the Division of Digital Access, Consumer, and Environmental Affairs.

Proposed changes require reopening of the docket unless the following three criteria are met:

- No new landowners are affected who have not been given notice and hearing opportunity
- Affected landowners have agreed to the change in writing
- No new resources are affected or additional impacts that were not described in the EA

Additional requirements for the applicant following an approved change include:

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

Alternative Solar Array Area

The applicant provided in its application an additional 25% area for alternative locations of solar arrays as required by Wis. Stat § 196.491 and Wis. Admin. Code § PSC 111. The alternative area is required for two reasons:

- The alternative area may be used to avoid portions of the primary area that are found undesirable or unusable during the Commission's review of the application.
- The alternative area may be used to resolve problems that arise during the construction process.

Situations that may prompt the use of alternative areas include, but are not limited to: protecting resources, avoiding unanticipated sub-surface conditions, accommodating governmental requests, addressing landowner concerns, minimizing construction costs, or improving electric generation. Both reasons for utilizing the alternative area are addressed when the Commission authorizes a project in siting decisions and as order conditions.

2.3. Technical Description and Design

Solar Arrays

The application stated that the proposed project is designed to generate solar power using thin-film, polycrystalline silicon, or monocrystalline silicon (including bi-facial) photovoltaic (PV) modules (solar panels) configured on a single-axis tracker system. The site is designed to

produce an overall generating capacity of 135 megawatts direct current (MWDC) and 100 megawatts alternating current (MWAC).

Solar panels for the proposed project may include JA Solar JAM-78D10 450W bifacial mono-crystalline, First Solar FS-6445-A 445W thin-film CdTe, Canadian Solar CS3Y-PB-AG 440W bifacial poly-crystalline, LONGi Solar LR4-72HBD 445W bifacial mono-crystalline, or other panels depending on the most cost-effective option. The primary solar array area could contain approximately 299,000 to 305,000 solar panels, and the alternate solar array area could contain approximately 72,350 solar panels.

The site would use a 1.35 direct current (DC) to alternating current (AC) ratio in the primary facility area, while using a 1.3 DC-to-AC ratio in the alternate facility area. The primary facility area is sized at approximately 574 acres, while the alternate facility area is approximately 146 acres. The primary facility area includes both an O&M building and the project substation.

The solar panels would be connected in series for up to 1500V operation and mounted on a tracker system in-line in portrait orientation on racking, which tracks east to west to follow the sun. The racking and tracker supports would be made of galvanized and stainless steel. The single-axis tracking system would be mounted on support posts driven or screwed into the ground with steel piles or helical piles spaced 41.3 feet apart.

Foundations

The project would use driven pier foundations and concrete foundations from 5 feet to 10 feet deep. The inverter/transformer skids would likely be installed on driven pier foundations but could be placed on concrete foundations if required by soil and geotechnical conditions. The main power transformer (MPT) would be installed on a concrete foundation. Foundation dimensions would be determined in the detailed engineering phase; generally, the largest foundation would be the MPT foundation which would be approximately 50 feet by 30 feet.

Some EA scoping comments expressed concern regarding the depth of array foundations and possible interaction with the bedrock beneath. The application states that the array foundations would be 5-10 feet deep, which should not affect the bedrock that is estimated to be 12 to 26 feet below the surface of the project area.

Collector System

A collector system would be comprised of the underground cabling infrastructure located between and throughout the solar production areas. There would be approximately 13 miles total of collector circuits comprised of below-ground collectors, operating at 34.5 kilovolts (kV).

Below-ground collector lines would contain up to five collector circuits constructed in open-cut trenches 36 to 48 inches deep. The width of the trenches would depend on the number of circuits: 12 to 18 inches for a single feeder trench, 3 foot spacing and 3 to 6-foot trench width for a two feeder trench, and 3 foot spacing and 15 to 16-foot trench width for a five feeder trench. At road, creek, and wetland crossings, circuits would be run using directional boring.

Generator Tie Line

The application materials indicated that a 138 kV generator tie line (gen-tie line) would be required, at a length of approximately 453 feet. Two vertically framed wooden monopole support structures would be needed to string a single circuit, 795 ASCR Drake conductor. The support structures would be approximately 61 feet above ground and require a ROW width of 60 to 80 feet. The gen-tie line would extend from the project substation to the Butternut substation, according to the Midcontinent Independent System Operator, LLC (MISO) J1171 facilities study report. Based on current MISO schedules for J1171, a signed generator interconnection agreements is expected by December 2021.

Substation

A project substation would be included in this project, transforming the collector circuit voltage at 34.5 kV to transmission voltages of 138 kV. Though final substation design has not been completed at this time, the project substation is expected to take a footprint area of approximately 305 feet by 310 feet, located on a two-acre plot for that purpose. The project substation would include some or all of the items identified below, depending on final design:

- 34.5/138 kV- and 75/100/125 kilo-volt-ampere (kVA) main power transformer
- 34.5kV/1200 ampere (A) air-insulated circuit breakers
- 34.5 kV/3000 A air-insulated buses and supporting structures
- 34.5 kV metering and instrument transformers
- 100 kVA station service transformer
- 138 kV/1200 A circuit breakers
- 138 kV/1200 A disconnect switches
- 138 kV surge arrestors
- 138 kV buses and supporting structures
- 138 kV metering and instrument transformers
- 138 kV dead-end structure for an outgoing transmission line
- Protection and control building
- Internal access roads
- Security fencing

Operations & Management (O&M) Building

The application discusses a need for an approximately 2,400 square foot O&M building, to be located on one acre of land. The application does not specify if the O&M building would be rented or purchased from an existing location in the larger project area or constructed at the site. If constructed at the site, the O&M building would be located directly west of the project substation. The O&M building would provide for employee offices/workstations, meeting space, and storage for equipment and spare parts. The application stated that up to four full-time equivalent staff would be employed at the O&M building. If constructed at the site, a parking lot with space for approximately 10 vehicles would be constructed next to the O&M building and a potable water well would be needed for water service to the building, as well as a septic system.

Battery Energy Storage System (BESS)

According to the application materials, no BESS is planned for the site at the time of the application.

Access Roads

Permanent internal access roads within the project arrays are expected to be approximately five miles in total length. The internal access roads would be located within the secured fenced areas and would not be available for use other than by the project owner. They would be designed to provide access to power conversion equipment within the panel arrays and to solar equipment, and to accommodate ongoing maintenance of the project components. Roads would not be constructed within every aisle. Access roads would be 12 to 16 feet wide with a minimum of ten feet of clearance to the array or other equipment.

Fencing

Array fencing would consist of 8-foot-high deer fence with metal fence posts and direct-embed steel corner posts. Fences would be set back a minimum of 20 feet from arrays or other equipment. The collector substation would be surrounded by security fencing with barbed wire.

Perimeter Area

Commission staff asked the applicant to describe how the land outside of the fenced solar array areas (also known as *perimeter areas*) would be affected by construction, how this land would be used during operation of the facility, as well as what type of vegetation would be planted here (e.g. pollinator species, native grasses, etc.).

The applicant responded by stating that generally, there would be minimal effects to areas outside of the fenced solar arrays. Temporary impacts to the ground surface may occur during the installation of the perimeter fences and from overland light duty vehicle travel. Installation of underground collection lines outside of the perimeter fencing would be done via a combination of horizontal directional drilling (HDD borings) and open cut trenches. Collection line runs under STH 49 and CTH 175 would be installed via HDD boring. Underground collection lines connecting arrays P3 and P6 (west of CTH 175) and arrays P4 and P6 (south of STH 49) would be installed via open cut trenching. Material excavated from the trenches would be stored directly adjacent to the trench during collector line installation. Topsoil, if present, would be separated from sub-surface material.

Following completion of the installation, the stored material would be placed back into the trench and top dressed with the separated topsoil. Disturbed areas outside the fenced areas but on parcels used for solar arrays would be stabilized with a cover crop and/or native upland grass species seed mix. Disturbed areas along the collection lines on parcels not used for solar arrays would be either: (1) permanently planted with a native upland grass species seed mix; (2) temporarily stabilized with a cover crop and/or native upland grass species seed mix until the next planting season then returned to agricultural use; or (3) immediately returned to agricultural use depending on landowner preference and timing of completion of construction. All cover

crop and upland grass seed mixes would be as specified in the Vegetation Management Plan included in Appendix J of the original CPCN Application. Springfield Solar anticipates that the majority of, if not all, areas outside the fenced solar array areas that are used for underground collection only would be returned to previous farming activities within one farming season after construction is complete.

2.4. Construction Process

Construction Sequence and Schedule

The applicant estimates that overall project activities would start in October 2021 and end in November 2022, with expected unit operation. The work would begin with site preparation activities, including erosion control measures and laying of tracking pads, from October 2021 to June 2022. Vegetation removal would also occur between October 2021 and December 2021, while access roads would be installed between October 2021 and June 2022. The project substation would be constructed between March 2022 and August 2022. For the solar arrays, rack installation is expected between December 2021 and June 2022, inverter pad installation is expected between May 2022 and June 2022, and solar module installation is expected between April 2022 and September 2022. Commissioning activities would be planned between September 2022 and October 2022, with in-service operation of the unit in November 2022.

Workforce

During construction, the project would require approximately 100 to 200 workers during peak construction periods. Upon operation of the unit, up to approximately 4 full time-equivalent personnel would be employed at the site.

Construction Equipment and Delivery Vehicles

The construction phase would use a variety of different construction equipment and delivery vehicles. Road construction and other civil engineering work activities would involve bull dozers, motor graders, and rollers. The equipment piles would be driven by pile driving equipment. Rack and panel installation activities would use skid steers and telehandlers. The substation portion of the construction would necessitate a large crane truck to place the main power transformer and other heavy equipment. The gen-tie line would use wheeled or tracked drill rigs to drill the holes for the support poles, while wheeled or tracked cranes would lift the poles into place. Other construction equipment that may be used could include all-terrain vehicles and forklifts.

Staging and Laydown Areas

There would be a primary five-acre laydown area constructed north of the collector substation. This area consists of entirely agricultural land. Two alternate, approximately five-acre laydown areas may be used, one within the alternate facility area A3 and one outside the fence line of array A3. These two laydown yards are located approximately 500 feet east of Center Drive and would be constructed entirely within agricultural lands.

Parking Area

Temporary parking for construction activities would be provided at the primary project laydown area. Permanent parking is planned for the O&M building. This parking area would be 80 feet by 50 feet (4,000 square feet) and would accommodate up to ten vehicles.

2.5. Decommissioning Plan

The applicant submitted a decommissioning plan as Appendix T of the application. The plan describes the major components that would need to be decommissioned, including solar panels and tracking systems, foundations and steel piles, inverter stations, electrical cabling and conduits, the project substation, site access and internal roads, and perimeter fencing. The solar electric facility's life is described to be at least 30 to 35 years, with a possible extension to 40 years or more. The plan notes that certain items may be upgraded to extend the useful life of the facility, but the facility would be decommissioned at the end of the facility's useful life.

Decommissioning activities would begin within twelve months of the site ceasing electrical production and take six months or more, depending on site conditions and monitoring needs. The major steps of the decommissioning process include:

- Reinforcement of access roads
- Installation of temporary erosion fencing
- De-energization and removal of solar panels, frames, and racking
- Removal of structural foundations and piles less than four feet below the surface
- Removal of inverter stations and foundations
- Removal of electrical cables and conduits less than four feet below the surface
- Removal of access and internal roads
- Removal of the project substation
- De-compactification of the soils as need for revegetation

Some project components, such as solar modules, racking, and inverters, may be refurbished and sold for use in the secondary market. Otherwise, these items would be salvaged or disposed of at appropriate facilities. The project substation components may also be re-sold or salvaged for scrap or other disposal, depending on conditions at the end of the project life. Electrical conduit and cable buried less than four feet from the surface would be removed, while those deeper than four feet would be abandoned in place. All internal roads are expected to be removed.

3. Environmental Effects

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

3.1. Agricultural Land

Scoping Comment Concerns

Many EA scoping comments raised the concern that large amounts of high quality agricultural land would be destroyed by the proposed project. The applicant states that the lands that are converted to solar production areas would be suitable for a return to agricultural farming activities at the end of the estimated project lifespan of 20 to 30 years. No known utility-scale solar facilities have yet been in operation for such a lifespan that would provide any examples of either destruction of agricultural land or complete restoration. The applicant's decommissioning plan includes reasonable activities that would seek to restore the land by removing all facility materials that are within four feet below the ground surface and decompacting the soil.

Current Agricultural Land Impacts

Most of the project would be constructed on agricultural land used for crop production. According to the application, the primary solar arrays with their associated access roads, collector circuits, inverters, substation facilities, and an O&M building would permanently impact 567.4 acres of agricultural land and temporarily impact 2.6 acres. The use of alternative solar arrays with the associated facilities listed above, would permanently impact 146.8 acres of agricultural land and temporarily impact 0.08 acres.

The applicant states that no damage to agricultural facilities or interference with farming operations are anticipated during construction of the solar facilities. There would be minimal interference between project construction equipment and farm equipment travelling on Town, Village and state roadways. They anticipate no impacts to herd management, specialty crop production, field and building access, or organic farming. The project would not affect any farmland that is part of an Agricultural Enterprise Area. None of the project parcels are enrolled in the Conservation Reserve Program.

Confined Animal Dairy Operations and Stray Voltage

Four confined animal dairy operations and two dairy/stock cattle facilities would be located within 0.5 miles of the project boundary:

- One dairy operation would be located approximately 100 feet west of Primary Array Area P5 (across STH 175).
- One dairy operation would be located approximately 0.39 mile south of Primary Array P3.
- One dairy operation would be located approximately 0.46 mile northwest of Alternative Array Area A1.
- One dairy/stock cattle operation would intersect the proposed aboveground collector line adjacent STH 49.
- One dairy/stock cattle facility is located within 300 feet of the distribution/collector centerline adjacent STH 49.

- One dairy cattle facility is located within 300 feet of Primary Array Area P5. This dairy facility is located on the opposite side of STH 175 and is not located within the project boundary.

The applicant states that they do not anticipate issues regarding induced (stray) voltage as a result of the project because induced voltage issues are generally caused by improperly grounded and/or isolated electrical circuits found in older buildings, factories, or barns. Grounding for the project would be designed and certified by a licensed electrical engineer according to current applicable electric code requirements. They state that given the substantially low risk of the project causing induced voltage, they may conduct pre- and post-construction induced voltage testing at appropriate agricultural facilities located within 0.5 mile of the project in coordination with the local distribution utility.

In some past solar project dockets, the Commission has included a condition that requires the applicant conduct stray voltage testing. The Commission could include an order condition requiring the applicant to conduct stray voltage testing for all six of the dairy operations located within 0.5 miles of the project boundary.

Drainage Tiles

The applicant states that a comprehensive file detailing the drainage tile or irrigation systems within the proposed project boundary does not exist. However, they have engaged and would continue to have discussions with agricultural landowners supporting the project to determine where drainage tiles exist. They plan to coordinate with the participating landowners and contract with a professional drainage tile company to locate, to the extent practicable, all drainage tiles potentially impacted by the project if the project is authorized by the Commission. They would avoid impacts to the existing drainage system as much as possible. If impacts to a major tile line are unavoidable, the tile line would be rerouted post-construction. Damaged, cut, or removed tile would be repaired or replaced within a reasonable timeframe.

Prime Farmland

According to Commission staff analysis, the project's solar arrays could impact up to approximately 720 acres of prime farmland, including both the prime farmland in the primary solar array sites (574 acres) and alternate solar array sites (146 acres). Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. These are high quality soils that have the growing season and moisture retention capability to produce economically-sustained high yields of crops when treated and managed appropriately. Generally, these soils have an adequate and dependable water supply, favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few to no rocks. Prime farmland soils are permeable to water and air and are not excessively erodible or saturated with water for a long period of time, no do they flood frequently or are protected from flooding. These may also include areas that would be prime farmland if drained.

Agricultural Impact Statement

Wisconsin Stat. § 32.035 states that an agricultural impact statement (AIS) with the Department of Agriculture, Trade, and Consumer Protection (DATCP) is required if the project is exercising the powers of eminent domain affecting farming operations. The proposed project would not exercise powers of eminent domain, therefore DATCP will not complete an AIS for this project.

3.2. Airports

Airport Presence

No commercial air services are known to operate within the project boundary. A decommissioned airport and runway associated with the Quad Graphics Facility is located approximately 0.25 mile northeast of the Project. The airstrip has been inactive since the early 2000s and is not included in any FAA, Dodge County, or private airport GIS databases. Fond Du Lac County Skyport (FLD) is located approximately 9.9 miles north of the project's northern boundary. FLD has two concrete runways for public use in light general aviation.

Impacts

The proximity of FLD would not impose any limitations on construction equipment or construction activity. Due to the height of proposed facilities and distance to the airport, no impacts to navigable airspace are expected and mitigation measures are not expected to be necessary. No FAA determinations or mitigation actions would be required for this project and no WisDOT high structure permits are required for the project.

The application included a glare analysis as Appendix N. It states that based on the solar array parameters provided, glare is not predicted to occur from the proposed project at the four airports located within ten miles of the project, including the Fond du Lac Airport, Dinnerbell Airport, Baier Landing Strip, and Middlestadt Landing Strip.

3.3. Air Quality and Dust

Temporary Impacts

Temporary, localized impacts to air quality would occur during the construction phase of the project. These impacts would be a result of construction machinery and delivery vehicles in the project area. Diesel engines can create exhaust impacts that are typically short term in nature, but can be a nuisance or, in high enough quantities, a health hazard. Keeping vehicles and construction equipment in good working order is one way to mitigate these impacts.

Loose or fugitive dust may be generated from excavation or grading work, exposed soils, or materials transport, and could create a nuisance for local homeowners or drivers. The extent of fugitive dust generated during construction would depend on the level of construction activity, weather conditions, and the moisture content and texture of soils being disturbed. High winds and dry conditions increase the chance of fugitive dust affecting air quality. Watering exposed

surfaces and covering disturbed soils with quick-growing non-invasive plant species can reduce the chance of fugitive dust.

Mitigation

Appendix M of the application includes an Erosion Control Plan that would likely help to decrease the amount of loose dirt and debris during construction and therefore lead to less dust creation. Some of these practices include temporary stabilization using biodegradable netting as well as temporary and permanent seeding of the project area.

No significant air quality impacts would be expected after construction is complete and the project is operational, if approved. Solar facilities generate energy without the creation of regulated pollutants or carbon dioxide.

3.4. Archaeological and Historic Resources

Identification of Resources

The applicant hired a consultant, Stantec, who conducted an initial cultural resources database review, created an archaeological site probability model, and conducted field investigations to identify any cultural resources present within the project boundary. The results of the cultural resources database review indicated that 14 archaeological surveys have been conducted within one mile of the project, including three surveys conducted within a participating parcel. Five archaeological sites would be within one mile of the project, including one located within a participating parcel. While none of the six recorded cemeteries and burial sites are within the project, the Lomira Cemetery would be located adjacent to a participating parcel. Finally, 18 cataloged historic structures would be located within one mile of the project. While none are located within a participating parcel, five of the cataloged structures would be within 0.3 miles of a participating parcel.

The consultant used archaeological site-location modeling to identify areas of high potential for archaeological sites. Stantec identified the area of high archaeological site potential through review of the Wisconsin Historic Preservation Database online archaeological site files and historical maps mainly postdating the Civil War. Further, site locations were restricted to areas with less than 15 percent slope and on soil types that were not subject to frequent flooding.

Stantec archaeologists conducted a pedestrian survey of 42.4 acres of high prehistoric Native American and Historic period Euro-American archaeological site potential. The pedestrian survey resulted in the identification of three Historic period sites with artifacts dating from the late nineteenth to twentieth centuries. No prehistoric Native American archaeological sites were identified.

Evaluation and Potential Effects

The three Historic period sites identified during the pedestrian survey yielded assemblages with both few artifacts and artifacts that predominantly date to the twentieth century. The artifacts

from all three sites are common types, and disturbance of the site areas by plowing suggests little potential for the presence of intact artifact deposits.

The three Historic period sites identified during the pedestrian survey appear to lack subsurface integrity and robust data sets that would allow researchers to address questions important to the understanding of local history. Stantec does not recommend further archaeological investigations at these Historic period sites.

For the five cataloged historic structures within 0.3 mile of the project, the Stantec field reconnaissance survey indicated that four are screened from proposed solar facilities by landscape trees, field tree lines, other residences, commercial structures, farm outbuildings, and in one instance, an interstate highway interchange. The fifth structure was not present at the location denoted within the Wisconsin Architecture and History Inventory database.

For the five cataloged historic structures, based on the screening between the cataloged structures and the solar facilities, Stantec concluded that the proposed project would not have an adverse effect on these resources. Therefore, Stantec did not evaluate the unevaluated structures for eligibility for listing in the National Register of Historic Places (NRHP).

Recommendations

The cultural resources investigations determined that there would likely be no adverse effects associated with the siting and construction of the project on historic properties listed in or eligible for either the NRHP or the Wisconsin State Register of Historic Places. No significant historic properties would be impacted by the project. The Cultural Resource Due Diligence Report is included in Appendix K of the application. The report also included an unanticipated archaeological discoveries plan, describing a process for addressing any resources discovered during construction, which includes contacting the Commission's Historic Preservation Officer as well as the State Historic Preservation Office should any archaeological materials be discovered during construction.

3.5. Communication Towers

Overall Effects and Mitigation

The application states that solar facilities would be consistent with the height of existing development in the project area and are not anticipated to impact any communications infrastructure or otherwise cause disruptions to line-of-sight and broadcast communications. They state that height of the project facilities should not obstruct microwave beam paths, degrade broadcast communications, or interfere with cell phone communications or radio broadcasts.

After commercial operation of the facility, the applicant plans to investigate any interference reports. Any reports determined to be caused by the installation of the project would be mitigated to the extent practicable to provide the same level of coverage prior to the installation of the project.

In some past solar project dockets, the Commission has included a condition that requires the applicant to mitigate any impacts of the project on line-of-sight communications. The Commission could include such an order condition in this docket.

Cell Phone Communications

The applicant queried the Federal Communications Commission (FCC) website for registered antenna structures (towers) within three miles of the project area. No towers would be located within the project boundary, one would be adjacent to the project boundary and five additional towers would be within three miles of the project boundary. Based on the search, the two closest towers would be located approximately 650 feet and 3,500 feet from the closest proposed panel, one tower being 64.4 feet (19.6 meters) in height and one being 88.1 feet (26.9 meters) in height. The closest tower to the project boundary is owned by Wisconsin Central Railroad, and the second is owned by Subcarrier Communications, Inc. The application states that at this distance and based on the maximum height of the solar panels (10 to 12 feet) and the perimeter security fence (8 feet), the cellular services on the two towers should not be impacted.

Radio Broadcasts

The applicant reviewed the FCC website for AM and FM radio stations within three miles of the project boundary. No stations were identified by this search. As there were no AM or FM stations found within three miles of the project, the project should not impact the coverage of local AM or FM stations.

Internet (WiFi)

The applicant states that they are not aware of evidence suggesting utility-scale solar interferes with internet service and therefore, they do not anticipate that the project would impact WiFi or internet services for nearby residences.

Television

The applicant reviewed the FCC website for any television (TV) stations within three miles of the project and no stations were identified. The application states that multipath interference to a television receiver occurs when television signals are scattered by reflecting off an object such as rotating wind turbine blades. Modern digital TV receivers have undergone significant improvements to mitigate the effects of signal scattering. When used in combination with a directional antenna, they believe it becomes even less likely that such signal scattering will cause interference to digital TV reception.

Doppler Radar Network

Radar towers are elevated to avoid interference from topography, therefore the applicant does not anticipate that there would be any impact to radar services due to the development of the project.

3.6. Conservation Easements

Managed and public lands, conservancies, land under contracts such as Conservation Reserve Program, Managed Forest Law and Farmland Preservation Agreements were reviewed for the project area by the applicant. There would be none of these public or managed lands within the project boundary. There are a total of five public parks, two managed forest law properties, and one golf course located within a two-mile buffer of the project boundary.

3.7. Developed Land

The project would be constructed in an area surrounded by some developed land including industrial, commercial, and residential buildings. As a wholesale merchant plant, the applicant would not have the ability to use eminent domain to acquire property for construction.

Industrial Areas

Several industrial developments would be located along the east side of the project area. These include a large Quad Graphics building. A rail line would be located east of the project going north to south. A busy roadway, Highway 41 goes north to south located to the east of the project area.

Commercial Areas

On the east side of the project area, a pub and grill would be located across the road (the northeast corner of State Rd 49 and 175) from the project. Downtown Brownsville is located nearby to the west of the project area.

Residential Areas

Several homes would be in fairly close proximity to the project on two or more sides. While the project is mostly within the Town of Lomira, homes and neighborhoods in the Village of Brownsville would actually be located much closer to the project. On the east side of the project area, there would be two apartment complexes that would be across the street from the project (the east side of State Rd 175). An existing neighborhood of homes would be located to the west of the project area, and new homes are under construction in an area to the south of the project.

The applicant states that there would be a total of 25 residential properties with solar panels located adjacent (within 100 feet) to its property lines. This does not include residences that are located across state, county, or Town roads from the project area. Springfield Solar states that it is taking visual impact mitigation requests from project neighbors under consideration as they arise and would continue to do so throughout the development process.

Setback Distances

Many EA scoping comments received expressed concerns about the close proximity of the project to nearby residences. The application included a table that shows the various setback distances from the solar arrays to surrounding property, shown below. The applicant states that

it designed the facilities to maintain minimum solar panel setbacks from residences, property lines, and other features. The project would not require easements from non-participating landowners to accommodate the setbacks utilized. The setback distances would meet or exceed all county, Township, and Village ordinances or rules.

The concept of using a standard setback distance of 300 feet has been introduced in other solar electric generation facility dockets. The Commission could consider requiring the use of additional setback distances or screening vegetation to mitigate the impacts described by landowners that are concerned about solar facilities adjacent to their properties.

Table 1 Project Setback Distances

Type	Setback/ Constraint	Setback	Clarification
Structures	Inhabitable Structures - Building Edge (nonparticipating)	100 feet (from building footprint)	As measured to edge of panel. Does NOT apply to access roads and fences.
Structures	Inhabitable Structures - Building Edge (participating)	100 feet (from building footprint)	As measured to edge of panel. Does NOT apply to access roads and fences.
Structures	Inhabitable Structures - Building Edge with Waiver	Per waiver	
Structures	Noninhabitable Structures	20 feet (from building footprint)	
Property Lines	Side-yard	8 feet	Measured from side lot line; setbacks could be revised during permitting process.
Property Lines	Rear-yard	25 feet	Measured from rear lot line; setbacks could be revised during permitting process.
Property Lines	Front-yard	Varies depending on class of road	In no case shall the distance of the setback to the edge of the ROW be less than the following; Streets and Town Roads (designated): 27 feet Streets and Town Roads (undesignated): 42 feet Federal, State, and County Trunk Highways: 67 feet

			Expressways and Freeways: 200 feet (residential use) and 67 feet (nonresidential use)
Structures	Height	40 feet	Applies to principal structures (panels, O&M facility)
Existing Infrastructure	Public Roads	Varies depending on class of road	In no case shall the distance of the setback to the edge of the ROW be less than the following; Streets and Town Roads (designated): 27 feet Streets and Town Roads (undesignated): 42 feet Federal, State, and County Trunk Highways: 67 feet Expressways and Freeways: 200 feet (residential use) and 67 feet (nonresidential use) Communications, collection and power transmission poles and lines may be constructed within the setback limits.
Other	Project Fence	20 feet from rights-of-way	Permitted on lot lines.

3.8. Endangered Resources

The state's Endangered Species Law, Wis. Stat. § 29.604, makes it illegal to take, transport, possess, process, or sell any wild animal that is included on the Wisconsin Endangered and Threatened Species List. In addition, it is illegal to remove, transport, carry away, cut, root up, sever, injure or destroy a wild plant on the Wisconsin Endangered and Threatened Species List on public lands. Although utility practices are exempted from the taking prohibitions of listed plant species on public lands, it may still be prudent for the applicant to actively avoid activities in certain areas that are known to host rare plants. The Federal Endangered Species Act (ESA) protects all federally listed animals from direct killing, taking, or other activities that may be detrimental to the species. Federally listed plants have similar protection, but the direct killing or taking prohibitions are limited to federal lands or when federal funds/permits are necessary. In addition, there may be other state and federal laws protecting rare species including the federal Migratory Bird Treaty Act, the federal Bald and Golden Eagle Protection Act, and the Protected Wild Animals (Wis. Admin Code § NR 10.02).

An Endangered Resources (ER) review is based off information from the Natural Heritage Inventory (NHI) database, maintained by the WDNR Bureau of Natural Heritage Conservation, to identify any endangered, threatened, or special concern species or natural communities in the project area. The NHI database contains known records for endangered resources. However, most areas of the state have not been surveyed extensively or recently, so the NHI data should not be solely relied upon, particularly in areas dominated by private lands. In areas where suitable habitat exists for protected species, but occurrences have not been recorded in the NHI database, there may be recommended activities that could mitigate or avoid potential impacts to protected species. A check in the NHI database found that there were no endangered, threatened,

or special concern species within the project area and one and two mile buffers. Therefore, there are no required or recommended actions for rare species and impacts are not expected as it relates to this project.

If approved, this project would begin construction over a year from the review date. WDNR regularly updates the NHI database as new species records are discovered and when previous records are checked to determine if the species is still present. If the project is approved, Springfield Solar should conduct an updated search of the NHI database closer to the construction start date (no more than one year out) to determine if any changes would result in an ER review being necessary to avoid impacts to protected species.

3.9. Erosion

Scoping Comment Concerns

Several EA scoping comments stated concern for the erosion potential of the construction area and facility. Commission staff asked the applicant to describe how many acres of the site would be graded and leveled for the project as well as the depth of the ground surface that would be stripped. The applicant responded that micro-grading or site leveling would likely be necessary prior to array installation. They estimate that micro-grading or site leveling would occur on roughly 40 to 60 acres at one time. They also state that at this early stage of the project, it is estimated that between 200 and 300 acres in total would need to be graded prior to the construction of the project. Micrograding generally includes grading to a depth less than one foot. The total final grading acreages and depths would not be known until a final project design is complete.

Erosion Potential

The solar generation facility would increase the amount of impervious surfaces in the area from access roads, the substation, O&M building, associated parking area, and solar panels. These surfaces may concentrate runoff and have the potential to cause erosion without adequate control measures put into place.

In contrast to current agricultural activities, which expose large soil surfaces to surface water and wind erosion, the project site would remain vegetated for the project's expected useful life. When the participating parcels at each project are revegetated, rainfall infiltration would increase, which benefits overall groundwater quality. Moreover, vegetative cover would limit soil erosion due to water and wind. This would decrease potential sediment and nutrient loading in nearby waterways and benefit overall surface water quality.

Mitigation during Construction

The applicant's Erosion Control Plan includes the installation of both temporary and permanent mitigation devices (Appendix M of the application). Temporary erosion control measures would be installed prior to initial ground disturbance and are comprised of sediment filter devices such as silt fences and mulch or other wildlife-suitable erosion control matting for steep slopes. A

temporary cover of vegetation would be planted after site grading to prevent soil erosion during construction. Tracking pads would be constructed at site access points to prevent soil and mud being tracked onto adjacent roadways. Silt fence would be installed adjacent to earthwork locations where the existing vegetation is removed. Significant material stockpiles are not expected for the project, but if required they would be protected from erosion by a row of silt fence installed along downstream sides.

The applicant stated that temporary erosion control devices would be inspected weekly and following precipitation events producing 0.5 inches or more of rainfall within a 24-hour period, with any deficiencies being reported and repaired. Construction activities would be postponed during extreme rain events. Additional measures would be installed in any necessary places to meet the requirements of the Wisconsin Pollutant Discharge Elimination System (WPDES) permit.

Mitigation during Facility Operation

Following construction, the applicant would seed disturbed areas and permanent erosion controls would be installed. All disturbed areas would be permanently seeded to comply with WDNR Conservation Practice Standard 1059 Seeding for Construction Site Erosion Control with a perennial seed mix that complies with Wis. Admin. Code ch. ATCP 20 regarding noxious weed seed content and labeling. Seeded areas without steep slopes may be mulched in compliance with the WDNR Conservation Practice Standard 1058 Mulching for Construction Sites. Areas with steep slopes would use wildlife compatible erosion control blankets. Revegetation and permanent erosion control devices would be monitored during the long-term operation and maintenance of the facility. Erosion control devices would be maintained until the site is successfully re-vegetated and then temporary erosion control devices would be removed.

If dewatering activities would be necessary during the excavation of directional drill bore pits and trenching, the applicant would discharge the water from these activities into upland vegetated areas in compliance with WDNR Technical Standard 1061. No discharges would be made directly to wetlands or waterways.

3.10. Forested Land

Current Forest

The Commission defines woodlands and forest as any wooded landscape with greater than 20% canopy cover, excluding narrow windbreaks located between agricultural areas, but including wooded areas adjacent to waterways. Non-agricultural upland within the project study area consisted primarily of the untilled edges of agricultural fields, forest, and roadside. Upland forests were dominated by black cherry (Prunus serotina), white pine (Pinus strobus), swamp white oak (Quercus bicolor), white oak (Quercus alba), boxelder (Acer negundo), common buckthorn (Rhamnus cathartica), black walnut (Juglans nigra), gray dogwood (Cornus racemosa), garlic mustard (Alliaria petiolate), dame's rocket (Hesperis matronalis), and common

burdock (Arctium minus). Upland roadsides were dominated by Kentucky bluegrass (Poa pratensis) and smooth brome (Bromus inermis).

Forest Impacts

Approximately 10.7 acres of upland forested land could be cleared for the project, including the primary solar arrays and access roads (8.0 acres) and alternate solar arrays and access roads (2.7 acres). Clearing would occur within Alternate Array A3 (2.6 acres) and Primary Array P5 (7.7 acres) prior to the start of construction. The application states that the upland forested areas proposed to be cleared consist of highly disturbed areas dominated by box elder, white pine, black walnut, and common buckthorn. These two forested areas were adversely impacted by a tornado that passed through the project study area in the summer of 2018. Most of the trees were either broken off or significantly damaged, with tree debris littering the area. Invasive species, such as common buckthorn, have begun to take over these areas.

Trees would be removed using heavy equipment. Prior to clearing and where applicable, perimeter best management practices (BMPs) would be installed to minimize issues with erosion from the removal of vegetation. Cut logs would be piled around the perimeter of the forested areas prior to transport off the project or for landowner use. Stumps are proposed to either be removed or ground prior to preliminary grading and temporary seeding. The cleared areas would be stabilized with permanent seed mixes detailed in the Vegetation Management Plan in Appendix J of the application.

Scoping Comment Concerns

Several EA scoping comments stated concern for the project's impacts of forest as wildlife habitat. The largest contiguous forested land within the proposed project area that would be impacted is a patch of trees within Primary Array P5 (7.7 acres). Commission staff asked the applicant to describe how the project could be modified to avoid impacting the forest located in the center of Array P5.

The applicant responded that clearing of the forested area located within Primary Array P5 is necessary to meet the 100-MW nameplate capacity of the project. This area is approximately 7.7 acres in size; there are no additional areas within the project boundary that could be used to site this acreage of primary array panels without having a larger impact on natural resources. They state that the forested area located in Primary Array P5 is highly disturbed and was severely damaged during a storm in the summer of 2018. Most of the trees in this area are either uprooted or broken off and dead. Invasive species have begun to take over this area. The existing landowner has begun to remove these dead or damaged trees for firewood.

Previous solar dockets have addressed the impacts of forest habitat by proposing that the applicant modify tree clearing timing to avoid bird and bat nesting seasons. The Commission could require the applicant to follow such modifications if the project is approved.

3.11. Grassland

Current Grassland

The Commission classifies grasslands as any undeveloped landscape dominated by herbaceous (non-woody) vegetation, including prairie, pasture, old field, etc. Most of the project area comprises of agricultural land with small patches of grassland existing primarily on the periphery.

Grassland Impacts

According to the application, only the primary solar arrays for the project would cause impacts to existing grassland, which would result in 1.6 acres of permanent impacts.

Planting New Grassland

The applicant plans to revegetate the project area after construction with a mix of native and non-native perennial grasses and sedges, as well as a pollinator-friendly seed mix that would be used in some of the buffer areas. Revegetation could create suitable grassland habitat for a variety of wildlife species including pollinating insects, nesting birds, and small mammals. However, the introduction of fencing may limit some larger animals' access to the new grassland habitat.

3.12. Hazardous Material

Construction Materials

During the construction phase of this project, there could be spills of potentially hazardous pollutants such as diesel fuel, insulating oils, hydraulic fluid, drilling fluids, lubricants, and solvents. These materials would be used during construction of the facilities or during the refueling and maintenance of equipment and vehicles. Herbicides could be used during construction or operation of the project.

These various substances would need to be kept onsite in limited quantities and brought in as required. The contractor selected would be required to prepare a Spill Prevention, Control and Countermeasures Plan that would describe measures to be used to prevent spills or releases of hazardous substances, as well as response and cleanup procedures. Spill kits and staff training in the use of these materials would decrease the risk of spills leading to site or water contamination.

Batteries used in vehicles or machinery could also be a source of hazardous materials depending on the type of battery used and would need to be disposed of at appropriate disposal facilities. Any subsequent use of Battery Energy Storage Systems (BESS) would have the potential for hazardous material releases, and a safety plan should be developed and enacted if that technology is used in the future.

Scoping Comment Concerns about Solar Panel Material

Several EA scoping comments raised concerns about potentially hazardous materials contained in solar panels and the potential exposure to these materials as a result of the construction and operation of the proposed project.

Research from Arizona State University states that installed solar panels pose practically no health or environmental risks; however, the potential leaching of toxic chemicals and materials from broken end-of-life landfilled panels could pose health or environmental risks. Further, it notes that U.S. Environmental Protection Agency (EPA) regulations have identified solar panels as general waste subject to a Toxicity Characterization Leaching Procedure (TCLP) to determine if they contain any toxic metals that can possibly leach into landfills.[1] Depending on the result, panels may then be classified as either universal waste or as hazardous waste and currently there are no standardized procedures for removing samples from solar panels to test chemical toxicity.

Commission staff asked the applicant to explain the reasons for utilizing thin-film solar panels that contain cadmium telluride (CdTe) for the proposed project, the effects of CdTe on humans and animals, what measures would be taken to reduce any harmful effects from CdTe-containing panels used for the project, as well as how the materials would be disposed of after the lifespan of the project. The response from the applicant is stated in section below.

Applicant Statement on CdTe

One of the four proposed module options for the project is the First Solar Series 6, a thin-film module. This module option is the only one proposed that contains cadmium telluride (CdTe). The compound CdTe differs from the more toxic element cadmium and is highly stable, nonvolatile, and non-water-soluble. CdTe modules have passed the U.S. EPA's toxicity characteristic leaching procedure (TCLP) in numerous studies. TCLP testing requires crushing of the modules and then tumbling in an acid bath before the fluid is tested for leachates. This test is designed to be overly conservative to determine whether a particular material should be classified as hazardous for the purposes of landfill disposal.

As CdTe modules are classified as non-hazardous because no hazardous compounds exceed EPA limits in TCLP tests, disposal of CdTe modules in municipal waste landfills is an acceptable and legal option from a leaching perspective. However, as nearly all of the materials used in a solar photovoltaic installation are recyclable, Springfield Solar anticipates that most of the project's components would be recycled upon decommissioning.

Exposure to CdTe can only cause health effects through ingestion or inhalation. Ingestion or inhalation of particles or dust from installed and operating panels is impossible as the vapor pressure of CdTe is zero at typical ambient outdoor conditions and the thin layers of CdTe

[1] GovindaSamy TamizhMani, Stephanie Shaw, Cara Libby, Adit Patankar, Bulent Bicer, "Assessing Variability in Toxicity Testing of PV Modules", Photovoltaic Specialists Conference (PVSC) 2019 IEEE 46th, pp. 2475-2481, 2019. Accessed at: https://ieeexplore.ieee. org/document/8548084

included in modules are encapsulated between layers of glass. In the case of fire, 99.9% of CdTe in a module remains encapsulated within melted or molten glass; the temperatures reached in typical outdoor fires do not reach the temperature thresholds above which CdTe can vaporize.

Due to the very low risk CdTe-containing panels present to the human and natural environment, and the permitted use of such panels by EPA, Springfield Solar has no concern over utilization of this technology.

3.13. Heat Island Effect

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

There are few studies currently available that investigate whether a similar heat island effect is created from solar electric generation facilities, referred to in the literature as the photovoltaic heat island effect (PVHI effect). The PVHI effect is described as solar photovoltaic arrays elevating ambient air temperatures relative to their natural surroundings. Solar electric generation facilities do this by changing the albedo, vegetation, and structure of the terrain; therefore, affecting how incoming energy is reflected back to the atmosphere or absorbed, stored, and reradiated.[2] A description of the PVHI effect is described in general terms here, from the expert testimony of Greg Barron-Gafford (2018):[3]

"… much like clouds trap the energy radiating from the Earth's surface. On cloudy nights, air temperatures do not cool off as much as they do on clear nights. This is the same principle in the PVHI, and I believe the reason that the PVHI dissipates so quickly as one moves away from the edge of the panels. Under the panels, it is analogous to a cloudy night, and away from the array, where those panels are absent, conditions are analogous to a clear night sky."

Commission staff reviewed available studies regarding heat island effects related to solar generation facilities. The published literature on the PHVI effect vary, with some theoretical in

[2] Barron-Gafford, G., Minor, R., Allen, N. *et al.* (2016). The Photovoltaic Heat Island Effect: Larger solar power plants increase local temperatures. *Sci Rep* 6**,** 35070. https://doi.org/10.1038/srep35070

[3] Barron-Gafford, G, 2018. Statement of evidence by Greg Barron-Gafford on Solar Heat Islanding Issues. Prepared for Neoen Australia Pty Ltd. Accessed at: https://www.planning.vic.gov.au/__data/assets/pdf_file/0024/126555/301-Expert-Witness-Statement-of-G-Barron-Gafford-PVHI-May-2018-Lemnos.pdf.

nature focusing on simulations and mathematical models[4, 5] and others utilizing empirical research to measure PVHI.[6, 7] Most of the published research to date has occurred at small scale solar electric generation facilities in arid landscapes, dissimilar to the proposed facilities in Wisconsin. Currently there are no known studies that have been conducted at large utility-scale solar facilities in the temperate environments of the Upper Midwest. While none of the studies reviewed were in locations similar to the proposed project, each found that solar electric generation facilities were altering the temperature of the air and in some cases the soil near the solar panels by a small amount. Some of the studies found that temperatures completely returned to normal overnight, while others found that temperatures remained altered.

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

3.14. Invasive Species and Herbicide

Invasive Species in the Project Area

The applicant evaluated the project study area for the presence of invasive species during field investigations in June and July 2020. They noted the dominant species and general locations of the invasive species on wetland delineation field mapping, found in Appendix I of the application, which was later digitized in GIS. The most dominant invasive plants found during the 2020 field investigations were reed canary grass, narrowleaf cattail, and garlic mustard.

Mitigation

The applicant states that they would manage invasive species using spot cutting, mowing, and herbicide treatments. Vegetation management would be conducted prior to construction and/or the year following construction to prepare the project area for permanent seed installation. Construction equipment that may come in contact with field-verified invasive species areas

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

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

[6] Barron-Gafford, G., Minor, R., Allen, N. *et al.* (2016). The Photovoltaic Heat Island Effect: Larger solar power plants increase local temperatures. *Sci Rep* 6**,** 35070. https://doi.org/10.1038/srep35070

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

would be cleaned before arriving and prior to leaving the project. Cleaning of construction equipment may consist of brushing, power washing, and steam cleaning.

Invasive Management during Facility Operation

The applicant plans to conduct invasive and weed species management as needed to reduce the spread of invasive species from existing populations, improve establishment and success of the permanent seed mixes, and reduce vegetation impacts to the solar panels and solar facility infrastructure. Flowering non-native species that are not considered invasive and do not have heights that would interfere with the project operations would not be actively managed.

They would time vegetation cutting appropriately to assist with control of invasive species (e.g., mow annual and biennial species during flowering but prior to seed production) and to remove vegetation to assist with site seedbed preparation. They would use herbicide treatments for management of perennial invasive and noxious species. Ongoing management of invasive and noxious species is required for compliance. Herbicides are also used to remove undesirable vegetation to prepare for permanent seed installation. Additional information regarding invasive species management is provided in the Vegetation Management Plan included in Appendix J of the application.

3.15. Local Government and Planned Development

Public Safety Services

The applicant states that its emergency-response plan would include training and coordination with local emergency responders. This would be finalized and submitted as part of the post-order pre-construction preparation for the project. It would provide safety protocols and contact information for the facility operations team to all local first responders. Periodic meetings with first responders would be held when requested, or previously scheduled, to ensure their familiarity with site facilities.

Changes to Infrastructure

The applicant states that it is not aware of any additional infrastructure or current upgrades to existing facilities that would be required to construct or operate the project. If improvements are necessary, such as the repair/improvement to specific roads used in hauling materials during construction, they would be done at the applicant's expense. The applicant does not anticipate that changes to existing roads along haul routes would be required. It would adhere to all local construction standards if any changes are needed.

A Road Condition Report was completed by the applicant in August 2020 and is included in Appendix S of the application. The Road Condition Report reviewed existing desktop road condition data prior to completing visual field inspections. The report would be used to assist the applicant, Dodge County, the Town of Lomira, and the Village of Lomira in assessing any potential damage to county and Town roads. Any such damage will be repaired by the applicant to original condition or better. The applicant may assist Dodge County, the Town of Lomira,

and the Village of Lomira in conducting additional pre- and post-construction inspections of haul roads utilized during construction.

Budgets and Shared Revenue

Local government budgets would benefit monetarily by hosting the proposed project. Wisconsin's Shared Revenue Utility Aid Program provides for payments to be distributed annually to the communities hosting an electric generator. The proposed project would be eligible for two components of the Shared Revenue Utility Aid Program: Component 4, the MW-based payment, and Component 5, the Incentive payment.

Springfield Solar would generate approximately $400,000 in annual payments through the above-referenced Shared Revenue Utility Aid Program. A 100-MW project would generate Shared Revenue Utility Payments of $10 million added revenue to the Village of Lomira, Town of Lomira, and Dodge County over an assumed 25-year life.

A 100-MW project would annually contribute approximately $22,399.97 to the Village of Lomira, $150,666.97 to the Town of Lomira, and $226,933.06 to Dodge County. The Utility Payment breakdown for the Village, Town, and County is summarized in the table below. Actual amounts would be determined with final design based on MW placement of the array. Estimates in the table below assume approximately 9.6 MW AC located in the Village of Lomira and 90.4 MW AC located in the Town of Lomira.

Table 2 Estimate of Annual Revenue for 100-MW Project

	Village of Lomira	**Town of Lomira**	**Dodge County**
MW based Payment	$12,799.97	$60,266.97	$126,933.06
Incentive Payment	$9,600	$90,400.00	$100,000.00
Total	$22,399.97	$150,666.97	$226,933.06

Community Benefits

The proposed project would employ approximately 100 to 200 workers during construction. The project would also require skilled electricians, operations staff, and maintenance workers. The applicant states that it would source these jobs from surrounding communities when possible.

Area landowners who participate in the project as both land sellers and easement grantors would gain significant revenues. There may be a potential increase in local employment opportunities to support the project. Nearby service providers in food service, lodging, fuel, sanitation, gravel, asphalt, and others may experience business gains.

The applicant plans to establish a Community Fund for the Lomira School District by setting up a 501(c)3 and annually donating $200 per MWAC installed capacity over a 20-year commitment.

This would result in additional revenue of $20,000 annually, or $400,000 over the 20-year period, for the Lomira School District.

Joint Developer Agreements (JDA)

The applicant has signed separate JDAs with the Town of Lomira and Dodge County, and have provided copies of the JDAs with their application. They state that they are actively pursuing JDAs with other local municipal entities and will upload those agreements to ERF when available.

The Town of Lomira JDA bans the applicant from annexing or otherwise altering the municipal boundaries that the project would be constructed within. The applicant would be required to mitigate any interference with radio, internet, telecommunications, or television signals caused by the project. It must also operate the project so as not to be unreasonably detrimental to the public health, safety, or general welfare of the immediate neighborhood, and without offensive noise, vibration, dust, smoke, odor, glare, lighting, or the risk of fire, explosion, or other accent in accordance with industry best practices.

The Dodge County JDA includes provisions for the applicant to construct access roads that cannot impair the existing drainage at the site, as well as repair any damaged public roads. Additionally, the applicant would be required to follow the Erosion Control Plan and remedy damage to public drainage infrastructure. The agreement requires the applicant to provide details regarding their decommissioning plan. The JDA also includes requirements for setbacks (at least 100 feet from non-participating inhabitable buildings), a 40-foot equipment height limit (with exception of the project substation and generation tie-line), and wildlife passage along existing natural corridors, as applicable.

Scoping Comment Concerns about Development

Several EA scoping comments stated opposition to the project because it would interfere with existing development plans in the proposed project area. Commission staff asked the applicant to describe the project's potential effects on any local government development plans and their communication with those entities regarding their development plans.

The applicant responded that Dodge County's Comprehensive Plan (County Comprehensive Plan) anticipates energy projects in the area that the proposed project is planned. The project area within the Town of Lomira is designated for future agricultural or industrial use, which County Comprehensive Plan states could include wind energy facilities and utility facilities. The applicant states that solar projects fit within this category of anticipated infrastructure. They also point to the letter that the Dodge County Land Resources and Parks Committee has filed in this docket indicating no objection to the proposed project (PSC REF#: 401375).

They state that one parcel of the proposed project would be located within the Village of Lomira, at approximately 65 acres in size. This parcel is zoned as Industrial District pursuant to the Village of Lomira Zoning Code (Village Code). According to Section 18.32(5)(n) of the Village

Code, utilities are a Permitted Use in the Industrial District and include private facilities such as power transmission lines and electric power substations.

No portion of the proposed project would be located within the municipal boundaries of the Village of Brownsville, but would be in areas north and east of the Village. The Village of Brownsville's Comprehensive Plan makes reference to future land use in the areas that would be within the Village's extraterritorial zoning jurisdiction, however no publicly available map is included in the Comprehensive Plan Appendix.

Lastly, the applicant added that it has engaged in numerous communications with representatives of Dodge County, the Town of Lomira, the Village of Lomira, and the Village of Brownsville, including discussions regarding the proposed primary and alternate array locations as related to future development plans.

3.16. Natural Gas Pipeline Safety

Scoping Comment Concerns

Several EA scoping comments expressed concerns about the safety of the project because several natural gas pipelines cross through the proposed site. The following section was prepared by the Commission's natural gas pipeline safety engineering team and is meant to address those concerns.

Existing Pipelines

A natural gas transmission pipeline and other natural gas pipeline facilities are located within the proposed project boundary. The natural gas transmission pipeline is operated by Guardian Pipeline (a subsidiary of Oneok Partners L.P.). Other natural gas pipelines and pipeline facilities in the area are operated by Alliant Energy d/b/a Wisconsin Power and Light Company.

The Guardian Pipeline is located on private easements that bisect one of the proposed solar arrays. Alliant Energy's facilities are located both on private easements and in public road ROW. Utility easements typically prohibit activities that could restrict access or interfere with the facility owner's operation and maintenance of the facilities. The application states that the panel and associated facilities would not encroach on the easements, but would require crossing of the Guardian Pipeline for its underground collector system. The proposed project may also require crossing of the Alliant pipelines.

Safety during Construction

Wisconsin Stat. § 182.0175 requires persons who engage in excavation to notify Diggers Hotline before starting work. Excavation, according to the law, means any operation in which earth, rock or other material in or on the ground is moved, removed or otherwise displaced by means of any tools, equipment or explosives and includes grading, trenching, digging, ditching, drilling, augering, tunneling, scraping, cable or pipe plowing and driving and means any operation by which a structure or mass of material is wrecked, razed, rended, moved or removed. An

Excavator's Guide, available on the Diggers Hotline website[8], explains the excavator's responsibilities and the transmission facility owner's responsibilities under the Wisconsin One-Call Law.

In addition, Federal Pipeline Safety regulations, including 49 CFR Part 192[9] and the pipeline operator's company policies may require a company representative to be physically on site to observe, inspect or monitor excavation activities occurring near their pipelines and pipeline facilities to prevent damage to the pipeline from the excavation activities and to verify the integrity of the pipeline. It is expected that the applicant would comply with the Wisconsin One-Call Law and would work with the pipeline operators to allow company personnel to observe, inspect or monitor excavation activities which may occur near their pipelines.

Safety during Facility Operation

Once in operation, the new electrical facilities could cause interference with the cathodic protection systems that protect the steel pipelines from galvanic corrosion. It is expected that the applicant would work with the pipeline operators to investigate and remedy any electrical interference problems.

Pipeline operators conduct patrols and aerial surveys to monitor activities in the vicinity of the pipelines, confirm that the ROW is clear of excessive vegetation and obstructions, check that pipeline signs or markers posts are in place, etc. The easements and ROW must be kept clear in order to facilitate the code-required maintenance including testing the corrosion control systems, conducting leakage surveys and to allow prompt access to any segment of the pipeline in an emergency.

Upon the completion of the proposed project, the pipeline operators may be required to perform additional tests, surveys and maintenance activities depending on the proximity of the proposed facilities to the pipelines. It is expected that the applicant would work with the pipeline operators both during the construction and after the completion of the proposed project to ensure that the pipeline operator's access to their pipelines and pipeline facilities is not hindered.

Additional Commission Questioning

Commission staff asked the applicant to provide documentation of notification and communication with Alliant Energy regarding the proximity to its pipelines. The applicant responded that Springfield Solar reviewed Alliant Energy's pipeline locations in and around the project area boundary via conference call with Alliant Energy on January 26, 2021. Pipeline locations as presented by Alliant Energy are depicted in the plans included in the application under Appendix B – Engineered Schematics Part 1 (Revised).

[8] www.diggershotline.com

[9] https://www.phmsa.dot.gov/pipeline/annotated-regulations/49-cfr-192

Commission staff also asked the applicant to provide documentation of the Diggers Hotline notification that was received prior to commencing borings. The applicant stated the following in response:

Springfield Solar engaged Terracon, a nationwide engineering and scientific consulting firm, to conduct geotechnical borings for the project site. All firms contracted by National Grid Renewables (the Springfield Solar parent company) and its subsidiaries to conduct ground penetrating activities, including Terracon, perform industry-standard due diligence prior to ground penetration in order to locate and avoid any underground utilities.

For the geotechnical borings conducted at the project site, Terracon reported polygons around each bore location to Diggers Hotline prior to any fieldwork. The boring closest to Alliant Energy's existing pipeline located between areas A3 and P1 was submitted with a 300' (E-W) and 200' (NS) polygon to Diggers Hotline on December 2, 2020. A map of the bore location and submitted area is included as Exhibit 1 to this Response. The Alliant Energy pipeline was not identified by the Diggers Hotline Ticket because it falls outside the submitted polygon; the pipeline was too far away from the bore location for there to be any risk of impact.

Additional due diligence performed by all firms contracted by National Grid Renewables and its subsidiaries before conducting ground-penetrating activities includes looking for any aboveground markers in the vicinity to identify additional underground utilities. Terracon has communicated to Springfield Solar that a visual assessment was conducted prior to commencing borings at the project site. Springfield Solar also performs ALTA boundary and encumbrance surveys on all parcels included within its project areas. While the ALTA survey is not typically complete at the time of permit application, any easements (or any other encumbrances) revealed during ALTA research efforts are incorporated into project plans at the time that they are discovered. Consistent with this practice, the Project ALTA survey was still in process at the time of Terracon's relevant work at the Project site. Subsequently, Springfield Solar received a draft ALTA from its real estate consultant in December 2020, which showed the location of Alliant Energy's pipeline easement running between A3 and P1. The updated plans are included in Appendix B – Engineered Schematics Part 1 (Revised). At no time was Terracon conducting ground-penetrating activities within the immediate proximity of any natural gas pipelines.

3.17. Noise and Sound Impacts

Local Noise Ordinances

The applicant states that the Town and Village of Lomira and Dodge County have similar public nuisance ordinances that restrict unreasonably loud or disturbing noises, but no regulations

directly applicable to a solar facility were identified. The project used the Commission's Noise Protocols[10] as a guideline.

Pre-construction Sound Survey

The applicant commissioned Stantec to complete a pre-construction ambient sound survey and operational predictive assessment for the project, which was included in Appendix P of the application. A post-construction sound analysis and report would be completed following construction of the project and commencement of operations in order to verify the findings and conclusions of the pre-construction survey.

Sound generated due to operation of the facility would emanate from the substation transformer and the inverters located throughout the project area. The applicant states that the facility's inverters would only operate when electricity is produced, which would be between sunrise and sunset. After sunset, the inverters would not operate and would not produce sound. The substation transformer would be energized but would also not produce sound after sunset. The majority of the sound production would occur during the daytime hours as defined by Wis. Admin. Code § PSC 128.14, 6:00 a.m. to 10 p.m. daily.

The nearest noise-sensitive area to an inverter would be approximately 400 feet. Per the manufacturer's specifications, the maximum sound level from each inverter is less than 84 dBA at a distance of one meter (three feet). The solar facility must be designed so that its sound does not exceed 50 dBA during daytime hours and 45 dBA during nighttime hours.

Pre-construction ambient sound measurements were made at five monitoring sites surrounding the proposed substation location and solar array inverters. Stantec used locations near residences with potential solar farm arrays in multiple directions and around the area of the substation. Existing background sound levels around the project area varied from 33.5 to 75.8 dBA for the varying sample locations and sample periods. The predominant sound source during the sampling was distant vehicular traffic, passing cars, distant trains, corn rustling in the wind, birds, and insects.

The maximum inverter-related sound level that would be expected at the outside wall of the nearest noise-sensitive receptor (400 feet) would be approximately 44 dBA.

The substation transformer would have a sound level of approximately 85 dBA at one meter (three feet). The substation would be set back from the nearest residence by approximately 1,000 feet. The maximum sound level that would be experienced at this receptor would be 37 dBA.

The applicant's results show that the impacts of the substation would not be discernable at the residences surrounding the substation. The projected sound values due to operation of the

[10] *Measurement Protocol for Sound and Vibration Assessment of Proposed and Existing Electrical Power Plants*. Public Service Commission of Wisconsin. November 2008.

facility, including the skid inverters and the substation, would be at or very near the existing background ambient sound levels.

Additionally, the applicant used computer modeling of the solar array to calculate sound contours using the Decibel Module of WindPro Modelling software by EMD International, which utilized algorithms to estimate sound propagation and atmospheric absorption. The modeling showed sound impact from a solar inverter to any residence would be 45.5 dBA with a ground attenuation of 0.0, while the maximum was determined to be 42.5 when a ground attenuation of 0.5 is used.

Noise Complaints

The applicant plans to work to maintain equipment and conduct repairs in a timely manner in order to avoid excessive sound from the facility. If they receive a reasonable sound complaint from a local resident, the complaint would be investigated and mitigated.

Mitigation Measures

Sound resulting from the operation of the solar facility is anticipated to have minimal impact on nearby residences. Therefore, the applicant has no plans for additional mitigation measures beyond compliance with the equipment specifications.

3.18. Property Value

Factors

Residents near large solar facilities have expressed concerns that construction of the proposed solar project would reduce their property values due to changes in views, rural character, and land use in the Townships. Property values can be influenced by a complex interaction of factors specific to individual parcels. These factors can include, but are not limited to, condition, improvements, acreage, or neighborhood characteristics, as well as proximity to schools, parks, and other amenities. In addition, local and national market conditions can influence property values. The presence of a utility-scale solar facility would become one of many interacting factors that could affect a property's value.

Impacts

Solar generating facilities have the potential to impact property values. Negative effects from these facilities could be the result of impacts that extend beyond the immediate footprint of the arrays such as visual impacts. However, unlike fossil-fueled electric generating facilities, a solar facility would have no emissions during operation of the facility.

The installation of solar electric facilities would create a visual impact. The facilities lack the height of smokestacks or wind turbines, and are not typically visible at longer distances like those facilities. The visual impact is greatest at ground level and depending on the distance, layout and acreage of the array in relation to the viewer, may be extensive. Some landowners

may not like the change in the area from agricultural land use; however, other landowners may prefer the solar project to other land uses, such as row crop agriculture, housing developments, or industrial buildings.

On a long-term basis, improper or incomplete decommissioning of the proposed project could also adversely affect local property values. The income to the local municipality or county from the Shared Revenue payments may provide benefits to local services that could positively impact a property's value.

Published literature specifically aimed at quantifying impacts to property values based solely on proximity to utility-scale solar facilities is limited. Currently there are few studies that discuss the potential property value impacts near solar installations. These studies vary in their conclusions and methods from analyzing professional opinions of assessors,[11] public perceptions,[12] geospatial analyses,[13] as well as hedonic valuation of externalities.[14] Results from these studies vary presenting positive, zero, and negative impacts on property values as a result of the construction of solar installations. With the information available, widespread or significant negative impacts to property values are not anticipated. In certain situations it is possible that individual property values could be negatively impacted.

3.19. Public Land and Parks

Snowmobile Trails

No public land or parks would be located within the proposed project area. However, EA scoping comments stated that snowmobile trails are located throughout the area and would be affected by the project. Commission staff asked the applicant to provide details about the project's impacts to snowmobile trails.

The applicant stated that according to the Dodge County Land Resources and Parks Department snowmobile trail maps, there are several snowmobile trails that pass through the proposed

[11] Kirkland, Richard. 2018. Re: Flatwood Solar Impact Study. Letter to Strata Solar Development, April 28, 2018. Accessed at: https://www.chathamnc.org/home/showdocument?id=39355

[12] Carlisle, J.E., Kane, S.L., Solan, D., Bowman, M., and Joe, J.C. 2015. Public attitudes regarding large-scale solar energy development in the U.S. Renewable and Sustainable Energy Reviews, 48, 835-847. Accessed at: https://www.osti.gov/servlets/purl/1188619

[13] Al-Hamoodah, L., Koopa, K., Schieve, E., Reeves, D.C., Hoen, B., Seel, J., and Rai, V. 2018. An Exploration of Property-Value Impacts Near Utility-Scale Solar Installations. The University of Texas at Austin, LBJ School of Public Affairs, Policy Research Project. Accessed at: https://emp.lbl.gov/sites/default/files/property-value_impacts_near_utility-scale_solar_installations.pdf

[14] Gaur, V. and C. Lang. 2020. Property Value Impacts of Commercial-Scale Solar Energy in Massachusetts and Rhode Island. Submitted to university of Rhode Island Cooperative Extension on September 29, 2020. Accessed at: https://today.uri.edu/wp-content/uploads/2020/09/PropertyValueImpactsOfSolar-1-1.pdf

project area. Solar projects are required to be fully fenced by the National Electrical Code, therefore continued use of any trails within the fenced area would not be feasible during construction or operation. If the project is approved, the applicant states that they are open to discussions with all local stakeholders, including snowmobile club members or recreational snowmobile trail users, on how any impacts to local resources can be reduced or mitigated.

3.20. Restoration and Management of Vegetation

Solar facilities in the upper Midwest typically have vegetation growing on the array sites around the site perimeter as well as between and underneath panels. This vegetation decreases the amount of impervious surface associated with the site and assists in managing storm water runoff and erosion. However, the vegetation needs to be established and managed in a way that avoids conflicts with the operation of the solar generation facility. Native plant species that can create a healthy and sustainable groundcover on the site are preferred to any noxious or invasive plants. Solar developers also look for plants that would not grow tall enough to shade the solar panels or interfere with other equipment.

Revegetation and Site Restoration Plan

The applicant included a description of their proposed permanent seed mixes and installation locations in the Vegetation Management Plan, Appendix J of the application.

Their proposed seeding locations would be dependent on final design elements, such as the distance between panels and fence placement. They proposed to use the following three permanent seed mixes for the project:

1. Low-growth native / non-native graminoid seed mix for solar panel areas
2. Pollinator refuge prairie seed mix for select buffer areas
3. Pollinator refuge wetland native seed mix for wetlands, if wetlands are disturbed as part of construction of the project.

Vegetation Monitoring and Management

The application states that all areas of the project would require some form of ongoing maintenance to establish and maintain desirable vegetation that is compatible with solar panels and the solar facility operations. They expect maintenance to be most intensive during the establishment phase, as desirable species germinate, grow, and mature for approximately 2 to 3 years following seeding, with native species generally taking longer to mature than non-native species.

Vegetation would be monitored alongside routine maintenance activities to confirm compatibility with facility goals. All seed mixes would likely need frequent cutting during the establishment phase (years 1 and 2 post-seeding) to reduce fast-growing weeds, minimize vegetation height under the solar panels, and assist with growth of planted species.

Mowing would be conducted when vegetation reaches a height of 8-12 inches and occur four weeks following seeding and every 4 – 6 weeks thereafter from mid-spring to mid-fall, depending on weather conditions. A transition phase would occur in years 3-5 when desirable vegetation would become increasingly established but remain susceptible to weed growth. The frequency of cutting may be reduced to approximately once per year, or transition to selective mowing to target specific areas of weed growth and minimize vegetation height under the solar panels. Following the establishment period, mowing would occur at least once every other year.

Native Plants and Pollinators

A vegetation management plan that includes pollinator friendly seed mix could benefit wildlife and pollinators that have been in decline in the U.S. and worldwide, such as the Monarch butterfly (*Danaus plexippus*). These insects have received national attention in recent years with the creation of a federal strategy to promote the health of honeybees and other pollinators. The federal initiative identified and described utility ROW as a key component to promote pollinators.

Guidelines have been developed to promote the use of large, relatively undisturbed ground in solar generation facilities to promote habitat for native bees and other pollinators. While the states of Minnesota and Illinois have passed legislation defining voluntary criteria for labeling solar facilities as pollinator-friendly, Wisconsin has not. However, the University of Wisconsin–Madison has developed similar guidelines and created a growing list of pollinator-friendly solar generation facilities.[15]

The proposed seed mixes showcase a variety of native species that would benefit many of the state's pollinators such as butterflies and bumble bees. However, some species that are notably absent from the Pollinator Refuge Prairie mix are milkweeds and early spring flowerers such as prairie smoke, wood betony, and/or shooting star. The milkweeds are host to the monarch butterfly which has steadily been in decline in recent years. Threats, including climate change, pesticide use and habitat loss are having a devastating impact on their populations and the migration phenomenon.

Efforts are being made at the state and federal levels to increase the number of milkweed stems on the landscape and adding milkweed species to the Pollinator Refuge Prairie mix would greatly enhance the habitat available to the monarch. Including early spring flowerers in the seed mix would benefit those pollinators, especially queen bumble bees, which are out on the landscape typically much earlier than other pollinators.

[15] https://pollinators.wisc.edu/solar/

3.21. Storm Water Runoff

EA Scoping Comment Concerns

There were several scoping comments received that stated the potential for flooding in the project area, and the idea that the project could increase the amount of flooding. Staff from WDNR who specialize in storm water permitting wrote the following sections to address these concerns.

Project Requirements

The project must meet WPDES storm water regulations as established by the Clean Water Act and regulated by the WDNR. The WDNR's Storm Water Discharge Permit Program is administered under the authority of ch. NR 216, Wis. Admin. Code, and addresses storm water discharges both during and after construction.

Runoff during Construction

During land disturbing construction activities, the responsible party would be required to implement erosion and sediment control practices to prevent or reduce sediment discharge related to construction activities as specified in s. NR 151.11(6m)(a), Wis. Admin. Code and meet the sediment performance standards in s. NR 151.11(6m)(b), Wis. Admin. Code. The required practices must be located so that treatment occurs before runoff enters waters of the state and must be implemented per s. NR 151.11(8), Wis. Admin. Code.

Runoff during Facility Operation

The project must also meet the post-construction performance standards in s. NR 151.121 through 128, Wis. Adm. Code, which include peak flow control, infiltration, and total suspended solids reduction requirements. There would be an increase in the impervious surfaces across the project site through increased aggregate surfaces for roads and the substation sites. Post-construction runoff from these surfaces are typically managed with swales and drainage ponds or basins. Solar panels create a disconnected impervious surface which concentrates runoff and has potential to cause erosion and increased runoff from the site. These issues can be minimized by spacing arrays to maintain vegetation between and underneath panels.

Well-maintained vegetation between and underneath solar panels can minimize water scour or erosion from driplines, filter runoff, and improve infiltration capacity of the soil. Infiltration of storm water typically improves in areas where row cropland is converted to grassland. Vegetation under and around the arrays would require long-term maintenance for the lifetime of the facility, as it would be the primary means of managing post-construction storm water runoff. The applicant should also minimize the vertical clearance between the panels and the ground in order to reduce the potential for erosion and scour at the dripline of the panels. The exact amount of increased impervious surface would be determined in final engineering design of the site and would be discussed in the Storm Water and Erosion Control Plan submitted to the

WDNR as part of the permit application under Wis. Stat. § 30.025 and Wis. Admin. Code ch.. 216.

3.22. Stray Voltage and EMF

Stray Voltage

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

Stray voltage can be caused by the operation of transmission lines in close proximity and parallel to a distribution line. To minimize the chance of stray voltage, utilities sometimes propose relocating or burying distribution lines for transmission line projects. The Commission has information on stray voltage testing and mitigation on its website.[16] The Commission may order that stray voltage testing be conducted if farms are located within a half-mile of the proposed project. More information about this issue is available in the section discussing agricultural land.

How EMF Works

Electricity produces two types of fields, electric and magnetic, which are often combined and referred to as electromagnetic fields or EMF. Electric fields are associated with any device or wire that is connected to a source of electricity, even when current is not flowing. Magnetic fields are only created when there is an electric current, and are proportional to the current flow through an electric line. Electric fields are typically reduced to a negligible level by the inclusion of shielding cables, which are electrical conductors encasing the current-carrying conductor. Magnetic fields are generally more difficult to reduce. Concerns regarding exposure to EMF are often raised during power plant and transmission line construction cases.

Mitigation of EMF

One way to lower the public's exposure to the magnetic fields generated by transmission lines is to increase the distance of the conductors from the public. The magnetic fields decrease drastically with distance. Another way to reduce the public's exposure to magnetic fields is to use multiple current-carrying conductors to partially cancel the magnetic fields. In nature, magnetic fields interact with each other and can partially or fully cancel out when the fields are

[16] https://psc.wi.gov/Documents/Brochures/Enviromental%20Impacts%20TL.pdf - page 21-22.

moving in opposite directions. Transmission system planners can make use of this knowledge and incorporate such natural cancellations into their design process.

Magnetic fields are measured or estimated in units of Gauss (G) or milligauss (mG) (a milligauss is equal to 1/1000th of a Gauss). Measurements of power line EMF are typically reported in mG. For more information on EMF and human health, a free publication, entitled EMF – Electric and Magnetic Fields is available on the PSC website.[17] The applicant states that for comparison, according to the World Health Organization[18], a typical iron or a refrigerator gives off 0.12 kV/m and a typical microwave gives off 40-80 mG, when at a distance of around 1 foot from the equipment.

Predicted EMF at the Facility

The EMF study for the proposed project was performed by Stantec and includes analysis of the underground collector circuits (Appendix O of the application). There are multiple scenarios presented in the summary tables below. In each scenario of underground cables at 25-feet from the centerline, the magnetic field was below 5.9 milli-Gauss (mG).

Table 3 EMF Levels for Collector Circuits

Underground (UG) Cable	Maximum Magnetic Field (mG)
One UG Cable	22.84
Two Parallel UG Cables	35.36
Three Parallel UG Cables	39.39
Four Parallel UG Cables	40.05
Five Parallel UG Cables	38.96

For the short generation tie line linking the project to the existing transmission grid, the applicant estimated the maximum electric field strength and magnetic field strength near or at the centerline of the overhead lines and also maximum values recorded in the entire monitored area was calculated. In each scenario for the project's transmission line at 50-feet from the centerline, the magnetic field was below 34 milli-Gauss (mG) and the electric field was below 0.33 kV/m. The application states that higher magnetic and electric field values were recorded due to the existing transmission lines.

Table 4 EMF Levels for Generation Tie Line

Gen-Tie Line	Near Centerline	Entire studied area

[17] EMF Electric & Magnetic Fields. 2017. Public Service Commission of Wisconsin Publication. Accessed at: https://psc.wi.gov/Documents/Brochures/EMF.pdf

[18] https://www.who.int/pehemf/about/WhatisEMF/en/index3.html

	MAXIMUM ELECTRIC FIELD (kV/m)	MAXIMUM MAGNETIC FIELD (mGauss)	MAXIMUM ELECTRIC FIELD (kV/m)	MAXIMUM MAGNETIC FIELD (mGauss)
Vertical tangent transmission line	1.8997	126.71	1.8997	126.71
Vertical tangent and existing H frame transmission lines	1.9550	132.46	4.0253	331.23

3.23. Waterways

Waterway Identification and Quality

Waterways and waterbodies within the project area were identified using the 24K hydro layer of the WDNR Surface Water Data Viewer and during field investigations conducted by the applicant in 2020. Three WNDR mapped waterways are within the study area, Kiefer Creek, also known as Kummel Creek, and two tributaries to Kiefer Creek. WDNR reviewed these waterways and determined only Kiefer Creek is navigable and jurisdictional within the project area. The other two waterways were determined to be non-jurisdictional within the project area. Kiefer Creek is a tributary to the Rock River. It is listed as an impaired waterway for total phosphorus and for sediment/total suspended solids. It is not designated as outstanding or exceptional resource waters, trout streams, wild rice waters, or wild or scenic rivers.

Potential Waterway Impacts

Construction activities conducted near and across waterways have the potential to impact water quality and aquatic species habitat. Forested and shrub areas along waterways provide a natural corridor for wildlife movement, help maintain soil moisture levels in waterway banks, provide bank stabilization, filter nutrient-laden sediments and other runoff, maintain cooler water temperatures, and encourage a diversity of vegetation and wildlife habitats. The removal of riparian vegetation can cause water temperatures to rise and negatively affect aquatic habitats, especially cold-water systems. Removing riparian wetland vegetation may decrease shoreline protection and may lead to increased sedimentation to waterways. Vegetation disturbance along the waterway can also lead to the infestation by invasive and nuisance species.

The use of heavy equipment on waterway banks may also cause soil compaction. Withdrawal of surface water for structure foundation construction may temporarily impact waterways. Constructing in areas with seeps and springs may temporarily alter the surface and subsurface hydrology feeding waterways. Overhead transmission lines may also have an aesthetic impact on the natural scenic beauty of the waterway. Transmission facilities may also pose a potential collision hazard for waterfowl and other large birds, especially when located in a migratory corridor.

In this project, underground collector lines would cross Kiefer Creek in one location utilizing trenchless construction techniques. Construction activities associated with the collector lines would occur outside of the waterbody and would avoid direct impact to the waterbody. Temporary staging and equipment storage would be located in uplands. All other project components, including solar arrays, driveways, roads and fences were sited to avoid direct waterbody impacts.

Waterway Impact Avoidance and Minimization

All attempts should first be made to avoid impacting waterways. Impacts to waterways can be avoided by citing structures away from riparian corridors, routing the solar arrays away from waterways, adjusting structure placements to span waterways, utilizing alternate installation methods (HDD), and avoiding equipment access across waterways. This project avoids regulated waterway impacts by siting all project components such as arrays, driveways and fences outside of waterways. One underground collection line crosses a waterway, but would be installed through trenchless construction technique to minimize potential impacts during construction.

Where complete waterway avoidance is not possible, waterway impacts should be minimized as much as possible. Construction and operation of transmission lines across waterways may have both short-term and long-term impacts. The type and significance of the impact is dependent on the characteristics of the waterway and the construction activities proposed. Physical features of the waterway are considered when assessing potential impacts to water quality, water quantity, habitat, recreational use, and the scenic quality of the waterway.

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

- Site-specific sediment and erosion control measures and devices should be installed prior to construction activities and inspected and maintained daily throughout all construction and restoration phases
- Implement a construction sequencing plan that minimizes the amount of land disturbed or exposed (susceptible to erosion) at one given time across the project
- Existing vegetative buffers should be left undisturbed whenever possible, or vegetation clearing should be kept to a minimum in riparian zones
- Revegetate disturbed areas and areas of exposed soil as soon as possible
- Maintaining shaded stream cover by avoiding or minimizing the removal of trees
- Avoiding the use of herbicides near waterways, or utilizing herbicides approved for use in aquatic environments
- Conducting surface and sub-surface assessments prior to construction, including hydrology and soil evaluations
- Modify the engineering plans as needed to avoid and minimize long term impacts to surface and subsurface resources and to re-establish conditions post-construction
- Preparing and implementing dewatering practices to prevent sedimentation into waterways

- Marking the location of waterways in the project area
- Restoring waterway banks to pre-existing conditions
- Limit the amount of time necessary to complete construction

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

The applicant states that it would utilize its internal environmental construction compliance program that ensures compliance with all environmental permits, plans, and regulations applicable to each project. An environmental monitor would conduct ongoing onsite inspections during construction to ensure all employees are environmentally aware and ensuring compliance throughout construction.

State wetland and waterway impact permitting

Wisconsin Stat. § 30.025 describes the WDNR process for reviewing and permitting utility projects that require authorization from the Commission and WDNR. WDNR is responsible for regulating the discharge of dredge and fill material into wetlands under Chapter 281.36, Wisconsin Statutes, and Wisconsin Administrative Code. The WDNR is also responsible for regulating direct impacts to navigable waterways and waterbodies under Chapter 30, Wisconsin Statutes, and Wisconsin Administrative Code.

WDNR participates in the joint review process with the Commission, as detailed in Wis. Stat. § 30.025, with respect to wetlands and navigable waterways. As currently proposed, the project would not require wetland or waterway permit coverage from the WDNR.

3.24. Wetlands

Wetland Identification and Quality

Wetlands within the project study area were field delineated during the 2020 growing season. The project study area includes the Primary and Alternate Facility Areas and ancillary facilities. All project components would be located entirely within the project study area. The field delineation identified 13 wetland complexes that are comprised primarily of farmed wetland, but also include hardwood swamp, wet meadow, and farmed wetland. The majority of the wetland complexes are considered to have low functional value because they are actively farmed or are dominated by invasive species and are in close proximity to active agricultural land. The field delineated hardwood swamp is located within the project study area but outside of the project boundary (and will not be impacted by the project).

Potential Wetland Impacts

The wetlands identified are not anticipated to be impacted by the project due to siting project components outside of wetland and by utilizing construction practices that avoid wetland

impacts. Based on the application, there are no wetlands present inside any proposed array fence lines. All wetlands would be avoided by project facilities and are not proposed to be impacted by construction. One wetland within the Alternative Array A1 is proposed to be crossed with collection lines by trenchless construction method. Additionally, no clearing of forested wetlands is proposed.

Wetland Impact Avoidance and Minimization

All attempts should first be made to avoid impacting wetlands. This project was sited to avoid direct wetland impacts. The degree and nature of impacts to wetlands depend on factors such as the type of wetland, quality of the wetland, ground conditions at the time of construction, and the type and duration of construction activities. Short-term wetland impacts can become long-term impacts if the construction phase is not well managed, or if restoration techniques are not properly applied.

Construction methods that can minimize impacts to wetlands include:

- Site-specific sediment and erosion control measures and devices should be installed prior to construction activities and inspected and maintained daily throughout all construction and restoration phases
- Implementing a construction sequencing plan that minimizes the amount of land disturbed or exposed (susceptible to erosion) at one given time across the project
- Marking the boundary of wetlands
- Preparing and implementing an invasive species management plan that identifies known areas of invasive species populations, addresses site restoration activities, and includes specific protocols to minimize the spread of invasive species
- Best management practices (BMPs) should be used, including cleaning construction vehicles and using construction matting
- To minimize the introduction of new invasive species populations, equipment and matting should be cleaned before entering this site or moved between sites
- Preparing and implementing dewatering practices that prevent sedimentation into wetlands
- Revegetating disturbed areas and areas of exposed soil as soon as possible, and seed with a cover crop and/or native seed mix to help prevent the establishment of invasive species
- Scheduling construction to avoid disrupting sensitive species
- Limiting the amount of time necessary to complete construction

Site restoration consists of the activities required to return the areas impacted by the construction of an approved project back to their original condition, if not better. Restoration typically occurs in any disturbed areas within the project area, including temporary construction areas, staging areas or laydown yards, transportation routes, off-ROW access roads, and any other areas used for project related activities. Site restoration, including re-vegetation, of the disturbed areas should be completed as soon as possible following construction. Sediment and erosion control

devices would be installed before ground disturbance occurs to reduce erosion and trap sediment from entering sensitive resources and would be in place until vegetation is re-established.

Temporary seeding should be used in areas of exposed soils where construction has temporarily ceased. Seeding disturbed wetlands with a cover crop would help prevent the establishment of invasive species and would not compete with the existing seed bank. Disturbed wetlands not infested with invasive species should be evaluated individually for re-vegetation with either a native seed mix or by allowing the native seed bank to re-establish naturally, and wetland areas infested by invasive species should be re-vegetated with an annual cover crop. Once permanent erosion control measures are installed, and vegetation is re-established, temporary erosion control measures would be removed.

3.25. Wildlife

EA Scoping Comment Concerns

Many EA scoping comments raised concerns about the potential impacts to wildlife from the project. The following sections describe some of the impacts that the project could have on wildlife.

Displacement of Species

Wildlife that resides within the construction zone of the project would likely be temporarily displaced to adjacent habitats during the construction process. Most solar projects are proposed for areas of large agricultural fields, with mixed habitat areas including small forests, wetlands, and residential areas. The most common wildlife in these areas are likely species that are generally more common and are accustomed to agricultural habitats or human disturbance. Examples of these species include deer, squirrel, raccoons, small rodents, common perching birds, red-tail hawks, pheasant, turkey, and geese. These species generally do not require specialized habitats and would be able to find suitable habitat nearby.

Unknown Bird Impacts

The extent that birds are affected by solar generation facilities is currently unclear, and additional research is needed to address hypotheses regarding how solar facilities may interact with bird populations, including whether some project features may attract birds to the facility and increase risk of mortality. Large-scale solar generation facilities are a relatively new addition to the landscape and research is ongoing to determine impacts to wildlife. Most research has occurred in different habitats than are found in Wisconsin.

Habitat Fragmentation due to Fencing

The use of seven or eight-foot tall agricultural fence around the arrays would restrict the movement of large species such as deer, and may cause fragmentation of habitat. The applicant proposes to use up to eight-foot high deer exclusion fencing around the solar arrays. This type of fence should allow for the passage of smaller mammals, reptiles, and amphibians while

preventing the access of larger animals such as deer. The addition of fencing on the landscape would affect wildlife movement corridors across the project area. Larger animal species would find the fenced arrays a barrier to movement, which could cause habitat fragmentation. Where a fence line runs along a road, deer that start to proceed along the ROW may have movement restricted, which could lead to more interactions with drivers.

Mowing Impacts to Ground Nests

There could be benefits to some ground nesting bird species, as well as small mammals and reptiles, from a change in habitat from agricultural land to grassland. This benefit would be enhanced by the inclusion of diverse plant species and a limit to disturbance activities such as mowing. The applicant could consider adjusting the vegetation management plan to reduce impacts to ground nesting birds and mammals by limiting any maintenance mowing to outside of May 15 to August 1 once new grassland at the facility is established (1 to 3 years) or by performing presence/absence surveys prior to any mowing activities taking place between May 15 and August 1, in consultation with the WDNR.

Deforestation Impacts

Northern long-eared bats, as well as other state-protected bat species, may use forests and trees in the project area as roosting habitat. Female bats and their young are vulnerable to mortality during the maternity period because of their use of trees for maternity colonies, and the inability of young bats to fly for several weeks after birth. Identification of maternal roost trees used by bats is very difficult and very few across the state are known and mapped. There are avoidance measures that can reduce potential for impacts to northern-long eared and other bat species, including a time of year restriction on tree clearing activities. The time of year tree clearing would occur is not stated in the application, with the application stating that a site-specific construction specification and schedule would be developed after a contractor was selected. It would be beneficial for bats, as well as nesting birds, for tree clearing to occur outside of the summer avoidance period of June 1 to August 15.

3.26. Visual and Aesthetic Impacts

Scoping Comment Concerns about Aesthetics

Many comments received during the EA scoping period stated a concern for the change in aesthetics that the project would likely cause. The project would create new visual impacts, and these would be experienced most intensely by the people using the area frequently or living nearby. The presence of the facility would increase an industrial/electrical aesthetic and reduce any rural agricultural aesthetic in the area. Individual opinion would vary on whether these changes are seen positively or negatively, however, the majority of the comments received stated that they would consider the changes negative.

Generally, the project would introduce new industrial-infrastructure visuals to those living near or traveling through the project area. There would not be a significant amount of existing

vegetation to shield views of the facility from surrounding viewers. The applicant has stated that they would be willing to work with adjacent landowners to design specific visual mitigation measures. The Commission could require the applicant to work with landowners to reduce visual impacts of the facility.

Photo Simulations

Appendix G of the application included photos that document the existing aesthetic conditions of the project area in July 2020. The applicant created visual simulations of the project using a subset of photographs collected during a site visit. The simulations show rendered views that include the proposed solar arrays and collector substation as proposed in engineering and plan documents. Prior to commencing the photo simulation tasks for the project, Springfield Solar consulted with Commission staff to determine the suitability of potential Key Observation Points (KOPs). Five KOPs and an alternate KOP were selected and used to create visual simulations of what the project may look like once constructed.

Glare Study

The applicant completed a glare study for all routes, flight paths, and homes using 8.5-foot and 13.5-foot panel heights, the results of which are available as Appendix N of the application. Based on the solar array parameters provided, they predict that glare from the proposed project would not occur for the four airports located within ten miles of the project, including the Fond du Lac Airport, Dinnerbell Airport, Baier Landing Strip, and Middlestadt Landing Strip. They also predict that glare would not occur for drivers of vehicles on 17 roads analyzed adjacent to the project at either five-foot (cars and small trucks) or nine-foot (semi-trucks) viewing heights, or for one railroad analyzed with a 15-foot viewing height. Additionally, the study predicts that glare would not occur for the 195 home sites and apartment buildings analyzed.

They state that the solar panels would be mounted to single-axis tracking systems that align the surface of the panels with the position of the sun, thereby reducing the potential for steep, glancing angles or the chance for glare. Complaints about glare by a residents within or outside of the project boundary would be assessed using ForgeSolar modeling to evaluate the extent and time of day of glare at the point of concern. Additional options for minimizing the impacts would include antireflective coating on panel surfaces, fencing, and vegetation.

4. Evaluation of Reasonable Alternatives

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

The no action alternative, which would be a denial of the CPCN, is a potential outcome of the Commission's consideration of the application. The potential environmental consequences of the proposed project described in this EA would not occur if the Commission denies the

application. The applicant not filing the CPCN application with the Commission at all would also have the same effect.

An alternative to the solar generation facility could take the form of other energy generation technologies, such as wind energy systems or natural gas electric generation facilities. Any alternative generation facility would also create impacts on the environment, some of which could be similar to those discussed in this EA. Other impacts, such as air quality or CO2 emissions, could be significantly different if an alternative that utilized fossil fuels were considered.

Wisconsin. Stat. § 196.491(3)(d)3 requires the Commission to consider alternative locations when determining whether a proposed generating plant is in the public interest. Wisconsin Admin. Code § PSC 111.53(1)(e) and (f), which implement this statutory provision, require a CPCN application to describe the siting process, to identify the factors considered in choosing the alternative sites, and to include specific site-related information for each site. Based on previous Commission CPCN processes with utility-scale solar generation facilities, applicants have provided 25% additional siting areas with the proposed project as an alternative. These provide options that the Commission could select as allowable areas for the installation of arrays at the solar generation facility.

5. Wisconsin Environmental Policy Act Determination

Wisconsin Admin. Code § PSC 4.20(2)(d) identifies ten broad factors that are useful to consider when evaluating whether an EIS is warranted for a given Commission action. The following subsections consider and discuss each of the ten factors with respect to the proposed project.

Effects on Geographically Important or Scarce Resources

No geographically important or scarce resources were identified within the area to be affected by construction of the proposed project. If proposed mitigation actions are followed, the proposed project is not expected to significantly affect historic resources, scenic or recreational resources, threatened or endangered species, or ecologically important areas.

Conflicts with Federal, State, or Local Plans or Policies

The project is not in conflict with any known federal, state, or local plans or policies.

Significant Controversy Associated with the Proposed Project

Notice of the proposed project was sent to city and county government offices and local media, in addition to all potentially affected landowners. There are some landowners and officials in the project area that have questions or concerns about the project. One of the concerns raised was the potential of this project to hinder development of this land, or ongoing development in the

area. The Commission is not aware of any controversies regarding the type, magnitude, or significance of the expected environmental impacts related to the proposed project.

Irreversible Environmental Effects

Few aspects of the proposed project would be irreversible, although reversing project actions would incur significant costs and create additional disturbance and environmental effects. Impacts such as noise, air quality, disturbance to local residents, erosion, and removal of vegetation would primarily be temporary and occur as a result of construction activities, and would not be reversible. Long-term effects including visual impacts and disturbance of wildlife would be reversible when the project is decommissioned.

New Environmental Effects

The installation of all the solar generation facility infrastructure would create new environmental effects in the project area. The physical presence of these facilities on the landscape would create environmental effects, or changes, relating to land use, aesthetics, wildlife impacts, changes to vegetation, and storm water runoff and infiltration.

Although the Commission has approved several large solar projects in the state so far, only one of those projects has been fully constructed and placed in operation at the time of this review, and there are still uncertainties regarding some of the potential impacts that might occur as a result of this project. The installation of smaller solar electric generation facilities has occurred elsewhere in the state, but not near the scale of this project. The large increase in fenced acreage along roadsides no longer accessible to certain wildlife could have effects on how animals move through the wider project area.

Unavoidable Environmental Effects

Construction of the proposed project would result in some environmental effects in the project area that could not be avoided by array location, route selection, or construction methods. Some of these could be reduced or minimized, but would not be entirely eliminated as a result of project activities. Some of the unavoidable environmental effects would occur during construction, such as:

- Disturbance to nearby residents due to noise, dust, and vibration
- Air quality impacts as a result of diesel fumes and dust
- Disturbance of wildlife
- Increased traffic in the project area
- Cutting or alteration of vegetation

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

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

Precedent-Setting Nature of the Proposed Project

The proposed project would not set any precedents, although there are several large scale solar facilities being proposed and constructed in Wisconsin at this time. Several utility-scale solar generation facilities have been previously approved by the Commission and others are also currently under review.

Cumulative Effects of the Proposed Project

The construction of more solar generation facilities in the project area, or possibly elsewhere in the state, would intensify some of the impacts that may be caused by this proposed project. Another solar electric generation facility would remove additional lands from other uses, or may cause increased impacts to more natural areas such as wetlands, forests, or natural grasslands. Additionally, similar fencing would likely be used, further restricting the movement of wildlife through the area and access to habitat. Additional facilities in the area would increase the impact to aesthetics and the local rural character. Further solar electric generation facility construction could displace fossil-fueled generation, benefitting air quality in areas near those types of generation sites.

Foreclosure of Future Options

The construction of the proposed solar generation facility would remove the land from any other use or environmental benefit it provides in its current state during the operational life of the project. After the useful life of the facility and after a decommissioning process, the land could be restored to agricultural or other uses.

Direct and Indirect Environmental Effects

There would be both direct and indirect environmental effects as a result of this project. The analysis of the proposed project by Commission staff assumes that the multiple construction methods and BMPs described in the applications and responses to data requests would be implemented. The proper use of mitigation techniques can greatly reduce impacts.

The direct impacts include disturbance to vegetation in areas of more natural habitat, where the fields are not already cleared of vegetation. There is an increased risk of soil erosion during excavation activities or if grading is done prior to vegetation establishment. In areas near wetlands and waterways, soil erosion can cause sedimentation. Topsoil loss or deposition can occur on cropland. Storm water and erosion control methods can decrease this risk. Site restoration actions, including prompt vegetation establishment on disturbed soils, can allow soil and vegetation disturbance to be temporary. Disturbed soils can be high-risk areas for invasion by non-native invasive plants. This would be an indirect and potentially long-term negative

effect on the environment, particularly if difficult to control plants such as non-native phragmites were able to establish. Therefore, loose soils should be stabilized with non-invasive cover crops as soon as possible. Machinery or equipment should be cleaned in accordance with invasive species BMPs as applicable.

Construction in and through agricultural fields would result in both temporary and long-term impacts. Some areas, such as laydown yards and temporary access roads would only be taken out of production during the construction phase of the project. The solar arrays, new collector substation, and O&M building would be out of agricultural production for the operational life of the project--potentially 50 years or more. Soil compaction and topsoil loss in agricultural fields are serious concerns and can impact future productivity. If drainage tiles are broken or damaged, the drainage of the array and surrounding fields could be affected, although some impacts might not be immediately known. The use of BMPs and post-construction soil restoration can reduce many direct impacts to agricultural operations. The eventual impacts of decommissioning the project site are not well known, but it is likely that thorough decommissioning, including decompacting soils and repairing any damaged drainage tiles, would allow for a return to agricultural use.

During construction activities, there would be increased noise, dust, and vibration in the construction areas. There would be increased traffic in the project area as employees and deliveries arrive and leave the project work areas. A visual change in the project area from open agricultural fields to a more industrial landscape would affect likely viewers differently. Some landowners that do not receive direct benefits from the project may react more negatively to the proposed project. Site-specific landscaping plans or larger set back distances might limit the impacts to adjacent landowners.

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

Air quality would be improved by the displacement of fossil-fueled power generation by non-emitting solar-generated electricity.

6. Recommendation

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

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

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

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

_____ Prepare an environmental impact statement.

Submitted by: Andrew Craft, PSC Environmental Analyst

Date: March 19, 2021

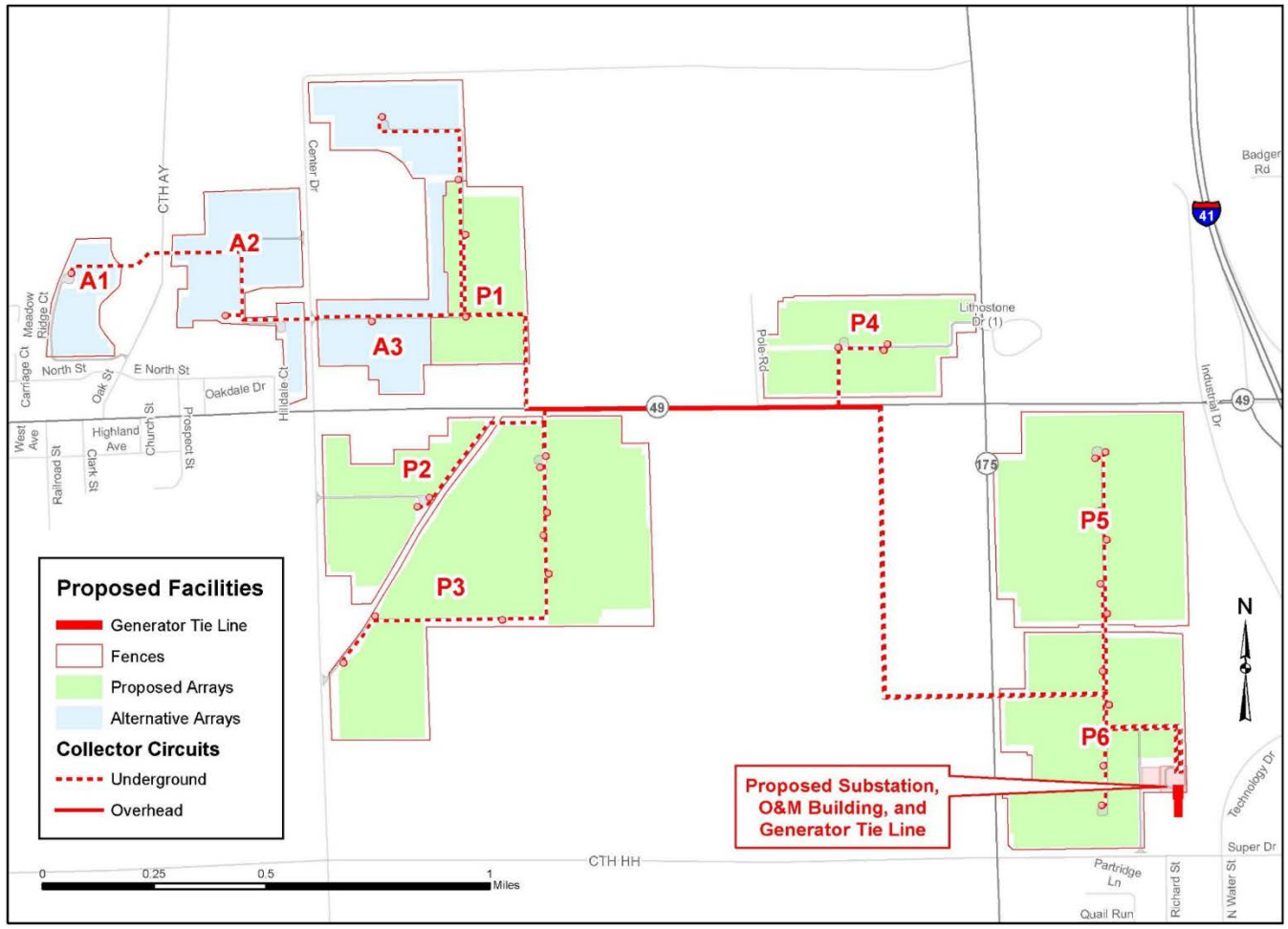
This environmental assessment complies with Wis. Stat. § 1.11, and Wis. Admin. Code § PSC 4.20.

Adam Ingwell

PSC Environmental Affairs (WEPA) Coordinator – Supervisor

Date: April 26, 2021

7. Appendix A: EA Notification Map[i]



[i] The overhead collector circuit planned along Highway 49 was changed by the applicant to an underground circuit via private easements.