NOTICE OF PUBLIC HEARING

Public notice is hereby given that Apex Clean Energy, LLC, as applicant, has filed with the Town of Cortland a request for a Special Use Permit in accordance with Title 9, Chapter 10, Section 6B of the Cortland Town Code regarding a property located at East North Avenue, DeKalb County, Illinois. The 77.54-acre site is located east of Somonauk Road, generally bounded by East Meadow Lane on the north and East North Avenue on the south, known as PIN 09-20-426-002. The applicant is requesting a Special Use Permit on the subject property to, upon annexation, construct, operate, and maintain a Solar Farm as set forth in Title 9, Chapter 4, Section 34 of the Cortland Town Code.

A Public Hearing before the Town's Planning Commission will be held at Town Hall, 59 S. Somonauk Road, Cortland, on **Thursday, June 4th, 2026, at 6:30 pm**.

All persons desiring to provide testimony regarding the requested special use permit may attend the public hearing to do so or offer testimony in advance thereof in writing. The application for special use permit for the subject property may be viewed through the Town's website at www.cortlandil.org. Written correspondence regarding the proposal may be directed to the Town of Cortland Zoning Administrator, P.O. Box 519, Cortland, IL 60112 and must be received not later than 4:30 p.m. at Town Hall on the day of the hearing in order to be incorporated into the public record of proceedings for special use permit request as appropriate.

Special Use Permit Application
Grand Parade Solar, LLC
Town of Cortland, DeKalb County, IL

Grand Parade Solar, LLC
5 MW Commercial Solar Energy Facility

Prepared by: Grand Parade Solar, LLC
Submitted May 2026

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APPLICATION SUMMARY

Grand Parade Solar, LLC (the "Applicant") respectfully requests consideration for a Special Use Permit ("SUP") to allow for the construction and operation of Grand Parade Solar ("Grand Parade Solar Project," the "Project," or "Grand Parade Solar"), an approximately 5-megawatt alternating current (MWac) ground-mounted solar energy facility located on private land, involving a single parcel in DeKalb County, Illinois and situated within 1.5 miles of the Town of Cortland ("Town") and abutting the Town's corporate boundary.

In accordance with the DeKalb County Code, Zoning – *Section 53-E-12, Sustainable Energy Systems, Municipal CSES (Section 4),* the Project is following the recommended deferral to the Town of Cortland's Zoning and Building regulations. Because the Project parcel is located adjacent to the Town's corporate boundary, the Applicant is also requesting the annexation of the Project parcel into the Town of Cortland. Accordingly, the Project has been designed to comply with the Town of Cortland Code of Ordinances, *Section 9-4-34, Solar Energy Systems Ordinance*.

The Applicant, therefore, kindly requests that the Town of Cortland Planning Commission and Town Board approve the Land Development Application for the Solar Energy System Special Use Permit (the "Application"). We also, respectfully request that the Town Board approve the Annexation Petition (the "Petition") provided alongside this Application. As detailed herein, the Applicant has satisfied all requirements outlined in the Town of Cortland's *Solar Energy Systems Ordinance*.

1.1 Applicant Description and Contact Information

Grand Parade Solar, LLC is a wholly owned subsidiary of Apex Clean Energy ("Apex"). Apex is a privately held renewable energy company based in Charlottesville, Virginia. Since its founding in 2009, Apex has evolved into one of the fastest-growing companies in the industry with a singular focus: to accelerate the shift to clean energy. Through origination, construction, and operation of utility-scale wind, solar, and storage facilities, distributed energy resources, and green fuel technologies, Apex is expanding the renewable frontier across North America. Nearly two dozen wind, solar, and storage facilities originated by Apex are now operating nationwide, representing approximately 5 gigawatts (GW) of clean energy. These include Mulligan Solar, a 70-MW solar facility near Lincoln, Illinois, and more than 500 MW of operating wind projects across the state. With this Project, Apex's solar portfolio in Illinois will exceed 800 MW under development. Apex employs more than 400 of the industry's leading professionals, including meteorologists, wildlife biologists, engineers, project managers, construction experts, GIS analysts, and financial specialists.

Grand Parade Solar, LLC's agents for contact purposes are:

Sido Shira
Development Manager, DER
Apex Clean Energy
[redacted]

Cady Merrick
Development Manager, DER
Apex Clean Energy
[redacted]

1.2 Right to Use Property for Proposed Facility

The Applicant is the Lessee of the Property, as evidenced by the recorded Memorandum of Ground Lease for Solar Energy System included in Exhibit B of this application. The Applicant's affiliate, Apex IL DER, LLC, was the original lessee, but on November 2, 2023, the lease was assigned to the Project entity, Grand Parade Solar, LLC (see Exhibit C). Any future assignments of the lease and obligations within will be recorded. Further, the Applicant will notify the Town of any future change in ownership. The Applicant understands that an issued SUP and Annexation Petition shall be binding on the Applicant or any successors, assignees, current or future lessee, sub-lessee, or owner of the solar energy system.

1.3 Project Overview

The Applicant is the owner of the proposed Grand Parade Solar Project. The Project will be located on a single parcel, (PRN# 0920426002) in DeKalb County, IL (the "Property") owned by Andra L. Olson, Trustee of the Andra L. Olson Declaration of Trust, who has leased the Property to the Applicant. The Property is located approximately half a mile northeast of Cortland's Town Hall along North Avenue and lies within a Department of Energy–designated energy community.[1] It is currently under the jurisdiction of DeKalb County, zoned A-1 Agriculture, and is bordered by parcels zoned Agricultural, Industrial, and Residential. Should the annexation into the Town of Cortland occur, the Property would be zoned AG, Agriculture. The land is currently farmed for corn and soybeans and is expected to continue agricultural operations alongside the proposed solar development. The Project will not alter neighboring land uses or diminish the use and enjoyment of nearby properties.

Legal Description:

Parcel ID: 920426002 (Part of the E1/2 SE1/4)
That part of the southeast quarter of section 20, township 40 north, range 5 east of the third principal meridian, Dekalb county, Illinois, described as follows: commencing at the northwest corner of the southeast quarter of said section 20; thence north 89'38'25" east along the north line of said southeast quarter (also the south line of Neucort lakes unit one & three), a distance of 1326.94 feet to the west line of the east half of said southeast quarter, for a point of beginning, thence south 00"/ i '73" west, along said west line a distance of 2063.06 feet to the north line of prairie view subdivision; thence north 89'/2'47" east along said north line, a distance of 95.61 feet to the northeast corner of said subdivision; thence south 00'06'00" west, along the east line of said subdivision, a distance of 357.66 feet; thence north 89'/2'39" east parallel with the south line of said southeast quarter. A distance of 404.09 feet,· thence south 00·09'75" west, a distance of 252.78 feet to the south line of said southeast quarter; thence north 89'/2'39" east along said south line, a distance of 824.93 feet to the southeast corner of said southeast quarter; thence north 00'13'16" east along the east line of said southeast quarter, a distance of 2663.54 feet to the northeast corner of said southeast quarter; thence south 89'38'25" west along the north line of said southeast quarter (also the south line of Neucort lakes unit one & three), a distance of 1326.93 feet to the point of beginning.

[1] The Department of Energy defines Energy Communities as: census tracts that, 1) are former brownfield sites; or 2) have had historical low levels of employment, or where local employment relied on extractive industries; or 3) are located near sites of retired coal plants. https://energycommunities.gov/energy-community-tax-credit-bonus/

The Project is intended to be a community solar facility and participate in an Illinois Power Agency program. Community solar enables eligible local utility customers to subscribe to a portion of the project's energy output and, in turn, receive savings on their monthly utility bills. Through virtual net metering, subscribers earn bill credits from their local utility for the electricity generated by the facility. Program participation is open to a broad range of customers, including homeowners, renters, municipalities, schools, non-profit organizations, and commercial businesses.

Approximately 30 acres of the 77.54-acre property will be dedicated to the solar panel array, electrical system components, and surrounding fencing, collectively referred to as the "Project Area". Because of its small size, the Project will not require a substation or related equipment. The site is well-suited for a community solar development: the land is largely flat, with elevations ranging from 874 to 902 feet above sea level, carries minimal flood risk, and has already been disturbed through prior agricultural use.

The Project Area is located in a rural residential setting and has been carefully designed to be unobtrusive, blending into the community through recently updated vegetative screening while preserving the area's rural character, as evidenced by a visual impact analysis provided in Exhibit D.

The Project will also comply with the Illinois Pollinator-Friendly Solar Site Act of 2018 (525 ILCS 55). In alignment with the Illinois Department of Natural Resources (IDNR) objectives, the Project Area will be planted with native perennial vegetation that supports pollinators, game birds, and songbirds. This approach will further reduce stormwater runoff, minimize soil erosion, and help prevent the spread of noxious weeds, ensuring the site remains both environmentally responsible and sustainable.

The current conditions of the land provide access to a strong solar resource and proximity to Commonwealth Edison (ComEd's) existing electrical distribution infrastructure. There is sufficient sunlight to operate this Project with access to sunlight for all panels as necessary to meet the required energy demands. Throughout its anticipated 40-year project life, the Project will produce the equivalent of approximately 1,000 homes' worth of clean solar electricity per year; the end user of the electricity will be ComEd's customers both locally and across the state of Illinois. If the Project receives all required approvals for construction, the Applicant anticipates construction could commence in the latter half of 2026 with operations beginning in the first half of 2027.

A (preliminary) Site Plan has been prepared in accordance with the requirements of the Town of Cortland's Solar Energy Systems Ordinance, and the Land Development Application for a Solar Energy System Special Use Permit (SUP) is included with this application – see below (Exhibit E). Following the SUP and annexation approval, the Applicant will conduct all required environmental and engineering surveys and finalize all pre-construction plans for submission to the Town for final site plan and all associated construction requirements, including but not limited to the building permit, and road use agreement.

The Project is expected to bring significant economic benefits to the Town of Cortland, and the

Applicant has designed the Project with the following considerations:

- To preserve the rural character of the area through the use of setbacks and vegetative screening, ensuring minimal impacts to neighboring parcels.

- To qualify as a community solar facility and participate in one of the Illinois Power Agency's incentive programs (e.g., Illinois Shines or Illinois Solar For All). Thus, saving project-subscribing residents money on their monthly utility bills.

- To provide local economic stimulus via increased tax revenue, estimated at approximately $1.16 million over 40 years of project operations.

- Commitment to providing a community benefit donation to the Town of Cortland.

- To produce the equivalent of over 1,000 homes' worth of clean electricity per year, based on average home electricity consumption in the U.S.

- To align with the goals and objectives of the 2023 Cortland Comprehensive Land Use Plan.

- The Project has signed and fully funded the interconnection facilities required with ComEd, following completion of the utility's interconnection study process, demonstrating both project viability and the Applicant's intent to build this project, if approved.

- Decommissioning of the Project at the end of its operational life will be performed in accordance with state law and the Illinois Department of Agriculture's Standard Agriculture Impact Mitigation Agreement (AIMA), see Exhibit F. The Applicant will provide financial security to the Town of Cortland pursuant to state law and the AIMA to ensure that the Town has financial resources available to decommission the Project in the unlikely event that the Applicant fails to. A Decommissioning Plan has been prepared and is provided in Exhibit G.

1.4 Project Facilities Overview

A. Design

The Project has been designed to comply with all setback requirements, as defined by Section B-1: Bulk Regulations of the Town of Cortland's Solar Energy Systems Ordinance. These setbacks are shown in the preliminary Site Plan in Exhibit E of this Application. The Project has been designed to maintain a 50-foot minimum setback from the boundary lines of nonparticipating properties and public road rights-of-way. The Project will update these preliminary engineering drawings prior to the final site plan and building permit review process based on final project construction designs.

While the Applicant has not yet finalized its selection of a solar panel model or manufacturer, the location, layout, and capacity of the Project will not materially change from what is depicted in the preliminary Site Plan. For reference, Exhibit H contains specification sheets that are an example of the type of technology that may be used. The final Project layout and technology selection will comply with all applicable Federal, State, and Local Code requirements, including demonstrating equipment certification from Underwriters Laboratories (UL), and final designs will be submitted for approval as part of the final site plan and building permit review process before construction.

The Project will comply fully with all design, safety, and electrical component requirements as stipulated. The Project will adhere to applicable industry standards, including those of the American National Standards Institute (ANSI), with certificates of design compliance from UL or an equivalent third party provided for all new, commercially available equipment. Additionally, as part of the final site plan approval during the building permit application process, a state-licensed structural engineer will certify that the facility's design meets professional standards, considering local soil, subsurface, and climate conditions. All electrical components will conform to relevant local, state, and national codes, as well as international standards, ensuring the project's safety and reliability.

Grand Parade Solar will incorporate all necessary measures to comply with the outlined standards in its final site plan design. The Project will ensure that no component of the solar panels, cells, or modules exceeds 10 feet above ground at maximum tilt. To the extent possible, topsoil will not be removed. The Project will utilize any existing vegetation to screen the solar facility and will install a vegetative screening as depicted in the site plan to protect viewsheds visible to nonparticipating residences. The screening will be placed between the project fence and the property line. As proposed and recently updated, the screening will be a continuous line of native evergreen foliage and/or native shrubs and/or native trees. Any lighting used will be shielded and directed downward to prevent light from affecting any adjacent parcels. All intra-project power and communication lines will be buried underground until they interconnect to the local utility grid along the property line via a 5-pole line up (see Section 5). Additionally, the Project will be enclosed with a security fence that meets the required height specifications of at least 6 feet and no more than 15 feet in height.

The Project will feature clear identification and warning signs about voltage at the base of all pad-mounted transformers– see additional example signs in Exhibit I. To enhance safety and visibility, reflective or colored markers, such as flags, sleeves, or tape, will be installed on the anchor points of guy wires and along the wires.

B. Solar Facility Configuration

Solar facilities consist of three major components: the panels, inverters, and the racking. The solar panels used will operate photovoltaic technology to convert sunlight into direct current (DC) energy. Each solar panel is comprised of several cells that are connected via semiconductors. These cells absorb photons from the sun, releasing electrons that flow through the semiconductors and system wiring to the inverters, which convert this DC energy into alternating current (AC). A pole-mounted transformer then increases the voltage of the AC energy to make it compatible with the electric grid.

Steel piles for the racking are driven into the ground (without concrete), then solar panels and string inverters are mounted to the racking. If sufficient depths cannot be achieved, or if larger central inverters are used, then concrete foundations will be poured to provide structural support and mounting for these components. All foundations will be certified by a professional engineer.

Solar Panels: Each solar panel, also known as a “solar module,” typically contains 72 or 96 photovoltaic cells. These photovoltaic cells are made of silicon and connected via semiconductors made from commonplace metals like aluminum and copper. These cells are encapsulated by a non-toxic, rubber-like adhesive film and secured between two layers of tempered glass. A junction box that houses the panel's wiring is mounted to the underside of the panel, and everything is secured by an aluminum frame. Multiple interconnected solar panels are called a "string", and multiple strings form an "array". A solar facility can be composed of multiple solar arrays.

Based on current technology, the Project's site could contain around 10,000-15,000 photovoltaic solar panels in total, and with the scale at which the technology is improving, the number of panels needed for the Project may be reduced due to increases in the energy output per panel. Any changes to the model or manufacturer will be submitted for review to the Town prior to construction. For more details on these types of panels, an example specification sheet has been provided in Exhibit H.

Racking: The structural support for a solar array is called the racking. Racking is made of high-grade aluminum and steel and can take the form of either fixed-tilt or single-axis trackers depending on the available space and contour of the land. As the name implies, single-axis trackers track the sun's path across the sky from east to west throughout the day along a horizontal axis with nearly imperceptible movement. A fixed-tilt racking system will be oriented towards the south pole (in the northern hemisphere) and tilted at an angle that matches the latitude of the facility's location.

A single axis tracking system is currently proposed for the Project racking. This system is designed to withstand wind speeds of 145mph and will not exceed 10ft at maximum height in accordance with the Town's Ordinance. Measurements for this system type are included on the preliminary Site Plan with specifications from a potential product manufacturer. Final equipment selection, details, and design will be submitted to the Town for approval prior to construction.

Inverters: The inverter converts DC energy to AC energy that is ready to be transmitted to the local distribution grid. Two types of inverters are used in solar facilities: string inverters and central inverters. String inverters, the most common for projects of this size, are proposed for this Project and typically have the following dimensions: (W x H x D): 26.4" x 35.5" x 11.7". A sample string inverter specification sheet has been provided for reference in Exhibit H. The final inverter selection will not substantially change the facility size or location but will be approved by the utility and submitted to the Town prior to construction.

The generated electricity is conducted underground (where possible) through cables to a series of poles that support the remaining equipment (e.g. transformer, reclosers, meters, etc.) required by the utility for interconnection to their existing line infrastructure.

Though solar projects do not produce significant sound levels, the Project's inverters do produce a low-level hum during the day when energy is being produced. This hum has been described as roughly equivalent to the sound of a dishwasher. The Project's inverters have been thoughtfully designed to be located centrally within the facility to further limit discernible sound from the perimeter of the Project. Under normal operating conditions, no sound is expected during the night.

C. Access Road

A new gravel access road will be sited with the goal of minimizing its impact and as such will be constructed with a single point of entry/exit along E. North Ave and located solely on the Property. The new access road will be gravel surfaced with 7-inch compacted stone and 20 feet in width. During construction, the access road may be temporarily widened to accommodate movement of the larger system components or construction equipment, generally not exceeding 50 feet. Following construction, the access road will be reduced back to 20 feet, and the area temporarily used will be restored, to the extent practicable. The exact routing of the project access road is preliminary in nature and subject to the completion of further engineering analysis prior to construction. The Project will provide a minimum of two parking spaces, 10' x 20' wide.

The Grand Parade Solar Project will comply with applicable public road use requirements. Discussions with the Town engineer have confirmed that a road use agreement is necessary to access the Project from North Avenue, provided in Exhibit J. Should any transportation of equipment for construction, operation, or maintenance take place, the project will ensure that all necessary weight and size permits are obtained from relevant government agencies. The project will also adhere to any applicable road regulations to maintain road safety and conditions throughout construction.

D. Electrical Collector Lines

The Project will utilize underground electrical collector lines to the extent practicable to connect all Project facilities to each other and to the equipment needed for interconnection with the utility. The collector system will be designed for operation at 13.2kV. The collector lines will be installed in a trench at a depth of at least 18 inches within the fenced Project area and a minimum of five feet outside of the fenced area. The location of collector lines installed underground outside of the fenced area will be reviewed by the landowner to minimize disturbance to the existing agricultural use of the Property. A fiber-optic cable and an additional separate ground wire will also be installed with the collector system. The fiber-optic cable will be used for Project-specific telemetry, control, and communication purposes. Above-ground junction boxes will be installed, as required, for connections or splices and will not exceed 15 feet in height.

E. Transformer and Interconnection

Due to the Project's small size, which is not to exceed 5 MWac of generating capacity, no substations or ancillary structures will be constructed or permanently installed. Instead, the Project will be connected by increasing the Project voltage with a step-up transformer and other associated equipment so that it is compatible with the existing voltage of the distribution system. The Project will run underground collection from the facility coming aboveground to run perpendicular to E North Avenue in a series of 5 distribution poles (see Section 5). These poles will host various electrical equipment, including but not limited to circuit reclosers, switches, and metering equipment, all of which are mounted to the tops of telephone poles close to the point of interconnection. The Project will interconnect with ComEd's existing three-phase distribution system via an electrical line adjacent to the Property and runs east to west along E North Avenue. These 13.2kV lines connect to the Glidden substation.

As part of the Applicant's completed interconnection agreement with ComEd, the utility identified required infrastructure upgrades that the Applicant has fulfilled in whole to interconnect the Project into the grid, see agreement provided in Exhibit K. As an added local benefit, these upgrades directly improve the resiliency of the local grid. The electricity generated by this system will be utilized locally by all ComEd customers that the substation services. *Please note while this Project is intended to be a community solar facility, ComEd customers in the Project's vicinity will need to elect to subscribe to the Project to experience the cost savings on their monthly electric bills.*

The scope of this Project does not include batteries, energy storage, or any equipment and facilities other than those described herein and planned for on the preliminary Site Plan (see Exhibit E).

1.5 Project Construction

Upon approval of the Application and issuance of a SUP, and as other state and federal approvals are obtained, including acceptance into Illinois Power Agency programs, the Applicant will complete engineering-scale designs of the access roads, parking, construction areas, array layout, and the electrical components necessary for securing a Solar Energy Systems Building Permit, Driveway, Fence and all required permits from the Town. The applicant will also secure all permits required by other government or regulatory agencies to commence construction and will commence construction within 12 months of SUP issuance, in accordance with the Town of Cortland's Solar Ordinance. As mentioned above, a state-licensed structural engineer will certify that the Project's pre-construction designs meet all required standards, considering local soil, subsurface, and climate conditions.

Consistent with the AIMA (see Section 3.4 and Exhibit F), the Applicant will take measures to minimize impacts to drainage infrastructure on the Property. In coordination with the Landowner, the Applicant has initiated locating all drainage tile and underground utilities within the Property. A third party was contracted to conduct a desktop review of underground tile and utilities, see Exhibit L. The Applicant will repair and/or install new drainage tile lines as needed and will compile "as built" drawings showing the locations of all encountered drainage tile lines and repair locations for distribution to the Landowner, the Illinois Department of Agriculture (IDOA), and the Town of Cortland's Water and Wastewater Department.

Under the AIMA, the Applicant will also work to maintain soil quality at the Property utilizing industry best management practices. For trenching of underground electrical collector lines during construction, topsoil will be stripped prior to trenching and then restored as close as reasonably practicable to the original depth and contour once trenching is completed. Best efforts shall be made to store the topsoil near the excavation site in a manner so as not to cause mixing with subsoil materials.

Safety will be a top priority during all aspects of construction activities, especially on public roads. All public roads used for construction will be subject to a road use agreement with the Town, see Exhibit J. Before construction, the Applicant will conduct a pre-construction baseline survey to document existing road conditions for assessing future damage, and will comply with all required weight and size requirements outlined in the road use agreement.

The total estimated timeframe for solar farm construction is approximately 6-8 months. Subject to receipt of all required pre-construction permits and any weather delays, the Project anticipates commencing construction in the latter half of 2026 and commencing commercial operations in 2027.

1.6 Project Maintenance

During operation and following a request from the Town, an operation and maintenance report will be provided within 14 calendar days of the Town's request. This report will include a summary of any repairs, replacements, or modifications made, any complaints and their resolutions related to setbacks, noise, appearance, safety, lighting, or road use, calls for emergency services, the status of liability insurance, and a summary of service calls.

The Applicant will coordinate with local emergency responders by providing a copy of the site plan, standard operating procedures, and standard operating guidelines, along with any updates. Prior to construction, the project will collaborate with the Town to develop an emergency action plan that includes 24-hour contact details for designated representatives – see Draft Emergency Action Plan in Exhibit M. Compliance with all applicable life safety and emergency regulations will be maintained. The Project will dispose of solid and minimal hazardous waste in accordance with all applicable laws and adhere to septic and well regulations as required by local and state health departments.

The Project will follow ANSI standards for signage, placing visible warning signs about voltage at all pad-mounted transformers, substations, and facility entrances. See Exhibit I for illustrative examples of signs, noting these examples are not meant to be fully exhaustive or the exact signs to be used. The project will also promptly repair any damaged drainage systems or infrastructure during construction and operation, in line with the Agricultural Impact Mitigation Agreement.

1.7 Economic Benefits

The Project will involve an initial capital investment of approximately $18 million and is expected to create both short-term and long-term benefits to the local economy, including creating approximately 25 full-time-equivalent (FTE) jobs during construction. The assessed value of the Project will add to the local tax revenue, amounting to an increase of approximately $1.16 million over the project's 40 years in operations, and $635,585 during the first 25 years of operations (this value was calculated using the IL Department of Revenue's method for Commercial Solar Energy System Valuation and an estimate of tax revenue utilizing a 2% escalator).[2]

In addition to the tax benefit this project will provide the Town, the Project has included a draft Community Benefit Donation (Exhibit U), which further demonstrates our commitment to provide a positive financial impact to the community.

The Project will also comply with all liability insurance and indemnification requirements by maintaining comprehensive insurance coverage of at least $3 million per occurrence and $5 million in aggregate throughout the project's lifecycle. The project will submit the necessary certificates of

[2] https://tax.illinois.gov/content/dam/soi/en/web/tax/localgovernments/property/documents/commercialsolarenergysystemsvaluation.pdf

insurance before construction begins and renew them annually. Additionally, the project will indemnify and hold the Town and its officials harmless from any claims or liabilities related to the facility, except those arising from the Town's own negligence or intentional acts as stated in the Towns Solar Energy Systems Ordinance.

A. Financial Impact Analysis

The Project hired a third-party Illinois licensed appraisal company to conduct a property value analysis of our Project and the impact a solar project may have on property values in the immediate and surrounding areas of our proposed Project. The full report is attached to this application in Exhibit N.

The results of the report state that the Project shows no impact on values of abutting or adjacent homes, and nearby residential or agricultural land where the Project is properly screened and buffered as proposed in the Project's preliminary Site Plan. Typical factors that lower property values in Illinois, such as noise, odor, and traffic, are not issues with solar farms; they are compatible with rural and residential areas. The Projects proposed setbacks and the supplemental vegetation enhance the areas where existing screening does not exist, ensuring no negative impact on nearby property values. Data from university studies, brokers, and appraisals, along with similar findings across many towns and counties (some upheld by courts), support this conclusion. Additionally, nearby residents have noted benefits of solar farms, such as protection from future development, reduced agricultural dust and chemicals, minimal traffic, and no light pollution.

Furthermore, recent studies and evaluations in Illinois and nationwide indicate that solar farms can contribute positively to surrounding areas by fostering a stable environment that discourages disruptive development while preserving open, green space. By providing a quiet and low-impact alternative to other land uses, solar farms can actually enhance the appeal of nearby properties. Communities across various regions have recognized solar farms as a beneficial asset, valuing their minimal maintenance requirements, lack of pollution, and limited need for municipal services. This positive perception is further reinforced by the fact that solar projects align well with rural and semi-rural landscapes, where their visual and environmental footprint remains minimal due to careful planning and buffering.

B. Visual Rendering

To assess and minimize potential visual impacts, the Project engaged a professional third-party digital artist to prepare detailed 2D visual renderings of the proposed Project during both the peak agricultural season and the dormant off-season. The visual renderings are attached to this application in Exhibit D.

These renderings illustrate that the Project will result in minimal, if any, visual impact on neighboring and nearby homes. This is due to a combination of robust vegetative screening, strategically placed to obscure key sightlines, and substantial setbacks that far exceed local zoning requirements. The layout and landscape design were carefully tailored to ensure the Project integrates into its surroundings, making it well-suited for the nearby residential environment. The result is a discreet, low-profile development that prioritizes neighborhood character and preserves the visual integrity of the Town.

Since these renderings were generated, additional vegetative screening has been incorporated into the site design to further protect local viewsheds.

1.8 Compliance with Federal, State, and Local Requirements

As detailed below in Sections 2, 3, and 4, the Project will comply with all Federal, State, and Local requirements prior to commencement of construction activities. All studies, permitting milestones, and coordination activities required in the Town's Solar Ordinance for submitting a SUP application have been initiated or completed.

2 FEDERAL COMPLIANCE AND NOTIFICATIONS

The Project submitted applications to, entered into agreements with, or otherwise conferred with the following federal regulatory agencies.

2.1 Federal Aviation Administration

The Federal Aviation Administration (FAA) has the regulatory authority to evaluate and permit structures which may pose a hazard to aviation.

The closest airport to the Project is the DeKalb Taylor Municipal Airport, located approximately 1.4 miles from the project site. To confirm that the Project will meet the standards and regulations of the FAA, the Applicant utilized the FAA's online OE/AAA Pre-Screening Tool, entering in the coordinates for the four corners of the proposed layout, the anticipated maximum height of the panels, and the site elevation to evaluate the potential to affect airspace or cause glare for aircraft. The Project does not exceed Notice Criteria, and no further coordination with the FAA is required, Exhibit O.

As of 2021, the FAA no longer requires guidance or assessment for potential glare associated with off-airport solar facilities and does not require submission of a Form 7460-2 (86 Fed. Reg. 25801 (May 11, 2021).

2.2 United States Army Corps of Engineers

The United States Army Corps of Engineers (USACE) is responsible for regulating the discharge of dredged or fill material into waters of the United States (WOTUS), including wetlands, under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (RHA).

The Applicant retained Tetra Tech, Inc. to conduct a desktop review and onsite field reconnaissance for aquatic resources that could potentially be considered WOTUS within the Project Area to inform Project design and ensure compliance with Section 404 of the CWA – see Exhibit P. Based on the results of the desktop review, there were six potentially jurisdictional features within the Project Area. Of the six locations investigated during the field reconnaissance, it is Tetra Tech's opinion that none of the locations would meet the definitive criteria for a WOTUS. The sites investigated did not possess positive wetland indicators for vegetation, hydrology, or hydric soils.

2.3 United States Environmental Protection Agency (US EPA)

Determining potential presence of environmental conditions is necessary for financing, siting, and construction. As such, the Applicant retained Tetra Tech, Inc. to perform a Due Diligence Environmental Review (DDER). The purpose of the DDER was to evaluate the Project area for indications of recognized environmental conditions (RECs). The information provided in the DDER included a review of historical and current environmental records and followed the "approximate minimum search distance" defined in the ASTM International (ASTM) Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM E1527-

21) to determine which records were obtained and reviewed. The approximate minimum search distance included research of standard federal, state, and tribal environmental record sources (as defined by ASTM E1527-21) in a 0.5 to 1.0-mile buffer around the Project Area. The assessment revealed no RECs, historical recognized environmental conditions (HRECs), controlled recognized environmental conditions (CRECs), or other potential issues within the Project Area.

Prior to Construction, a Phase I Environmental Site Assessment ("Phase I ESA") will be conducted to demonstrate further compliance with US EPA requirements.

2.4 United States Fish and Wildlife Service

The United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) online tool was used to generate a list of federal species and resources protected under the Endangered Species Act (ESA; i.e., threatened and endangered species and designated critical habitat) that may occur in the vicinity of the Property. Based on the USFWS IPaC review (Exhibit Q), the following federally endangered and threatened species have the potential to occur: Indiana bat, tri-colored bat, whooping crane, monarch butterfly, and the Eastern prairie fringed orchid. Given that the Project Area is located within an area previously cleared for agricultural purposes there is little, if any, suitable habitat that will be impacted, and no adverse impacts to federally listed species are anticipated.

The USFWS also administers the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), which prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald or golden eagles, including their parts (including feathers), nests, or eggs. The Migratory Bird Treaty Act also prohibits the take (including killing, capturing, selling, trading, and transport) of migratory birds. Because the Project Area and those surrounding it have been previously cleared for agricultural purposes, there is no suitable habitat for nesting eagles and limited suitable breeding habitat for migratory birds.

2.5 Federal Emergency Management Agency (FEMA) - Flood Plain Designations

A desktop review of the FEMA Flood Hazard maps determined that the entire Project Area falls in Zone X – Area of Minimal Flood Hazard. The FEMA National Flood Hazard Layer FIRMette can be found in Exhibit R. No further action is required for compliance.

3 STATE OF ILLINOIS COMPLIANCE AND NOTIFICATIONS

Compliance with State of Illinois rules and regulations involved permit applications, consultations and/or agreements with the following agencies.

3.1 Illinois Department of Natural Resources (IDNR)

State-listed Threatened and Endangered Species

Under 520 ILCS §§ 10/11, 30/17, issuers of local or state permits must consider the potential adverse effects of proposed actions on Illinois endangered and threatened species and nature preserves. To ensure compliance with state threatened and endangered species regulations, the Applicant requested a formal Ecological Compliance Assessment Tool (EcoCAT) review by the IDNR for the Project area on September 29, 2025. The review identified no record of state-listed threatened or endangered species, no Illinois Natural Area Inventory sites, no dedicated Illinois Nature Preserves, nor registered Land and Water Reserves in the vicinity of the Property. Based on the results of the EcoCAT, no adverse impacts to Illinois endangered and threatened species and nature preserves are expected, and consultation with IDNR is complete. The EcoCAT report can be found in Exhibit S.

Illinois Pollinator-Friendly Solar Site Act

The Grand Parade Solar Project will comply with the Illinois Pollinator-Friendly Solar Site Act of 2018 (525 ILCS 55). The project's plan aligns with the objectives of the IDNR and complies with the Town's Ordinance by incorporating and maintaining native perennial vegetation ground cover under and around the panels to create foraging habitats for pollinators, game birds, and songbirds (Exhibit T). Additionally, this approach will help reduce stormwater runoff and soil erosion while preventing the spread of noxious weeds, ensuring an environmentally supportive and sustainable site.

3.2 Illinois Historic Preservation Division (IHPD)

Under the Illinois State Agency Historic Resources Protection Act, the Illinois State Preservation Office (SHPO) division at IDNR is responsible for studying possible Project effects on archaeological and/or architectural (cultural) resources. Agencies requiring SHPO evaluation concurrent with their review include the Illinois Environmental Protection Agency, IDNR, and the USACE.

Since the Project will require a National Pollutant Discharge Elimination System (NPDES) Permit from the Illinois Environmental Protection Agency (IEPA), SHPO review and concurrence is required to ensure impacts to cultural resources are avoided and/or minimized.

3.3 Illinois Environmental Protection Agency (IEPA)

The IEPA Division of Water Pollution Control is responsible for regulating wastewater discharges to Illinois streams and lakes, which includes issuance of stormwater permits under the NPDES program.

The Project will obtain coverage under the Illinois General NPDES Permit for Storm Water Discharges from Construction Site Activities (ILR10) prior to construction. To satisfy all standards for obtaining a NPDES permit, the Project will design a Stormwater Pollution Prevention Plan (SWPPP) which includes both structural and non-structural best management practices (BMPs) that will be implemented to minimize the potential discharge of pollutants during construction activities. Examples of structural BMPs may include the installation of silt fences and/or other physical controls to divert flows from exposed soils or otherwise limit runoff and pollutants from exposed areas of the site. Examples of non-structural BMPs include implementation of materials handling, disposal requirements, and spill prevention methods.

Before starting project construction, the Applicant will file a notice of intent and accompanying SWPPP for a general permit to discharge relating to storm water discharges during Project construction.

3.4 Illinois Department of Agriculture (IDOA)

The Project will be located on a site that is currently zoned A -1, Agricultural and is anticipated to be zoned A, Agriculture pending the annexation of the Property, and used for agricultural purposes. Because of this, the Applicant is required to follow the IDOA's minimum requirements related to construction and Decommissioning of a renewable energy facility, including topsoil segregation, rock removal, weed control, and repair of damages. The Applicant has submitted an Agricultural Impact Mitigation Agreement (AIMA) with the Illinois Department of Agriculture, per the Renewable Energy Facilities Agricultural Impact Mitigation Act (505 ILCS § 147/15) and the requirements of state statute 55 ILCS § 5/5-12020. A copy of the AIMA has been provided to the landowner and can be found in Exhibit F of this Application.

3.5 Illinois Department of Transportation (IDOT)

The Applicant will comply with IDOT guidelines and requirements of state statute 55 ILCS § 5/5-12020 prior to delivery of the solar facility components and construction vehicles needed to construct the Project. The access road for the Project is considered a low- to moderate-volume commercial entrances. Typical approvals or coordination for use of state roads may include permits for over-size or over-weight vehicles, permits for any work on constructing/modifying entrances/exits, or permits for any use that may cause damage to the state roads being used.

As shown in the preliminary Site Plan, Exhibit E, the Project will be accessed via E. North Avenue and will comply with local guidelines and requirements.

3.6 State Statute 55 ILCS § 5/5-12020 Commercial Solar Energy Facilities

The Applicant will comply with all requirements described in Illinois State Statute 55 ILCS § 5/5-12020, regulating Solar Energy Facilities.

[55 ILCS § 5/5-12020(e)(3)] Setbacks*.*

The Project has been designed to follow the Town's Solar Energy System Ordinance setbacks of at least 50 feet from the front, corner, side, and rear property lines.

[55 ILCS § 5/5-12020(e)(4)] Fencing*.*

The perimeter of the Project will be enclosed by fencing that is at least 6 feet but no more than 15 feet in height.

[55 ILCS § 5/5-12020(e)(5)] Facility Height.

The height of the components of the Project will not exceed more than 10 feet above ground when the solar arrays are at full tilt.

[55 ILCS § 5/5-12020(j)] Construction and Decommissioning standards.

At the end of the Project life, the Project will be decommissioned in accordance with a Decommissioning Plan that is prepared and sealed by a Professional Engineer. A Draft Decommissioning Plan has been prepared for this project and can be found in Exhibit G. Prior to application for building permits, and after the final site plan design, the Decommissioning Plan will be updated (as needed), and a final version will be provided to the Town. As part of Decommissioning, all Project facilities will be dismantled and removed in accordance with State and Local requirements (see Section 5), and the land will return to agricultural use, or another use permitted by the Town Ordinance and as desired by the property owner. If it is agreed between the Town and the landowner, the Project access roads may be kept in place for continued use. In accordance with the Project's AIMA and Town Ordinance, the Applicant shall file an updated Decommissioning Plan with the Town every three to five years following the issuance of the special use permit.

In accordance with the guidelines of Section 17.D. of the Standard Solar AIMA (see Section 3.4 above and Exhibit F), the requirements in 55 ILCS 5/5· 12020, and in accordance with Town Ordinance, the Applicant will provide the Town with financial assurance to cover the estimated costs of Decommissioning of the Project as approved by the Town Engineer. The estimated Decommissioning cost will be based upon the final site plan, prepared by a Professional Engineer, and provided via bond, letter of credit, or other form of financial assurance. Most of the Project's components will still have significant market value and are able to be reused or recycled.

[55 ILCS § 5/5-12020(s)] Road Use Agreements.

Local rights-of-way are used for access to the Project and Point of Interconnect (POI). A Road Use Agreement with local and state road authorities shall place responsibility on the Applicant to cover costs of improving and/or repairing roads that are used to construct the Project so that those roads are restored to safe conditions for public utilization when construction is complete (see Exhibit J).

4 LOCAL COMPLIANCE AND NOTIFICATIONS

The Applicant has incorporated all requirements of the Town of Cortland's Solar Energy Systems Ordinance into its Project design and has considered how the Project will be consistent with the purposes, goals, objectives, and standards of the Town's Comprehensive Plan. The purpose of this section is to confirm compliance and identify the location of the requirement within the application.

Category	Key Requirements	Location
B. Zoning	Must be located and permitted in AG or I-1 districts	**Section 1.3**
1. Bulk Regulations	Min. Lot Size: 5 acres - Setbacks: 50 ft (front, side, rear) - Height: Max 10 ft (panels), 15 ft (equipment)	**Section 3.6 & Exhibit E**
2. Off-Street Parking	Min. 2 spaces (10'x20'), Accessways: 12' wide with 7" compacted stone	**Section 1.4 (C) & Exhibit E**
3. Signage	ID sign at entrance with operator contact info - Warning signs visible along property lines	**Section 1.6 & Exhibit I**
4. Power & Communication	All lines between panels, substations, or buildings must be buried underground	**Section 1.4 (A) & Exhibit E**
5. Batteries	Must comply with all local, state, and federal regulations	**Section 1.4 (E)**
6. Interconnection	An interconnection agreement with the utility provider is mandatory	**Exhibit K**
7. Stormwater & NPDES	Must meet all local stormwater and NPDES permit requirements	**Section 3.3**
8. Ground Cover & Buffer Areas	Native perennial ground cover required under/around panels	**Section 3.1**
9. Foundation	The foundation must be certified by a qualified engineer	**Section 1.4 (B)**
10. Other Standards & Codes	Must meet all local, state, and federal codes	**Section 2, 3, 4**
11. Site Plan	Show arrays, structures, utilities, easements, roads, topography, floodplains, wetlands, etc.	**Exhibit E**
12. FAA Compliance	If within 500 ft of airport, submit Solar Glare Hazard Analysis Tool	**Section 2.1 & Exhibit O**
13. Endangered Species & Wetlands	Complete EcoCat and IDNR review with results	**Section 3.1 & Exhibit S**
14. Operations & Maintenance	Upon Request, report must be submitted within 14 calendar days	**Section 1.6**
15. Decommissioning Plan	Provide a plan and update every 3–5 years. Complete removal within 6 months of shutdown	**Exhibit G**
16. Restoration Requirements	Remove all structures, underground wires, hazardous materials; restore vegetation and soil	**Section 1.6, 3.6 & Exhibit T**
17. Bonds	Performance/payment bond required prior to building permit issuance	**Section 3.6**
18. Abandonment	Financial surety required; town can use funds if owner fails to decommission	**Section 1.3**
C. Solar Skyspace Easements	Easements not provided by town; operator is responsible for obtaining necessary solar access rights	**Section 1.3**
D. Liability Insurance	Min. $3M per occurrence / $5M aggregate; Town must be named as insured	**Section 1.7**
E. Indemnification	Must defend and indemnify the town from claims related to the solar system installation, operation, or removal	**Section 1.7**

4.1 Conformance with Special Use Standards

A. The proposed structure or use at the particular location requested is necessary or desirable to provide a service or a facility which is in the interest of the public and will contribute to the general welfare of the neighborhood or community;

- Grand Parade Solar is desirable to site in the Town of Cortland as a community solar project. It will allow safe and clean power generation to be sited near the intended local customers. The Project will provide clean energy and additional infrastructure to the local grid, increasing reliability and decreasing electricity costs for participating community members. The Project parcel will be annexed to the Town providing additional tax income from both the property and the facility.

B. The proposed structure or use will not have a substantial adverse effect upon the adjacent property, the character of the neighborhood, traffic conditions, utility facilities and other matters affecting the public health, safety and general welfare; and

- **Adjacent Properties and the Character of the Neighborhood.** Grand Parade Solar will not have a substantially adverse effect on the adjacent properties of the character of the surrounding neighborhood for the following reasons:

  1. **Property Values:** A recent 2024 study completed by researchers at Loyola University titled “Assessing property value impacts near utility-scale solar in the Midwestern United States” echoed these conclusions and further noted, when comparing property values surrounding 70 utility-scale solar farms across the Midwest, there was a minor positive effect in property values, increasing values. This is due to solar farms driving economic development in rural communities. Additionally, a Property Value Impact Assessment was prepared by an IL licensed appraiser for Grand Parade Solar which echoed these findings, found in Exhibit N, also noting a likely minor positive effect on neighboring property values..
  2. **Odor:** Unlike other forms of development, solar farms do not produce any odor nor do they create any air emissions. Exhibit N at page 15
  3. **Noise:** Solar farms produce no discernible noise beyond the Project boundary. Exhibit N at page 15. As further discussed in Section 1.4.B. above, while inverters may produce a low-level hum, the inverters for this Project have been designed to sit in the middle of the Project area to minimize or eliminate noise at the Property boundary, creating no substantially adverse effects to neighboring properties or the character of the neighborhood.
  4. **Light:** Solar farms are completely dark at night. Exhibit N at page 142. As further discussed in Section 1.4.A. above, any lights installed as part of the Project will be shielded and downcast to avoid impact to adjacent properties and the character of the neighborhood.
  5. **Visual:** Any visual impacts to adjacent properties or the character of the neighborhood will similarly be mitigated. As discussed in Sections 1.4.A. and 1.7.B., the Project Area is located in a rural residential setting and has been carefully designed to be unobtrusive, blending into the community through recently updated vegetative screening while preserving the area’s rural character, as

evidenced by a visual impact analysis provided in Exhibit D. The vegetative screening, consisting of a continuous line of native evergreen foliage and/or native shrubs and/or native trees, will minimize impact to neighboring properties viewsheds.

- **Traffic Conditions:** Solar Farms are not traffic generators, and construction and operation of the Project will not cause a substantially adverse effect on traffic conditions. During construction, some increase in traffic can be expected, but the Project will mitigate any impacts of those conditions through consultation with the Town and by way of the Road Use Agreement and any necessary size or weight permits discussed in Section 1.5 above. Further, during operation the Project will produce substantially less traffic than the average household. According to the Institute of Transportation Engineers, one single family home in the U.S., on average, generates 9.5 vehicle trips per day. In comparison, once the Project is operational, only one to three visits per month can be anticipated. Finally, the Project incorporates all necessary access roads on the Project parcel, further reducing traffic impacts.

- **Utility Facilities:** This temporary land use will not have any substantially adverse effects on public utilities. Grand Parade Solar will not require the use of public utilities and will provide necessary drainage facilities without materially disturbing adjacent landowners or the community.

- **Public Health and Safety:** Solar farms are not known to present any health or safety risks, and do not contain hazardous materials. First, peer-reviewed studies consistently show that solar panels are not fragile as they are made mostly of aluminum and shatter-resistant glass. They can withstand golf ball-sized hail, and similar to a car window, they would crack but not shatter if struck with a larger sized object. Second, current solar panels contain materials in the solid state (crystalline) form; they do not contain liquids that can leak into the environment. All materials in solar panels are insoluble and non-volatile at ambient conditions and do not mix with water or vaporize into air.

  Many peer-reviewed reports, but most notably "Health and Safety Impacts of Solar Photovoltaics" published by NC State University, provided as Exhibit V, report that modern solar panels pass the U.S. EPA's Toxic Characteristic Leaching Procedures (TCLP) test. The TCLP test is used to evaluate the potential for a hazardous material to leach into groundwater, specifically during simulated landfill disposal conditions. Passing this test means that the material is considered a non-hazardous material. Research comparing those TCLP simulated landfill disposal conditions to conditions of damaged panels in the field found that simulated landfill conditions provide overly conservative estimates of leaching for field-damaged panels, meaning modern panels passing the TCLP test are also unlikely to leach any material if damaged while operating. Furthermore, this report delves into a variety of commonly stated concerns regarding solar energy and concludes that solar energy systems are safe and pose minimal to no risks.

C. The proposed structure or use will be designed, arranged and operated so as to permit the development and use of neighboring property in accordance with the applicable district regulations.

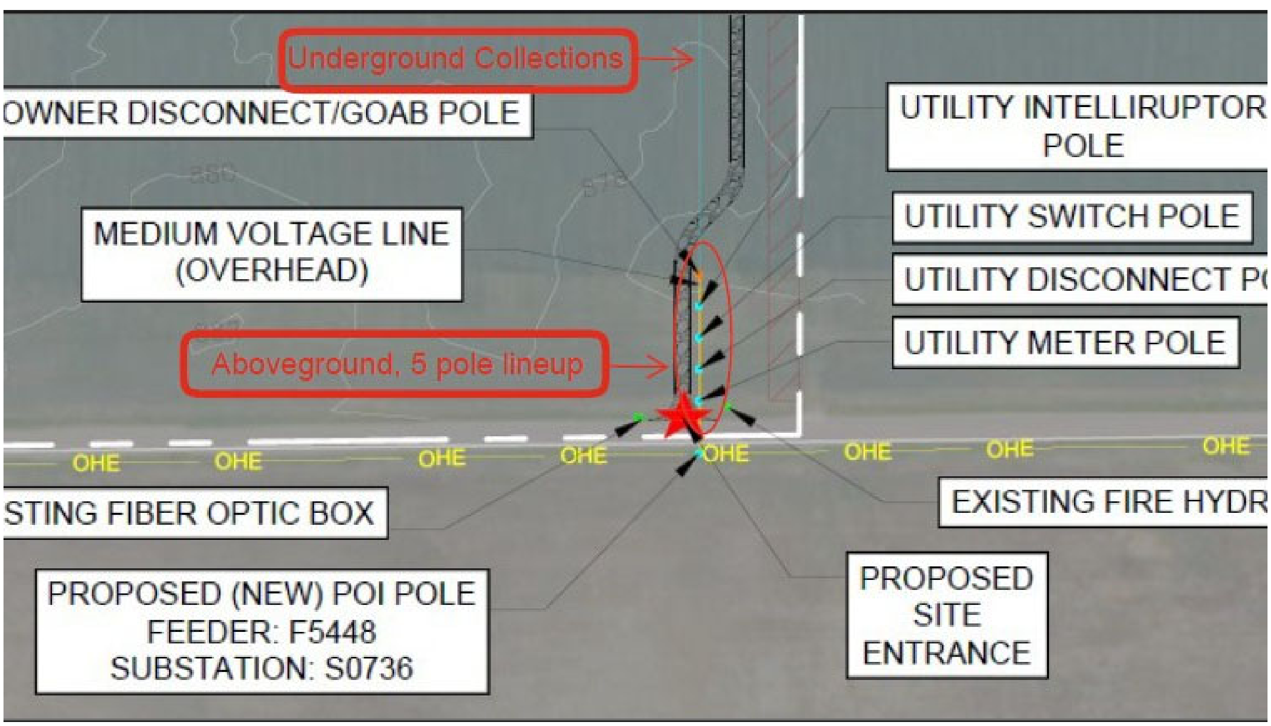
- Grand Parade Solar is designed and will be operated in accordance with all Town ordinances. The design was updated to allow space for the current stub roads within the Town to be connected in the future, if desired. The Project design exceeds all Town setback requirements and avoids impacts to the Town utilities that are sited on the Project parcel. Grand Parade Solar will not impact the development opportunities of any neighboring properties.

5 SPECIAL PERMIT CONDITION REQUESTS

The Applicant kindly requests the following permit conditions.

1. **Maximum Height.** Grand Parade Solar respectfully requests that the five-utility pole line-up proposed for interconnection to ComEd's electrical grid, running perpendicular to E. North Avenue, as shown in Figure 1, be exempted from the 15-foot maximum height restriction outlined in the Cortland Zoning Ordinance, Section 9-4-34(1)(e).
2. **Power and Communication Lines.** Grand Parade Solar further requests that the same five-utility pole line-up described above and illustrated in Figure 1 be exempted from the underground power and communication line requirements that may otherwise apply under Cortland Zoning Ordinance, Section 9-4-34(4), for this section only.
3. **Restoration Requirements.** Grand Parade Solar requests that underground electrical cables installed at a depth greater than five (5) feet be exempted from the removal requirement specified in Cortland Zoning Ordinance, Section 9-4-34(16)(b). This request aligns with the State's underground cabling depth provisions in the Agricultural Impact Mitigation Agreement (AIMA), Section 17(4), which states: *"Transformers, inverters, energy storage facilities, or substations, including all components and foundations; however, underground cables at a depth of 5 feet or greater may be left in place."*

Figure 1. Aboveground Power Pole Line-up



SPECIAL PERMIT CONDITION REQUESTS (CONTINUED)

4. **Site Design.** Provided that Grand Parade Solar remains in compliance with the December 5, 2025, Cortland Town Code - Solar Energy Systems Ordinance, the project requests reasonable flexibility in module and other equipment manufacturer selection and in the site plan design and layout until a final site plan, certified by an Illinois-licensed structural engineer, is submitted to and approved by the Town.

6 EXHIBITS

Exhibit A – Land Development Application ....

Exhibit B – Memorandum of Ground Lease ....

Exhibit C – Assignment and Assumption Agreement ....

Exhibit D – Visual Impact Analysis with 2D Photomontages ....

Exhibit E – Preliminary Site Plan ....

Exhibit F – AIMA ....

Exhibit G – Decommissioning Plan ....

Exhibit H – Example Specification Sheets ....

Exhibit I – Signage ....

Exhibit J – Road Use Agreement and Town of Cortland Driveway Permit ....

Exhibit K – ComEd Interconnection Agreement ....

Exhibit L – Drain Tile and Underground Utility Desktop Review ....

Exhibit M – Draft Emergency Action Plan ....

Exhibit N – Property Value Impact Assessment ....

Exhibit O – FAA Notice Criteria Tool Results ....

Exhibit P – Wetland / Cultural Reports ....

Exhibit Q - IPaC ....

Exhibit R – FEMA Firmette ....

Exhibit S – EcoCAT ....

Exhibit T – Vegetation Management Plan ....

Exhibit U - Community Benefit Donation ……………………………………………………………

Exhibit V - “Health and Safety Impacts of Solar Photovoltaics” Report……………………………

Exhibit A – Land Development Application

Date Filed:	
Job Number:	
PC Number:	

LAND DEVELOPMENT APPLICATION

THE UNDERSIGNED RESPECTFULLY PETITIONS THE TOWN OF CORTLAND TO REVIEW AND CONSIDER GRANTING THE FOLLOWING APPROVAL ON THE LAND HEREIN DESCRIBED.

(Check all that apply)

- [x] Annexation*
- [ ] Rezoning from ______ to ______
- [ ] Text Amendment (attached proposed language)
- [x] Special Use Permit for a:
  - [ ] Planned Unit Development
  - [x] Other Solar Energy System
- [ ] Planned Unit Development:
  - [ ] Concept Plan
  - [ ] Preliminary Development Plan
  - [ ] Final Development Plan
- [ ] Subdivision Plat:
  - [ ] Preliminary Subdivision Plat
  - [ ] Final Subdivision Plat

** Attach an original copy of the annexation petition to this application*

PLEASE PRINT OR TYPE IN BLUE OR BLACK INK

PART I. APPLICANT INFORMATION

	APPLICANT	LAND OWNER (If not the Applicant)	CONTACT PERSON (If not the Applicant)
Name:	Grand Parade Solar, LLC	Andra L. Olson, Trustee of the Andra L. Olson	Sido Shira
Company			Apex Clean Energy, LLC
Address:	[redacted]	[redacted]	[redacted]
E-mail:	[redacted]	[redacted]	[redacted]
Phone:	[redacted]	[redacted]	[redacted]

IS THE APPLICANT THE OWNER OF THE SUBJECT PROPERTY? ☐ YES ☑ NO

*(If the Applicant is not the owner of the subject property, a notarized letter from the Owner authorizing the Applicant to file the **Land Development Application** must be attached to this application.)*

IS THE APPLICANT AND/OR OWNER A TRUSTEE OR A BENEFICIARY OF A LAND TRUST? ☐ YES ☑ NO

(If the Applicant and/or Owner of the subject property is a Trustee of a land trust or beneficiary(ies) of a land trust, a disclosure statement identifying each beneficiary of such land trust by name and address and defining his/her interest therein shall be verified by the Trustee and shall be attached hereto.)

Cortland Land Development Application

Date Filed:	
PC Number:	

PART II. PROPERTY INFORMATION

ADDRESS OF PROPERTY: E. North Ave, Cortland IL, 60112

PARCEL INDEX NUMBER(S): 920426002

LEGAL DESCRIPTION: *A FULL LEGAL DESCRIPTION MUST BE ATTACHED TO THIS APPLICATION*

TOTAL AREA OF SUBJECT PROPERTY(IES) (*ACRES*): 77.54

IF SUBDIVIDING, NUMBER OF LOTS BEING CREATED: ______

CURRENT ZONING: A-1 **PROPOSED ZONING:** AG

RECOMMENDED LAND USE: AG

(Based upon the recommendations of the Cortland Town Plan)

PROPOSED LAND USE: Solar Energy System - Solar Farm

NAME OF PROPOSED DEVELOPMENT: Grand Parade Solar, LLC

The subject property is located in which FIRE PROTECTION DISTRICT? Cortland Fire Protection District

The subject property is located in which SCHOOL DISTRICT? CUSD #428 - DeKalb

Attach relevant checklist(s) and associated information as outlined during the pre-application meeting. ☑

I, Charlie Johnson, hereby apply for review and approval of this application and represent that the application and requirements thereof and supporting information have been completed in accordance with the Zoning Ordinance and/or Subdivision Ordinance of the Town of Cortland.

[redacted]
Signature of Applicant

4/27/26
Date

State of ~~Illinois~~ Virginia
County of Albemarle.

Signed before me on April 27th, 20 26 by Charlie Johnson
Applicant

(Seal)

SIDONIE SHIRA
NOTARY PUBLIC
REG. # 8006415
MY COMMISSION EXPIRES
08/31/2026
COMMONWEALTH OF VIRGINIA

Signature of Notary Public

G:\Forms\Land Development & Change\Land Development Ap 1-7-21.doc

Exhibit B – Memorandum of Ground Lease

Note: The Original Lease was signed on October 28, 2022, under Apex IL DER, LLC – see original lease memo below. On November 2, 2023, the project was assigned from Apex IL DER, LLC to the Applicant entity Grand Parade Solar, LLC – see assignment and assumption agreement in Exhibit C.

2022011555

TASHA SIMS
RECORDER - DEKALB COUNTY, IL
RECORDED: 12/12/2022 09:19 AM
REC FEE: 56.00 RHSPS FEE: 9.00

PAGES: 7

Recording Requested By and
When Recorded Return to:

Apex IL DER, LLC
c/o Apex Clean Energy, Inc.
Attn: Land Manager
[redacted]

MEMORANDUM OF GROUND LEASE FOR SOLAR ENERGY SYSTEM

THIS MEMORANDUM OF GROUND LEASE FOR SOLAR ENERGY SYSTEM ("**Memorandum**") is made and dated as of October 28, 2022 ("**Effective Date**") by and between Andra L. Olson, Trustee of the Andra L. Olson Declaration of Trust dated May 18, 2012 ("**Landlord**"), and Apex IL DER, LLC, a Delaware limited liability company ("**Tenant**"), in light of the following facts and circumstances:

Landlord and Tenant entered in that certain Ground Lease for Solar Energy System, of even date herewith (the "**Lease**"), pursuant to which Landlord has leased to Tenant certain real property of Landlord ("**Property**") located in the County of Dekalb, State of Illinois as more particularly described on the attached Exhibit A and which the Lease and said Exhibit A are hereby incorporated herein as if fully set forth in this Memorandum. Landlord and Tenant have executed and acknowledged this Memorandum for the purpose of providing constructive notice of the Lease. Capitalized terms not otherwise defined in this Memorandum shall have the meanings provided in the Lease.

NOW THEREFORE, Landlord and Tenant hereby agree as follows:

1. **Lease of Property and Easements.** Landlord has leased the Property to Tenant on the terms, covenants and conditions stated in the Lease. The Lease is for the development and operation of a solar energy Project or Projects. As more fully set forth in the Lease, Landlord has granted unto Tenant, and Tenant has accepted from Landlord a ground lease and easements, which include: (i) the sole and exclusive right to use the Property for solar energy conversion purposes, energy storage, and other related purposes as set forth herein, and to capture, use and convert unobstructed solar resources over and across the Property,

and to install, use, operate, maintain, repair, improve, relocate, replace and remove components of the Solar Energy System and Improvements and on the Property; (ii) an exclusive lease of the Property and all air rights thereon for solar energy conversion purposes and other related purposes as set forth herein; (iii) an exclusive easement on, over and across the Property for one or more line or lines of poles and/or towers, with such wires and cables as from time to time are suspended therefrom, and/or overhead and/or underground wires and cables, for the transmission and/or collection of electrical energy and/or for communication purposes (including, without limitation, communications and radio relay systems and telecommunications equipment), and all necessary and proper foundations, footings, towers, poles, crossarms, guy lines and anchors and other appliances and fixtures for use in connection with said towers, wires and cables; (iv) an easement on, over and across the Property for access to any point where any Solar Energy Facilities are or may be located at any time from time to time; (v) an exclusive easement on, over and across the Property for the open and unobstructed access to the solar energy resources found on, below, over and across the Property (such energy resources collectively referred to as the "**Solar Energy Resources**") to any Generating Facilities on any of the Property and to ensure adequate exposure of the Generating Facilities to the Solar Energy Resources and an easement and right on the Property to prevent measurable diminishment in output due to obstruction or impediment of the sunlight across the Property including but not limited to an easement right to trim, prune, top, cut down, remove or otherwise control all trees (whether natural or cultivated), shrubs, brushes, plants or other vegetation and dismantle, demolish and remove any and all fire and electrical hazards now or hereafter existing on the Property which might impede and/or obstruct receipt of or access to sunlight throughout the Solar Panel Area or interfere with or endanger the Solar Energy System, as determined by Tenant; and (vi) an exclusive easement prohibiting any obstruction to the open and unobstructed access to the Solar Energy Resources throughout the entire Property to and for the benefit of the area existing horizontally three hundred and sixty degrees (360°) from any point where any Solar Energy Facilities are or may be located at any time from time to time (each such point referred to as a "**Site**") and for a distance from each Site to the boundaries of the Property, together vertically through all space located above the surface of the Property, that is, one hundred eighty degrees (180°) or such greater number or numbers of degrees as may be necessary to extend from each point on and along a line drawn along the surface from each point along the exterior boundary of the Property through each Site to each point and on and along such line to the opposite exterior boundary of the Property; (vii) an easement and right for any audio, visual, view, light, glare, shadow, noise, vibration, electromagnetic or other effect of any kind or nature whatsoever resulting, directly or indirectly, from the Solar Energy System owned, leased, operated or maintained by Tenant, on the Property, including but not limited to rights to cast shadows and reflect glare onto all of Landlord's property, from the Solar Energy System and/or any and all other related facilities located on the Property, (viii) the right of subjacent and lateral support on the Property to whatever is necessary for the operation and maintenance of the Solar Energy System, including, without limitation, anchors, guy wires and other supports, and (ix) a right to undertake any such purposes or other activities on the Property, whether accomplished by Tenant or a third party authorized by Tenant, that Tenant reasonably determines are required, necessary, useful and/or appropriate, each as applicable, to accomplish any of the purposes or uses set forth in this Lease or that are compatible with such purposes or uses. This Lease and the easements granted herein shall be binding upon Landlord's heirs, personal representatives, successors and assigns and shall run with the Property for the Term.

2. **Term.** The term of the Lease shall begin on the Effective Date and shall expire five (5) years after the Effective Date, if not extended or sooner terminated as provided in this Lease. Tenant may at its sole discretion extend the term of this Lease for an additional two (2) year term, followed by an additional forty (40) year term and followed by an additional ten (10) year term.

3. **Ownership.** Landlord shall have no ownership or other interest in any Improvements (as defined in the Lease) installed on the Property.

4. **Assignment.** The Lease provides, among other things, that Tenant and any Transferee shall have the right, subject to certain conditions set forth in the Lease, to sell, convey, lease, assign, mortgage, encumber or transfer to one or more assignees or mortgagees the Lease, or any right or interest in the Lease, or any or all right or interest of Tenant in the Property, or in any or all of the Improvements that Tenant or any other party may now or hereafter install on the Property.

5. **Rights of Chattel Mortgagees.** Pursuant to the Lease, any Chattel Mortgagee of Tenant or Tenant's assignees has certain rights regarding notice and right to cure any default of Tenant under the Lease, and the right to take possession of the Property and the Project, and to acquire the leasehold estate and the easement interests by foreclosure, as well as other rights as set forth in the Lease.

6. **Notice.** This Memorandum is prepared for the purpose of giving notice of the Lease and in no way modifies the express provisions of the Lease.

7. **Setback Waiver.** To the extent that any applicable law, ordinance, regulation or permit establishes, or has established, minimum setbacks from the exterior boundaries of the Property, from any structures on the Property (occupied or otherwise) or from any other point of measurement for Generating Facilities constructed on the Property or otherwise within the Project, Landlord hereby waives any and all such setback requirements (the "**Setback Waiver**"). The Setback Waiver is for the benefit of Tenant, the owner(s) of adjacent properties within the Project, and their respective successors and assigns, and shall run with the land. If requested by Tenant, Landlord shall execute and deliver to Tenant one or more separate setback waivers evidencing the intent of this Setback Waiver, in a form provided by Tenant, which Tenant may then record at its expense. This waiver shall survive the termination of this Lease for so long as Improvements exist on real property adjacent to the Property.

8. **Tenant as Landlord's Agent.** Landlord hereby appoints Tenant as Landlord's agent only for the purpose of preparing, executing, applying for, submitting, and/or prosecuting in Landlord's name, any and all Approvals on behalf of Landlord, any environmental impact review, permit, entitlement, approval, authorization or other rights necessary or convenient in connection with Tenant's intended Solar Energy System and Operations from any governmental agency or any other person or entity (collectively "**Approvals**").

9. **Successors and Assigns.** This Memorandum, the Lease and the easements described herein shall burden the Property and shall run with the land. The Lease and this Memorandum shall inure to the benefit of and be binding upon Landlord and Tenant and, to the extent provided in any assignment or other transfer under the Lease, any assignee or Chattel Mortgagee, and their respective heirs, transferees, successors and assigns, and all persons claiming under them.

10. **No Conflict.** In the event of any conflict or inconsistency between the provisions of this Memorandum and the provisions of the Lease, the provisions of the Lease shall control. Nothing in this Memorandum shall be deemed to amend, modify, change, alter, amplify, limit, interpret or supersede any provision of the Lease or otherwise limit or expand the rights and obligations of the parties under the Lease and the Lease shall control over this Memorandum in all events.

11. **Multiple Counterparts.** This Memorandum may be executed by different parties on separate counterparts, each of which, when so executed and delivered, shall be an original, but all such counterparts shall constitute one and the same instrument.

[*signature page follows*]

IN WITNESS WHEREOF, the Parties have executed this Memorandum as of the Effective Date.

LANDLORD:

By: [redacted]
Name: Andra L. Olson, Trustee of the Andra L. Olson Declaration of Trust dated May 18, 2012

STATE OF ILLINOIS

COUNTY OF Dekalb

The foregoing instrument was acknowledged before me this 28th day of October, 2022, by Andra L. Olson, Trustee of the Andra L. Olson Declaration of Trust dated May 18, 2012.

Daniel Cohen
Notary Public

Daniel Cohen
Typed or Printed

5-25-2023
Commission Expiration Date

(SEAL)

DANIEL COHEN
OFFICIAL SEAL
Notary Public, State of Illinois
My Commission Expires
May 25, 2023

TENANT:

Apex IL DER, LLC
A Delaware limited liability company

By: Apex Clean Energy Finance, LLC,
a Delaware limited liability company,
its Sole Member

By: Apex GBR, LLC,
a Delaware limited liability company,
its Sole Member

By: Apex Clean Energy Holdings, LLC,
a Delaware limited liability company,
its Manager

By: ______________________________
Name: Jeanine G. Wolanski
Title: Senior Vice President of Land Management

COMMONWEALTH OF VIRGINIA

CITY OF CHARLOTTESVILLE

The foregoing instrument was acknowledged before me this 1 day of NOVEMBER, 2022 by Jeanine G. Wolanski, as the Senior Vice President of Land Management for Apex Clean Energy Holdings, LLC, a Delaware limited liability company, the Manager of Apex GBR, LLC, a Delaware limited liability company, the Sole Member of Apex Clean Energy Finance, LLC, a Delaware limited liability company, the Sole Member of Apex IL DER, LLC, a Delaware limited liability company, on behalf of the company.

Lori Carrara
Commonwealth of Virginia
Notary Public
Commission No. 276132
My Commission Expires 4/30/2026

____
Notary Public

My Commission Expires: 4-30-26

This instrument prepared by: Emily Carroll, Esq.
Apex Clean Energy, Inc.
[redacted]

EXHIBIT A

LEGAL DESCRIPTION OF PROPERTY

That certain real property of Landlord located in Dekalb County, Illinois, consisting of 113.9 acres, more particularly described as follows:

Tracts 1-2:

Tracts 1-2 include all of two parcels of land referenced as 0920401006 and 0920426002, which is a portion of the land described below:

PART OF THE SOUTHEAST QUARTER OF SECTION 20, TOWNSHIP 40 NORTH, RANGE 5 EAST OF THE THIRD PRINCIPAL MERIDIAN, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF THE SOUTHEAST QUARTER OF SAID SECTION 20; THENCE SOUTH 00 DEGREES 08 MINUTES 55 SECONDS WEST ALONG THE WEST LINE OF SAID SOUTHEAST QUARTER, A DISTANCE OF 647.69 FEET; THENCE SOUTH 89 DEGREES 51 MINUTES 05 SECONDS EAST, PERPENDICULAR TO THE LAST DESCRIBED COURSE, A DISTANCE OF 175.00 FEET; THENCE SOUTH 00 DEGREES 08 MINUTES 55 SECONDS WEST, PARALLEL WITH THE WEST LINE OF SAID SOUTHEAST QUARTER, A DISTANCE OF 53.50 FEET; THENCE SOUTH 89 DEGREES 51 MINUTES 05 SECONDS EAST, PERPENDICULAR TO THE LAST DESCRIBED COURSE, A DISTANCE OF 151.00 FEET; THENCE SOUTH 00 DEGREES 08 MINUTES 55 SECONDS WEST, PARALLEL WITH THE WEST LINE OF SAID SOUTHEAST QUARTER, A DISTANCE OF 84.62 FEET; THENCE SOUTH 65 DEGREES 56 MINUTES 35 SECONDS WEST, A DISTANCE OF 165.56 FEET; THENCE NORTH 89 DEGREES 51 MINUTES 05 SECONDS WEST, A DISTANCE OF 7.00 FEET; THENCE SOUTH 00 DEGREES 08 MINUTES 55 SECONDS WEST, PARALLEL WITH THE WEST LINE OF SAID SOUTHEAST QUARTER A DISTANCE OF 45.00 FEET; THENCE NORTH 89 DEGREES 51 MINUTES 05 SECONDS WEST, PERPENDICULAR TO THE LAST DESCRIBED COURSE, A DISTANCE OF 168.00 FEET TO THE WEST LINE OF SAID SOUTHEAST QUARTER; THENCE SOUTH 00 DEGREES 08 MINUTES 55 SECONDS WEST ALONG SAID WEST LINE, A DISTANCE OF 844.18 FEET; THENCE NORTH 89 DEGREES 12 MINUTES 39 SECONDS EAST, A DISTANCE OF 297.00 FEET; THENCE SOUTH 00 DEGREES 08 MINUTES 55 SECONDS WEST, PARALLEL WITH THE WEST LINE OF SAID SOUTHEAST QUARTER, A DISTANCE OF 330.01 FEET TO THE NORTH LINE OF PRAIRIE VIEW SUBDIVISION; THENCE NORTH 89 DEGREES 12 MINUTES 47 SECONDS EAST ALONG SAID NORTH LINE, A DISTANCE OF 1124.45 FEET TO THE NORTHEAST CORNER OF SAID SUBDIVISION; THENCE SOUTH 00 DEGREES 06 MINUTES 00 SECONDS WEST ALONG THE EAST LINE OF SAID SUBDIVISION, A DISTANCE OF 357.66 FEET; THENCE NORTH 89 DEGREES 12 MINUTES 39 SECONDS EAST, PARALLEL WITH THE SOUTH LINE OF SAID SOUTHEAST QUARTER, A DISTANCE OF 404.09 FEET; THENCE SOUTH 00 DEGREES 09 MINUTES 15 SECONDS WEST, A DISTANCE OF 252.78 FEET TO THE SOUTH LINE OF SAID SOUTHEAST QUARTER; THENCE NORTH 89 DEGREES 12 MINUTES 39 SECONDS EAST ALONG SAID SOUTH LINE, A DISTANCE OF 824.93 FEET TO THE SOUTHEAST CORNER OF SAID SOUTHEAST QUARTER; THENCE NORTH 00 DEGREES 13 MINUTES 16 SECONDS EAST ALONG THE EAST LINE OF SAID SOUTHEAST QUARTER, A DISTANCE OF 2663.54 FEET TO THE NORTHEAST CORNER OF SAID SOUTHEAST QUARTER; THENCE SOUTH

89 DEGREES 38 MINUTES 25 SECONDS WEST ALONG THE NORTH LINE OF SAID SOUTHEAST QUARTER (ALSO THE SOUTH LINE OF NEUCORT LAKES UNIT ONE & THREE), A DISTANCE OF 2653.87 FEET TO THE POINT OF BEGINNING, CONTAINING 136.84 ACRES, MORE OR LESS, SUBJECT TO THAT LAND BEING USED FOR PUBLIC ROAD PURPOSES AND ALSO SUBJECT TO ALL EASEMENTS, AGREEMENTS, COUNTY CODES AND/OR ORDINANCES OF RECORD, IF ANY, ALL SITUATED IN THE TOWNSHIP OF CORTLAND, THE COUNTY OF DEKALB, AND THE STATE OF ILLINOIS.

Tax Parcel References:	0920401006 (38.55 acres) 0920426002 (75.35 acres)

In the event of inaccuracies in the foregoing legal description, Landlord and Tenant shall amend this Memorandum to correct such inaccuracies

Exhibit C – Assignment and Assumption Agreement

2024008932

TASHA SIMS
RECORDER - DEKALB COUNTY, IL
RECORDED: 12/3/2024 09:23 AM
REC FEE: 56.00 RHSPS FEE: 18.00
PAGES: 6

Prepared by and return to: Apex Clean Energy, Inc., [redacted], Attention: Michael B. Workman, Esq.

ASSIGNMENT AND ASSUMPTION AGREEMENT

THIS ASSIGNMENT AND ASSUMPTION AGREEMENT (this "**Agreement**") is made as of the 11th day of November, 2024 (the "**Effective Date**") by and between Apex IL DER, LLC, a Delaware limited liability company ("**Assignor**"), and Grand Parade Solar, LLC, a Delaware limited liability company ("**Assignee**"). Assignor and Assignee shall be referred to individually herein as a "**Party**" and collectively as the "**Parties**".

RECITAL:

A. Assignor is a party to that certain Ground Lease for Solar Energy System (the "**Lease**") pursuant to which Assignor holds lease rights with respect to certain real property located in the County of Dekalb, State of Illinois (the "**Property**"). The Lease and the Property are more particularly described on Exhibit A attached hereto.

B. Assignor desires to assign to Assignee all of Assignor's right, title and interest in, to and under the Lease and the Property, and Assignee desires to accept such assignment and assume Assignor's rights, title, interests and obligations in, to and under the Lease and the Property, as assigned, subject to the terms, covenants and conditions set forth in this Agreement.

AGREEMENT:

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties covenant and agree as follows:

1. Assignment. As of the Effective Date, Assignor hereby assigns, transfers, sets over and conveys unto Assignee all of Assignor's right, title and interest as tenant in, to and under the Lease and the Property (the "**Assignment**").

2. Assumption. As of the Effective Date, Assignee hereby accepts the Assignment and assumes all obligations of Assignor under the Lease, as assigned, to the extent such obligations arise or accrue on or after the Effective Date.

3. Governing Law. This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of Illinois, without regard to the conflicts of laws principles thereof.

4. Binding Effect. This Agreement shall be binding upon and inure to the benefit of Assignor and Assignee and their respective successors and assigns.

5. Recording. This Agreement may be recorded in the official public records of the county or jurisdiction in which the Property that is the subject of the Lease is located.

6. Entire Agreement. This Agreement contains the entire agreement between the Parties with respect to matters set forth herein, and all prior negotiations, understandings and agreements (including, but not limited to, any letter of intent executed by the Parties) are superseded by this Agreement. No modification of this Agreement (including waivers of rights and conditions) shall be effective unless in writing and signed by the Party against whom enforcement of such modification is sought, and then only in the specific instance and for the specific purpose given.

7. Headings. Article and section headings are included in this Agreement for convenience of reference only and shall not be used in construing this Agreement.

8. Multiple Counterparts. This Agreement may be executed in two or more counterparts, all of which shall be considered one and the same agreement and each of which shall be deemed an original.

[*signatures appear on the following pages*]

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed as of the Effective Date.

ASSIGNOR

APEX IL DER, LLC,
a Delaware limited liability company

By: **Apex Clean Energy Finance, LLC**
a Delaware limited liability company,
its sole member

By: **Apex GBR, LLC**
a Delaware limited liability company,
its sole member

By: **Apex Clean Energy Holdings, LLC**
a Delaware limited liability company,
its manager

By: Jeanine Wolanski
Name: Jeanine Wolanski
Title: Senior Vice President of Land Management

COMMONWEALTH OF VIRGINIA

CITY OF CHARLOTTESVILLE

The foregoing instrument was acknowledged before me this 11 day of November 2024 by Jeanine Wolanski, the Senior Vice President of Land Management for Apex Clean Energy Holdings, LLC, a Delaware limited liability company, Manager of Apex GBR, LLC, a Delaware limited liability company, Sole Member of Apex Clean Energy Finance, LLC, a Delaware limited liability company, Sole Member of Apex IL DER, LLC, a Delaware limited liability company, on behalf of the company.

Lori Carrara
Notary Public, Commonwealth of Virginia

(SEAL)

Lori Carrara
Commonwealth of Virginia
Notary Public
Commission No. 276132
My Commission Expires 4/30/2026

ASSIGNEE

GRAND PARADE SOLAR, LLC,
a Delaware limited liability company

By: **Apex GCL, LLC**
a Delaware limited liability company,
its sole member

By: **Apex Clean Energy Holdings, LLC**
a Delaware limited liability company,
its sole member

By: Jeanine Wolanski
Name: Jeanine Wolanski
Title: Senior Vice President of Land Management

COMMONWEALTH OF VIRGINIA

CITY OF CHARLOTTESVILLE

The foregoing instrument was acknowledged before me this 11 day of November, 2024, by Jeanine G. Wolanski, as the Senior Vice President of Land Management for Apex Clean Energy Holdings, LLC, a Delaware limited liability company, the Sole Member of Apex GCL, LLC, a Delaware limited liability company, the Sole Member of Grand Parade Solar, LLC, a Delaware limited liability company, on behalf of the company.

Lori Carrara
Notary Public
Commission Expires: 4-30-26
Commission No.: 276132

(SEAL)

Lori Carrara
Commonwealth of Virginia
Notary Public
Commission No. 276132
My Commission Expires 4/30/2026

EXHIBIT A
DESCRIPTION OF LEASE AND PROPERTY

Ground Lease for Solar Energy System by and between Andra L. Olson, Trustee of the Andra L. Olson Declaration of Trust dated May 18, 2012 ("Landlord"), and Apex IL DER, LLC, a Delaware limited liability company ("Tenant"), dated October 28, 2022, a memorandum of which was recorded on December 12, 2022, at Instrument No. 2022011555, in the Recorder's Office of Dekalb County, Illinois. (5504-013-01)

The Property is all of the following tracts or parcels of land, situated in the County of Dekalb, State of Illinois, consisting of 113.9 acres, more particularly described as follows:

Tracts 1-2:

Tracts 1-2 include all of two parcels of land referenced as 0920401006 and 0920426002, which is a portion of the land described below:

PART OF THE SOUTHEAST QUARTER OF SECTION 20, TOWNSHIP 40 NORTH, RANGE 5 EAST OF THE THIRD PRINCIPAL MERIDIAN, BOUNDED AND DESCRIBED AS FOLLOWS:

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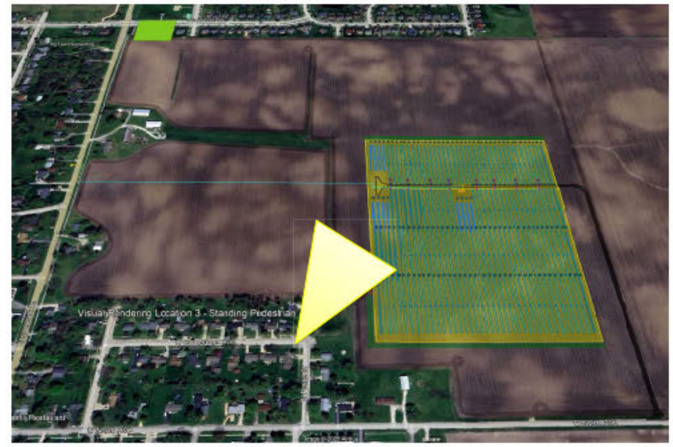
Tax Parcel References:	0920401006 (38.55 acres) 0920426002 (75.35 acres)

Exhibit D – Visual Impact Analysis with 2D Photomontages

Grand Parade Solar - Visual Renderings

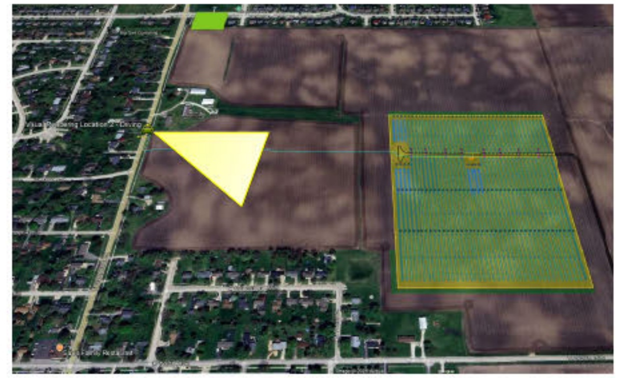
View from Conestoga during peak season



View from Conestoga during off season

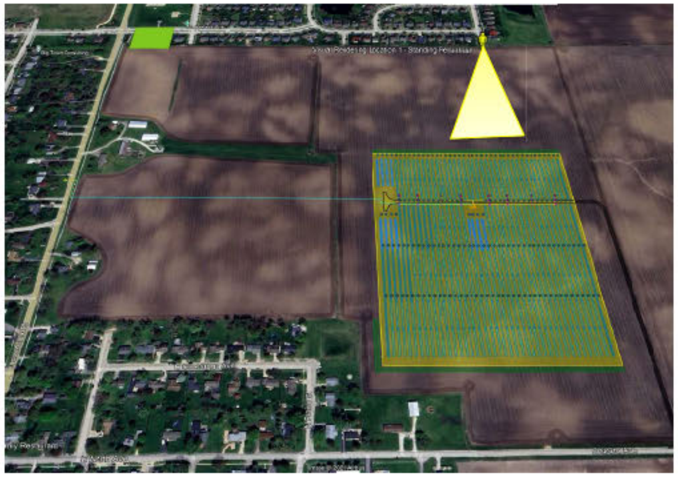
Disclaimer: These visual renderings were created by a third-party digital designer and are provided for illustrative purposes only.

Grand Parade Solar - Visual Renderings



Disclaimer: These visual renderings were created by a third-party digital designer and are provided for illustrative purposes only.

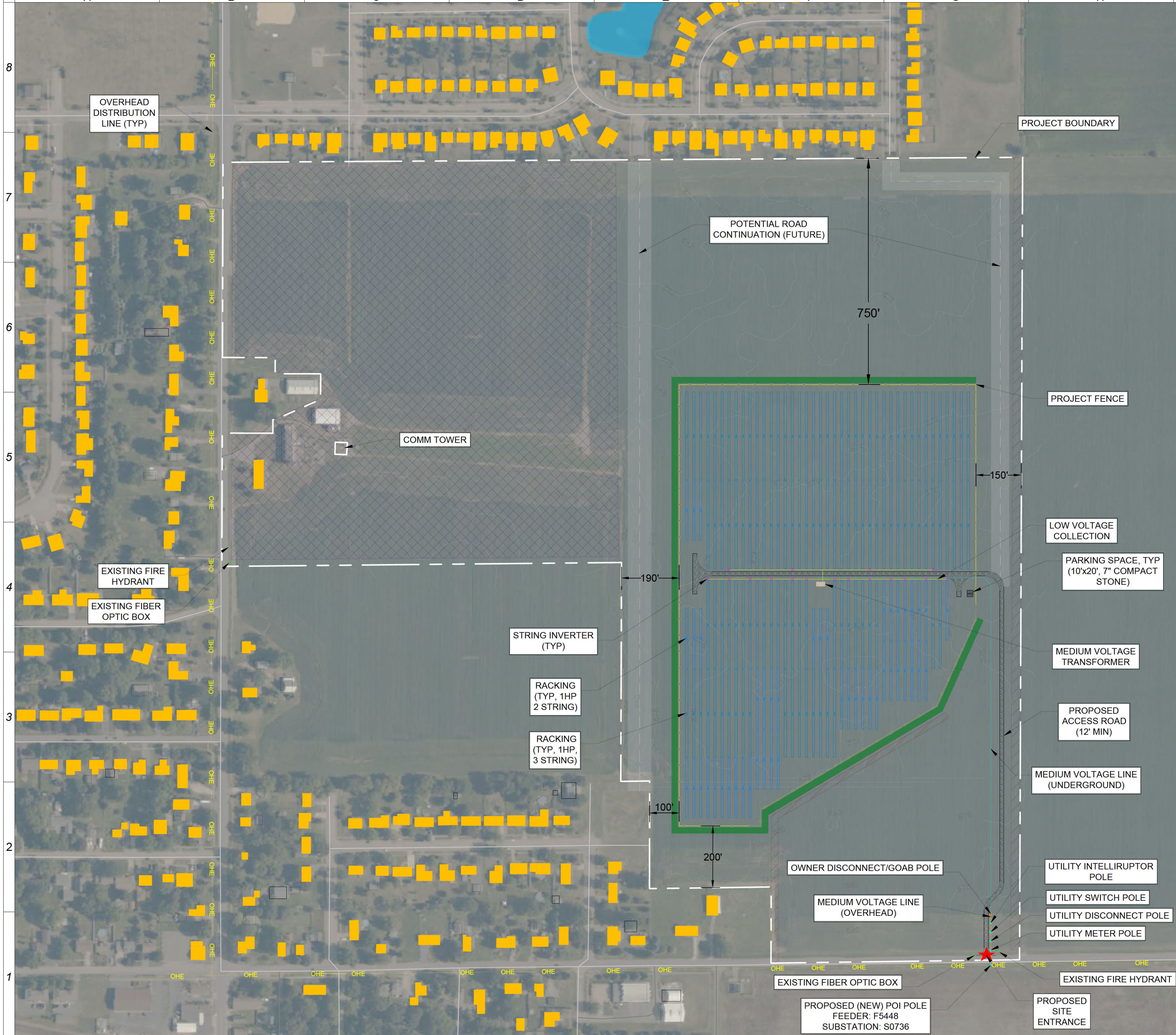
Grand Parade Solar - Visual Renderings



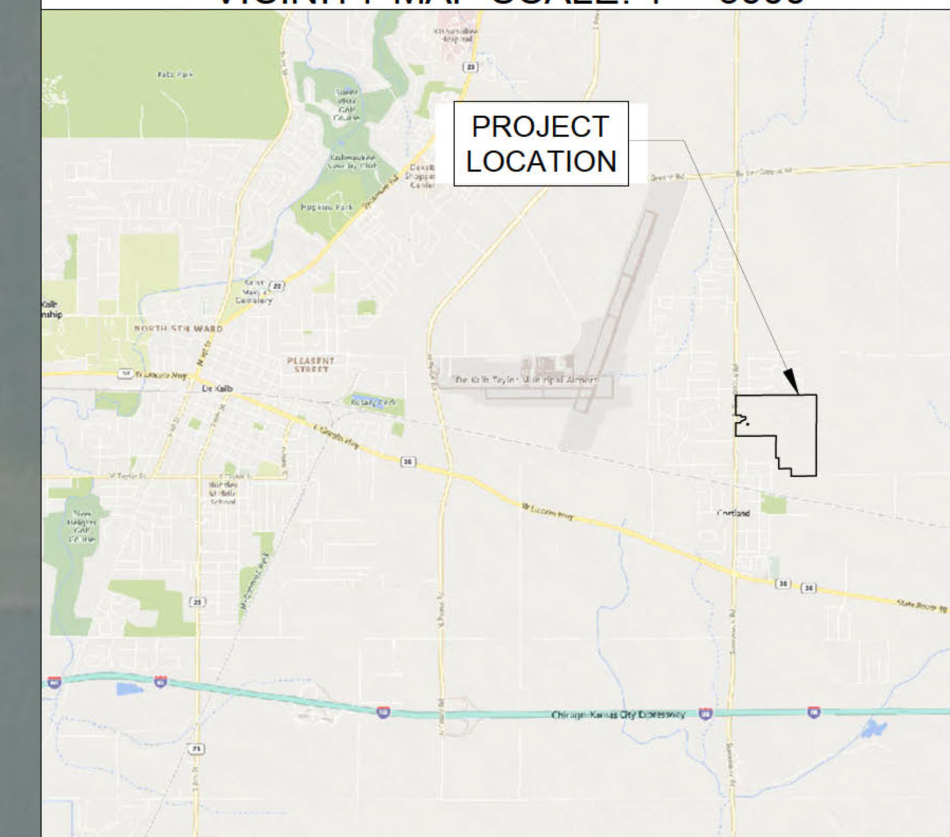
Disclaimer: These visual renderings were created by a third-party digital designer and are provided for illustrative purposes only.

Exhibit E – Preliminary Site Plan

NOTE: The Project developed the preliminary Site Plan in accordance with Town Ordinance requirements. The Project will update these preliminary engineering drawings prior to the final site plan and building permit review process based on final project construction designs.



VICINITY MAP SCALE: 1' = 5000'



LINE-TYPE LEGEND

- ROAD - PRIVATE
- ROAD - PUBLIC
- STRUCTURE (UNOCCUPIED)
- STRUCTURE (OCCUPIED)
- EXCLUSION ZONE - SOLAR EXCLUSION
- COLLECTION EASEMENT
- PROPOSED VEGITATIVE BUFFER
- SURVEYED EASEMENTS
- WATERBODY

SYSTEM SUMMARY - AS MODELED

DC (MODELED)	kW	6,770
AC (GRID LIMIT)	kW	5,000
DC:AC (MODELED)	PU	1.35
MODULE MFR	-	JINKO SOLAR
MODULE MODEL	-	JKM590-72HL4-BDV
MODULE QTY	EA	11,475
MODULES PER STRING	-	25
INVERTER POWER	kVA	(17) 350
ORIENTATION	-	1HP SAT
FENCED AREA	ACRE	28.8

SYSTEM SUMMARY - AS DRAWN

DC (DRAWN)	kW	6,770
OVERBUILD	%	0
GCR	%	32
MOUNTING SYSTEM	-	SINGLE AXIS TRACKER
PANEL TILT	-	+/- 60° MAX
PANEL LENGTH	FT	~7.5
ROW GAP	FT	~15.75
TOTAL ROW-TO-ROW	FT	~23.5
PANEL WIDTH	FT	~3.75
PANEL GAP (N-S)	IN	0.5
MAX PANEL HEIGHT	-	~8.5' @ MAX TILT
PANEL CLEARANCE	-	~18" FROM GROUND (MIN)
ELEC. POLE SPACING	-	30' (MIN)

APEX CLEAN ENERGY

#	REVISIONS	DATE	BY
10	L4 - CLARIFIED SETBACKS	10/1/25	DNM
11	L4 - SHIFTED ROAD & POLES	10/16/25	DNM
12	L4 - NEW POI (SOUTH)	4/20/26	DNM

PRELIMINARY NOT FOR CONSTRUCTION

CONFIDENTIAL

N W E S

SCALE: 1" = 150'

v2.3

CONSULTANT

APEX CLEAN ENERGY [redacted]

PROJECT

GRAND PARADE SOLAR LLC

Cortland County, IL LAT: 41.93° LONG: -88.68°

DATE:	04/20/26
DRAWN BY:	DNM
CHECKED BY:	MRCL

GENERAL ARRAY

A-001

Exhibit F – AIMA

STANDARD AGRICULTURAL IMPACT MITIGATION AGREEMENT
between
Grand Parade Solar, LLC

and the
ILLINOIS DEPARTMENT OF AGRICULTURE
Pertaining to the Construction of a Commercial Solar Energy Facility
in
DeKalb **County, Illinois**

Pursuant to the Renewable Energy Facilities Agricultural Impact Mitigation Act (505 ILCS 147), the following standards and policies are required by the Illinois Department of Agriculture (IDOA) to help preserve the integrity of any Agricultural Land that is impacted by the Construction and Deconstruction of a Commercial Solar Energy Facility. They were developed with the cooperation of agricultural agencies, organizations, Landowners, Tenants, drainage contractors, and solar energy companies to comprise this Agricultural Impact Mitigation Agreement (AIMA).

Grand Parade Solar, LLC, hereafter referred to as Commercial Solar Energy Facility Owner, or simply as Facility Owner, plans to develop and/or operate a 5MWac Commercial Solar Energy Facility in DeKalb County [GPS Coordinates: 41.92507, -88.68034], which will consist of up to 70 acres that will be covered by solar facility related components, such as solar panel arrays, racking systems, access roads, an onsite underground collection system, inverters and transformers and any affiliated electric transmission lines. This AIMA is made and entered between the Facility Owner and the IDOA.

If Construction does not commence within four years after this AIMA has been fully executed, this AIMA shall be revised, with the Facility Owner's input, to reflect the IDOA's most current Solar Farm Construction and Deconstruction Standards and Policies. This AIMA, and any updated AIMA, shall be filed with the County Board by the Facility Owner prior to the commencement of Construction.

The below prescribed standards and policies are applicable to Construction and Deconstruction activities occurring partially or wholly on privately owned agricultural land.

Conditions of the AIMA

The mitigative actions specified in this AIMA shall be subject to the following conditions:

A. All Construction or Deconstruction activities may be subject to County or other local requirements. However, the specifications outlined in this AIMA shall be the minimum standards applied to all Construction or Deconstruction activities. IDOA may utilize any legal means to enforce this AIMA.

B. Except for Section 17. B. through F., all actions set forth in this AIMA are subject to modification through negotiation by Landowners and the Facility Owner, provided such changes are negotiated in advance of the respective Construction or Deconstruction activities.

C. The Facility Owner may negotiate with Landowners to carry out the actions that Landowners wish to perform themselves. In such instances, the Facility Owner shall offer Landowners the area commercial rate for their machinery and labor costs.

D. All provisions of this AIMA shall apply to associated future Construction, maintenance, repairs, and Deconstruction of the Facility referenced by this AIMA.

E. The Facility Owner shall keep the Landowners and Tenants informed of the Facility's Construction and Deconstruction status, and other factors that may have an impact upon their farming operations.

F. The Facility Owner shall include a statement of its adherence to this AIMA in any environmental assessment and/or environmental impact statement.

G. Execution of this AIMA shall be made a condition of any Conditional/Special Use Permit. Not less than 30 days prior to the commencement of Construction, a copy of this AIMA shall be provided by the Facility Owner to each Landowner that is party to an Underlying Agreement. In addition, this AIMA shall be incorporated into each Underlying Agreement.

H. The Facility Owner shall implement all actions to the extent that they do not conflict with the requirements of any applicable federal, state and local rules and regulations and other permits and approvals that are obtained by the Facility Owner for the Facility.

I. No later than 45 days prior to the Construction and/or Deconstruction of a Facility, the Facility Owner shall provide the Landowner(s) with a telephone number the Landowner can call to alert the Facility Owner should the Landowner(s) have questions or concerns with the work which is being done or has been carried out on his/her property.

J. If there is a change in ownership of the Facility, the Facility Owner assuming ownership of the Facility shall provide written notice within 90 days of ownership transfer, to the Department, the County, and to Landowners of such change. The Financial Assurance requirements and the other terms of this AIMA shall apply to the new Facility Owner.

K. The Facility Owner shall comply with all local, state and federal laws and regulations, specifically including the worker protection standards to protect workers from pesticide exposure.

L. Within 30 days of execution of this AIMA, the Facility Owner shall use Best Efforts to provide the IDOA with a list of all Landowners that are party to an Underlying Agreement and known Tenants of said Landowner who may be affected by the Facility. As the list of Landowners and Tenants is updated, the Facility Owner shall notify the IDOA of any additions or deletions.

M. If any provision of this AIMA is held to be unenforceable, no other provision shall be affected by that holding, and the remainder of the AIMA shall be interpreted as if it did not contain the unenforceable provision.

Definitions

Abandonment — When Deconstruction has not been completed within 12 months after the Commercial Solar Energy Facility reaches the end of its useful life. For purposes of this definition, a Commercial Solar Energy Facility shall be presumed to have reached the end of its useful life if the Commercial Solar Energy Facility Owner fails, for a period of 6 consecutive months, to pay the Landowner amounts owed in accordance with an Underlying Agreement.

Aboveground Cable	Electrical power lines installed above ground surface to be utilized for conveyance of power from the solar panels to the solar facility inverter and/or point of interconnection to utility grid or customer electric meter.
Agricultural Impact Mitigation Agreement (AIMA)	The Agreement between the Facility Owner and the Illinois Department of Agriculture (IDOA) described herein.
Agricultural Land	Land used for Cropland, hayland, pastureland, managed woodlands, truck gardens, farmsteads, commercial ag-related facilities, feedlots, livestock confinement systems, land on which farm buildings are located, and land in government conservation programs used for purposes as set forth above.
Best Efforts	Diligent, good faith, and commercially reasonable efforts to achieve a given objective or obligation.
Commercial Operation Date	The calendar date of which the Facility Owner notifies the Landowner, County, and IDOA in writing that commercial operation of the facility has commenced. If the Facility Owner fails to provide such notifications, the Commercial Operation Date shall be the execution date of this AIMA plus 6 months.
Commercial Solar Energy Facility (Facility)	A solar energy conversion facility equal to or greater than 500 kilowatts in total nameplate capacity, including a solar energy conversion facility seeking an extension of a permit to construct granted by a county or municipality before June 29, 2018. "Commercial solar energy facility" does not include a solar energy conversion facility: (1) for which a permit to construct has been issued before June 29, 2018; (2) that is located on land owned by the commercial solar energy facility owner; (3) that was constructed before June 29, 2018; or (4) that is located on the customer side of the customer's electric meter and is primarily used to offset that customer's electricity load and is limited in nameplate capacity to less than or equal to 2,000 kilowatts.
Commercial Solar Energy Facility Owner deemed (Facility Owner)	A person or entity that owns a commercial solar energy facility. A Commercial Solar Energy Facility Owner is not nor shall it be to be a public utility as defined in the Public Utilities Act.
County	The County or Counties where the Commercial Solar Energy Facility is located.
Construction	The installation, preparation for installation and/or repair of a Facility.
Cropland	Land used for growing row crops, small grains or hay; includes land which was formerly used as cropland, but is currently enrolled in a government conservation program; also includes pastureland that is classified as Prime Farmland.

Deconstruction	The removal of a Facility from the property of a Landowner and the restoration of that property as provided in the AIMA.
Deconstruction Plan	A plan prepared by a Professional Engineer, at the Facility's expense, that includes: (1) the estimated Deconstruction cost, in current dollars at the time of filing, for the Facility, considering among other things: i. the number of solar panels, racking, and related facilities involved; ii. the original Construction costs of the Facility; iii. the size and capacity, in megawatts of the Facility; iv. the salvage value of the facilities (if all interests in salvage value are subordinate to that of the Financial Assurance holder if abandonment occurs); v. the Construction method and techniques for the Facility and for other similar facilities; and (2) a comprehensive detailed description of how the Facility Owner plans to pay for the Deconstruction of the Facility.
Department	The Illinois Department of Agriculture (IDOA).
Financial Assurance	A reclamation or surety bond or other commercially available financial assurance that is acceptable to the County, with the County or Landowner as beneficiary.
Landowner	Any person with an ownership interest in property that is used for agricultural purposes and that is party to an Underlying Agreement.
Prime Farmland	Agricultural Land comprised of soils that are defined by the USDA Natural Resources Conservation Service (NRCS) as "Prime Farmland" (generally considered to be the most productive soils with the least input of nutrients and management).
Professional Engineer	An engineer licensed to practice engineering in the State of Illinois.
Soil and Water Conservation District (SWCD)	A unit of local government that provides technical and financial assistance to eligible Landowners for the conservation of soil and water resources.
Tenant	Any person, apart from the Facility Owner, lawfully residing or leasing/renting land that is subject to an Underlying Agreement.
Topsoil	The uppermost layer of the soil that has the darkest color or the highest content of organic matter; more specifically, it is defined as the "A" horizon.
Underlying Agreement	The written agreement between the Facility Owner and the Landowner(s) including, but not limited to, an easement, option, lease, or license under the terms of which another person has constructed, constructs, or intends to construct a Facility on the property of the Landowner.

Underground Cable	Electrical power lines installed below the ground surface to be utilized for conveyance of power within a Facility or from a Commercial Solar Energy Facility to the electric grid.
USDA Natural Resources Conservation Service (NRCS)	An agency of the United States Department of Agriculture that provides America's farmers with financial and technical assistance to aid with natural resources conservation.

Construction and Deconstruction Standards and Policies

1. Support Structures

A. Only single pole support structures shall be used for the Construction and operation of the Facility on Agricultural Land. Other types of support structures, such as lattice towers or H-frames, may be used on nonagricultural land.

B. Where a Facility's Aboveground Cable will be adjacent and parallel to highway and/or railroad right-of-way, but on privately owned property, the support structures shall be placed as close as reasonably practicable and allowable by the applicable County Engineer or other applicable authorities to the highway or railroad right-of-way. The only exceptions may be at jogs or weaves on the highway alignment or along highways or railroads where transmission and distribution lines are already present.

C. When it is not possible to locate Aboveground Cable next to highway or railroad right-of-way, Best Efforts shall be expended to place all support poles in such a manner to minimize their placement on Cropland (i.e., longer than normal above ground spans shall be utilized when traversing Cropland).

2. Aboveground Facilities

Locations for facilities shall be selected in a manner that is as unobtrusive as reasonably possible to ongoing agricultural activities occurring on the land that contains or is adjacent to the Facility.

3. Guy Wires and Anchors

Best Efforts shall be made to place guy wires and their anchors, if used, out of Cropland, pastureland and hayland, placing them instead along existing utilization lines and on land other than Cropland. Where this is not feasible, Best Efforts shall be made to minimize guy wire impact on Cropland. All guy wires shall be shielded with highly visible guards.

4. Underground Cabling Depth

A. Underground electrical cables located outside the perimeter of the (fence) of the solar panels shall be buried with:

1. a minimum of 5 feet of top cover where they cross Cropland.
2. a minimum of 5 feet of top cover where they cross pastureland or other non-Cropland classified as Prime Farmland.
3. a minimum of 3 feet of top cover where they cross pastureland and other Agricultural Land not classified as Prime Farmland.

4. a minimum of 3 feet of top cover where they cross wooded/brushy land.

B. Provided that the Facility Owner removes the cables during Deconstruction, underground electric cables may be installed to a minimum depth of 18 inches:

1. Within the fenced perimeter of the Facility; or

2. When buried under an access road associated with the Facility provided that the location and depth of cabling is clearly marked at the surface.

C. If Underground Cables within the fenced perimeter of the solar panels are installed to a minimum depth of 5 feet, they may remain in place after Deconstruction.

5. Topsoil Removal and Replacement

A. Any excavation shall be performed in a manner to preserve topsoil. Best Efforts shall be made to store the topsoil near the excavation site in such a manner that it will not become intermixed with subsoil materials.

B. Best Efforts shall be made to store all disturbed subsoil material near the excavation site and separate from the topsoil.

C. When backfilling an excavation site, Best Efforts shall be used to ensure the stockpiled subsoil material will be placed back into the excavation site before replacing the topsoil.

D. Refer to Section 7 for procedures pertaining to rock removal from the subsoil and topsoil.

E. Refer to Section 8 for procedures pertaining to the repair of compaction and rutting of the topsoil.

F. Best Efforts shall be performed to place the topsoil in a manner so that after settling occurs, the topsoil's original depth and contour will be restored as close as reasonably practicable. The same shall apply where excavations are made for road, stream, drainage ditch, or other crossings. In no instance shall the topsoil materials be used for any other purpose unless agreed to explicitly and in writing by the Landowner.

G. Based on the mutual agreement of the landowner and Facility Owner, excess soil material resulting from solar facility excavation shall either be removed or stored on the Landowner's property and reseeded per the applicable National Pollution Discharge Elimination System (NPDES) permit/Stormwater Pollution Prevention Plan (SWPPP). After the Facility reaches the end of its Useful Life, the excess subsoil material shall be returned to an excavation site or removed from the Landowner's property, unless otherwise agreed to by Landowner.

6. Rerouting and Permanent Repair of Agricultural Drainage Tiles

The following standards and policies shall apply to underground drainage tile line(s) directly or indirectly affected by Construction and/or Deconstruction:

A. Prior to Construction, the Facility Owner shall work with the Landowner to identify drainage tile lines traversing the property subject to the Underlying Agreement to the extent reasonably practicable. All drainage tile lines identified in this manner shall be shown on the Construction and Deconstruction Plans.

B. The location of all drainage tile lines located adjacent to or within the footprint of the Facility shall be recorded using Global Positioning Systems (GPS) technology. Within 60 days after Construction is complete, the Facility Owner shall provide the Landowner, the IDOA, and the respective County Soil and Water Conservation District (SWCD) with "as built" drawings (strip maps) showing the location of all drainage tile lines by survey station encountered in the Construction of the Facility, including any tile line repair location(s), and any underground cable installed as part of the Facility.

C. **Maintaining Surrounding Area Subsurface Drainage**

If drainage tile lines are damaged by the Facility, the Facility Owner shall repair the lines or install new drainage tile line(s) of comparable quality and cost to the original(s), and of sufficient size and appropriate slope in locations that limit direct impact from the Facility. If the damaged tile lines cause an unreasonable disruption to the drainage system, as determined by the Landowner, then such repairs shall be made promptly to ensure appropriate drainage. Any new line(s) may be located outside of, but adjacent to the perimeter of the Facility. Disrupted adjacent drainage tile lines shall be attached thereto to provide an adequate outlet for the disrupted adjacent tile lines.

D. **Re-establishing Subsurface Drainage Within Facility Footprint**

Following Deconstruction and using Best Efforts, if underground drainage tile lines were present within the footprint of the facility and were severed or otherwise damaged during original Construction, facility operation, and/or facility Deconstruction, the Facility Owner shall repair existing drainage tiles or install new drainage tile lines of comparable quality and cost to the original, within the footprint of the Facility with sufficient capacity to restore the underground drainage capacity that existed within the footprint of the Facility prior to Construction. Such installation shall be completed within 12 months after the end of the useful life of the Facility and shall be compliant with Figures 1 and 2 to this Agreement or based on prudent industry standards if agreed to by Landowner.

E. If there is any dispute between the Landowner and the Facility Owner on the method of permanent drainage tile line repair, the appropriate County SWCD's opinion shall be considered by the Facility Owner and the Landowner.

F. During Deconstruction, all additional permanent drainage tile line repairs beyond those included above in Section 6.D. must be made within 30 days of identification or notification of the damage, weather and soil conditions permitting. At other times, such repairs must be made at a time mutually agreed upon by the Facility Owner and the Landowner. If the Facility Owner and Landowner cannot agree upon a reasonable method to complete this restoration, the Facility Owner may implement the recommendations of the appropriate County SWCD and such implementation constitutes compliance with this provision.

G. Following completion of the work required pursuant to this Section, the Facility Owner shall be responsible for correcting all drainage tile line repairs that fail due to Construction and/or Deconstruction for one year following the completion of Construction or Deconstruction, provided those repairs were made by the Facility Owner. The Facility Owner shall not be responsible for drainage tile repairs that the Facility Owner pays the Landowner to perform.

7. Rock Removal

With any excavations, the following rock removal procedures pertain only to rocks found in the uppermost 42 inches of soil, the common freeze zone in Illinois, which emerged or were brought to the site as a result of Construction and/or Deconstruction.

A. Before replacing any topsoil, Best Efforts shall be taken to remove all rocks greater than 3 inches in any dimension from the surface of exposed subsoil which emerged or were brought to the site as a result of Construction and/or Deconstruction.

B. If trenching, blasting, or boring operations are required through rocky terrain, precautions shall be taken to minimize the potential for oversized rocks to become interspersed in adjacent soil material.

C. Rocks and soil containing rocks removed from the subsoil areas, topsoil, or from any excavations, shall be removed from the Landowner's premises or disposed of on the Landowner's premises at a location that is mutually acceptable to the Landowner and the Facility Owner.

8. Repair of Compaction and Rutting

A. Unless the Landowner opts to do the restoration work on compaction and rutting, after the topsoil has been replaced post-Deconstruction, all areas within the boundaries of the Facility that were traversed by vehicles and Construction and/or Deconstruction equipment that exhibit compaction and rutting shall be restored by the Facility Owner. All prior Cropland shall be ripped at least 18 inches deep or to the extent practicable, and all pasture and woodland shall be ripped at least 12 inches deep or to the extent practicable. The existence of drainage tile lines or underground utilities may necessitate less ripping depth. The disturbed area shall then be disked.

B. All ripping and disking shall be done at a time when the soil is dry enough for normal tillage operations to occur on Cropland adjacent to the Facility.

C. The Facility Owner shall restore all rutted land to a condition as close as possible to its original condition upon Deconstruction, unless necessary earlier as determined by the Landowner.

D. If there is any dispute between the Landowner and the Facility Owner as to what areas need to be ripped/disked or the depth at which compacted areas should be ripped/disked, the appropriate County SWCD's opinion shall be considered by the Facility Owner and the Landowner.

9. Construction During Wet Weather

Except as provided below, construction activities are not allowed on agricultural land during times when normal farming operations, such as plowing, disking, planting or harvesting, cannot take place due to excessively wet soils. With input from the landowner, wet weather conditions may be determined on a field by field basis.

A. Construction activities on prepared surfaces, surfaces where topsoil and subsoil have been removed, heavily compacted in preparation, or otherwise stabilized (e.g. through cement mixing) may occur at the discretion of the Facility Owner in wet weather conditions.

B. Construction activities on unprepared surfaces will be done only when work will not result in rutting which may mix subsoil and topsoil. Determination as to the potential of subsoil and topsoil mixing will be made in consultation with the underlying Landowner, or, if approved by the Landowner, his/her designated tenant or designee.

10. Prevention of Soil Erosion

A. The Facility Owner shall work with Landowners and create and follow a SWPPP to prevent excessive erosion on land that has been disturbed by Construction or Deconstruction of a Facility.

B. If the Landowner and Facility Owner cannot agree upon a reasonable method to control erosion on the Landowner's property, the Facility Owner shall consider the recommendations of the appropriate County SWCD to resolve the disagreement.

C. The Facility Owner may, per the requirements of the project SWPPP and in consultation with the Landowner, seed appropriate vegetation around all panels and other facility components to prevent erosion. The Facility Owner must utilize Best Efforts to ensure that all seed mixes will be as free of any noxious weed seeds as possible. The Facility Owner shall consult with the Landowner regarding appropriate varieties to seed.

11. Repair of Damaged Soil Conservation Practices

Consultation with the appropriate County SWCD by the Facility Owner shall be carried out to determine if there are soil conservation practices (such as terraces, grassed waterways, etc.) that will be damaged by the Construction and/or Deconstruction of the Facility. Those conservation practices shall be restored to their preconstruction condition as close as reasonably practicable following Deconstruction in accordance with USDA NRCS technical standards. All repair costs shall be the responsibility of the Facility Owner.

12. Compensation for Damages to Private Property

The Facility Owner shall reasonably compensate Landowners for damages caused by the Facility Owner. Damage to Agricultural Land shall be reimbursed to the Landowner as prescribed in the applicable Underlying Agreement.

13. Clearing of Trees and Brush

A. If trees are to be removed for the Construction or Deconstruction of a Facility, the Facility Owner shall consult with the Landowner to determine if there are trees of commercial or other value to the Landowner.

B. If there are trees of commercial or other value to the Landowner, the Facility Owner shall allow the Landowner the right to retain ownership of the trees to be removed and the disposition of the removed trees shall be negotiated prior to the commencement of land clearing.

14. Access Roads

A. To the extent practicable, access roads shall be designed to not impede surface drainage and shall be built to minimize soil erosion on or near the access roads.

B. Access roads may be left intact during Construction, operation or Deconstruction through mutual agreement of the Landowner and the Facility Owner unless otherwise restricted by federal, state, or local regulations.

C. If the access roads are removed, Best Efforts shall be expended to assure that the land shall be restored to equivalent condition(s) as existed prior to their construction, or as otherwise agreed to by the Facility Owner and the Landowner. All access roads that are removed shall be ripped to a depth of 18 inches. All ripping shall be performed consistent with Section 8.

15. Weed/Vegetation Control

A. The Facility Owner shall provide for weed control in a manner that prevents the spread of weeds. Chemical control, if used, shall be done by an appropriately licensed pesticide applicator.

B. The Facility Owner shall be responsible for the reimbursement of all reasonable costs incurred by owners of agricultural land where it has been determined by the appropriate state or county entity that weeds have spread from the Facility to their property. Reimbursement is contingent upon written notice to the Facility Owner. Facility Owner shall reimburse the property owner within 45 days after notice is received.

C. The Facility Owner shall ensure that all vegetation growing within the perimeter of the Facility is properly and appropriately maintained. Maintenance may include, but not be limited to, mowing, trimming, chemical control, or the use of livestock as agreed to by the Landowner.

D. The Deconstruction plans must include provisions for the removal of all weed control equipment used in the Facility, including weed-control fabrics or other ground covers.

16. Indemnification of Landowners

The Facility Owner shall indemnify all Landowners, their heirs, successors, legal representatives, and assigns from and against all claims, injuries, suits, damages, costs, losses, and reasonable expenses resulting from or arising out of the Commercial Solar Energy Facility, including Construction and Deconstruction thereof, and also including damage to such Facility or any of its appurtenances, except where claims, injuries, suits, damages, costs, losses, and expenses are caused by the negligence or intentional acts, or willful omissions of such Landowners, and/or the Landowners heirs, successors, legal representatives, and assigns.

17. Deconstruction Plans and Financial Assurance of Commercial Solar Energy Facilities

A. Deconstruction of a Facility shall include the removal/disposition of all solar related equipment/facilities, including the following utilized for operation of the Facility and located on Landowner property:

1. Solar panels, cells and modules;
2. Solar panel mounts and racking, including any helical piles, ground screws, ballasts, or other anchoring systems;
3. Solar panel foundations, if used (to depth of 5 feet);

4. Transformers, inverters, energy storage facilities, or substations, including all components and foundations; however, Underground Cables at a depth of 5 feet or greater may be left in place;
5. Overhead collection system components;
6. Operations/maintenance buildings, spare parts buildings and substation/switching gear buildings unless otherwise agreed to by the Landowner;
7. Access Road(s) unless Landowner requests in writing that the access road is to remain;
8. Operation/maintenance yard/staging area unless otherwise agreed to by the Landowner; and
9. Debris and litter generated by Deconstruction and Deconstruction crews.

B. The Facility Owner shall, at its expense, complete Deconstruction of a Facility within twelve (12) months after the end of the useful life of the Facility.

C. During the County permit process, or if none, then prior to the commencement of construction, the Facility Owner shall file with the County a Deconstruction Plan. The Facility Owner shall file an updated Deconstruction Plan with the County on or before the end of the tenth year of commercial operation.

D. The Facility Owner shall provide the County with Financial Assurance to cover the estimated costs of Deconstruction of the Facility. Provision of this Financial Assurance shall be phased in over the first 11 years of the Project's operation as follows:

1. On or before the first anniversary of the Commercial Operation Date, the Facility Owner shall provide the County with Financial Assurance to cover ten (10) percent of the estimated costs of Deconstruction of the Facility as determined in the Deconstruction Plan.
2. On or before the sixth anniversary of the Commercial Operation Date, the Facility Owner shall provide the County with Financial Assurance to cover fifty (50) percent of the estimated costs of Deconstruction of the Facility as determined in the Deconstruction Plan.
3. On or before the eleventh anniversary of the Commercial Operation Date, the Facility Owner shall provide the County with Financial Assurance to cover one hundred (100) percent of the estimated costs of Deconstruction of the Facility as determined in the updated Deconstruction Plan provided during the tenth year of commercial operation.

The Financial Assurance shall not release the surety from liability until the Financial Assurance is replaced. The salvage value of the Facility may only be used to reduce the estimated costs of Deconstruction if the County agrees that all interests in the salvage value are subordinate or have been subordinated to that of the County if Abandonment occurs.

E. The County may, but is not required to, reevaluate the estimated costs of Deconstruction of any Facility after the tenth anniversary, and every five years thereafter, of the Commercial Operation Date. Based on any reevaluation, the County may require changes in the level of Financial Assurance used to calculate the phased Financial Assurance levels described in Section 17.D. required from the Facility Owner. If the County is unable to its satisfaction to perform the investigations necessary to approve the Deconstruction Plan filed by the Facility Owner, then the County and Facility may mutually agree on the selection of a Professional Engineer independent of the Facility Owner to conduct any necessary investigations. The Facility Owner shall be responsible for the cost of any such investigations.

F. Upon Abandonment, the County may take all appropriate actions for Deconstruction including drawing upon the Financial Assurance.

Concurrence of the Parties to this AIMA

The Illinois Department of Agriculture and Grand Parade Solar, LLC concur that this AIMA is the complete AIMA governing the mitigation of agricultural impacts that may result from the Construction and Deconstruction of the solar farm project in DeKalb County within the State of Illinois.

The effective date of this AIMA commences on the date of execution.

STATE OF ILLINOIS
DEPARTMENT OF AGRICULTURE

Jerry Costello II

By: Jerry Costello II, Director 4

Clay Nordsiek

By ~~Tess Feagans, General Counsel~~
Clay Nordsiek, Deputy General Counsel

801 E. Sangamon Avenue, 62702
State Fairgrounds, POB 19281 Springfield, IL 62794-9281

12/4, 2023

Grand Parade Solar, LLC

CR
Charlie Johnson (Oct 23, 2023 09:03 EDT)

By Charlie Johnson, Sr. Director of DER

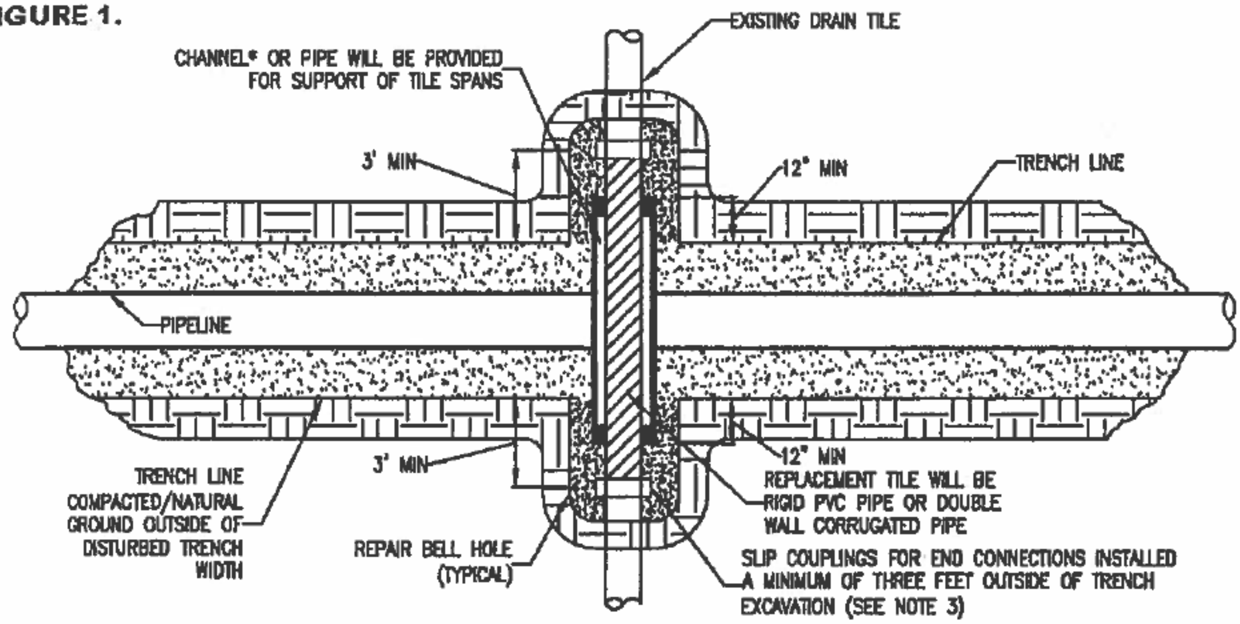
[redacted]

Address

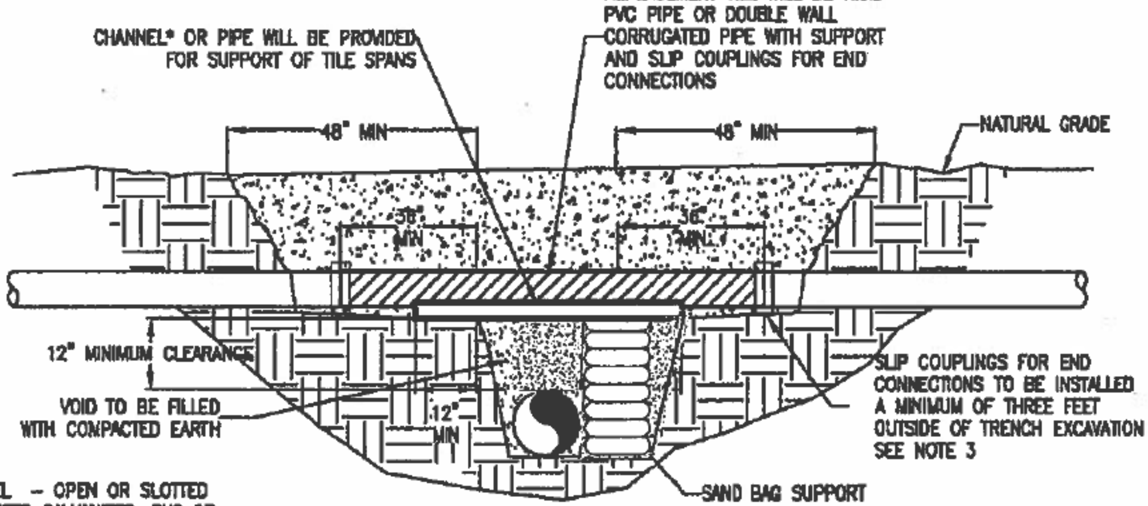
October 20th, 2023

Standard Solar AIMA V.8.19.19

FIGURE 1.



PLAN
N.T.S.



*CHANNEL – OPEN OR SLOTTED CORRUGATED GALVANIZED, PVC OR ALUMINUM CRADLE TO SUPPORT DRAIN TILE.

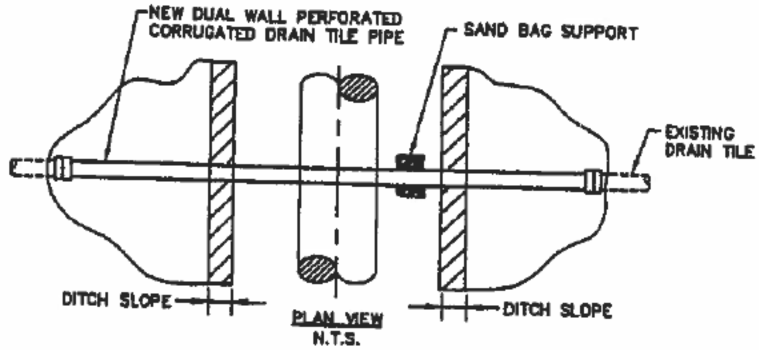
CROSS SECTION
N.T.S.

NOTE:

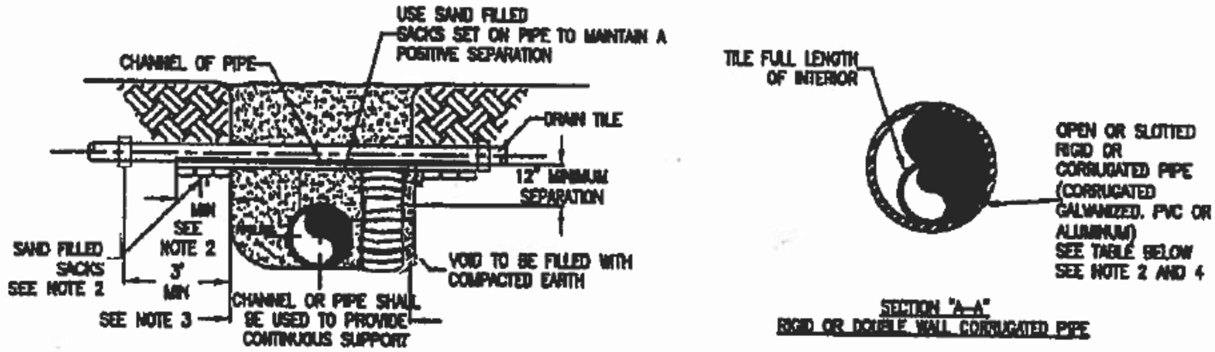
1. IMMEDIATELY REPAIR TILE IF WATER IS FLOWING THROUGH TILE AT TIME OF TRENCHING. IF NO WATER IS FLOWING AND TEMPORARY REPAIR IS DELAYED, OR NOT MADE BY THE END OF THE WORK DAY, A SCREEN OR APPROPRIATE 'NIGHT CAP' SHALL BE PLACED ON OPEN ENDS OF TILE TO PREVENT ENTRAPMENT OF ANIMALS ETC.
2. CHANNEL OR PIPE (OPEN OR SLOTTED) MADE OF CORRUGATED GALVANIZED PIPE, PVC OR ALUMINUM WILL BE USED FOR SUPPORT OF DRAIN TILE SPANS.
3. INDUSTRY STANDARDS SHALL BE FOLLOWED TO ENSURE PROPER SEAL OF REPAIRED DRAIN TILES.

TEMPORARY DRAIN TILE REPAIR

FIGURE 2.



PLAN VIEW



END VIEWS

MINIMUM SUPPORT TABLE					
TILE SIZE	CHANNEL SIZE		PIPE SIZE		
3"	4" @ 5.4	#/ft	4"	STD. WT.
4"-5"	5" @ 6.7	#/ft	6"	STD. WT.
6"-9"	7" @ 9.8	#/ft	8"-10"	STD. WT.
10"	10" @ 15.3	#/ft	12"	STD. WT.

NOTE:

1. TILE REPAIR AND REPLACEMENT SHALL MAINTAIN ORIGINAL ALIGNMENT GRADIENT AND WATER FLOW TO THE GREATEST EXTENT POSSIBLE. IF THE TILE NEEDS TO BE RELOCATED, THE INSTALLATION ANGLE MAY VARY DUE TO SITE SPECIFIC CONDITIONS AND LANDOWNER RECOMMENDATIONS.

2. 1'-0" MINIMUM LENGTH OF CHANNEL OR RIGID PIPE (OPEN OR SLOTTED CORRUGATED GALVANIZED, PVC OR ALUMINUM CRADLE) SHALL BE SUPPORTED BY UNDISTURBED SOIL, OR IF CROSSING IS NOT AT RIGHT ANGLES TO PIPELINE, EQUIVALENT LENGTH PERPENDICULAR TO TRENCH. SHIM WITH SAND BAGS TO UNDISTURBED SOIL FOR SUPPORT AND DRAINAGE GRADIENT MAINTENANCE (TYPICAL BOTH SIDES).

3. DRAIN TILES WILL BE PERMANENTLY CONNECTED TO EXISTING DRAIN TILES A MINIMUM OF THREE FEET OUTSIDE OF EXCAVATED TRENCH LINE USING INDUSTRY STANDARDS TO ENSURE PROPER SEAL OF REPAIRED DRAIN TILES INCLUDING SLIP COUPLINGS.

4. DIAMETER OF RIGID PIPE SHALL BE OF ADEQUATE SIZE TO ALLOW FOR THE INSTALLATION OF THE TILE FOR THE FULL LENGTH OF THE RIGID PIPE.

5. OTHER METHODS OF SUPPORTING DRAIN TILE MAY BE USED IF ALTERNATE PROPOSED IS EQUIVALENT IN STRENGTH TO THE CHANNEL/PIPE SECTIONS SHOWN AND IF APPROVED BY COMPANY REPRESENTATIVES AND LANDOWNER IN ADVANCE. SITE SPECIFIC ALTERNATE SUPPORT SYSTEM TO BE DEVELOPED BY COMPANY REPRESENTATIVES AND FURNISHED TO CONTRACTOR FOR SPANS IN EXCESS OF 20', TILE GREATER THEN 10" DIAMETER, AND FOR "HEADER" SYSTEMS.

6. ALL MATERIAL TO BE FURNISHED BY CONTRACTOR.

7. PRIOR TO REPAIRING TILE, CONTRACTOR SHALL PROBE LATERALLY INTO THE EXISTING TILE TO FULL WIDTH OF THE RIGHTS OF WAY TO DETERMINE IF ADDITIONAL DAMAGE HAS OCCURRED. ALL DAMAGED/DISTURBED TILE SHALL BE REPAIRED AS NEAR AS PRACTICABLE TO ITS ORIGINAL OR BETTER CONDITION.

PERMANENT DRAIN TILE REPAIR

Exhibit G – Decommissioning Plan

A DECOMMISSIONING PLAN FOR

Grand Parade Solar Project

DeKalb County, Illinois

JULY 17, 2025

PREPARED FOR:

Grand Parade Solar, LLC

PREPARED BY:

Westwood

Westwood

Decommissioning Plan

Grand Parade Solar Project

Cortland, DeKalb County, Illinois

Prepared for:

Grand Parade Solar, LLC
[redacted]

Prepared by:

Westwood Professional Services
12701 Whitewater Drive, Suite 300
Minnetonka, MN 55343
(952) 937-5150

Project Number: 0047106.00

Date: July 17, 2025

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Attachments

Attachment A: Decommissioning Cost Estimate

1.0 Introduction / Facility Description

This Decommissioning Plan (“Plan”) has been prepared for the Grand Parade Solar Project in accordance with the site-specific Agricultural Impact Mitigation Agreement (AIMA) with the Illinois Department of Agriculture (IDOA) and using the Cortland, Illinois Code of Ordinances for Solar Energy Systems as guidance. The purpose of the Plan is to describe the means and methods that can be used to remove all structures, foundations, underground cables, and equipment and to reclaim and restore the land altered during the construction and operation of the solar facility to its predevelopment condition to the extent feasible.

The Grand Parade Solar Project (”Facility”) is a solar power generation facility proposed by Grand Parade Solar, LLC (“Applicant”) in the Town of Cortland in DeKalb County, Illinois. The Facility will have an aggregate nameplate capacity of up to 5.0-megawatt (MW) alternating current (AC), 6.8-MW direct current (DC). Upon completion, the Facility will comprise a solar array consisting of solar panels, tracking systems, inverters, transformers, collection lines, a distribution line, an access road, vegetative screening, and fencing. The Facility will be built within a general Facility Area of approximately 29.5 acres.

The land leases for the Facility are for forty (40) years. Following the Cortland, Illinois Code Of Ordinances for Solar Energy Systems guidelines, the Plan and cost estimate will be updated and re-filed with the town of Cortland every three (3) to five (5) years following issuance of the special use. The revised plans will reflect advancements in construction techniques, reclamation equipment, and standards. The Decommissioning Plan will be certified by a Professional Engineer.

2.0 Proposed Future Land Use

Prior to the development of the Facility, the land use of the Facility Area was primarily corn and soy production. After all equipment and infrastructure is removed during decommissioning, any holes or voids created by poles, concrete pads, and other equipment will be filled in with native soil to the surrounding grade, and the site will be restored to pre-construction conditions to the extent practicable. Access roads and other areas compacted by equipment may be decompacted to a depth necessary to ensure drainage of the soil and root penetration prior to fine grading and tilling to a farmable condition to match preconstruction conditions. Please refer to Section 3.2 for a detailed description of reclamation activities.

3.0 Decommissioning Activities

Decommissioning of the Facility will include removing the solar panels, solar panel racking, steel foundation posts and beams, inverters, transformers, collection cables and lines, equipment pads and foundations, equipment cabinets, and ancillary equipment. The civil facilities – the access road, security fencing, and vegetative screening are included in the scope. Standard decommissioning practices will be utilized, including dismantling and repurposing, salvaging/recycling, or disposing of the solar energy improvements.

During decommissioning, the landowners will be consulted to identify the extent and type of work to be completed. Some Facility infrastructure may be removed at the discretion of the landowners.

Decommissioning will include the removal and transportation of all Facility components from the Facility site. All dismantling, removal, recycling, and disposal of materials generated during decommissioning will comply with rules, regulations, and prevailing Federal, State, and local laws at the time decommissioning is initiated and will use approved local or regional disposal or recycling sites as available. Recyclable materials will be recycled to the furthest extent practicable. Non-recyclable materials will be disposed of in accordance with State and Federal law.

3.1 Decommissioning of Facility Components

3.1.1 Solar Panels

Solar panels will be inspected for physical damage, tested for functionality, and disconnected and removed from racking. Functioning panels will be packed, palletized, and shipped to an off-site facility for reuse or resale. Non-functioning panels will be shipped to the manufacturer or a third party for recycling or disposal.

3.1.2 Tracking Rack System

The tracking rack system components will be disassembled and removed from the steel foundation posts, processed to appropriate size, and sent to a metal recycling facility.

3.1.3 Steel Foundation Posts

Structural foundation steel posts will be pulled out to full depth, removed, processed to appropriate size, and shipped to a recycling facility. The posts can be removed using back hoes or similar equipment. During decommissioning, the area around the foundation posts may be compacted by equipment and, if compacted, the area will be decompacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent for vegetation.

3.1.4 Collection Lines

All cables and conduits will be removed to a depth of five (5) feet, in accordance with the IDOA's AIMA. Topsoil will be segregated and stockpiled for later use prior to any excavation and the subsurface soils will be staged next to the excavation. The subgrade will be compacted per standards. Topsoil will be redistributed across the disturbed area.

3.1.5 Distribution Line

The approximately 178 feet of 13.2 kV distribution line, supporting poles/structures, and attachments will be removed from the Facility and taken to a recycling facility

3.1.6 Inverters, Transformers, and Ancillary Equipment

All electrical equipment will be disconnected and disassembled. All parts will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the Applicant's sole discretion, consistent with applicable regulations and industry standards.

3.1.7 Equipment Foundations and Ancillary Foundations

The ancillary foundations are pile foundations for the equipment pads. As with the solar array steel foundation posts, the foundation piles will be pulled out completely. Duct banks will be excavated to full depth. All unexcavated areas compacted by equipment used in decommissioning will be decompacted in a manner to adequately restore the topsoil and sub-grade material to a density similar to the surrounding soils. All materials will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the Applicant's sole discretion, consistent with applicable regulations and industry standards.

3.1.8 Fence

Fence parts and foundations (if necessary) will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the Applicant's sole discretion, consistent with applicable regulations and industry standards. The surrounding areas will be restored to pre-solar farm conditions to the extent feasible.

3.1.9 Access Roads

1. Unless otherwise required by the landowner, removal of the access road will entail removal of the road base aggregate and any other materials used for constructing the road. During removal, the topsoil adjacent to both sides of the road will be stripped and stockpiled in a windrow paralleling the road. The road base materials will then be removed by bulldozers, wheeled loaders, or backhoes and hauled off site in dump trucks to be recycled or disposed of at an off-site facility. On-site processing may allow much of the aggregate to be re-used to improve public roads. The aggregate base can often be used by local landowners for driveway or clean fill. Another option is to use the aggregate base as "daily cover" at a landfill, where it is usually accepted without cost . If geotextile fabric was utilized under the aggregate base, it will be removed and disposed of in a landfill off site. The access road removal will proceed from the array areas to the public roads to limit tracking and provide stable access during removal. Following removal, topsoil will be reapplied and graded to blend with surrounding contours to promote pre-construction drainage patterns. The topsoil and subsoil will be decompacted in accordance with the IDOA decompaction standards and the area will be decompacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent for the reintroduction of farming.

3.1.10 Vegetative Screening

Unless requested to remain in place by the landowner, all vegetative screening installed for the Facility will be removed. All vegetation and associated geotextile fabrics or other ground covers will be excavated and hauled off-site to an approved landfill facility. It is also possible that these trees and/or shrubs could be transplanted to another location such that agricultural activities can efficiently resume on the parcel. Depending on the vegetative screening species type, either a tree truck, backhoe, or bulldozer will excavate the screening. Following removal, topsoil and subsoil will be decompacted in a manner to adequately restore the topsoil and sub-grade to a density consistent for the reintroduction of farming.

3.2 Reclamation

The Applicant will restore and reclaim the site to the pre-solar farm condition consistent with the site lease agreement. The Applicant assumes that most of the site will be returned to farmland and/or pasture after decommissioning through implementation of appropriate measures to facilitate such uses. If no specific use is identified, the Applicant will vegetate the site with a seed mix approved by the local soil and water conservation district or similar agency. The goal of restoration will be to restore natural hydrology and plant communities to the greatest extent practicable while minimizing new disturbance and removal of native vegetation. Cropland shall be ripped at least eighteen (18) inches or to the extent practicable. The existence of underground utilities may necessitate less ripping depth. Following ripping, the disturbed area shall then be disced. Additionally, ruts caused by operation of the facility or decommissioning activities will be corrected. All materials and debris associated with Facility decommissioning will be removed and properly recycled or disposed of at off-site facilities.

4.0 Best Management Practices (BMPs)

4.1 Construction Stormwater Practices

During decommissioning, erosion and sediment control BMPs will be implemented to minimize potential for erosion of site soils and sedimentation of surface waters and waters of the state. Because decommissioning will entail disturbance of more than one (1) acre of soil, the Applicant will prepare a Stormwater Pollution Prevention Plan (SWPPP) and obtain coverage with the Illinois Environmental Protection Agency (EPA) under the Illinois General National Pollutant Discharge Elimination System (NPDES) permit No. ILR10 prior to initiating soil disturbing activities. Potential BMPs to be implemented during decommissioning activities are described below and will be subject to refinement in the SWPPP. The decommissioning team will review the permitting requirements at the time of decommissioning and obtain any other necessary permits, which may include a US Army Corps of Engineers (USACE) Section 404 Permit to Discharge Dredged or Fill Material.

4.1.1 Erosion Control

Erosion control measures will be refined based on the standard of practice current at the time the SWPPP is developed for decommissioning. All disturbed areas without permanent impermeable or gravel surfaces, or planned for use as crop land, will be vegetated for final stabilization. All slopes steeper than 4:1 should be protected with erosion control blankets. Restoration should include seed application prior to application of the blanket. All slopes 4:1 or flatter should be restored with seed and mulch, which will be disc anchored.

4.1.2 Sediment Control

Sediment controls, such as silt fences, fiber logs, dewatering practices, construction entrances, and sedimentation traps and/or basins will be implemented during construction to prevent the transport of sediment off-site during decommissioning activities. Street sweeping/scraping will also be implemented to mitigate potential tracking of sediment onto public roadways.

4.1.3 Controlling Stormwater Flowing onto and Through the Facility

Given the low gradient of the slopes in the Facility Area, controlling stormwater flow that enters the Facility Area will likely require minimal effort during decommissioning activities. Only newly disturbed areas may require new, temporary stormwater control. If necessary, water may be diverted around the Facility site using diversion berms.

4.2 Permitting

All decommissioning and reclamation activities will comply with Federal and State permit requirements. Decommissioning activities that will disturb more than one (1) acre of soil will require coverage under the Illinois General NPDES permit No. ILR10 for construction stormwater. The permits will be applied for and received prior to decommissioning construction activities commencing. A SWPPP will be developed prior to filing for construction stormwater permit coverage.

If necessary for decommissioning activities, wetlands and waters permits will be obtained from the USACE or Illinois EPA. A Spill Prevention, Control, and Countermeasure (SPCC) Plan for decommissioning will likely also be required for decommissioning work.

4.3 Health and Safety Standards

Work will be conducted in strict accordance with the Applicant's health and safety plan. The construction contractor hired to perform the decommissioning will also be required to prepare a site-specific health and safety plan. All site workers, including subcontractors, will be required to read, understand, and abide by the plans. A site safety officer will be designated by the construction contractor to ensure compliance. This official will have stop-work authority over all activities on the site should unsafe conditions or lapses in the safety plan be observed.

5.0 Timeline

Decommissioning of the Facility will be initiated if the Facility has not operated for ninety (90) consecutive days in accordance with the Cortland, Illinois Code of Ordinances for Solar Energy Systems, or when the Facility has surpassed the useful lifespan of the panels and facilities. It is anticipated that the decommissioning activities for the Facility can be completed in a twelve (12) week period. The estimated costs for decommissioning are tied to assumptions about the amount of equipment mobilized, the crew sizes, weather and climate conditions, and the productivity of the equipment and crews.

6.0 Decommissioning Costs

The decommissioning costs are calculated using current pricing. In keeping with the Cortland, Illinois Code of Ordinance for Solar Energy Systems, the estimate of net costs should be reevaluated every three (3) to five (5) years following issuance of the special use to recognize price trends for both decommissioning costs and the salvage and resale values of the components.

There are currently active markets for scrap steel, aluminum, and copper, used transformers and electrical equipment, and used solar panels. Scrap metal prices have been discounted from posted spot prices found on www.scrapmonster.com. Pricing for used panels has been discounted from the average price of used panels, as published in EnergyBin's 2024 "Module Price Index."

The total estimated cost of decommissioning the Grand Parade Solar Facility is approximately $605,932 ($89,688 per MW). Estimated salvage/scrap value of the panels, racking, transformers, and other materials is approximately $623,446. The net decommissioning costs after accounting for resale and salvage values is approximately $17,600 in surplus, or $2,592 in surplus per MW.

7.0 Financial Assurance

The Applicant shall be responsible for submittal of a financial assurance to cover the cost of decommissioning the Facility. Prior to the issuance of a building permit, the Project Applicant shall provide the town with a performance and payment bond with adequate security or surety bond in an amount determined adequate by the town board to guarantee the performance of the aforesaid restoration requirements and Decommissioning Plan. If the Project is abandoned and not properly decommissioned, the town shall utilize the funds to restore the property to its original or an improved condition.

Attachment A

Decommissioning Cost Estimate

Grand Parade Solar Project

	Quantity	Unit	Unit Cost	Total Cost
Mobilization/Demobilization	1	Lump Sum	$31,800.00	$31,800
Mobilization was estimated to be approximately 7% of total cost of other items.				
Permitting				
County Permits	1	Lump Sum	$10,000.00	$10,000
State Permits	1	Lump Sum	$20,000.00	$20,000
Subtotal Permitting				**$30,000**
Decommissioning will require SWPPP and SPCC Plans. Cost is an estimate of the permit preparation cost.				
Civil Infrastructure				
Remove Gravel Surfacing from Road	1,299	Cubic Yards (BV)	$2.92	$3,794
Haul Gravel Removed from Road to Landfill (Rockford, IL)	1,624	Cubic Yards (LV)	$21.03	$34,146
Dispose of Gravel Removed from Road (Landfill uses as Daily Cover)	2,104	Tons	$0.00	$0
Remove Geotextile Fabric from Beneath Access Roads	5,010	Square Yards	$1.40	$7,014
Haul Geotech Fabric to Landfill (DeKalb, IL)	1.4	Tons	$4.52	$6
Dispose of Geotech Fabric	1.4	Tons	$81.00	$112
Remove and Load Culvert from Beneath Access Roads	1	Each	$420.00	$420
Haul Culvert Removed from Access Roads to Landfill (DeKalb, IL)	0.3	Tons	$4.52	$1
Dispose of Culvert	0.3	Tons	$81.00	$24
Grade Road Corridor (Re-spread Topsoil)	2,505	Linear Feet	$1.98	$4,948
Decompact Road Area	1.0	Acres	$249.40	$258
Remove Chainlink Fence	4,757	Linear Feet	$7.38	$35,105
Haul Chainlink Fence to Metal Recycling (DeKalb, IL)	25.3	Tons	$5.05	$128
Clear and Grub Vegetative Buffer	0.9	Acres	$5,627.25	$5,065
Haul Cleared Vegetation to Landfill (DeKalb, IL)	22.5	Tons	$4.52	$102
Dispose of Cleared Vegetation	22.5	Tons	$81.00	$1,823
Subtotal Civil Infrastructure				**$92,946**
Civil removal costs are a combination of MNDOT unit costs where applicable, RSMeans cost for Rockford, IL, and industry standards provided to Westwood.				
Structural Infrastructure				
Remove Steel Foundation Posts (Arrays, Equipment)	1,988	Each	$16.60	$32,993
Haul Array Steel Post to Metal Recycling (DeKalb, IL)	143	Tons	$4.39	$628
Remove Tracker Racking System per String	458	Each	$235.20	$107,721
Haul Tracker Racking System to Metal Recycling (DeKalb, IL)	333	Tons	$4.39	$1,461
Remove Drive Motor Posts	156	Each	$16.60	$2,589
Haul Drive Motor Posts to Metal Recycling (DeKalb, IL)	11	Tons	$4.39	$49
Subtotal Structural Infrastructure				**$145,441**
Steel removal costs were calculated by using RSMeans information for demolition of steel members.				
Hauling calculations are based on the locations of metals recyclers.				
Electrical Collection System				
Remove PV Panels	11,450	Each	$12.64	$144,771
Haul PV 95% of Panels to Reseller (Louisville, KY)	372	Tons	$77.31	$28,738
Haul 5% of PV Panels to Landfill (DeKalb, IL)	20	Tons	$4.52	$88
Dispose of PV Panels	20	Tons	$81.00	$1,585
Remove Combiner Boxes	16	Each	$60.00	$960
Remove Equipment Skids	1	Each	$1,167.48	$1,167
Remove Equipment Pad Piles	8	Each	$16.60	$133
Haul Equipment Skid Steel Post to Metal Recycling (DeKalb, IL)	1	Tons	$4.39	$3
Haul Equipment to Transformer Disposal (Pecatonica, IL)	1	Each	$394.65	$395
Remove SCADA Equipment	1	Each	$2,000.00	$2,000

Remove DC Collector System Cables (copper)	7	Per MW	$2,000.00	$13,512
Remove Underground (AC) Collector System Stub-Ups	1	Locations	$400.00	$400
Load and Haul Cables for Recycling	1.7	Tons	$4.39	$7
Subtotal Electrical Collection				**$193,759**

Electrical removal costs of PV Panels and Combiner Boxes were based industry standard installation rates. Equipment pads, MV Equipment, and SCADA Equipment removal cost are based on removal of equipment, concrete pads, and conduits using a truck mounted crane and RSMeans information on crew production rates.

Transmission System				
Remove Overhead Cables	178	Feet	$7.90	$1,406
Loadout Overhead Cables	0.4	Tons	$37.00	$13
Haul Overhead Cables	0.4	Tons	$4.39	$2
Remove and Load Timber Transmission Poles	5	Each	$432.85	$2,164
Haul Timber Poles to Landfill (DeKalb, IL)	16	Tons	$4.52	$73
Haul Hardware, Bracing, and Attachments to Landfill (DeKalb, IL)	3	Cubic Yards	$6.16	$17
Dispose of Transmission Pole Components	5	Each	$81.00	$405
Topsoil and Revegetation at Removed Poles	5	Each	$1.14	$6
Subtotal Transmission System				**$4,086**

Site Restoration				
Stabilized Construction Entrance	1	Each	$2,000.00	$2,000
Perimeter Controls (Erosion and Sediment Control)	2,378	Linear Feet	$3.90	$9,276
Till to Farmable Condition on Array Areas	29.5	Acres	$216.22	$6,372
Subtotal Site Restoration				**$17,648**

Project Management				
Project Manager	12	Weeks	$3,749.00	$44,988
Superintendent (half-time)	12	Weeks	$1,762.50	$21,150
Field Engineer (half-time)	12	Weeks	$1,634.50	$19,614
Clerk (half-time)	12	Weeks	$375.00	$4,500
Subtotal Project Management				**$90,252**

Standard industry weekly rates from RSMeans.

Subtotal Demolition/Removals	**$605,932**

Salvage				
Fencing (Chain Link)	25	Tons	$251.74	$6,377
Steel Posts	143	Tons	$251.74	$36,034
Tracker Racking	333	Tons	$251.74	$83,876
PV Panels	10,878	Each	$45.14	$490,956
Transformers and Inverters	3,803	Pounds	$0.38	$1,455
Transformers (Oil)	720	Gallons	$0.70	$504
DC Collection Line Stub-Ups (Copper)	1,365	Pounds	$1.47	$2,007
AC Collection Line Stub-Ups (Aluminum)	2,000	Pounds	$0.90	$1,800
Transmission Lines (Steel)	0.1	Tons	$289.17	$39
Transmission Lines (Aluminum)	444	Pounds	$0.90	$400
Subtotal Salvage				**$623,446**

Salvage values are a combination of the following factors; current market metal salvage prices, current secondary market for solar panel module recycling, discussions with national companies that specialize in recycling and reselling electrical transformers and inverters, and the assumption that care is taken to prevent any damage or breakage of equipment.

Total Demolition Minus Salvage	**($17,600)**

Notes:

1. Prices used in analysis are estimated based on research of current average costs and salvage values.
2. Prices provided are estimates and may fluctuate over the life of the project.
3. Contractor means and methods may vary and price will be affected by these.

Cost Estimate Assumptions

To develop a cost estimate for the decommissioning of the Grand Parade Solar Facility, Westwood engineers made the following assumptions and used the following pricing references. Costs were estimated based on current pricing, technology, and regulatory requirements. The assumptions are listed in order from top to bottom of the estimate spreadsheet. When publicly available bid prices or State Department of Transportation bid summaries were not available for particular work items, we developed time- and material-based estimates considering composition of work crews and equipment and material required. While materials may have a salvage value at the end of the Facility life, the construction activity costs and the hauling/freight costs are separated from the disposal costs or salvage value to make revisions to salvage values more transparent.

1. Facility quantities are based on site plans prepared for Grand Parade Solar, LLC, dated May 9, 2025.
2. A Facility of this size and complexity requires a full-time project manager with half-time support staff.
3. RS Means pricing was used for the Rockford, Illinois region for the second (2^{nd}) quarter of 2025.
4. Common labor will be used for the majority of tasks, supplemented by electricians, steel workers, and equipment operators where labor rules may require. The labor rates reflect union labor rates.
5. Mobilization was estimated at approximately seven percent (7%) of total cost of other items.
6. Permit applications will require the preparation of a SWPPP and an SPCC Plan.
7. Road gravel removal was estimated on a time and material basis. Since the material will not remain on-site, a hauling cost is added to the removal cost. Clean aggregate can typically be used as “daily cover” at landfills without incurring a disposal cost. The road gravel may also be used to fortify local driveways and roads, lowering hauling costs but incurring placing and compaction costs. The hauling costs to a landfill represents an upper limit to costs for disposal of the road gravel.
8. The selected disposal facility (WM – DeKalb County Security Landfill) is located in DeKalb, Illinois, approximately three (3) miles from the Facility site. Hauling costs to the landfill are estimated to be $4.52 per ton.
9. Erosion and sediment control along road reflects the cost of silt fence on the downgradient side of the proposed roads. As such, the length of controls has been estimated to be approximately fifty percent (50%) of the road length.
10. Topsoil is required to be stockpiled on-site during construction, so no topsoil replacement is expected to replace the road aggregate. Subsoiling cost to decompact roadway areas is estimated as $249.40 per acre, and tilling to an agriculture-ready condition is estimated as $216.22 per acre.
11. The selected metal recycling facility (Zimmerman Recycling) is located in DeKalb, Illinois, approximately four (4) miles from the Facility site. Hauling costs to the recycling facility are approximately $1.10 per ton mile, or $4.39 per ton.
12. Tracker foundation posts are lightweight “I” beam sections installed with a specialized piece of equipment and can be removed with a standard backhoe with an attachment for gripping the piles. We estimate crew productivity at 240 posts per day, resulting in a per post cost of approximately $16.60. The posts weigh approximately 150 pounds each.
13. It is assumed that the racking structures weigh approximately fifteen (15) pounds per linear foot of array. Each solar panel has a width of 44.65 inches. The Facility will have approximately 11,450 panels and 46,760 feet of array. The arrays are made of steel pipes; a crew with hand tools can

disassemble and cut the pieces to sizes for recycling at a rate of about 1800 pounds per person per hour, or about $307.16 per ton.

14. The solar panels for the Facility measure approximately 3.72 feet by 7.47 feet and weigh 68.34 pounds. They can easily be disconnected, removed, and packed by a three- (3-) person crew at a rate we estimate at eighteen (18) panels per hour.
15. The equipment skids will consist of inverter(s), a transformer, and a panel on a metal frame approximately thirty (30) feet long by fifteen (15) feet wide by eight (8) feet six (6) inches tall. The skids weigh approximately 20,469 pounds and can be disconnected by a crew of electricians. They must be lifted by a mobile crane for transport to the recycler. They contain copper or aluminum windings.
16. The transformers contain copper windings that have significant salvage value. They are typically oil filled, but most transformer recyclers will accept the transformers with oil. The estimated costs include removal of metal frame and conduits feeding the equipment.
17. Medium voltage (MV) equipment and SCADA equipment are mounted on the same equipment skids as the inverters and transformers, and they are enclosed in weatherproof cabinets. Their size requires light equipment to remove them. The costs for the removal of the pile foundations are included in the "Remove Steel Foundation Posts" estimate.
18. The underground collector system cables are placed in trenches with a minimum of eighteen (18) inches of cover. Several cables/circuits are placed side by side in each trench. The conduits and cables can be removed by trenching.
19. Perimeter control pricing is based on silt fence installation around downgradient sides of the Facility perimeter.
20. Metal salvage prices (steel, aluminum, copper) are based on June 2025 quotes from www.scrapmonster.com for the Midwest. Posted prices are three (3) months old. These prices are based on delivery to the recycling facility with the material prepared to meet size, thickness, cleanliness, and other specifications.
21. A reduction of twenty-five percent (25%) has been taken from all pricing obtained from www.scrapmonster.com to reflect the processing by the contractor to meet the specifications.
22. The salvage value for steel uses pricing from the Midwest United States at $370 per metric ton, or $335.66 for U.S. ton.
23. Solar panel salvage values are shown in current values, assuming near-new conditions for the first few years of operations. Pricing for used panels has been discounted from the average resale price of used panels, as published in EnergyBin's 2024 "Module Price Index." Panel values will decline over time as a function of loss of output and age.
24. There is an active market for reselling and recycling electrical transformers and inverters with several national companies specializing in recycling. However, we have assumed that the electrical equipment will be obsolete at the time of decommissioning, so we have based the pricing on a percentage of the weight that reflects the copper windings that can be salvaged. Pricing was used for Copper Transformer Scrap for the Midwest United States, at $0.51 per pound.
25. The collection lines are priced assuming copper conductor wire for the direct current circuits and aluminum wire for the alternating current circuits. The prices reflect a reduced yield of copper or aluminum resulting from the stripping of insulation and other materials from the wire prior to recycling. The estimate uses the Midwest prices of #2 insulated copper wire with a fifty percent (50%) recovery rate ($1.96 /pound) and E.C. Aluminum Wire ($1.20 /pound).

26. Care to prevent damage and breakage of equipment, PV panels, inverters, capacitors, and SCADA must be exercised, but removal assumes unskilled common labor under supervision.

Exhibit H – Example Specification Sheets

www.jinkosolar.com

JinKO Solar
Building Your Trust in Solar

Tiger Neo N-type 72HL4-BDV
560-580 Watt

BIFACIAL MODULE WITH DUAL GLASS

N-Type

Positive power tolerance of 0~+3%

IEC61215(2016), IEC61730(2016)

ISO9001:2015: Quality Management System

ISO14001:2015: Environment Management System

ISO45001:2018
Occupational health and safety management systems

Key Features

SMBB Technology
Better light trapping and current collection to improve module power output and reliability.

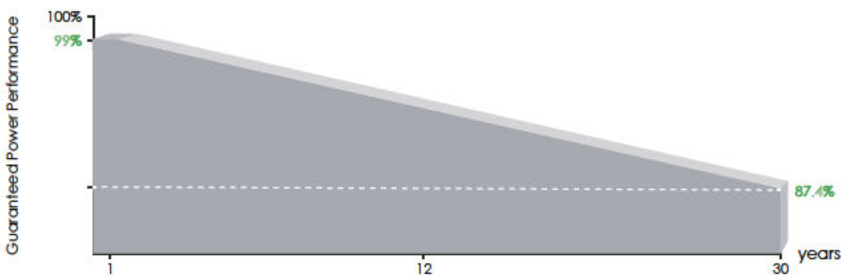
Hot 2.0 Technology
The N-type module with Hot 2.0 technology has better reliability and lower LID/LETID.

PID Resistance
Excellent Anti-PID performance guarantee via optimized mass-production process and materials control.

Enhanced Mechanical Load
Certified to withstand: wind load (2400 Pascal) and snow load (5400 Pascal).

Higher Power Output
Module power increases 5-25% generally, bringing significantly lower LCOE and higher IRR.

LINEAR PERFORMANCE WARRANTY

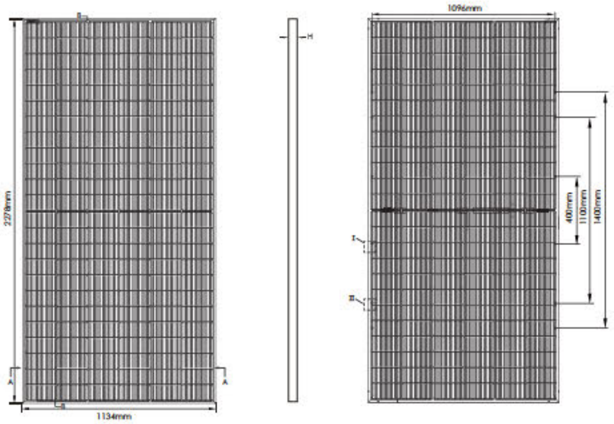


12 Year Product Warranty

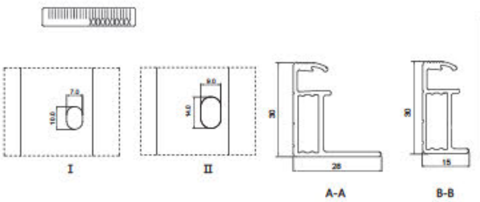
30 Year Linear Power Warranty

0.40% Annual Degradation Over 30 years

Engineering Drawings

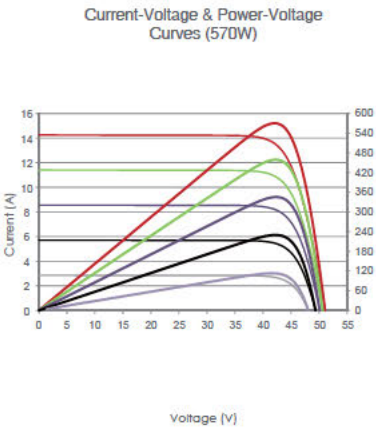


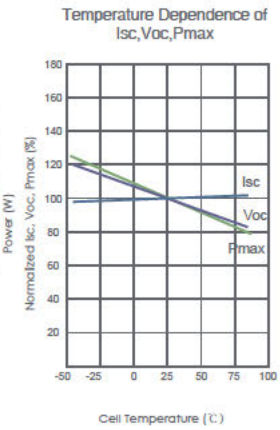
Front Side Back



Length: ±2mm
Width: ±2mm
Height: ±1mm
Row Pitch: ±2mm

Electrical Performance & Temperature Dependence





Packaging Configuration

(Two pallets = One stack)

36pcs/pallets, 72pcs/stack, 720pcs/ 40'HQ Container

Mechanical Characteristics

Cell Type	N type Mono-crystalline
No. of cells	144 (2×72)
Dimensions	2278×1134×30mm (89.69×44.65×1.18 inch)
Weight	32 kg (70.55 lbs)
Front Glass	2.0mm, Anti-Reflection Coating
Back Glass	2.0mm, Heat Strengthened Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68 Rated
Output Cables	TUV 1×4.0mm² (+): 400mm , (-): 200mm or Customized Length

SPECIFICATIONS

Module Type	JKM560N-72HL4-BDV		JKM565N-72HL4-BDV		JKM570N-72HL4-BDV		JKM575N-72HL4-BDV		JKM580N-72HL4-BDV	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax)	560Wp	421Wp	565Wp	425Wp	570Wp	429Wp	575Wp	432Wp	580Wp	436Wp
Maximum Power Voltage (Vmp)	41.95V	39.39V	42.14V	39.52V	42.29V	39.65V	42.44V	39.78V	42.59V	39.87V
Maximum Power Current (Imp)	13.35A	10.69A	13.41A	10.75A	13.48A	10.81A	13.55A	10.87A	13.62A	10.94A
Open-circuit Voltage (Voc)	50.67V	48.13V	50.87V	48.32V	51.07V	48.51V	51.27V	48.70V	51.47V	48.89V
Short-circuit Current (Isc)	14.13A	11.41A	14.19A	11.46A	14.25A	11.50A	14.31A	11.55A	14.37A	11.60A
Module Efficiency STC (%)	21.68%		21.87%		22.07%		22.26%		22.45%	
Operating Temperature(℃)	-40℃~+85℃									
Maximum system voltage	1500VDC (IEC)									
Maximum series fuse rating	30A									
Power tolerance	0~+3%									
Temperature coefficients of Pmax	-0.30%/℃									
Temperature coefficients of Voc	-0.25%/℃									
Temperature coefficients of Isc	0.046%/℃									
Nominal operating cell temperature (NOCT)	45±2℃									
Refer. Bifacial Factor	80±5%									

BIFACIAL OUTPUT-REARSIDE POWER GAIN

5%	Maximum Power (Pmax)	588Wp	593Wp	599Wp	604Wp	609Wp
	Module Efficiency STC (%)	22.76%	22.97%	23.17%	23.37%	23.57%
15%	Maximum Power (Pmax)	644Wp	650Wp	656Wp	661Wp	667Wp
	Module Efficiency STC (%)	24.93%	25.15%	25.37%	25.60%	25.82%
25%	Maximum Power (Pmax)	700Wp	706Wp	713Wp	719Wp	725Wp
	Module Efficiency STC (%)	27.10%	27.34%	27.58%	27.82%	28.07%

*STC: Irradiance 1000W/m² Cell Temperature 25°C AM=1.5

NOCT: Irradiance 800W/m² Ambient Temperature 20°C AM=1.5 Wind Speed 1m/s

SG350HX-US

Multi-MPPT String Inverter for 1500 Vdc System

HIGH YIELD

- Up to 16 MPPTs with max. efficiency 99%
- 20A per string, compatible with 500Wp+ module
- Data exchange with tracker system, improving yield

LOW COST

- Q at night function, save investment
- Power line communication (PLC)

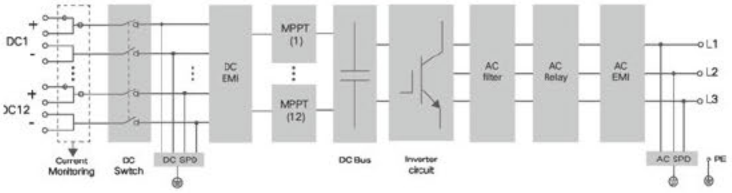
GRID SUPPORT

- SCR≥1.15 stable operation in extremely weak grid
- Reactive power response time <30ms

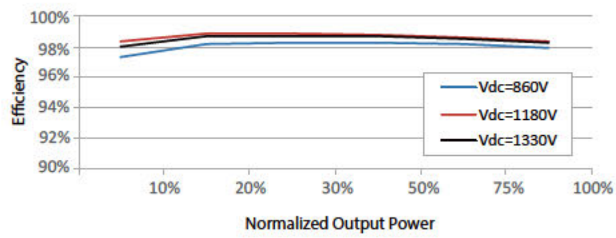
PROVEN SAFETY

- 2 strings per MPPT, no fear of string reverse connection
- 24h real-time AC and DC insulation monitoring

CIRCUIT DIAGRAM



EFFICIENCY CURVE



SUNGROW
Clean power for all

Type designation	SG350HX-US
Input (DC)	
Max. PV input voltage	1500 V
Min. PV input voltage / Startup input voltage	500 V / 550 V
Nominal PV input voltage	1180 V
MPP voltage range	500 V – 1500 V
Full power MPP voltage range @ 40 ℃	860 V – 1330 V *
No. of independent MPP inputs	12 (Optional : 16)
Max. number of input connector per MPPT	2
Max. PV input current	12 * 40 A (Optional: 16 * 30 A)
Max. DC short-circuit current per MPPT	60 A
Output (AC)	
AC output power	352 kVA @ 30℃ / 320 kVA @ 40 ℃
Max. AC output current	254 A
Nominal AC voltage	3 / PE, 800 V
AC voltage range	704 V – 880 V
Nominal grid frequency / Grid frequency range	60 Hz / 55 Hz – 65 Hz
THD	< 3 % (at nominal power)
DC current injection	< 0.5 % In
Power factor at nominal power / Adjustable power factor	> 0.99 / 0.8 leading – 0.8 lagging
Feed-in phases / Connection phases	3 / 3
Efficiency	
Max. efficiency / CEC efficiency	99.02 % / 98.5 %
Protection	
DC reverse connection protection	Yes
AC short circuit protection	Yes
Leakage current protection	Yes
Grid monitoring	Yes
Ground fault monitoring	Yes
DC switch / AC switch	Yes / No
PV string current monitoring	Yes
Q at night function	Yes
Anti-PID and PID recovery function	Optional (MVS3200-US / MVS4480-US)
Surge protection	DC Type II / AC Type II
General data	
Dimensions (W * H * D)	1165 mm * 870 mm * 361 mm (45.9'' * 34.3'' * 14.2'')
Weight	≤ 122 kg (≤ 269 lbs)
Isolation method	Transformerless
Degree of protection	IP66 (NEMA 4X)
Power consumption at night	< 6 W
Operating ambient temperature range	-30 ℃ – 60 ℃ (-22 ℉ – 140 ℉)
Allowable relative humidity range	0 % – 100 %
Cooling method	Smart forced air cooling
Max. operating altitude	4000 m (> 3000 m derating) / 13123 ft (> 9843 ft derating)
Display	LED, Bluetooth+APP
Communication	RS485 / PLC
DC connection type	MC4 (Max. 10AWG, optional 8AWG)
AC connection type	Support OT / DT terminal (Max. 750 Kcmil)
Compliance	UL 1741, UL 62109-1, CSA C22.2 No.107.1-16, IEEE 1547-2018, IEEE 1547.1-2020, UL 1741 SA/SB, California Rule21, HECO SRD V2.0
Grid Support	Q at night function, LVRT, HVRT,active & reactive power control and power ramp rate control, Q-U control, P-f control

* Full power MPP range is temperature dependent, check the characteristic curve of the inverter for more information.

Exhibit I – Signage

Note: The following signs are examples of signs to be used and do not reflect the entirety or the exact signs that will be used. The Project will ensure all Town signage requirements are met during construction/operations.

	4	Before Office/Laydown Area and before Far West Entrance Each way
	4	All gates
		
	1	
	1	
	2	At each gate
	3	At each Gate

	4	At each gate
	3	At each gate
	4	All gates
	1	Office
	1	
	4	All gates
	2	Office

Exhibit J – Road Use Agreement and Town of Cortland Driveway Permit

NOTE: This agreement and permit are not included with this application, as it is to be completed in conjunction with the building permit.

Exhibit K – ComEd Interconnection Agreement

Section 466.APPENDIX D Levels 1 to 4 Contract

STANDARD AGREEMENT FOR INTERCONNECTION OF DISTRIBUTED ENERGY RESOURCES FACILITIES WITH A CAPACITY LESS THAN OR EQUAL TO 10 MVA

This agreement (together with all attachments, the "Agreement") is made and entered into this ________________ day of __________________, by and betweenAPEX IL DER, LLC ("interconnection customer"), as a Limited Liability Company organized and existing under the laws of the State of Delaware and Commonwealth Edison Company, ("Electric Distribution Company" or "EDC"), a corporation existing under the laws of the State of Illinois. Interconnection customer and EDC each may be referred to as a "Party", or collectively as the "Parties".

Recitals:

Whereas, interconnection customer is proposing to install or direct the installation of a distributed energy (DER) resources or is proposing a generating capacity addition to an existing DER facility, consistent with the interconnection request application form completed by interconnection customer on 12/6/2022; and

Whereas, the interconnection customer will operate and maintain, or cause the operation and maintenance of, the DER facility; and

Whereas, interconnection customer desires to interconnect the DER facility with EDC's electric distribution system.

Now, therefore, in consideration of the premises and mutual covenants set forth in this Agreement, and other good and valuable consideration, the receipt, sufficiency and adequacy of which are hereby acknowledged, the Parties covenant and agree as follows:

Article 1. Scope and Limitations of Agreement

1.1 This Agreement shall be used for all approved interconnection requests for DER facilities that fall under Levels 2, 3 and 4 according to the procedures set forth in Part 466 of the Commission's rules (83 Ill. Adm. Code 466) (referred to as the Illinois Distributed Energy Resources Interconnection Standard).

1.2 This Agreement governs the terms and conditions under which the DER facility will interconnect to, and operate in parallel with, the EDC's electric distribution system.

1.3 This Agreement does not constitute an agreement to purchase or deliver the interconnection customer's power.

1.4 Nothing in this Agreement is intended to affect any other agreement between the EDC and the interconnection customer.

1.5 Terms used in this agreement are defined as in Section 466.30 of the Illinois Distributed Generation Interconnection Standard unless otherwise noted.

1.6 Responsibilities of the Parties

1.6.1 The Parties shall perform all obligations of this Agreement in accordance with all applicable laws and regulations.

1.6.2 The EDC shall construct, own, operate, and maintain its interconnection facilities in accordance with this Agreement.

1.6.3 The interconnection customer shall construct, own, operate, and maintain its DER facility and interconnection facilities in accordance with this Agreement.

1.6.4 Each Party shall operate, maintain, repair, and inspect, and shall be fully responsible for, the facilities that it now or subsequently may own unless otherwise specified in the attachments to this Agreement. Each Party shall be responsible for the safe installation, maintenance, repair and condition of its respective lines and appurtenances on its respective sides of the point of interconnection.

1.6.5 The interconnection customer agrees to design, install, maintain and operate its DER facility so as to minimize the likelihood of causing an adverse system impact on the electric distribution system or any other electric system that is not owned or operated by the EDC.

1.7 Parallel Operation Obligations
Once the DER facility has been authorized to commence parallel operation, the interconnection customer shall abide by all operating procedures established in IEEE Standard 1547 and any other applicable laws, statutes or guidelines, including those specified in Attachment 4 of this Agreement.

1.8 Metering
The interconnection customer shall be responsible for the cost to purchase, install, operate, maintain, test, repair, and replace metering and data acquisition equipment specified in Attachments 5 and 6 of this Agreement.

1.9 Reactive Power

1.9.1 Interconnection customers with a DER facility larger than or equal to 1 MVA shall design their DER facilities to maintain a power factor at the point of interconnection between .95 lagging and .95 leading at all times. Interconnection customers with a DER facility smaller than 1 MVA shall design their DER facility to maintain a power factor at the point of interconnection between .90 lagging and .90 leading at all times.

1.9.2 Any EDC requirements for meeting a specific voltage or specific reactive power schedule as a condition for interconnection shall be clearly specified in Attachment 4. Under no circumstance shall the EDC's additional requirements for voltage or reactive power schedules exceed the normal operating capabilities of the DER facility.

1.9.3 If the interconnection customer does not operate the DER facility within the power factor range specified in Attachment 4, or does not operate the distribute generation facility in accordance with a voltage or reactive power schedule specified in Attachment 4, the interconnection customer is in default under this Agreement, and the terms of Article 6.5 apply.

1.10 Standards of Operations

The interconnection customer must obtain all certifications, permits, licenses and approvals necessary to construct, operate and maintain the facility and to perform its obligations under this Agreement. The interconnection customer is responsible for coordinating and synchronizing the DER facility with the EDC's system. The interconnection customer is responsible for any damage that is caused by the interconnection customer's failure to coordinate or synchronize the DER facility with the electric distribution system. The interconnection customer agrees to be primarily liable for any damages resulting from the continued operation of the DER facility after the EDC ceases to energize the line section to which the DER facility is connected. In Attachment 4, the EDC shall specify the shortest reclose time setting for its protection equipment that could affect the DER facility. The EDC shall notify the interconnection customer at least 10 business days prior to adopting a faster reclose time on any automatic protective equipment, such as a circuit breaker or line recloser, that might affect the DER facility.

Article 2. Inspection, Testing, Authorization, and Right of Access

2.1 Equipment Testing and Inspection

The interconnection customer shall test and inspect its DER facility including the interconnection equipment prior to interconnection in accordance with IEEE Standard 1547 (2003) and IEEE Standard 1547.1 (2005). The interconnection customer shall not operate its DER facility in parallel with the EDC's electric distribution system without prior written authorization by the EDC as provided for in Articles 2.1.1-2.1.3.

2.1.1 The EDC shall perform a witness test after construction of the DER facility is completed, but before parallel operation, unless the EDC specifically waives the witness test. The interconnection customer shall provide the EDC at least 15 business days’ notice of the planned commissioning test for the DER facility. If the EDC performs a witness test at a time that is not concurrent with the commissioning test, it shall contact the interconnection customer to schedule the witness test at a mutually agreeable time within 10 business days after the scheduled commissioning test designated on the application. If the EDC does not perform the witness test within 10 business days after the commissioning test, the witness test is deemed waived unless the Parties mutually agree to extend the date for scheduling the witness test, or unless the EDC cannot do so for good cause, in which case, the Parties shall agree to another date for scheduling the test within 10 business days after the original scheduled date. If the witness test is not acceptable to the EDC, the EDC shall deliver in writing a detailed technical description of all deficiencies of the DER facility identified by the EDC during the witness test. The interconnection customer has 30 business days after receipt of the written description to address and resolve any deficiencies. This time period may be extended upon agreement between the EDC and the interconnection customer. If the interconnection customer fails to address and resolve the deficiencies to the satisfaction of the EDC, the applicable cure provisions of Article 6.5 shall apply. The interconnection customer shall, if requested by the EDC, provide a copy of all documentation in its possession regarding testing conducted pursuant to IEEE Standard 1547.1.

2.1.2 If the interconnection customer conducts interim testing of the DER facility prior to the witness test, the interconnection customer shall obtain permission from the EDC before each occurrence of operating the DER facility in parallel with the electric distribution system. The EDC may, at its own expense, send qualified personnel to the DER facility to observe such interim testing, but it cannot mandate that these tests be considered in the final witness test. The EDC is not required to observe the interim testing or precluded from requiring the tests be repeated at the final witness test. During and leading up to the witness test, the EDC shall not limit the interconnection customer’s ability to test the DER facility during normal working hours except for safety and reliability reasons.

2.1.3 After the DER facility passes the witness test, the EDC shall affix an authorized signature to the certificate of completion and return it to the interconnection customer approving the interconnection and authorizing parallel operation. The authorization shall not be conditioned or delayed and the EDC shall return the signed certificate of completion to interconnection customer no more than 10 business days after the date that the DER facility passes the witness test.

2.2 Commercial Operation
The interconnection customer shall not operate the DER facility, except for interim testing as provided in Article 2.1, until such time as the certificate of completion is signed by all Parties.

2.3 Right of Access
The EDC must have access to the disconnect switch and metering equipment of the DER facility at all times. When practical, the EDC shall provide notice to the interconnection customer prior to using its right of access.

Article 3. Effective Date, Term, Termination, and Disconnection

3.1 Effective Date
This Agreement shall become effective upon execution by all Parties.

3.2 Term of Agreement
This Agreement shall become effective on the effective date and shall remain in effect unless terminated in accordance with Article 3.3 of this Agreement.

3.3 Termination

3.3.1 The interconnection customer may terminate this Agreement at any time by giving the EDC 30 calendar days prior written notice.

3.3.2 Either Party may terminate this Agreement after default pursuant to Article 6.5.

3.3.3 The EDC may terminate, upon 60 calendar days' prior written notice, for failure of the interconnection customer to complete construction of the DER facility within 12 months after the in-service date as specified by the Parties in Attachment 2, which may be extended by agreement between the Parties.

3.3.4 The EDC may terminate this Agreement, upon 60 calendar days' prior written notice, if the interconnection customer has abandoned, cancelled, permanently disconnected or stopped development, construction, or operation of the DER facility, or if the interconnection customer fails to operate the DER facility in parallel with the EDC's electric system for three consecutive years.

3.3.5 Upon termination of this Agreement, the DER facility will be disconnected from the EDC's electric distribution system. Terminating this Agreement does not relieve either Party of its liabilities and obligations that are owed or continuing when the Agreement is terminated.

3.3.6 If the Agreement is terminated, the interconnection customer loses its position in the interconnection queue.

3.4 Temporary Disconnection
A Party may temporarily disconnect the DER facility from the electric distribution system in the event one or more of the following conditions or events occurs:

3.4.1 Emergency conditions – shall mean any condition or situation: (1) that in the judgment of the Party making the claim is likely to endanger life or property; or (2) that the EDC determines is likely to cause an adverse system impact, or is likely to have a material adverse effect on the EDC's electric distribution system, interconnection facilities or other facilities, or is likely to interrupt or materially interfere with the provision of electric utility service to other customers; or (3) that is likely to cause a material adverse effect on the DER facility or the interconnection equipment. Under emergency conditions, the EDC or the interconnection customer may suspend interconnection service and temporarily disconnect the DER facility from the electric distribution system. The EDC must notify the interconnection customer when it becomes aware of any conditions that might affect the interconnection customer's operation of the DER facility. The interconnection customer shall notify the EDC when it becomes aware of any condition that might affect the EDC's electric distribution system. To the extent information is known, the notification shall describe the condition, the extent of the damage or deficiency, the expected effect on the operation of both Parties' facilities and operations, its anticipated duration, and the necessary corrective action.

3.4.2 Scheduled maintenance, construction, or repair – the EDC may interrupt interconnection service or curtail the output of the DER facility and temporarily disconnect the DER facility from the EDC's electric distribution system when necessary for scheduled maintenance, construction, or repairs on EDC's electric distribution system. The EDC shall provide the interconnection customer with notice no less than 5 business days before an interruption due to scheduled maintenance, construction, or repair, or the EDC shall provide notice immediately if the scheduled maintenance, construction, or repair is scheduled less than 5 business days in advance. The EDC shall coordinate the reduction or temporary disconnection with the interconnection customer; however, the interconnection customer is responsible for out-of-pocket costs incurred by the EDC for deferring or rescheduling maintenance, construction or repair at the interconnection customer's request.

3.4.3 Forced outages – The EDC may suspend interconnection service to repair the EDC's electric distribution system. The EDC shall provide the interconnection customer with prior notice, if possible. If prior notice is not possible, the EDC shall, upon written request, provide the interconnection customer with written documentation, after the fact, explaining the circumstances of the disconnection.

3.4.4 Adverse system impact – the EDC must provide the interconnection customer with written notice of its intention to disconnect the DER facility, if the EDC determines that operation of the DER facility creates an adverse system impact. The documentation that supports the EDC's decision to disconnect must be provided to the interconnection customer. The EDC may disconnect the DER facility if, after receipt of the notice, the interconnection customer fails to remedy the adverse system impact, unless emergency conditions exist, in which case, the provisions of Article 3.4.1 apply. The EDC may continue to leave the generating facility disconnected until the adverse system impact is corrected.

3.4.5 Modification of the DER facility – The interconnection customer must receive written authorization from the EDC prior to making any change to the DER facility, other than a minor equipment modification. If the interconnection customer modifies its facility without the EDC's prior written authorization, the EDC has the right to disconnect the DER facility until such time as the EDC concludes the modification poses no threat to the safety or reliability of its electric distribution system.

3.4.6 The EDC’s compliance with Article 3 shall preclude any claim for damage for any lost opportunity or other costs incurred by the interconnection customer as a result of an interruption of service under Article 3. Any dispute over whether the EDC complied with Article 3 shall be resolved in accordance with the dispute resolution mechanism set forth in Article 8.

Article 4. Cost Responsibility for Interconnection Facilities and Distribution Upgrades

4.1 Interconnection Facilities

4.1.1 The interconnection customer shall pay, or reimburse the EDC, as applicable, for the cost of the interconnection facilities itemized in Attachment 3. The EDC shall identify the additional interconnection facilities necessary to interconnect the DER facility with the EDC's electric distribution system, the cost of those facilities, and the time required to build and install those facilities, as well as an estimated date of completion of the building or installation of those facilities.

4.1.2 The interconnection customer is responsible for its expenses, including overheads, associated with owning, operating, maintaining, repairing, and replacing its interconnection equipment.

4.2 Distribution Upgrades
The EDC shall design, procure, construct, install, and own any distribution upgrades. The actual cost of the distribution upgrades, including overheads, shall be directly assigned to the interconnection customer whose DER facility caused the need for the distribution upgrades.

Article 5. Billing, Payment, Milestones, and Financial Security

5.1 Billing and Payment Procedures and Final Accounting (Applies to additional reviews conducted under a Level 1, 2 or 3 review with EDC construction necessary for accommodating the DER facility and Level 4 reviews)

5.1.1 The EDC shall bill the interconnection customer for the design, engineering, construction, and procurement costs of EDC-provided interconnection facilities and distribution upgrades contemplated by this Agreement as set forth in Attachment 3. The billing shall occur on a monthly basis, or as otherwise agreed to between the Parties. The interconnection customer shall pay each bill within 30 calendar days after receipt, or as otherwise agreed to between the Parties.

5.1.2 Unless waived by the interconnection customer, within 90 calendar days after completing the construction and installation of the EDC's interconnection facilities and distribution upgrades described in Attachments 2 and 3 to this Agreement, the EDC shall provide the interconnection customer with a final accounting report of any difference between (1) the actual cost incurred to complete the construction and installation of the EDC's interconnection facilities and distribution upgrades; and (2) the interconnection customer's previous deposit and aggregate payments to the EDC for the interconnection facilities and distribution upgrades. If the interconnection customer's cost responsibility exceeds its previous deposit and aggregate payments, the EDC shall invoice the interconnection customer for the amount due and the interconnection customer shall pay the EDC within 30 calendar days. If the interconnection customer's previous deposit and aggregate payments exceed its cost responsibility under this Agreement, the EDC shall refund to the interconnection customer an amount equal to the difference within 30 calendar days after the final accounting report. Upon request from the interconnection customer, if the difference between the budget estimate and the actual cost exceeds 20%, the EDC will provide a written explanation for the difference.

5.1.3 If a Party disputes any portion of its payment obligation pursuant to this Article 5, the Party shall pay in a timely manner all non-disputed portions of its invoice, and the disputed amount shall be resolved pursuant to the dispute resolution provisions contained in Article 8. A Party disputing a portion of an Article 5 payment shall not be considered to be in default of its obligations under this Article.

5.2 Interconnection Customer Deposit
Within 15 business days after signing and returning the interconnection agreement to the EDC, the interconnection customer shall provide the EDC with a deposit equal to 100% of the estimated, non-binding cost to procure, install, or construct any such facilities (the "Security Deposit"). However, when the estimated date of completion of the building or installation of facilities exceeds three months from the date of notification, pursuant to Article 4.1.1 of this Agreement, this deposit may be held in escrow by a mutually agreed-

upon third-party, with any interest to inure to the benefit of the interconnection customer. To the extent that this interconnection agreement is terminated for any reason, the EDC shall return all deposits provided by the interconnection customer, less any actual costs incurred by the EDC.

Article 6. Assignment, Limitation on Damages, Indemnity, Force Majeure, and Default

6.1 Assignment

This Agreement may be assigned by either Party. If the interconnection customer attempts to assign this Agreement, the assignee must agree to the terms of this Agreement in writing and such writing must be provided to the EDC. Any attempted assignment that violates this Article is void and ineffective. Assignment shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason of the assignment. An assignee is responsible for meeting the same obligations as the assignor.

6.1.1 Either Party may assign this Agreement without the consent of the other Party to any affiliate (including mergers, consolidations, or transfers, or a sale of a substantial portion of the Party's assets, between the Party and another entity), of the assigning Party that has an equal or greater credit rating and the legal authority and operational ability to satisfy the obligations of the assigning Party under this Agreement.

6.1.2 The interconnection customer can assign this Agreement, without the consent of the EDC, for collateral security purposes to aid in providing financing for the DER facility.

6.2 Limitation on Damages

Except for cases of gross negligence or willful misconduct, the liability of any Party to this Agreement shall be limited to direct actual damages and reasonable attorney's fees, and all other damages at law are waived. Under no circumstances, except for cases of gross negligence or willful misconduct, shall any Party or its directors, officers, employees and agents, or any of them, be liable to another Party, whether in tort, contract or other basis in law or equity for any special, indirect, punitive, exemplary or consequential damages, including lost profits, lost revenues, replacement power, cost of capital or replacement equipment. This limitation on damages shall not affect any Party's rights to obtain equitable relief, including specific performance, as otherwise provided in this Agreement. The provisions of this Article 6.2 shall survive the termination or expiration of the Agreement.

6.3 Indemnity

6.3.1 This provision protects each Party from liability incurred to third parties as a result of carrying out the provisions of this Agreement. Liability under this provision is exempt from the general limitations on liability found in Article 6.2.

6.3.2 The interconnection customer shall indemnify and defend the EDC and the EDC's directors, officers, employees, and agents, from all damages and expenses resulting from a third party claim arising out of or based upon the interconnection customer's (a) negligence or willful misconduct or (b) breach of this Agreement.

6.3.3 The EDC shall indemnify and defend the interconnection customer and the interconnection customer's directors, officers, employees, and agents from all damages and expenses resulting from a third party claim arising out of or based upon the EDC's (a) negligence or willful misconduct or (b) breach of this Agreement.

6.3.4 Within 5 business days after receipt by an indemnified Party of any claim or notice that an action or administrative or legal proceeding or investigation as to which the indemnity provided for in this Article may apply has commenced, the indemnified Party shall notify the indemnifying Party of such fact. The failure to notify, or a delay in notification, shall not affect a Party's indemnification obligation unless that failure or delay is materially prejudicial to the indemnifying Party.

6.3.5 If an indemnified Party is entitled to indemnification under this Article as a result of a claim by a third party, and the indemnifying Party fails, after notice and reasonable opportunity to proceed under this Article, to assume the defense of such claim, that indemnified Party may, at the expense of the indemnifying Party, contest, settle or consent to the entry of any judgment with respect to, or pay in full, the claim.

6.3.6 If an indemnifying Party is obligated to indemnify and hold any indemnified Party harmless under this Article, the amount owing to the indemnified person shall be the amount of the indemnified Party's actual loss, net of any insurance or other recovery.

6.4 Force Majeure

6.4.1 As used in this Article, a force majeure event shall mean any act of God, labor disturbance, act of the public enemy, war, acts of terrorism, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment through no direct, indirect, or contributory act of a Party, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party's control. A force majeure event does not include an act of gross negligence or intentional wrongdoing by the Party claiming force majeure.

6.4.2 If a force majeure event prevents a Party from fulfilling any obligations under this Agreement, the Party affected by the force majeure event ("Affected Party") shall notify the other Party of the existence of the force majeure event within one business day. The notification must specify the circumstances of the force majeure event, its expected duration, and the steps that the Affected Party is taking and will take to mitigate the effects of the event on its performance. If the initial notification is verbal, it must be followed up with a written notification within one business day. The Affected Party shall keep the other Party informed on a continuing basis of developments relating to the force majeure event until the event ends. The Affected Party may suspend or modify its obligations under this Agreement (other than the obligation to make payments) only to the extent that the effect of the force majeure event cannot be otherwise mitigated.

6.5 Default

6.5.1 No default shall exist when the failure to discharge an obligation (other than the payment of money) results from a force majeure event as defined in this Agreement, or the result of an act or omission of the other Party.

6.5.2 A Party shall be in default ("Default") of this Agreement if it fails in any material respect to comply with, observe or perform, or defaults in the performance of, any covenant or obligation under this Agreement and fails to cure the failure within 60 calendar days after receiving written notice from the other Party. Upon a default of this Agreement, the non-defaulting Party shall give written notice of the default to the defaulting Party. Except as provided in Article 6.5.3, the defaulting Party has 60 calendar days after receipt of the default notice to cure the default; provided, however, if the default cannot be cured within 60 calendar days, the defaulting Party shall commence the cure within 20 calendar days after original notice and complete the cure within six months from receipt of the default notice; and, if cured within that time, the default specified in the notice shall cease to exist.

6.5.3 If a Party has assigned this Agreement in a manner that is not specifically authorized by Article 6.1, fails to provide reasonable access pursuant to Article 2.3, and is in default of its obligations pursuant to Article 7, or if a Party is in default of its payment obligations pursuant to Article 5 of this Agreement, the defaulting Party has 30 days from receipt of the default notice to cure the default.

6.5.4 If a default is not cured as provided for in this Article, or if a default is not capable of being cured within the period provided for in this Article, the non-defaulting Party shall have the right to terminate this Agreement by written notice, and be relieved of any further obligation under this Agreement and, whether or not that Party terminates this Agreement, to recover from the defaulting Party all amounts due under this Agreement, plus all other damages and remedies to which it is entitled at law or in equity. The provisions of this Article shall survive termination of this Agreement.

<u>Article 7.</u> Insurance

For DER facilities with a nameplate capacity of 1 MVA or above, the interconnection customer shall carry sufficient insurance coverage so that the maximum comprehensive/general liability coverage that is continuously maintained by the interconnection customer during the term shall be not less than $2,000,000 for each occurrence, and an aggregate, if any, of at least $4,000,000. The EDC, its officers, employees and agents shall be added as an additional insured on this policy. The interconnection customer agrees to provide the EDC with at least 30 calendar days advance written notice of cancellation, reduction in limits, or non-renewal of any insurance policy required by this Article.

<u>Article 8.</u> Dispute Resolution

8.1 Parties shall attempt to resolve all disputes regarding interconnection as provided in this Article in a good faith manner.

8.2 If there is a dispute between the Parties about implementation or an interpretation of the Agreement, the aggrieved Party shall issue a written notice to the other Party to the agreement that specifies the dispute and the Agreement articles that are disputed.

8.3 A meeting between the Parties shall be held within 10 days after receipt of the written notice. Persons with decision-making authority from each Party shall attend the meeting. If the dispute involves technical issues, persons with sufficient technical expertise and familiarity with the issue in dispute from each Party shall also attend the meeting. The meeting may be conducted by teleconference. The informal process between the parties shall extend 30 days after the receipt of written notice, after which the dispute is deemed resolved and the timeframes for decisions within the interconnection process procedures described in Article 8.4 or files a formal complaint at the Commission prior to the end of the 30-day period.

8.4 If the parties are unable to resolve the dispute through the process outlined in Article 8.3, either party may submit the interconnection dispute to an Ombudsman for non-binding arbitration. The party electing non-binding arbitration shall notify the other party of the request in writing. The non-binding arbitration process is limited to 60 days, absent mutual agreement of the parties and the Ombudsman to a longer period.

8.5 Each party shall bear its own fees, costs and expenses and an equal share of the expenses of the non-binding arbitration.

8.6 Within 10 days after the conclusion of the procedures in Article 8.4, either party may initiate a formal complaint with the Commission and ask for an expedited resolution of the dispute. If the complaint seeks expedited resolution, any written recommendation of the Ombudsman shall be appended to the complaint. The formal complaint shall proceed as a contested hearing pursuant to the Commission's Rules of Practice.

8.7 A party may, after good faith negotiations have failed, decline to pursue non-binding arbitration and instead initiate a formal complaint with the Commission. The formal complaint shall proceed as a contested hearing pursuant to the Commission's Rules of Practice.

8.8 Pursuit of dispute resolution may not affect an interconnection request or an interconnection applicant's position in the EDC's interconnection queue.

8.9 If the Parties fail to resolve their dispute under the dispute resolution provisions of this Article, nothing in this Article shall affect any Party's rights to obtain equitable relief, including specific performance, as otherwise provided in this Agreement.

Article 9. **Miscellaneous**

9.1 Governing Law, Regulatory Authority, and Rules
The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of Illinois, without regard to its conflicts of law principles. This Agreement is subject to all applicable laws and regulations. Each Party expressly reserves the right to seek change in, appeal, or otherwise contest any laws, orders or regulations of a governmental authority. The language in all parts of this Agreement shall in all cases be construed as a whole, according to its fair meaning, and not strictly for or against the EDC or interconnection customer, regardless of the involvement of either Party in drafting this Agreement.

9.2 Amendment
Modification of this Agreement shall be only by a written instrument duly executed by both Parties.

9.3 No Third-Party Beneficiaries
This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations in this Agreement assumed are solely for the use and benefit of the Parties, their successors in interest and, where permitted, their assigns.

9.4 Waiver

9.4.1 Except as otherwise provided in this Agreement, a Party's compliance with any obligation, covenant, agreement, or condition in this Agreement may be waived by the Party entitled to the benefits thereof only by a written instrument signed by the Party granting the waiver, but the waiver or failure to insist upon strict compliance with the obligation, covenant, agreement, or condition shall not operate as a waiver of, or estoppel with respect to, any subsequent or other failure.

9.4.2. Failure of any Party to enforce or insist upon compliance with any of the terms or conditions of this Agreement, or to give notice or declare this Agreement or the rights under this Agreement terminated, shall not constitute a waiver or relinquishment of any rights set out in this Agreement, but the same shall be and remain at all times in full force and effect, unless and only to the extent expressly set forth in a written document signed by that Party granting the waiver or relinquishing any such rights. Any waiver granted, or relinquishment of any right, by a Party shall not operate as a relinquishment of any other rights or a waiver of any other failure of the Party granted the waiver to comply with any obligation, covenant, agreement, or condition of this Agreement.

9.5 Entire Agreement

Except as provided in Article 9.1, this Agreement, including all attachments, constitutes the entire Agreement between the Parties with reference to the subject matter of this Agreement, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Agreement. There are no other agreements, representations, warranties, or covenants that constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this Agreement.

9.6 Multiple Counterparts

This Agreement may be executed in two or more counterparts, each of which is deemed an original, but all constitute one and the same instrument.

9.7 No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties, or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

9.8 Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other governmental authority, (1) that portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by the ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

9.9 Environmental Releases

Each Party shall notify the other Party of the release of any hazardous substances, any asbestos or lead abatement activities, or any type of remediation activities related to the DER facility or the interconnection facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall (1) provide the notice as soon as practicable, provided that Party makes a good faith effort to provide the notice no later than 24 hours after that Party becomes aware of the occurrence, and (2) promptly furnish to the other Party copies of any publicly available reports filed with any governmental authorities addressing such events.

9.10 Subcontractors

Nothing in this Agreement shall prevent a Party from using the services of any subcontractor it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing services and each Party shall remain primarily liable to the other Party for the performance of the subcontractor.

9.10.1 A subcontract relationship does not relieve any Party of any of its obligations under this Agreement. The hiring Party remains responsible to the other Party for the acts or omissions of its subcontractor. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of the hiring Party.

9.10.2 The obligations under this Article cannot be limited in any way by any limitation of subcontractor's insurance.

Article 10. Notices

10.1 General

Unless otherwise provided in this Agreement, any written notice, demand, or request required or authorized in connection with this Agreement ("Notice") shall be deemed properly given if delivered in person, delivered by recognized national courier service, or sent by first class mail, postage prepaid, to the person specified below:

If to Interconnection Customer:

Interconnection Customer: APEX IL DER, LLC

Attention:

Address: [redacted]

City: [redacted] State: [redacted] Zip: [redacted]

Phone: [redacted] Fax: E-Mail: [redacted]

If to EDC:

EDC: Commonwealth Edison Company

Attention: DER Interconnection

Address: 2 Lincoln Center

City: Oakbrook Terrace State: IL Zip: 60181

Phone: 630-576-8158 E-Mail: interconnect@comed.com

Alternative Forms of Notice

Any notice or request required or permitted to be given by either Party to the other Party and not required by this Agreement to be in writing may be given by telephone, facsimile or e-mail to the telephone numbers and e-mail addresses set out above.

10.2 Billing and Payment

Billings and payments shall be sent to the addresses set out below:

If to Interconnection Customer

Interconnection Customer: APEX IL DER, LLC

Attention:

Address: [redacted]

City: [redacted] State: [redacted] Zip: [redacted]

[redacted]

Phone [redacted] Fax Email [redacted]

If to EDC:

EDC: Commonwealth Edison

Attention: DER Interconnection

Address: 2 Lincoln Center

City: Oakbrook Terrace State: IL Zip: 60181

Phone Fax E-Mail

10.3 Designated Operating Representative

The Parties may also designate operating representatives to conduct the communications that may be necessary or convenient for the administration of this Agreement. This person will also serve as the point of contact with respect to operations and maintenance of the Party's facilities.

Interconnection Customer's Operating Representative:

Attention:

Address: [redacted]

City: [redacted] State: [redacted] Zip:

Phone: Fax: Email: [redacted]

Phone Fax E-Mail

EDC's Operating Representative: Commonwealth Edison Company

Attention: Customer Operations

Address: ComEd - 2 Lincoln Center – Call Center

City: Oakbrook State: IL Zip: 60181

Phone 1-800-334-7661 Fax E-Mail

10.4 Changes to the Notice Information

Either Party may change this notice information by giving five business days written notice before the effective date of the change.

Article 11. Signatures

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized representatives.

Project Name: Grand Parade Solar

For the Interconnection Customer:

Name: ______________________

Title: CEO of the Sole Member of the Sole Member of the Interconnection Customer

Date: September 21, 2023

For EDC:

Name: ______________________

Title: ______________________

Date: ______________________

Attachment 1

Definitions

Adverse system impact – A negative effect that compromises the safety or reliability of the electric distribution system or materially affects the quality of electric service provided by the electric distribution company (EDC) to other customers.

Applicable laws and regulations – All duly promulgated applicable federal, State and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, or judicial or administrative orders, permits and other duly authorized actions of any governmental authority, having jurisdiction over the Parties.

Commissioning test – Tests applied to a energy resources facility by the applicant after construction is completed to verify that the facility does not create adverse system impacts. At a minimum, the scope of the commissioning tests performed shall include the commissioning test specified by IEEE Standard 1547 Section 5.4 "Commissioning tests."

Distributed energy resources (DER) facility – The equipment used by an interconnection customer to generate or store electricity that operates in parallel with the electric distribution system. A DER facility typically includes an electric generator, prime mover, and the interconnection equipment required to safely interconnect with the electric distribution system or a local electric power system.

Distribution upgrades – A required addition or modification to the EDC's electric distribution system at or beyond the point of interconnection to accommodate the interconnection of a DER facility. Distribution upgrades do not include interconnection facilities.

Electric distribution company or EDC – Any electric utility entity subject to the jurisdiction of the Illinois Commerce Commission.

Electric distribution system – The facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries from interchanges with higher voltage transmission networks that transport bulk power over longer distances. The voltage levels at which electric distribution systems operate differ among areas but generally carry less than 100 kilovolts of electricity. Electric distribution system has the same meaning as the term Area EPS, as defined in 3.1.6.1 of IEEE Standard 1547.

Facilities study – An engineering study conducted by the EDC to determine the required modifications to the EDC's electric distribution system, including the cost and the time required to build and install the modifications, as necessary to accommodate an interconnection request.

Force majeure event – Any act of God, labor disturbance, act of the public enemy, war, acts of terrorism, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment through no direct, indirect, or contributory act of a Party, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party's control. A force majeure event does not include an act of gross negligence or intentional wrongdoing.

Governmental authority – Any federal, State, local or other governmental regulatory or administrative agency, court, commission, department, board, other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that this term does not include the interconnection customer, EDC or any affiliate of either.

IEEE Standard 1547 – The Institute of Electrical and Electronics Engineers, Inc. (IEEE), 3 Park Avenue, New York NY 10016-5997, Standard 1547 (2003), "Standard for Interconnecting Distributed Resources with Electric Power Systems."

IEEE Standard 1547.1 – The IEEE Standard 1547.1 (2005), "Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems."

Illinois standard distributed energy resources Interconnection Rules – The most current version of the procedures for interconnecting distributed energy resources facilities adopted by the Illinois Commerce Commission. See 83 Ill. Adm. Code 466

Interconnection agreement or Agreement – The agreement between the interconnection customer and the EDC. The interconnection agreement governs the connection of the DER facility to the EDC's electric distribution system and the ongoing operation of the DER facility after it is connected to the EDC's electric distribution system.

Interconnection customer – The entity entering into this Agreement for the purpose of interconnecting a DER facility to the EDC's electric distribution system.

Interconnection equipment – A group of components or an integrated system connecting an electric generator with a local electric power system or an electric distribution system that includes all interface equipment, including switchgear, protective devices, inverters or other interface devices. Interconnection equipment may be installed as part of an integrated equipment package that includes a generator or other electric source.

Interconnection facilities – Facilities and equipment required by the EDC to accommodate the interconnection of a DER facility. Collectively, interconnection facilities include all facilities, and equipment between the DER facility and the point of interconnection, including modification, additions, or upgrades that are necessary to physically and electrically interconnect the DER facility to the electric distribution system. Interconnection facilities are sole use facilities and do not include distribution upgrades.

Interconnection request – An interconnection customer's request, on the required form, for the interconnection of a new DER facility, or to increase the capacity or change the operating characteristics of an existing DER facility that is interconnected with the EDC's electric distribution system.

Interconnection study – Any of the following studies, as determined to be appropriate by the EDC: the interconnection feasibility study, the interconnection system impact study, and the interconnection facilities study.

Load customer – An EDC customer whose primary business classification is not the production of electricity.

Parallel operation or Parallel – The state of operation that occurs when a DER facility is connected electrically to the electric distribution system.

Point of interconnection – The point where the DER facility is electrically connected to the electric distribution system. Point of interconnection has the same meaning as the term "point of common coupling" defined in 3.1.13 of IEEE Standard 1547.

Witness test – For lab-certified equipment, verification (either by an on-site observation or review of documents) by the EDC that the interconnection installation evaluation required by IEEE Standard 1547 Section 5.3 and the commissioning test required by IEEE Standard 1547 Section 5.4 have been adequately performed. For interconnection equipment that has not been lab-certified, the witness test shall also include verification by the EDC of the on-site design tests required by IEEE Standard 1547 Section 5.1 and verification by the EDC of production tests required by IEEE Standard 1547 Section 5.2. All tests verified by the EDC are to be performed in accordance with the test procedures specified by IEEE Standard 1547.1.

Attachment 2

Construction Schedule, Proposed Equipment & Settings

This attachment is to be completed by the interconnection customer and shall include the following:

1. The construction schedule for the DER facility.

   The proposed construction schedule for the DER facility is identified in Attachment 3, Schedule for Customer Work.

2. A one-line diagram indicating the DER facility, interconnection equipment, interconnection facilities, metering equipment, and distribution upgrades.

3. Component specifications for equipment identified in the one-line diagram.

4. Component settings.

5. Proposed sequence of operations.

6. A three line diagram showing current potential circuits for protective relays.

7. Relay tripping and control schematic diagram.

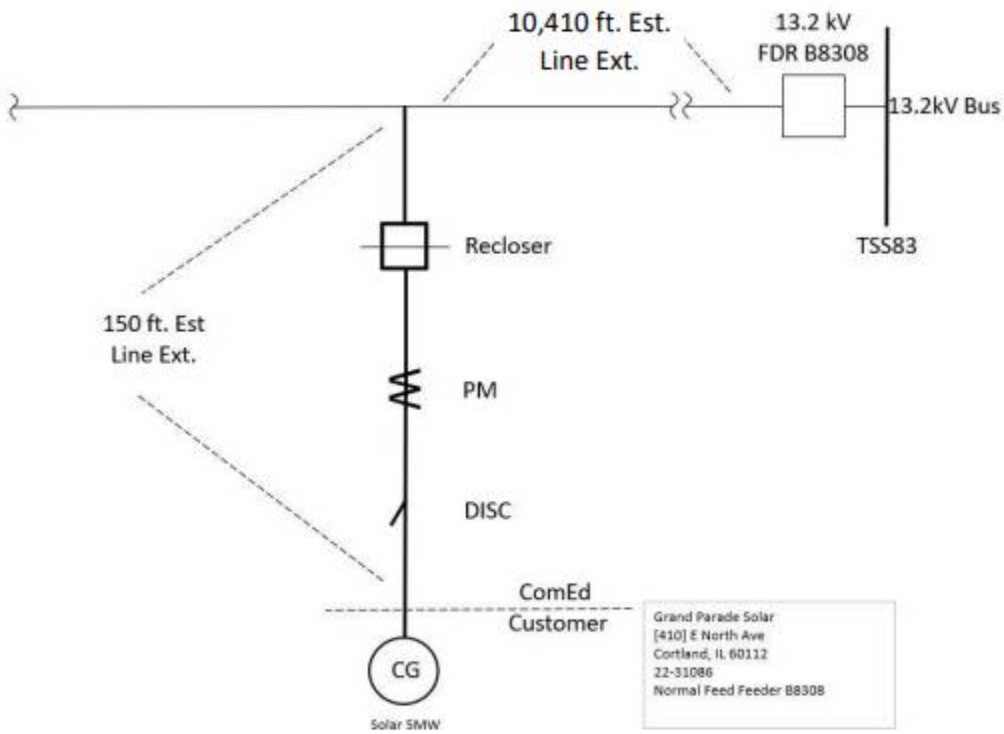


Exhibit L – Drain Tile and Underground Utility Desktop Review


pinion
A DIVISION OF
KCOE ISOM
DIGS
ASSOCIATES
Profitable Results Through Trusted Professionals

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62550
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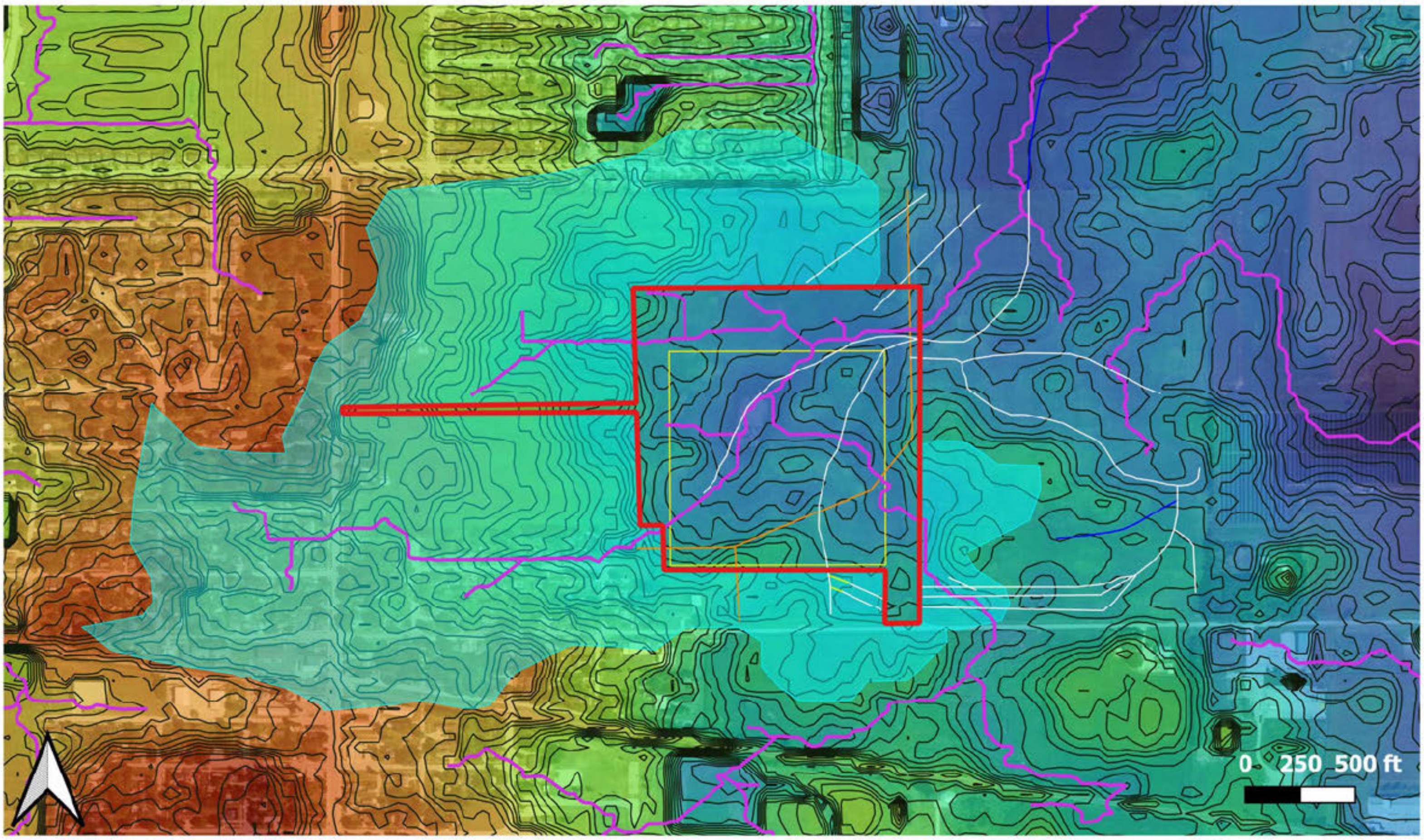
https://www.pinionglobal.com/land-advisory/

APEX Clean Energy - Grand Parade Solar - Summary

During our initial desktop analysis of Grand Parade Solar, we were able to confirm the presence of existing drain tile within the project area. We were provided tile maps which we confirmed the accuracy with the landowner Andra Olson. Andra also provided an additional tile map that showed some additional older clay tile. We also discovered the presence of historical tile through the use of historical aerial imaging. Andra also called out in the provided tile maps that there is a 36" storm sewer line that runs the length of the project boundary.

Through the use of tile maps, historical images, topographical analysis, and predictive analytics we recommend eight exploratory trenching locations. Six locations are areas around the perimeter of the project boundary that either have tile entering or exiting the project boundary or are areas that likely contain drain tile. The two additional exploratory trenching locations inside the array are necessary to confirm the direction of an existing tile. We have also included three locations that we recommend a probe/pothole inspection in order to confirm the depth and location of an existing storm sewer line.

APEX Clean Energy - Grand Parade Solar - Drainage Report



GPS Location: 41.92578248771528, -88.68246678163597,

Legend

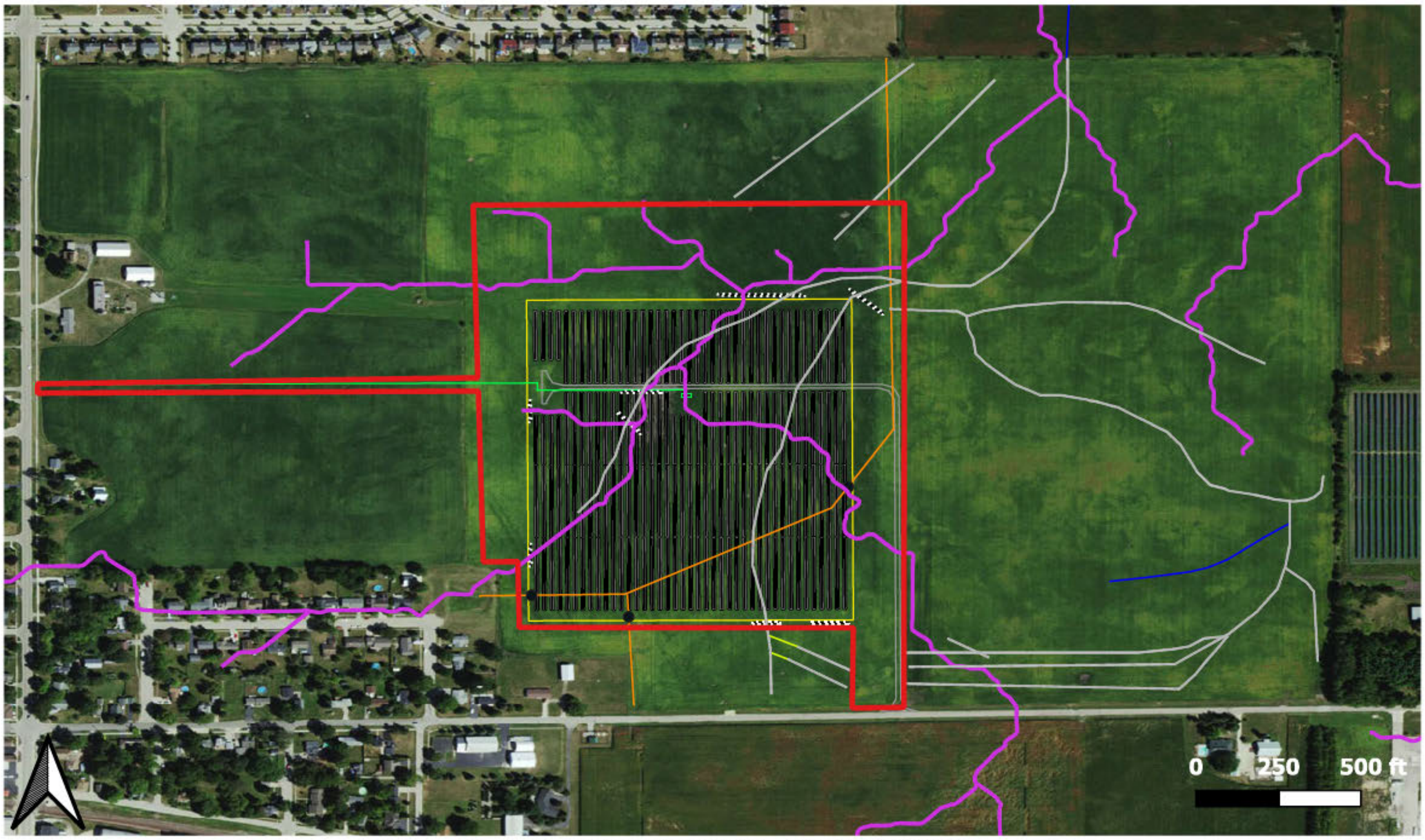
- Project Boundary
- Fence
- Assumed Tile
- Existing Tile
- Historical Research
- Storm Drain
- Predictive Analytics
- Watershed

pinion

DIGS ASSOCIATES

Date Created 10/24/2025

APEX Clean Energy - Grand Parade Solar- Proposed Exploratory Trenching



GPS Location: 37.908567936161546, -88.68079522852484,

Legend

- Project Boundary
- Fence
- Exploratory Path
- Storm Drain Probe Points
- Assumed Tile
- Existing Tile
- Historical Research
- Storm Drain
- Predictive Analytics
- Arrays
- Electrical
- Road

pinion | DIGS ASSOCIATES

Date Created 10/23/2025

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APEX Clean Energy - Grand Parade Solar - Exploratory Trenching Estimate

Date: 10/21/2025

Pricing Estimate Form

This is an industry standard cost estimate

Job Name	Location	Acres
Grand Parade Solar	DeKalb County, IL	52
Client	**Contractor**	**Scope**
APEX Clean Energy	TBD	Ag-Infrastructure

Description	Quantity	Unit	Per Unit Cost	TOTAL
Tile Repair / Existing Connections	12	EA	$800.00	$9,600.00
Mobilization/ Demobilization	1	EA	$4,500.00	$4,500.00
Exploratory Trenching**	955	LF	$11.00	$10,505.00
Exploratory Report***	1	EA	$1,500.00	$1,500.00
Probe/Pothole****	3	EA	$750.00	$2,250.00
			TOTAL	**$28,355.00**
Optional Scope of Work Items (Per Occurrence Costs)				
	Quantity	Unit	Per Unit Cost	TOTAL
Contractor Down Time*	1	HR	$750.00	$750.00
Downtime requires an appoved signature from the contracting party, and includes the striking of foreign objects found in subsoil.				
			TOTAL	**$29,105.00**
Disclaimer: The price quoted is valid for 30 days from the date of this estimate				

Comments

** Exploratory trenching would need to be done prior to installation. This may require two mobilization dates.
*** Exploratory Report: Documentation of existing tile depth, material, size, condition, percent flow restriction due to sedimentation and GPS location. **** Probing/Potholing to confirm location and depth of existing storm sewer

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APEX Clean Energy - Grand Parade Solar - Contact Log

Grand Parade Solar

Name on Plat	Total Acres	Est. Acres in Watershed	Person of Contact	Title	Address	Telephone	Email	Verbal Contact	Comments / Notes
Andra Olson	52	151	Andra Olson	Owner	164 N SOMONAUK RD CORTLAND IL 60112	815-217-4429	andraolson@yahoo.com	Yes	RB - 10/15/2025 - Introduced myself and sent tile map to confirm accuracy. RB - 10/16/2025 - Andra sent over two additional tile maps for the parcel.
Non - Participating Landowners									
TWENTYTHREE51 LLC	15		Eric Carlson	Owner	45W228 TALL PINES RD ELGIN IL 60124	312-479-1975		Yes	RB - 10/20/2025 - Spoke with Eric and he is not aware of any drain tile on his property.
D & K OF DEKALB LLC	80		David Halverson	Owner	16591 SOMONAUK RD DEKALB IL 60115	815-758-6439			RB - 10/20/2025 - Phone number is valid, but there was no answer and the VM box was full.

Persons of Interest	Contact	Title	Telephone	Email	Comments/Notes
Fehr-Graham & Associates, LLC.			217-795-8800		10/23/2025 - Spoke with Fehr-Graham & Associates, LLC. Fehr-Graham confirmed the completion of the Cortland Storm Drain Utility Map, however, directed Pinion to call the town of Cortland to confirm the existence and location of the storm drain in question as it pertains to the ALTA survey.
Town of Cortland	Brandy Williams	Town Engineer	815-756-9041		10/23/2025 - 11am - Called town of Cortland, no answer 3:45pm - Called town of Cortland, no answer 10/24/2025 - Called town of Cortland and spoke with town of Cortland engineer, Brandy Williams. Ms. Williams was not able to provide any definitive answer as to the discrepancies of the location and existence of the recorded storm sewer easement vs the mapping of the storm sewer provided on the Cortland Storm Drain Utility Map
County	DEREK M. HILAND	Community Development (CD) Director	815-895-7188	dhiland@dekalbcounty.org	The Dekalb County website has drainage district maps. This project area is not in a drainage district, but is very close to the Cortland-Pierce #15 Drainage District.

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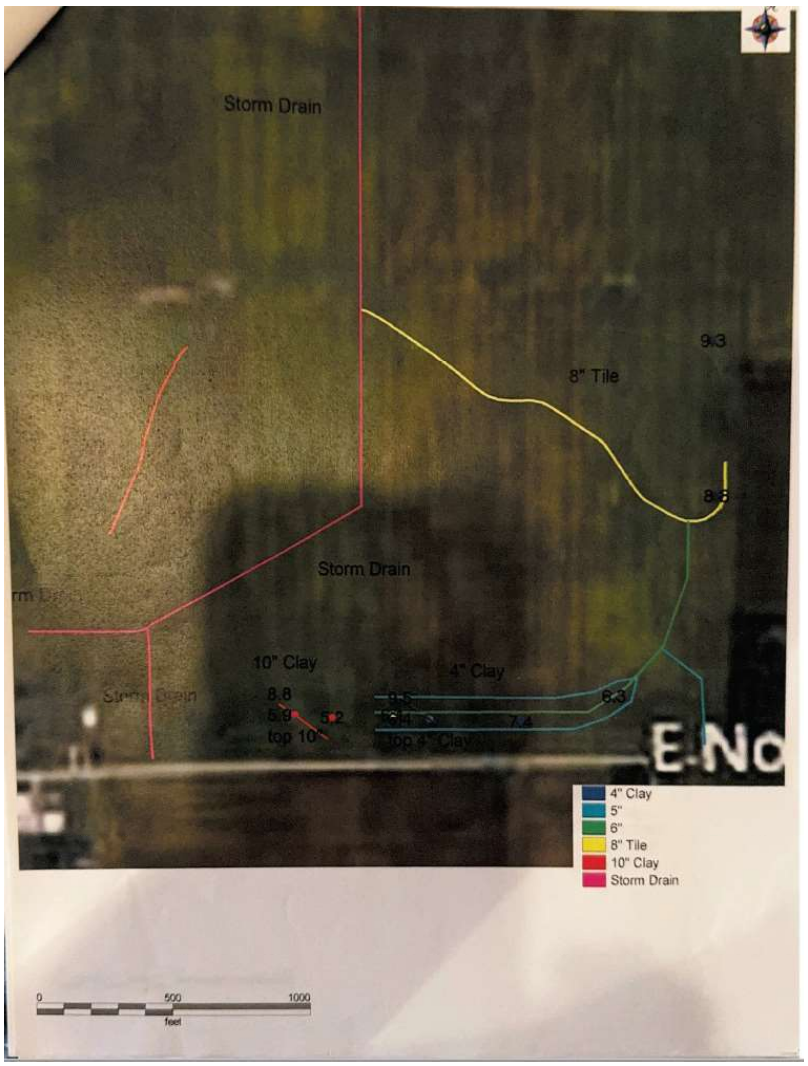
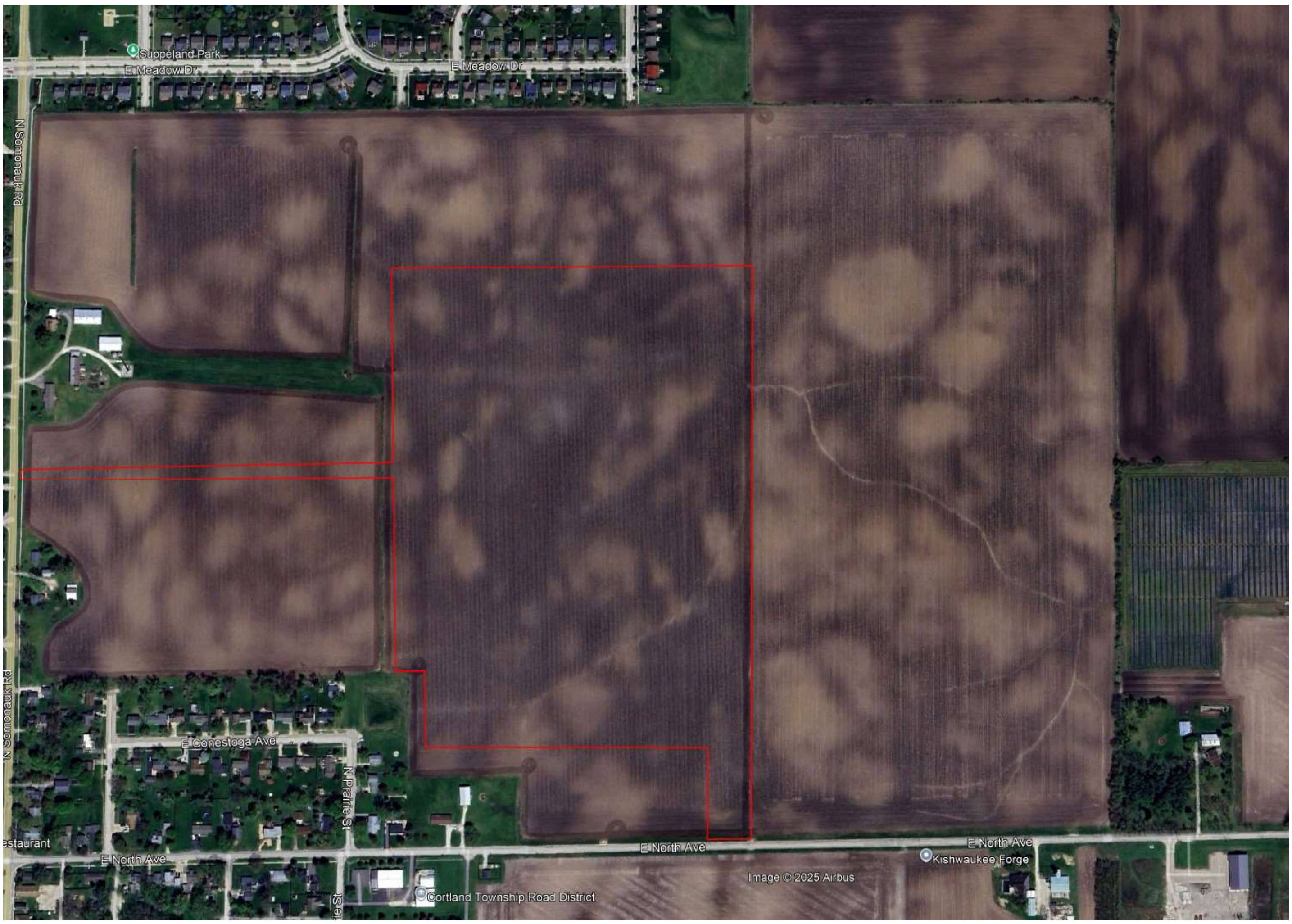
Appendix A

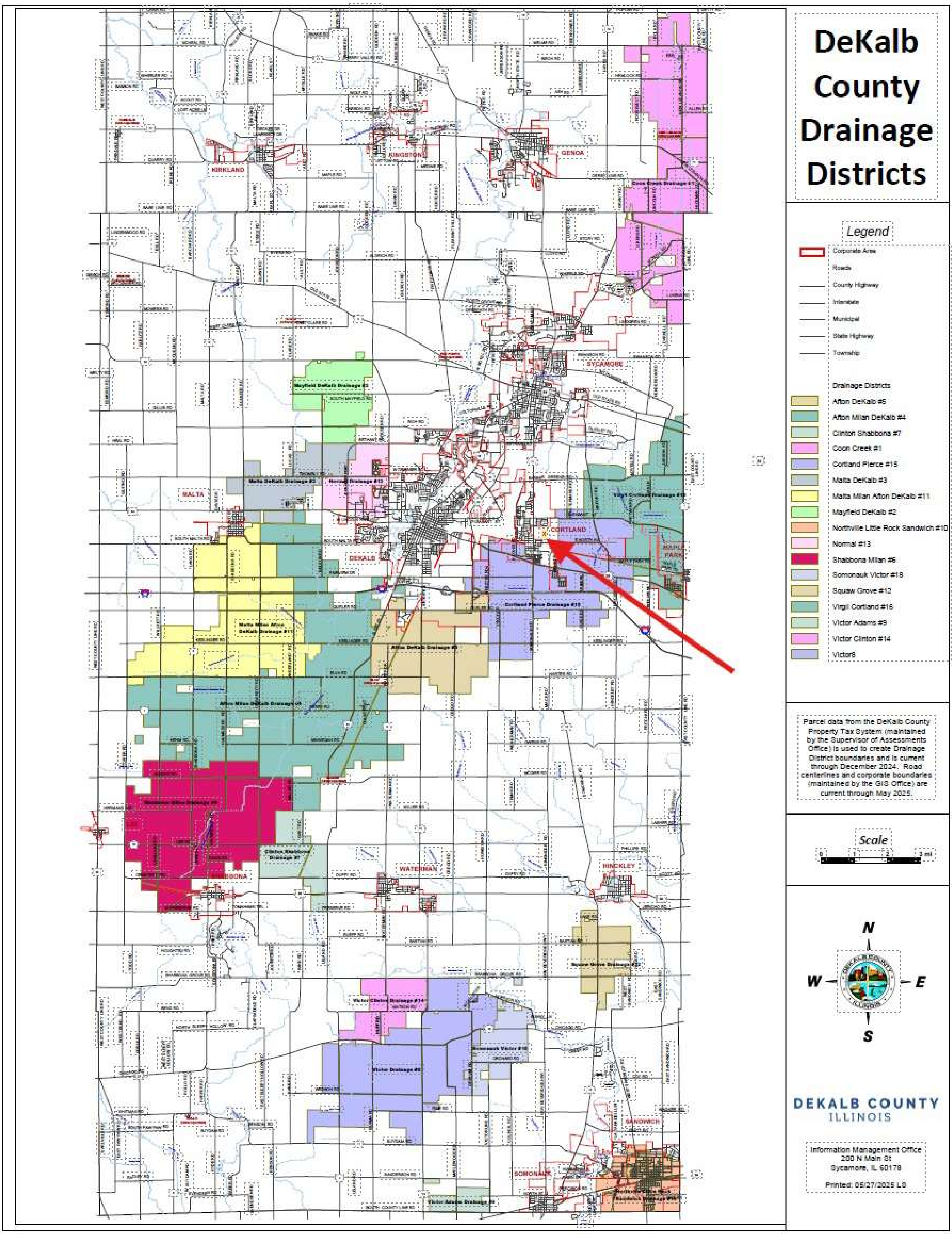
Existing Tile Maps


ORTLAND 2016
Storm Drain
All tile into 36"
10" into 36"
10"
10" Clay
8" Tile
Storm Drain
Storm Drain
Storm Drain
10" Clay
4" Clay
E.N


Storm Drain
6"
12"
9.3
8" Tile
10" Clay
8.8
Storm Drain
rm Drain
10" Clay
4" Clay
6.3
Storm Drain
8.8
5.9
5.2
top 10"
9.5
6.4
7.4
top 4" Clay
E No
4" Clay
5"
6"
8" Tile
10" Clay
Storm Drain


Storm Drain
8" Tile
9.3
8.8
Storm Drain
10" Clay
4" Clay
8.8
5.9
5.2
top 10"
6.3
7.4
top 4" Clay
E No
4" Clay
5"
6"
8" Tile
10" Clay
Storm Drain
0
500
1000
feet


Suppeland Park
E Meadow Dr
E Meadow Dr
N Somonauk Rd
N Somonauk Rd
E Conestoga Ave
N Prairie St
estaurant
E North Ave
E North Ave
E North Ave
Kishwaukee Forge
Image © 2025 Airbus
Cortland Township Road District


DeKalb County Drainage Districts
Legend
Corporate Area
Roads
County Highway
Interstate
Municipal
State Highway
Township
Drainage Districts
Afton DeKalb #6
Afton Milan DeKalb #4
Clinton Shabbona #7
Coon Creek #1
Cortland Pierce #15
Malta DeKalb #3
Malta Milan Afton DeKalb #11
Mayfield DeKalb #2
Northville Little Rock Sandwich #10
Normal #13
Shabbona Milan #6
Somonauk Victor #18
Squaw Grove #12
Virgil Cortland #16
Victor Adams #9
Victor Clinton #14
Victor8
Parcel data from the DeKalb County Property Tax System (maintained by the Supervisor of Assessments Office) is used to create Drainage District boundaries and is current through December 2024. Road centerlines and corporate boundaries (maintained by the GIS Office) are current through May 2025.
Scale
N
W
E
S
DEKALB COUNTY
ILLINOIS
Information Management Office
200 N Main St
Sycamore, IL 60178
Printed: 05/27/2025 LS
KIRKLAND
KINGSTON
GENOA
SYCAMORE
MALTA
DEKALB
CORTLAND
WATERMAN
HINCKLEY
SHABBONA
SANDWICH
SOMONAUK

GLOSSARY

Topography

The blue through red spectrum of contoured lines and shaded areas indicate the topography surrounding the project area. Used to help analyze and create the watershed to discover the area of impact.

Watershed

The blue shaded-outlined area of the results of an in-depth analysis of the topography to show which neighboring parcels will be impacted by the project.

Mapped Drainage Tile

The white lines depict the discovered Mapped Drainage Tile. These are geo-referenced using landowner provided information such as hand-drawn maps, photo imagery, CAD drawings, GPS files, and other drainage tile map sources.

Assumed Flows

Deep purple lines depict Assumed Flows. The Assumed Flows are predictive analytics, that incorporate local drainage practices, soil types, topography, and water conveyance, to make strong inferences about the location of unmarked or unmapped drainage tile (8" ID and larger). This analysis will help the development team design infrastructure to coincide with the current and future drainage needs of the footprint. This tool was designed to help guide early through late-stage development and layout.

Assumed &Historical Research Drainage Tile

Royal blue lines depict Assumed & Historical Reserach Drainage Tile. These geo-referenced drainage tile lines are a combination of future drainage plans and strong inferences developed through satellite imagery research. This report is designed to provide the development team with deeper information surrounding the strong possibility of additional drainage tile located within specific areas of the footprint.

Drainage District or other Municipal Drainage

Orange lines depict the path of the existing drainage infrastucture that is either publicly owned through the Drainage District or storm drainage through a municipality.

Remediation Plan

The mixed color tile lines typically accompanied by sizes indicate the remediation plan recommended to maintain or improve the current level of drainage within the watershed.

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Standard Solar AIMA

(For all Section and Figure references, refer to Standard Solar AIMA v.8.19.19 at https://agr.illinois.gov/resources/aima.html)

Rerouting and Permanent Repair of Agricultural Drainage Tiles

The following standards and policies shall apply to underground drainage tile line(s) directly or indirectly affected by Construction and/or Deconstruction:

A. Prior to Construction, the Facility Owner shall work with the Landowner to identify drainage tile lines traversing the property subject to the Underlying Agreement to the extent reasonably practicable. All drainage tile lines identified in this manner shall be shown on the Construction and Deconstruction Plans.

B. The location of all drainage tile lines located adjacent to or within the footprint of the Facility shall be recorded using Global Positioning Systems (GPS) technology. Within 60 days after Construction is complete, the Facility Owner shall provide the Landowner, the IDOA, and the respective County Soil and Water Conservation District (SWCD) with "as built" drawings (strip maps) showing the location of all drainage tile lines by survey station encountered in the Construction of the Facility, including any tile line repair location(s), and any underground cable installed as part of the Facility.

C. Maintaining Surrounding Area Subsurface Drainage

If drainage tile lines are damaged by the Facility, the Facility Owner shall repair the lines or install new drainage tile line(s) of comparable quality and cost to the original(s), and of sufficient size and appropriate slope in locations that limit direct impact from the Facility. If the damaged tile lines cause an unreasonable disruption to the drainage system, as determined by the Landowner, then such repairs shall be made promptly to ensure appropriate drainage. Any new line(s) may be located outside of, but adjacent to the perimeter of the Facility. Disrupted adjacent drainage tile lines shall be attached thereto to provide an adequate outlet for the disrupted adjacent tile lines.

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Standard Solar AIMA (cont.)

D. Re-establishing Subsurface Drainage Within Facility Footprint

Following Deconstruction and using Best Efforts, if underground drainage tile lines were present within the footprint of the facility and were severed or otherwise damaged during original Construction, facility operation, and/or facility Deconstruction, the Facility Owner shall repair existing drainage tiles or install new drainage tile lines of comparable quality and cost to the original, within the footprint of the Facility with sufficient capacity to restore the underground drainage capacity that existed within the footprint of the Facility prior to Construction. Such installation shall be completed within 12 months after the end of the useful life of the Facility and shall be compliant with Figures 1 and 2 to this Agreement or based on prudent industry standards if agreed to by Landowner.

E. If there is any dispute between the Landowner and the Facility Owner on the method of permanent drainage tile line repair, the appropriate County SWCD's opinion shall be considered by the Facility Owner and the Landowner.

F. During Deconstruction, all additional permanent drainage tile line repairs beyond those included above in Section 6.D. must be made within 30 days of identification or notification of the damage, weather and soil conditions permitting. At other times, such repairs must be made at a time mutually agreed upon by the Facility Owner and the Landowner. If the Facility Owner and Landowner cannot agree upon a reasonable method to complete this restoration, the Facility Owner may implement the recommendations of the appropriate County SWCD and such implementation constitutes compliance with this provision.

G. Following completion of the work required pursuant to this Section, the Facility Owner shall be responsible for correcting all drainage tile line repairs that fail due to Construction and/or Deconstruction for one year following the completion of Construction or Deconstruction, provided those repairs were made by the Facility Owner. The Facility Owner shall not be responsible for drainage tile repairs that the Facility Owner pays the Landowner to perform.

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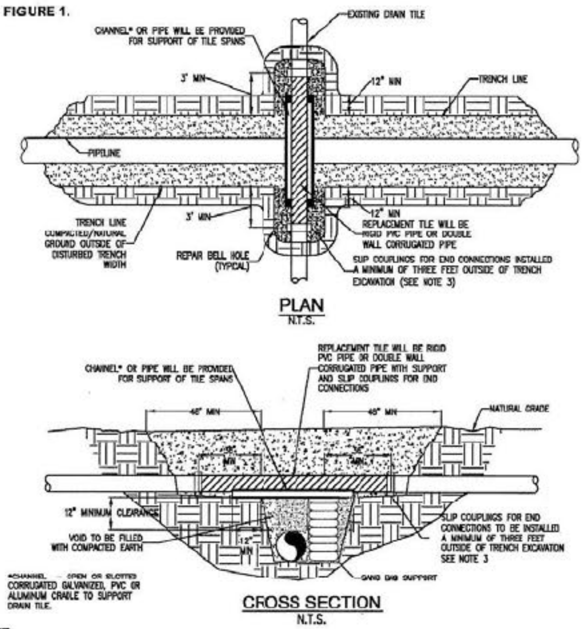
FIGURE 1.



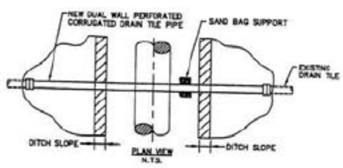
NOTE:

1. IMMEDIATELY REPAIR TILE IF WATER IS FLOWING THROUGH TILE AT TIME OF TRENCHING. IF NO WATER IS FLOWING AND TEMPORARY REPAIR IS DELAYED, OR NOT MADE BY THE END OF THE WORK DAY, A SCREEN OR APPROPRIATE 'NIGHT CAP' SHALL BE PLACED ON OPEN ENDS OF TILE TO PREVENT ENTRAPMENT OF ANIMALS ETC.
2. CHANNEL OR PIPE (OPEN OR SLOTTED) MADE OF CORRUGATED GALVANIZED PIPE, PVC OR ALUMINUM WILL BE USED FOR SUPPORT OF DRAIN TILE SPANS.
3. INDUSTRY STANDARDS SHALL BE FOLLOWED TO ENSURE PROPER SEAL OF REPAIRED DRAIN TILES.

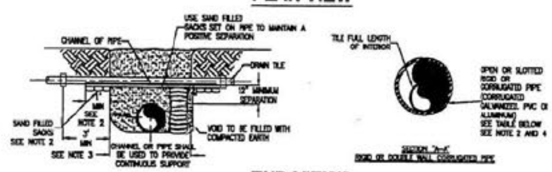
TEMPORARY DRAIN TILE REPAIR

PAGE 1 of 2

FIGURE 2.



PLAN VIEW



END VIEWS

MINIMUM SUPPORT TABLE				
TILE SIZE	CHANNEL SIZE		PIPE SIZE	
3"	4" @ 5.4	#/ft	4"	STD. WT.
4"-5"	5" @ 6.7	#/ft	6"	STD. WT.
6"-8"	7" @ 9.8	#/ft	8"-10"	STD. WT.
10"	10" @ 15.3	#/ft	12"	STD. WT.

NOTE:

1. TILE REPAIR AND REPLACEMENT SHALL MAINTAIN ORIGINAL ALIGNMENT GRADIENT AND WATER FLOW TO THE GREATEST EXTENT POSSIBLE. IF THE TILE NEEDS TO BE RELOCATED, THE INSTALLATION ANGLE MAY VARY DUE TO SITE SPECIFIC CONDITIONS AND LANDOWNER RECOMMENDATIONS.

2. 1'-0" MINIMUM LENGTH OF CHANNEL OR RIGID PIPE (OPEN OR SLOTTED CORRUGATED GALVANIZED, PVC OR ALUMINUM CRADLE) SHAL BE SUPPORTED BY UNDISTURBED SOIL, OR IF CROSSING IS NOT AT RIGHT ANGLES TO PIPELINE, EQUIVALENT LENGTH PERPENDICULAR TC TRENCH. SHIM WITH SAND BAGS TO UNDISTURBED SOIL FOR SUPPORT AND DRAINAGE GRADIENT MAINTENANCE (TYPICAL BOTH SIDES).

3. DRAIN TILES WILL BE PERMANENTLY CONNECTED TO EXISTING DRAIN TILES A MINIMUM OF THREE FEET OUTSIDE OF EXCAVATED TRENCH LINE USING INDUSTRY STANDARDS TO ENSURE PROPER SEAL OF REPAIRED DRAIN TILES INCLUDING SLIP COUPLINGS.

4. DIAMETER OF RIGID PIPE SHALL BE OF ADEQUATE SIZE TO ALLOW FOR THE INSTALLATION OF THE TILE FOR THE FULL LENGTH OF THI RIGID PIPE.

5. OTHER METHODS OF SUPPORTING DRAIN TILE MAY BE USED IF ALTERNATE PROPOSED IS EQUIVALENT IN STRENGTH TO THE CHANNEL/PIPE SECTIONS SHOWN AND IF APPROVED BY COMPANY REPRESENTATIVES AND LANDOWNER IN ADVANCE. SITE SPECIFIC ALTERNATE SUPPORT SYSTEM TO BE DEVELOPED BY COMPANY REPRESENTATIVES AND FURNISHED TO CONTRACTOR FOR SPANS IN EXCESS OF 20', TILE GREATER THEN 10" DIAMETER, AND FOR "HEADER" SYSTEMS.

6. ALL MATERIAL TO BE FURNISHED BY CONTRACTOR.

7. PRIOR TO REPAIRING TILE, CONTRACTOR SHALL PROBE LATERALLY INTO THE EXISTING TILE TO FULL WIDTH OF THE RIGHTS OF WAY TC DETERMINE IF ADDITIONAL DAMAGE HAS OCCURRED. ALL DAMAGED/DISTURBED TILE SHALL BE REPAIRED AS NEAR AS PRACTICABLE TC ITS ORIGINAL OR BETTER CONDITION.

PERMANENT DRAIN TILE REPAIR

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Appendix B

Historical Imagery Research

Exhibit M – Draft Emergency Action Plan

Note: The following is a template and not the proposed final emergency plan. The Project will work with relevant Town authorities to ensure a tailored plan that meets the specific needs of the project and local responders.

Draft Emergency Action Plan

Grand Parade Solar, LLC

Note: The following is a template and not the proposed final emergency plan. The Project will work with relevant Town authorities to ensure a tailored plan that meets the specific needs of the Project and local responders.

Solar Facility Shut-down During Emergencies

At this project, each input inverter will have redundant automated systems that shut the equipment down when a fault condition is detected. Human intervention will not be required.

In addition to the automated systems, the Owner will utilize a 24/7/365 Remote Operation Control Center (ROCC) connected to its facilities, which also has control capabilities with individual inverters to isolate the affected component(s) in an emergency. Other Operators will have a similar type of control center. No specialized emergency response equipment will be required for coverage of this facility.

Emergency Contact List

Police:

Fire Department and Emergency Medical Services:

Medical Helicopter:

Hospital:

Occupational Clinic:

Hazmat:

Federal Bureau of Investigation:

Occupational Safety and Health Administration:

Poison Control:

Emergency Contact List

Owner's Rep:
Grand Parade Solar, LLC
POC:
Address:
Cell #

Facility Manager:
POC:
Cell #

Director of Health and Safety:
POC:
Cell #

Remote Operations Control Center (ROCC)
ROCC #
Additional Line #

Program evaluation

The Health and Safety Director shall review and evaluate the effectiveness of the EAP as outlined below.

- On an annual basis
- Whenever regulatory changes occur requiring a revision to the program.
- Whenever changes occur to related procedures that require a revision.

Inspections

All alarm and control systems outlined in this program, or otherwise necessary for emergency reporting and control shall be tested on a regular and frequent basis. All such equipment shall be registered, and logged into a testing schedule based on the strictest applicable regulation or standard. Inspection reports shall be maintained and accessible for review at any time.

De-energization

The facility operator shall bear responsibility for de-energizing and/or isolating equipment and systems under emergency conditions to reduce the risk of fire, electric shock, and personal injuries. Emergency personnel shall coordinate with the Facility Manager or their representative to ensure proper system de-energization.

Emergency Preparedness Coordination

The project team will hold a pre-construction coordination meeting with identified Response Personnel and Project contractors prior to the start of Construction. The date of the Initial Training will be discussed, along with identifying the attendees of the training.

Each year during the operating life of the Project, the site operation team shall check in with local Response Personnel to determine what form of emergency drills (in-person, online, or other options that may become available over the life of the Project) are appropriate to train and coordinate efforts with local emergency responders.

The Initial Training shall provide training to local Response Personnel in the Project area for emergency response actions pertaining to a solar power generation facility. This program ensures that Response Personnel are prepared to assess and respond to incidents that may occur at or near the facility. Training includes hazard identification, recommended protocols for maintaining materials and safety data sheets for the specific facility, and emergency response planning. Training will be provided annually if requested by the Response Personnel.

Medical Emergency

Medical cases generally fall under the following categories:

1. Minor Medical Case – Medical cases requiring minimal lay car and presenting no disability potential. Frequently do not require professional medical care.
2. Urgent Medical Case – Medical cases that are not life-threatening and not likely to result in permanent or serious disability. Require professional medical care.
3. Emergency Medical Case – Those medical cases that, if not properly attended to, could result in serious injury or death. Permanent disability is possible. Require professional medical care.

Procedure:

1. Do not move the victim unless safety dictates.
2. Notify "base" of the extent of the medical emergency and your location.
3. See "Field Injury – Emergency Operations Procedure."
4. If the injury appears to be life-threatening, be prepared to give "base" as much information as possible so that they can relay the information to the professional (911) EMTs.
5. See "Accident Report."
6. If the injury is not life-threatening or not likely to result in permanent disability, first aid care may be provided by trained site personnel, or the injured person will be transported to our industrial clinic by a supervisor.

Location of first aid supplies:

1. Each vehicle is equipped with an individual trauma kit and an AED.

Site Personnel Guidelines

A. FIRST PERSON AT THE ACCIDENT SCENE

Upon arriving at the scene of an injury-related accident, the first person shall survey the scene (is it safe?), then notify management personnel of the following:

1. Severity of the victim(s) injury.
2. Emergency personnel "are" or "are not" required.

B. ACCIDENT REPORT

If emergency personnel are required, the management personnel shall:

1. Obtain an "Accident Report"
2. Copy information received via radio to the form.
3. Ensure that all areas of the form are completed.
4. Continue to monitor communications for further developments.

C. CALL 911

The designated 911-call person shall:

1. Dial 911 immediately.
2. Relay all the information on the accident form to the 911 operator.

D. NOTIFY THE FOLLOWING PERSONS

After the call to 911, the designated 911 call person shall notify all the following personnel (if possible):

1. Facility Manager
2. ROCC

Fire

Unlike thermal power plants, solar power facilities pose minimal explosion or fire potential, as there is no need to combust fuel to generate power. However, as with any construction undertaking, the construction of the Project does present some minimal fire risks.

Fire risk mitigation starts with facility design, especially with electrical design, which needs to comply with the latest National Electric Code (NEC), National Electric Safety Code (NESC), and the National Fire Protection Agency (NFPA) standards.

Site Personnel Guidelines

1. Field personnel should report the fire emergency by notifying the Fire Department. Immediately dial "911" in the event of a fire. However, when in doubt, shout FIRE.
2. Know the location of fire extinguishers, fire exits, and alarm systems in your area and know how to use them. In most cases, do not attempt to extinguish the fire.
3. If a minor fire appears to be controllable, a Manager or a member of the Safety Committee may attempt to extinguish the fire using the fire extinguishers or other sources, such as water from a hose – only after "911" has been called.
4. A complete evacuation of the entire site will be performed in any fire emergency. All site personnel should proceed to the nearest exit. Last ones to exit should close doors behind them.
5. Managers or site personnel will assist in the evacuation and will meet the Fire Department to direct them to the proper location. Once the Fire Department has arrived, the responding incident commander will take charge of all rescue operations and suppression activities.
6. Keep clear of fire lanes, hydrants, and walkways for emergency crews and vehicles.
7. Personnel should remain at this location until accounted for by Management. Do not leave the premises until accounted for and given permission to do so. Valuable time could be wasted searching for personnel who have not followed the correct procedures.
8. Only members of Management can declare the state of emergency over and give permission to re-enter.

Brush Fire

1. Dial 911
2. Notify Facility Manager
3. Advise all site employees of the fire emergency and gather team at the muster location.
4. Work with local responders to address fire encroachment near the facility.
5. Fire Department will manage the fire scene, site personnel will stand by to assist with isolation of module strings and electrical equipment if requested by the Fire Department Incident Commander.
6. All safety requests from the Incident Commander shall be followed by the site team.

Adverse Weather

Site Personnel Guidelines

A serious weather "watch" indicates that conditions for bad weather exist. During a "watch" status, maintain a normal routine. Management will monitor available information report. A "warning" is more serious. The following is a list of emergency situations, definitions of these conditions, and general emergency instructions which should be followed:

Severe Thunderstorms

Winds exceeding 55 miles per hour and heavy lightning and thunder. Lightning is the greatest danger during a severe thunderstorm.

Special Precautions

1. Remain indoors.
2. Stay away from open doors, windows, metal pipes, or electrical appliances.
3. Prepare for flash flooding and low water crossings.
4. Follow Management instructions.

Working in Adverse Weather: Lightning

In addition to the General Safety Policy and General Safety Rules of the IIPP, the following shall apply:

1. Morning safety meetings shall cover forecasted weather conditions for the day.
2. Lightning warnings shall reflect a fifty (50) mile radius as an initial advisement to technicians that a storm is in the area, and a thirty (30) mile radius will indicate an immediate weather stand down. Technicians will be required to immediately stop working and head to their vehicles until the storm passes.
3. Stand-down directions will be clear. The message "STOP WORK- weather stand down is in effect" shall be communicated when a storm reaches a thirty (30) mile radius from the site.
4. Site supervision will confirm all employees are accounted for. At that time, they will be directed to return to the shop or stay in the field until the lightning passes.
5. Lines of communications shall include radios as a primary source.

First Aid Recommendations for Lightning Victims

Most lightning victims can actually survive their encounter with lightning, especially with timely medical treatment. Individuals struck by lightning do not carry a charge and it is safe to touch them to render medical treatment. Follow these steps to try to save the life of a lightning victim:

1. **First:** Call 911 to provide directions and information about the likely number of victims.

2. Response: The priority of emergency care is "make no more casualties." If the area where the victim is located is in a high-risk area (mountain top, open field, etc.) with a continuing thunderstorm, the rescuers may be placing themselves in significant danger.
3. Evacuation: It is relatively unusual for victims who survive a lightning strike to have major fractures that would cause paralysis or major bleeding complications unless they have suffered a fall or been thrown a distance. As a result, in an active thunderstorm, the rescuer needs to choose whether evacuation from very high-risk areas to an area of lesser risk is warranted and should not be afraid to move the victim rapidly if necessary. Rescuers are cautioned to minimize their exposure to lightning as much as possible.
4. Resuscitation: If the victim is not breathing, start mouth-to-mouth resuscitation. If it is decided to move the victim, give a few quick breaths prior to moving them. Determine if the victim has a pulse by checking the pulse at the carotid artery (side of the neck) or femoral artery (groin) for at least 20 – 30 seconds. If no pulse is detected, start cardiac compressions as well. In situations that are cold and wet, putting a protective layer between the victim and the ground may decrease the hypothermia that the victim suffers, which can further complicate the resuscitation.

Note: The persons named above shall be trained in the procedures to follow and have full authority to perform said duties. Training shall be performed annually or when the plan changes. A copy of this plan shall be available to all site personnel. The location manager shall maintain the master copy of this plan and forward a copy to the corporate Safety Officer. A map of any evacuation routes shall be posted and kept up to date by the plan supervisor.

Working in Adverse Weather: Tornadoes

General

This policy effects all locations that see annual alerts.

Definitions

Tornado Watch: A tornado watch means that conditions are favorable for tornados to develop.

Tornado Warning: A tornado warning means that either official spotters have sighted a tornado or Doppler Radar has reported a developing tornado. A tornado warning is typically issued for a small area (possibly a county or two) for less than an hour.

Fujita-Pearson Tornado Scale:

1. F-0: 40–72 mph, chimney damage, tree branches broken
2. F-1: 73–112 mph, mobile homes pushed off foundation or overturned
3. F-2: 113–157 mph, considerable damage, mobile homes demolished, trees uprooted
4. F-3: 158–205 mph, roofs and walls torn down, trains overturned, cars thrown
5. F-4: 207–260 mph, well-constructed walls leveled
6. F-5: 261–318 mph, homes lifted off foundation and carried considerable distances, autos thrown as far as 100 meters

Tornado Safety

Tornado danger signs (learn and know these tornado danger signs):

1. An approaching cloud of debris can mark the location of a tornado even if a funnel is not visible.
2. Before a tornado hits, the wind may die down and the air may become very still.
3. Tornadoes generally occur near the trailing edge of a thunderstorm. It is not uncommon to see clear, sunlit skies behind a tornado.

Take the following protective actions when a tornado watch has been issued in your area:

1. Have a person designated to monitor a radio or television
2. Notify all affected site personnel of the tornado watch and assure that they are in immediate contact if an emergency arises.
3. If the weather is extreme, remove all site personnel from the field and prepare for the safety of all site personnel.

Take the following protective actions when a tornado warning has been issued in your area:

1. Seek sturdy shelter in a basement or other predestinated “tornado shelter” (not a mobile home, car, or trailer)
2. Go at once to a windowless, interior room; storm cellar; basement; or lowest level of the building.

3. If there is no basement, go to an inner hallway or a small inner room without windows, such as a bathroom or closet.
4. Stay away from windows, doors, and outside walls (most deaths occur from flying debris)

If outdoors:

1. If possible, get inside a building.
2. If shelter is not available or there is no time to get indoors, lie in a ditch or a low-lying area or crouch near a strong building. Be aware of the potential for flooding.
3. Use arms to protect head and neck.

If in a car:

1. Never try to out drive a tornado in a car or truck. Tornadoes can change direction quickly and can lift a car or truck and toss it through the air.
2. Get out of the car immediately and take shelter in a nearby building.
3. If there is no time to get indoors, get out of the car and lie in a ditch or low-lying area away from the vehicle.

Crime / Violent Behavior / Civil Disturbance

Site Personnel Guidelines

How to Report

You may contact any Manager or call “911” yourself to access the police department.

Reporting Crimes in Progress

If you are a victim or a witness to any in-progress criminal offense, report the incident as soon as possible, providing the following information:

1. Nature of the incident. MAKE SURE that the 911 dispatcher understands that the incident is IN PROGRESS!
2. Location of the incident.
3. A description of the suspect(s) involved.
4. A description of any weapons involved.
5. A description of any property involved.

Stay on the line with the dispatcher until a police officer arrives at the scene. Keep the dispatcher informed of any changes in the situation so that updated information can be relayed to the responding units. Even if you are the victim and unable to communicate further, try to keep the line open.

Reporting Crimes Not in Progress

Even though it seems futile, all crime should be reported.

Be prepared to provide the following information to the investigating officer:

1. When the incident occurred.
2. If a property crime, what was taken or damaged.
3. The named and/or descriptions of any suspects or witnesses.

Civil Disturbance Response Plan

Any site personnel noting a possible civil disturbance should contact a Manager immediately. If necessary, all entrances and exits will be secured. Should unauthorized intruders gain access onto premises, refrain from any contact with the intruders. All site personnel should remain in the area, remain calm, and follow instructions from Management. Should intruders gain access into the building and damage property, site personnel should not interfere. The personal safety of our personnel is more important than the protection of our property.

Exhibit N – Property Value Impact Assessment

Kirkland Appraisals, LLC

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Raleigh, North Carolina 27603
Phone (919) 414-8142
rkirkland2@gmail.com
www.kirklandappraisals.com

July 18, 2025

Mrs. Cady Merrick
Apex Clean Energy
[redacted]

RE: Grande Parade Solar, near Cortland, Dekalb County, Illinois

Mrs. Merrick

At your request, we have considered the impact of a proposed 5 MW solar farm proposed to be constructed on a portion of 111.10 acres off Somonauk Road, Cortland, Dekalb County, Illinois. Specifically, we have been asked to give my professional opinion on whether the proposed solar will or will not be injurious to or diminish the value of other property in the immediate vicinity for the purposes already permitted as well as whether or not it will impede the normal and orderly development and improvements of surrounding property for uses permitted by right in the zoning districts of surrounding property.

To form an opinion on these issues, we have researched and visited existing and proposed solar farms in Illinois as well as other states, researched articles through the Appraisal Institute and other studies, and discussed the likely impact with other real estate professionals. We have not been asked to assign any value to any specific property.

This letter is a limited report of a real property appraisal consulting assignment and subject to the limiting conditions attached to this letter. My client is Grand Parade Solar< LLC, represented to me by Mrs. Cady Merrick. My findings support the application. The effective date of this consultation is July 18, 2025.

Conclusion

The matched pair analysis shows no impact on home values due to abutting or adjoining a solar farm as well as no impact to abutting or adjacent vacant residential or agricultural land where the solar farm is properly screened and buffered. The criteria that typically correlates with downward adjustments on property values such as noise, odor, and traffic all indicate that a solar farm is a compatible use for rural/residential transition areas and that it would function in a harmonious manner with this area.

The adjoining properties have sufficient setbacks from the proposed solar panels and supplemental vegetation is proposed to enhance the areas where the existing trees are insufficient to provide a proper screen. The distances and landscaping buffers indicated for this project are well supported by the market data as sufficient for protecting adjoining property values. I therefore conclude that the project as presented will not have a negative impact on adjoining property values.

Data from the university studies, broker commentary, and other appraisal studies support a finding of no impact on property value adjoining a solar farm with proper setbacks and landscaped buffers.

Very similar solar farms in very similar areas have been found by hundreds of towns and counties not to have a substantial negative effect to abutting or adjoining properties, and many of those findings of no impact have been upheld by appellate courts. Similar solar farms have been approved with adjoining agricultural uses, schools, churches, and residential developments.

The data that I have researched includes new home construction as well as new subdivision development adjoining solar farms which speaks to a finding of no impact on adjoining uses.

I note that some of the positive implications of a solar farm that have been expressed by people living next to solar farms include protection from future development of residential developments or other more intrusive uses, reduced dust, odor and chemicals from farming operations, protection from light pollution at night, it is quiet, and there is minimal traffic.

If you have any questions, please let me know.

Sincerely,

Richard C. Kirkland, Jr., MAI
NC Certified General Appraiser #A4359
IL Certified General Appraiser 553.002633

Lee Ovington, MAI, SRA
IL Certified General Appraiser 553.001203

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II. Proposed Project and Adjoining Uses

Proposed Use Description

This 5 MW solar farm is proposed to be constructed on a portion of 111.10 acres off Somonauk Road, Cortland, Dekalb County, Illinois.

Adjoining Properties

I have considered adjoining uses and included a map to identify each parcel's location. The proposed panels are located near the north end of the assemblage of land. Adjoining land is primarily a mix of residential and agricultural uses, which is very typical of solar farm sites. The closest home identified is 410 feet and the average distance to adjoining homes is 963 feet.

The project proposed a vegetative screen between the project and the closest home shown as Parcel 9 in the map below.

Also of note there is an existing solar project just east of adjoining Parcel 3.

Landscaping screens are proposed along the northern, southern and southwest corner of the property. The breakdown of those uses by acreage and number of parcels is summarized below.

Adjoining Use Breakdown

	Acreage	**Parcels**
Residential	25.49%	90.74%
Agricultural	40.71%	1.85%
Industrial	13.50%	5.56%
Agri/Res	20.30%	1.85%
Total	**100.00%**	**100.00%**

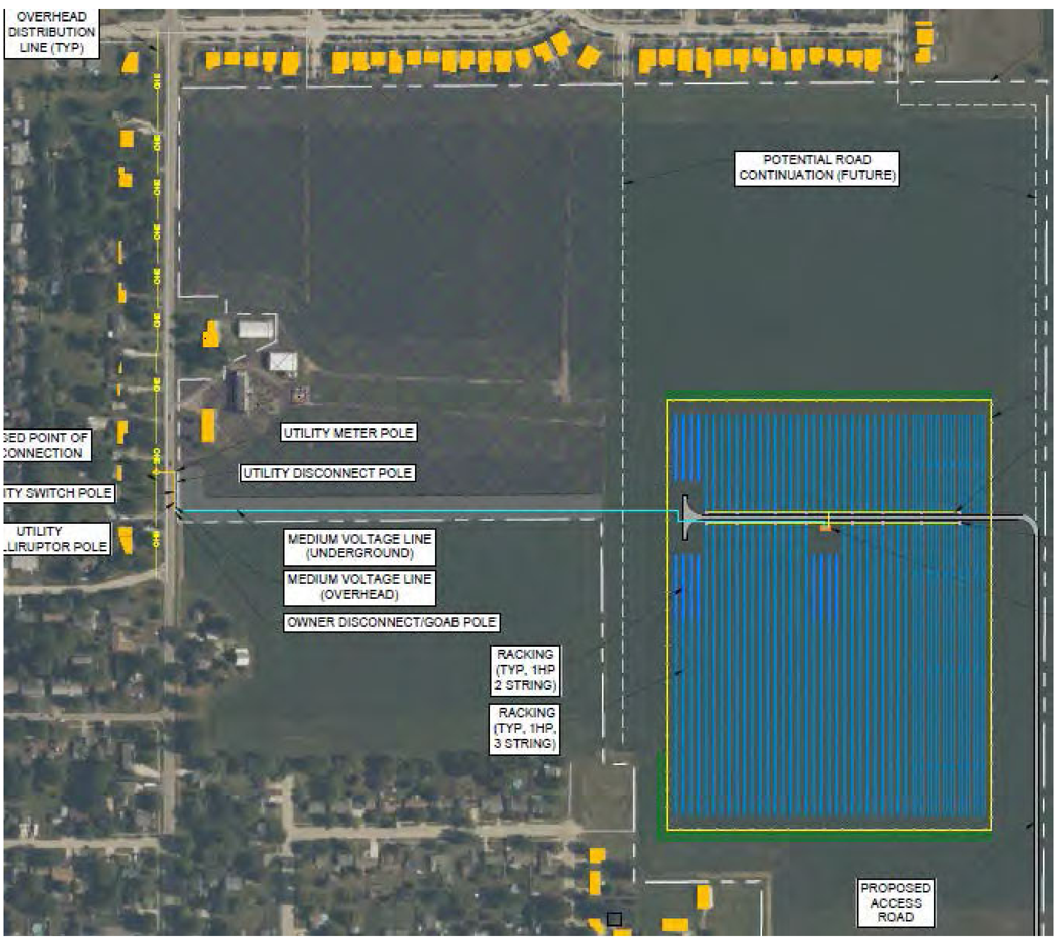

23-54
1
2
22
12-21
3
11
8-10
7
5
4
6

Surrounding Uses

#	MAP ID	Owner	GIS Data Acres	Present Use	Adjoin Acres	Adjoin Parcels	Distance (ft) Home/Panel
1	920279012	Neucort	9.36	Residential	4.82%	1.85%	N/A
2	921100003	Malone	39.40	Agri/Res	20.30%	1.85%	1,730
3	921300001	D & K	79.03	Agricultural	40.71%	1.85%	N/A
4	928100023	Twenty	10.94	Industrial	5.64%	1.85%	N/A
5	929226016	Twenty	12.67	Industrial	6.53%	1.85%	N/A
6	929226015	Crystal	2.59	Industrial	1.33%	1.85%	N/A
7	920476002	Jason	1.89	Residential	0.97%	1.85%	440
8	920454004	Margaret	0.30	Residential	0.15%	1.85%	490
9	920454003	Kaitlyn	0.34	Residential	0.18%	1.85%	410
10	920456001	Cortland	0.64	Residential	0.33%	1.85%	N/A
11	920451003	Andra	19.95	Residential	10.28%	1.85%	1,310
12	920326017	Karen	1.04	Residential	0.54%	1.85%	1,555
13	920326009	Kevin	0.84	Residential	0.43%	1.85%	1,540
14	920326008	Robert	0.82	Residential	0.42%	1.85%	1,530
15	920326007	Robert	0.82	Residential	0.42%	1.85%	1,540
16	920326006	Lester	0.94	Residential	0.48%	1.85%	1,540
17	920401007	Andra	1.22	Residential	0.63%	1.85%	1,245
18	920326013	Benjamin	0.84	Residential	0.43%	1.85%	1,525
19	920326012	Timothy	1.10	Residential	0.57%	1.85%	1,525
20	920326026	Naveen	0.84	Residential	0.43%	1.85%	N/A
21	920326025	Naveen	0.93	Residential	0.48%	1.85%	1,525
22	920326002	Breyanna	1.96	Residential	1.01%	1.85%	1,550
23	920181001	Richland	0.08	Residential	0.04%	1.85%	N/A
24	920252001	Martin	0.35	Residential	0.18%	1.85%	1,380
25	920252002	Jose	0.16	Residential	0.08%	1.85%	1,330
26	920252003	Amanda	0.16	Residential	0.08%	1.85%	1,280
27	920252004	Andrew	0.16	Residential	0.08%	1.85%	1,225
28	920252005	Shawn	0.22	Residential	0.11%	1.85%	1,165
29	920253001	Billy	0.21	Residential	0.11%	1.85%	1,040
30	920253002	Heather	0.16	Residential	0.08%	1.85%	1,000
31	920253003	Hanna	0.16	Residential	0.08%	1.85%	955
32	920253004	E & H	0.16	Residential	0.08%	1.85%	915
33	920253005	Devin	0.16	Residential	0.08%	1.85%	880
34	920253006	Keith	0.16	Residential	0.08%	1.85%	835
35	920253007	Tom	0.16	Residential	0.08%	1.85%	800
36	920253008	Joseph	0.16	Residential	0.08%	1.85%	765
37	920253009	Kevin	0.16	Residential	0.08%	1.85%	730
38	920253010	Emily	0.16	Residential	0.08%	1.85%	705
39	920253011	Mitchell	0.19	Residential	0.10%	1.85%	680
40	920253012	Christopher	0.24	Residential	0.12%	1.85%	685

Surrounding Uses

#	MAP ID	Owner	GIS Data Acres	Present Use	Adjoin Acres	Adjoin Parcels	Distance (ft) Home/Panel
41	920253014	Angela	0.30	Residential	0.15%	1.85%	610
42	920282001	Louis	0.21	Residential	0.11%	1.85%	600
43	920282002	Ryan	0.16	Residential	0.08%	1.85%	600
44	920282003	Arturo	0.16	Residential	0.08%	1.85%	605
45	920282004	McGraw	0.16	Residential	0.08%	1.85%	580
46	920282005	Anthony	0.16	Residential	0.08%	1.85%	595
47	920282006	Gabriella	0.16	Residential	0.08%	1.85%	605
48	920282007	Anthony	0.16	Residential	0.08%	1.85%	610
49	920282008	Roger	0.16	Residential	0.08%	1.85%	590
50	920282009	Antonio	0.16	Residential	0.08%	1.85%	610
51	920282010	Dennis	0.16	Residential	0.08%	1.85%	615
52	920282011	Kimberly	0.16	Residential	0.08%	1.85%	615
53	920282012	Peggy	0.16	Residential	0.08%	1.85%	615
54	920282013	Edward	0.18	Residential	0.09%	1.85%	605
		Total	**194.120**		**100.00%**	**100.00%**	963

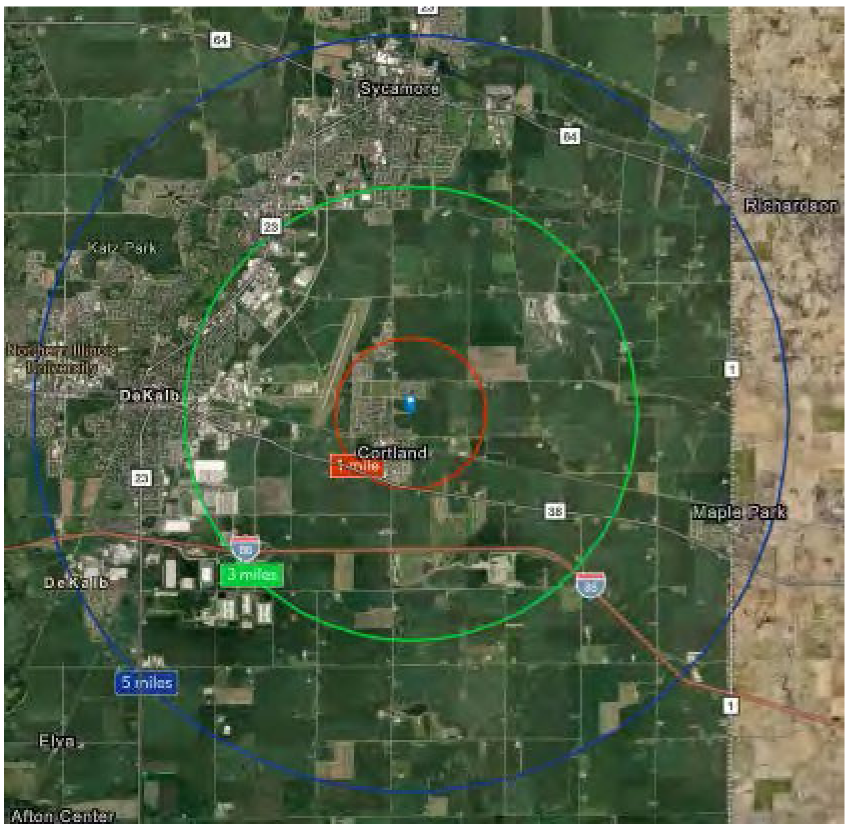


Demographics Around Subject Property

I have pulled demographic data around a 1-mile, 3-mile and 5-mile radius from the middle of the project as shown on the following pages.

The demographics show nominal growth to nominal declines in population in all rings.

I note that the ring map below illustrates a point I make later in this report about various university studies that compare home prices within 3 miles of solar projects to activity in the 5 to 6 miles radius. The problem with those studies is that a great many of the solar projects are similar to what is shown below with heavy population areas in the outer ring being compared to activity in the closer more rural ring which leads to distortions in the data.



Housing Profile

122-198 E Maple Ave
122-198 E Maple Ave, Cortland, Illinois, 60112
Ring: 1 mile radius

Prepared by Esri

Population		Households	
2020 Total Population	2,499	2025 Median Household Income	$82,149
2025 Total Population	2,563	2030 Median Household Income	$92,059
2030 Total Population	2,598	2025-2030 Annual Rate	2.30%
2025-2030 Annual Rate	0.27%		

	Census 2020		2025		2030	
Housing Units by Occupancy Status and Tenure	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Total Housing Units	954	100.0%	1,017	100.0%	1,054	100.0%
Occupied	919	96.3%	976	96.0%	1,013	96.1%
Owner	763	80.0%	827	81.3%	872	82.7%
Renter	156	16.4%	149	14.7%	141	13.4%
Vacant	48	5.0%	41	4.0%	42	4.0%

	2025		2030	
Owner Occupied Housing Units by Value	**Number**	**Percent**	**Number**	**Percent**
Total	827	100.0%	872	100.0%
<$50,000	63	7.6%	88	10.1%
$50,000-$99,999	1	0.1%	0	0.0%
$100,000-$149,999	51	6.2%	31	3.6%
$150,000-$199,999	269	32.5%	200	22.9%
$200,000-$249,999	208	25.2%	206	23.6%
$250,000-$299,999	119	14.4%	145	16.6%
$300,000-$399,999	49	5.9%	77	8.8%
$400,000-$499,999	26	3.1%	50	5.7%
$500,000-$749,999	40	4.8%	73	8.4%
$750,000-$999,999	1	0.1%	2	0.2%
$1,000,000-$1,499,999	0	0.0%	0	0.0%
$1,500,000-$1,999,999	0	0.0%	0	0.0%
$2,000,000+	0	0.0%	0	0.0%
Median Value	$206,971		$228,277	
Average Value	$227,714		$255,344	

esri
THE SCIENCE OF WHERE

Housing Profile

122-198 E Maple Ave
122-198 E Maple Ave, Cortland, Illinois, 60112
Ring: 3 mile radius

Prepared by Esri
[illegible]
[illegible]

Population		Households	
2020 Total Population	5,987	2025 Median Household Income	$74,584
2025 Total Population	5,869	2030 Median Household Income	$84,769
2030 Total Population	5,944	2025-2030 Annual Rate	2.59%
2025-2030 Annual Rate	0.25%		

	Census 2020		2025		2030	
Housing Units by Occupancy Status and Tenure	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Total Housing Units	2,300	100.0%	2,379	100.0%	2,468	100.0%
Occupied	2,195	95.4%	2,277	95.7%	2,364	95.8%
Owner	1,606	69.8%	1,726	72.6%	1,798	72.9%
Renter	589	25.6%	551	23.2%	566	22.9%
Vacant	109	4.7%	102	4.3%	104	4.2%

	2025		2030	
Owner Occupied Housing Units by Value	**Number**	**Percent**	**Number**	**Percent**
Total	1,725	100.0%	1,799	100.0%
<$50,000	100	5.8%	136	7.6%
$50,000-$99,999	39	2.3%	20	1.1%
$100,000-$149,999	223	12.9%	154	8.6%
$150,000-$199,999	538	31.2%	415	23.1%
$200,000-$249,999	367	21.3%	373	20.7%
$250,000-$299,999	211	12.2%	263	14.6%
$300,000-$399,999	87	5.0%	134	7.4%
$400,000-$499,999	63	3.7%	122	6.8%
$500,000-$749,999	86	5.0%	163	9.1%
$750,000-$999,999	10	0.6%	18	1.0%
$1,000,000-$1,499,999	1	0.1%	1	0.1%
$1,500,000-$1,999,999	0	0.0%	0	0.0%
$2,000,000+	0	0.0%	0	0.0%
Median Value	$196,570		$223,458	
Average Value	$225,511		$262,436	

esri
THE SCIENCE OF WHERE

Housing Profile

122-198 E Maple Ave
122-198 E Maple Ave, Cortland, Illinois, 60112
Ring: 5 mile radius

Prepared by Esri

Population		Households	
2020 Total Population	46,150	2025 Median Household Income	$67,292
2025 Total Population	45,682	2030 Median Household Income	$72,260
2030 Total Population	45,648	2025-2030 Annual Rate	1.43%
2025-2030 Annual Rate	-0.01%		

	Census 2020		2025		2030	
Housing Units by Occupancy Status and Tenure	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Total Housing Units	19,922	100.0%	20,670	100.0%	21,162	100.0%
Occupied	18,730	94.0%	19,388	93.8%	19,856	93.8%
Owner	11,058	55.5%	11,919	57.7%	12,526	59.2%
Renter	7,672	38.5%	7,469	36.1%	7,330	34.6%
Vacant	1,170	5.9%	1,282	6.2%	1,307	6.2%

	2025		2030	
Owner Occupied Housing Units by Value	**Number**	**Percent**	**Number**	**Percent**
Total	11,914	100.0%	12,519	100.0%
<$50,000	525	4.4%	557	4.4%
$50,000-$99,999	369	3.1%	215	1.7%
$100,000-$149,999	1,302	10.9%	911	7.3%
$150,000-$199,999	2,559	21.5%	2,075	16.6%
$200,000-$249,999	2,229	18.7%	2,241	17.9%
$250,000-$299,999	2,245	18.8%	2,553	20.4%
$300,000-$399,999	1,559	13.1%	2,129	17.0%
$400,000-$499,999	723	6.1%	1,172	9.4%
$500,000-$749,999	299	2.5%	516	4.1%
$750,000-$999,999	90	0.8%	133	1.1%
$1,000,000-$1,499,999	14	0.1%	17	0.1%
$1,500,000-$1,999,999	0	0.0%	0	0.0%
$2,000,000+	0	0.0%	0	0.0%
Median Value	$226,974		$255,112	
Average Value	$245,456		$275,128	

The subject is located in the eastern section of Cortland, in an area comprised of mostly vacant Ag Land. Industrial use is located in this vicinty along the north side of the Union Pacific RR tracks and south of North Avenue. To the north of the subject is unincorporated land zoned and used for farmland. Land to the east of the subject is zoned P-1 Recreation and Open Space.

Cortland is located immediately east of the city of DeKalb and adjacent the DeKalb-Taylor Municipal Airport. The community is located near the Interstate 88 and Peace Road interchange and is easily accessible to Chicago and the Fox Valley suburbs to the east. Cortland sits atop a flat plain overlooking the East Branch of the South Branch of the Kishwaukee River to the northeast. The topography and soil characteristics make it suitable and productive for crop farming. Woodlands are scarce and are concentrated along the Kishwaukee River.

The Town sits at the leading edge of a growth corridor extending westward from Aurora-Naperville along Interstate 88, as well as from the Fox River communities from Elgin to Aurora. Once considered remote, Cortland is increasingly being pulled into the expanding exurban area of the Chicago metropolitan area.

I-38 is a primary east-west arterial thoroughfare. It connects the Town with DeKalb and Rochelle on the west and Elburn, St. Charles, and Wheaton on the east. A future interchange on Interstate 88 at Hinckley Road is in the process of being negotiated with the Illinois Toll Highway Authority.

Downtown Cortland is currently centered on the railroad crossing at Somonauk Road. The railroad essentially divides the Downtown neighborhood into two halves, since between 70 and 100 trains use the railroad on a daily basis. The growing emphasis on rail transportation in the Chicago metropolitan area and the extension of commuter rail service to Elburn six miles to the east offers new commuter rail opportunities and options for Cortland residents in the future.

According to a recent study of Somonauk Road driving conditions, a daily average of 2,077 vehicles traveled along Somonauk Road south of North Avenue and a daily average of 2,314 vehicles traveled north on Somonauk Road. The Town has a public water distribution system and a sanitary sewage collection system. Public storm water management system and facilities are present in the community. The Sycamore and DeKalb school districts serve the Town of Cortland. A newer elementary school was constructed several years ago for grades K through 5th. Cortland's housing stock is primarily single-family in character. There are a few buildings designed or used for more than one family, but these are the exception in the Town. The housing inventory is generally in average to good condition. The housing stock is varied: large and small, old and new. In addition to single-family homes, two-family, attached single-family, apartments, and other multiple-family building typologies are present in Cortland. Future housing growth in Cortland will likely emphasizes development of mixed-residential neighborhoods that provide a wide range of housing types in close proximity to each other to provide neighborhood stability and offer choices and options within the neighborhood. Mixed-residential neighborhoods are a key to Cortland's character and the quality of life in the community.

Cortland occupies a small amount of land. Development in Cortland is concentrated around the railroad crossing at Somonauk Road and north and south along Somonauk Road. Recent additions such as the Cortland Estates, Neucort Lakes and Heatherfield neighborhoods are separated from the community by farmland and other rural land uses. Commercial land uses in Cortland are sparse. A cluster of commercial uses is located at the intersections of Somonauk Road and IL 38 and Loves Road and IL 38, and in the area of the railroad crossing on Somonauk Road. The "downtown" area also is where the Town Hall, library and post office are located. Industrial land uses are located along IL 38 at Loves Road and a small area on Elm Street along the railroad. Land along the south side of North Ave is also zoned for Industrial. Industrial uses in Cortland tend to be small machine shop-type enterprises.

At present, much of Cortland's land area is in agriculture land use. This is somewhat misleading because the existing agriculture land use is temporary and belies what the future land uses will be once the undeveloped parcels are developed. This is due to several recent annexations which have expanded the Town's boundaries in anticipation of future development. The agriculture land also distorts the percentage of land use for residential land uses. If the agriculture land use is removed from the tally, residential land uses account for fifty percent of the land area in Cortland (31% single-family, 19% multiple-family). Regardless of whether agriculture is considered in the overall land use distribution, single-family land use accounts for 62% of all the residential land in Cortland. Cortland is part of the DeKalb/Cortland/Sycamore trade area, which shares customers and suppliers between the three communities and attracts customers from the surrounding area. Currently the majority of retail and office providers are located primarily in DeKalb and secondarily in Sycamore, both 5-10 minutes driving distance from Cortland. Cortland has one sit-down restaurant, one take-out (no drive in) restaurant, one bank, two gas station/mini-marts, and several industrial businesses located in or adjacent the Downtown.

The majority of Cortland's contribution to the market comes from its industrial park, west of the Downtown area, and from the retail and industrial business along Lincoln Highway located south and west of Downtown. Cortland has also dedicated land for commercial purposes along Route 38 and land to the north along Somonauk Road which will eventually host neighborhood shopping and food service uses and the proposed Uptown neighborhood, Cortland's retail and civic center. The library, post office, and Town Hall are expected to move to larger facilities in Uptown in the next five to seven years. All of these developments will impact the Downtown, as will the growth in Cortland's overall population from 3,000 to more than 12,000 persons within the same time frame.

Both DeKalb and Sycamore have significantly larger populations than Cortland and have long been primary market locations. DeKalb has allowed large format, i.e., "big box," retail to congregate along State Route 23 between Peace Road and Barber Green. DeKalb is also working on their own downtown plan, which involves rehabilitating the old storefront buildings along State Route 38, hoping to re-establish boutique retail uses. Sycamore has maintained their storefronts along State Route 64 in better condition and has a number of long-standing retail, restaurant, and service businesses.

III. Methodology and Discussion of Issues

Standards and Methodology

I conducted this analysis using the standards and practices established by the Appraisal Institute and that conform to the Uniform Standards of Professional Appraisal Practice. The analyses and methodologies contained in this report are accepted by all major lending institutions, and they are used in Indiana and across the country as the industry standard by certified appraisers conducting appraisals, market analyses, or impact studies and are considered adequate to form an opinion of the impact of a land use on neighboring properties. These standards and practices have also been accepted by the courts at the trial and appellate levels and by federal courts throughout the country as adequate to reach conclusions about the likely impact a use will have on adjoining or abutting properties.

The aforementioned standards compare property uses in the same market and generally within the same calendar year so that fluctuating markets do not alter study results. Although these standards do not require a linear study that examines adjoining property values before and after a new use (e.g. a solar farm) is developed, some of these studies do in fact employ this type of analysis. Comparative studies, as used in this report, are considered an industry standard.

The type of analysis employed is a Matched Pair Analysis or Paired Sales Analysis. This methodology is outlined in **The Appraisal of Real Estate**, Twelfth Edition by the Appraisal Institute pages 438-439. It is further detailed in **Real Estate Damages**, Third Edition, pages 33-36 by Randall Bell PhD, MAI. Paired sales analysis is used to support adjustments in appraisal work for factors ranging from the impact of having a garage, golf course view, or additional bedrooms. It is an appropriate methodology for addressing the question of impact of an adjoining solar farm. The paired sales analysis is based on the theory that when two properties are in all other respects equivalent, a single difference can be measured to indicate the difference in price between them. Dr. Bell describes it as comparing a test area to control areas. In the example provided by Dr. Bell he shows five paired sales in the test area compared to 1 to 3 sales in the control areas to determine a difference. I have used 3 sales in the control areas in my analysis for each sale developed into a matched pair.

Determining what is an External Obsolescence

An external obsolescence is a use of property that, because of its characteristics, might have a negative impact on the value of adjacent or nearby properties because of identifiable impacts. Determining whether a use would be considered an external obsolescence requires a study that isolates that use, eliminates any other causing factors, and then studies the sales of nearby versus distant comparable properties. The presence of one or a combination of key factors does not mean the use will be an external obsolescence, but a combination of these factors tends to be present when market data reflects that a use is an external obsolescence.

External obsolescence is evaluated by appraisers based on several factors. These factors include but are not limited to:

1) Traffic. Solar Farms are not traffic generators.

2) Odor. Solar farms do not produce odor.

3) Noise. Solar farms generate no noise concerns based on numerous noise studies and personal inspection of hundreds of solar farm sites. They make even less noise at night.

4) Environmental. Solar farms do not produce toxic or hazardous waste. Grass is maintained underneath the panels so there is minimal impervious surface area.

5) Appearance/Viewshed. This is the one area that potentially applies to solar farms. However, solar farms are generally required to provide significant setbacks and landscaping buffers to address that concern. Furthermore, any consideration of appearance of viewshed impacts has to be considered in comparison with currently allowed uses on that site. For example if a residential subdivision is already an allowed use, the question becomes in what way does the appearance impact adjoining property owners above and beyond the appearance of that allowed subdivision or other similar allowed uses.

6) Other factors. I have observed and studied many solar farms and have never observed any characteristic about such facilities that prevents or impedes neighbors from fully using their homes or farms or businesses for the use intended.

Market Imperfection

Throughout this analysis, I have specifically considered the influence of market imperfection on data analysis. Market imperfection is the term that refers to the fact that unlike a can of soup at the supermarket or in your online shopping cart, real estate cannot be comparison shopped for the best price and purchased at the best price for that same identical product. Real estate products are always similar and never identical. Even two adjacent lots that are identical in almost every way, have a slight difference in location. Once those lots are developed with homes, the number of differences begin to multiply, whether it is size of the home, landscaping, layout, age of interior upfit, quality of interior upfit, quality of maintenance and so on.

Neoclassical economics indicates a perfectly competitive market as having the following: A large number of buyers and sellers (no one person dominates the market), no barriers or transaction costs, homogeneous product, and perfect information about the product and pricing. Real estate is clearly not homogeneous. The number of buyers and sellers for a particular product in a particular location is limited by geography, financing, and the limited time period within a property is listed. There are significant barriers that limit the liquidity in terms of time, costs and financing. Finally, information on real estate is often incomplete or partial – especially at the time that offers are made and prices set, which is prior to appraisals and home inspections. So real estate is very imperfect based on this definition and the impact of this are readily apparent in the real estate market.

What appear to be near-identical homes that are in the same subdivision will often sell with slight variations in price. When multiple appraisers approach the same property, there is often a slight variation among all of those conclusions of value, due to differences in comparables used or analysis of those comparables. This is common and happens all of the time. In fact, within each appraisal, after making adjustments to the comparables, the appraiser will typically have a range of values that are supported that often vary more than +/-5% from the median or average adjusted value.

Based on this understanding of market imperfection, it is important to note that very minor differences in value within an impact study do not necessarily indicate either a negative or positive impact. When the impacts measured fall within that +/-5%, I consider this to be within typical market variation/imperfection. Therefore it may be that there is a negative or positive impact identified if the impact is within that range, but given that it is indistinguishable from what amounts to the background noise or static within the real estate data, I do not consider indications of +/-5% to support a finding of a negative or positive impact.

Impacts greater than that range are however, considered to be strong indications of impacts that fall outside of typical market imperfection. I have used this as a guideline while considering the impacts identified within this report.

Steps Involved in the Analysis

The paired sales analysis employed in this report follows the following process:

1. Identify sales of property adjoining existing solar farms.
2. Compare those sales to similar property that does not adjoin an existing solar farm.
3. Confirmation of sales are noted in the analysis write ups.
4. Distances from the homes to panels are included as a measure of the setbacks.
5. Topographic differences across the solar farms themselves are likewise noted along with demographic data for comparing similar areas.

There are a number of Sale/Resale comparables included in the write ups, but most of the data shown is for sales of homes after a solar farm has been announced (where noted) or after a solar farm has been constructed.

IV. Research on Solar Farms

A. Appraisal Market Studies

I have also considered a number of impact studies completed by other appraisers as detailed below.

CohnReznick – Property Value Impact Study: Adjacent Property Values Solar Impact Study: A Study of Eight Existing Solar Facilities

Patricia McGarr, MAI, CRE, FRICS, CRA and Andrew R. Lines, MAI with CohnReznick completed an impact study for a proposed solar farm in Cheboygan County, Michigan completed on June 10, 2020. I am familiar with this study as well as a number of similar such studies completed by CohnReznick. I have not included all of these studies but I submit this one as representative of those studies.

This study addresses impacts on value from eight different solar farms in Michigan, Minnesota, Indiana, Illinois, Virginia and North Carolina. These solar farms are 19.6 MW, 100 MW, 11.9 MW, 23 MW, 71 MW, 61 MW, 40 MW, and 19 MW for a range from 11.9 MW to 100 MW with an average of 31 MW and a median of 31.5 MW. They analyzed a total of 24 adjoining property sales in the Test Area and 81 comparable sales in the Control Area over a five-year period.

The conclusion of this study is that there is no evidence of any negative impact on adjoining property values based on sales prices, conditions of sales, overall marketability, potential for new development or rate of appreciation.

Christian P. Kaila & Associates – Property Impact Analysis – Proposed Solar Power Plant Guthrie Road, Stuarts Draft, Augusta County, Virginia

Christian P. Kaila, MAI, SRA and George J. Finley, MAI developed an impact study as referenced above dated June 16, 2020. This was for a proposed 83 MW facility on 886 acres.

Mr. Kaila interviewed appraisers who had conducted studies and reviewed university studies and discussed the comparable impacts of other development that was allowed in the area for a comparative analysis of other impacts that could impact viewshed based on existing allowed uses for the site. He also discussed in detail the various other impacts that could cause a negative impact and how solar farms do not have such characteristics.

Mr. Kaila also interviewed County Planners and Real Estate Assessor's in eight different Virginia counties with none of the assessor's identifying any negative impacts observed for existing solar projects.

Mr. Kaila concludes on a finding of no impact on property values adjoining the indicated solar farm.

Fred Beck, MAI, CCIM – Impact Analysis in Lincoln County, North Carolina, 2013

Mr. Fred Beck, MAI, CCIM completed an impact analysis in 2013 for a proposed solar farm that concluded on a negative impact on value. That report relied on a single cancelled contract for an adjoining parcel where the contracted buyers indicated that the solar farm was the reason for the cancellation. It also relied on the activities of an assessment impact that was applied in a nearby county.

Mr. Beck was interviewed as part of the Christian Kalia study noted above. From that I quote "Mr. Beck concluded on no effect on moderate priced homes, and only a 5% change in his limited research of higher priced homes. His one sale that fell through is hardly a reliable sample."

Also noted in the Christian Kalia interview notes is a response from Mr. Beck indicating that in his opinion "the homes were higher priced homes and had full view of the solar farm." Mr. Beck indicated in the interview if landscaping screens were employed he would not see any drop in value.

NorthStar Appraisal Company – Impact Analysis for Nichomus Run Solar, Pilesgrove, New Jersey, 2020

Mr. William J. Sapio, MAI with NorthStar Appraisal Company considered a matched pair analysis for the potential impact on adjoining property values to this proposed 150 MW solar farm. Mr. Sapio considered sales activity in a subdivision known as Point of Woods in South Brunswick Township and identified two recent new homes that were constructed and sold adjoining a 13 MW solar farm and compared them to similar homes in that subdivision that did not adjoin the solar farm. These homes sold in the $1,290,450 to $1,336,613 price range and these homes were roughly 200 feet from the closest solar panel.

Based on this analysis, he concluded that the adjoining solar farm had no impact on adjoining property value.

MR Valuation Consulting, LLC – The Kuhl Farm Solar Development and The Fischer Farm Solar Development – New Jersey, 2012

Mr. Mark Pomykacaz, MAI MRICS with MR Valuation Consulting, LLC considered a matched pair analysis for sales near these solar farms. The sales data presented supported a finding of no impact on property value for nearby and adjoining homes and concludes that there is no impact on marketing time and no additional risk involved with owning, building, or selling properties next to the solar farms.

Mary McClinton Clay, MAI – McCracken County Solar Project Value Impact Report, Kentucky, 2021

Ms. Mary Clay, MAI reviewed a report by Kirkland Appraisals in this case and also provided a differing opinion of impact. Having testified opposite Ms. Clay, she has stated that she does not confirm her data and does not use an appropriate method for time adjustments.

The comments throughout this study are heavy in adjectives, avoids stating facts contrary to the conclusion and shows a strong selection bias.

Kevin T. Meeks, MAI – Corcoran Solar Impact Study, Minnesota, 2017

Mr. Kevin Meeks, MAI reviewed a report by Kirkland Appraisals in this case and also provided additional research on the topic with additional paired sales. The sales he considered are well presented and show that they were confirmed by third parties and all of the broker commentary is aligned with the conclusion that the adjoining solar farms considered had no impact on the adjoining home values.

Mr. Meeks also researched a 100 MW project in Chisago County, known as North Star Solar Garden in MN. He interviewed local appraisers and a broker who was actively marketing homes adjoining that solar farm to likewise support a finding of no impact on property value.

John Keefe, Chisago County Assessor, Chisago County Minnesota Assessor's Office, 2017

This study was completed by the Chisago County Minnesota Assessor's Office on property prices adjacent to and in close vicinity of a 1,000-acre North Star solar farm in Minnesota. The study concluded that the North Star solar farm had "no adverse impact" on property values. Mr. Keefe further stated that, "It seems conclusive that valuation has not suffered."

Tim Connelly, MAI – Solar Impact Study of Proposed Solar Facility, New Mexico, 2023

This study is a detailed review of an Impact Study completed by Kirkland Appraisals, LLC for Rancho Viejo Solar. It goes through all of the analysis and confirms the applicability and reliability of the methods and conclusions. Mr. Connelly, MAI concurs that "the proposed solar project will not have a negative impact on market value, marketability, or enjoyment of property in the immediate vicinity of the proposed project."

Donald Fisher, ARA, 2021

Donald Fisher has completed a number of studies on solar farms and was quoted in February 15, 2021 stating, "Most of the locations were in either suburban or rural areas, and all of those studies found either a neutral impact or, ironically, a positive impact, where values on properties after the installation of solar farms went up higher than time trends."

Jennifer N. Pitts, MAI - Study of Residential Market Trends Surrounding Six Utility-Scale Solar Projects in Texas, 2023

This study was completed by Real Property Analytics with Ms. Pitts along with Erin M. Kiella, PhD, and Chris Yost-Bremm, PhD. This analysis considered these solar farms through different stages of the market from announcement of the project, during construction, and after construction. They found no indication of a negative impact on sales price, the ratio of sales price to listing price, or the number of Days on Market. They also researched individual sales and interviewed local brokers who confirmed that market participants were knowledgeable of the solar projects and did not result in a negative impact on sales price or marketing time.

Michael S. MaRous, MAI, CRE – Market Impact Analysis Langdon Mills Solar, Columbia County, Wisconsin, 2023

This study was completed by MaRous & Company and singed by Machael S. MaRous. This analysis included consideration of solar projects in 13 states and including 7 solar projects in Wisconsin. This includes 22 matched pairs with a conclusion on Page 70 that states "there does not appear to have been any measurable negative impact on surrounding residential property values due to the proximity of a solar farm."

This analysis was further supported by Assessor Surveys including assessors in Wisconsin which found no instance of an assessor in Wisconsin identifying any negative impacts from solar farms on adjoining property values.

Conclusion of Impact Studies

Of the 11 studies noted 9 included actual sales data to derive an opinion of no impact on value. The two studies to conclude on a negative impact includes the Fred Beck study based on no actual sales data, and he has since indicated that with landscaping screens he would not conclude on a negative impact. The other study by Mary Clay shows improper adjustments for time, a lack of confirmation of sales comparables, and exclusion of data that does not support her initial position.

I have relied on these studies as additional support for the findings in this impact analysis.

B. Articles

I have also considered a number of articles on this subject as well as conclusions and analysis as noted below.

Farm Journal Guest Editor, March 22, 2021 – Solar's Impact on Rural Property Values

Andy Ames, ASFMRA (American Society of Farm Managers and Rural Appraisers) published this article that includes a discussion of his survey of appraisers and studies on the question of property value related to solar farms. He discusses the university studies that I have cited as well as Patricia McGarr, MAI.

He also discusses the findings of Donald A. Fisher, ARA, who served six years at the Chair of the ASFMRA's National Appraisal Review Committee. He is also the Executive Vice President of the CNY Pomeroy Appraiser and has conducted several market studies on solar farms and property impact. He is quoted in the article as saying, "Most of the locations were in either suburban or rural areas, and all of those studies found either a neutral impact, or ironically, a positive impact, where values on properties after installation of solar farms went up higher than time trends."

Howard Halderman, AFM, President and CEO of Halderman Real Estate and Farm Management attended the ASFMRA solar talk hosted by the Indiana Chapter of the ASFMRA and he concludes that other rural properties would likely see no impact and farmers and landowners shown even consider possible benefits. "In some cases, farmers who rent land to a solar company will insure the viability of their farming operation for a longer time period. This makes them better long-term tenants or land buyers so one can argue that higher rents and land values will follow due to the positive impact the solar leases offer."

More recently in August 2022, Donald Fisher, ARA, MAI and myself led a webinar on this topic for the ASFMRA discussing the issues, the university studies and specific examples of solar farms having no impact on adjoining property values.

National Renewable Energy Laboratory – Top Five Large-Scale Solar Myths, February 3, 2016

Megan Day reports form NREL regarding a number of concerns neighbors often express. Myth #4 regarding property value impacts addresses specifically the numerous studies on wind farms that show no impact on property value and that solar farms have a significantly reduced visual impact from wind farms. She highlights that the appearance can be addressed through mitigation measures to reduce visual impacts of solar farms through vegetative screening. Such mitigations are not available to wind farms given the height of the windmills and again, those studies show no impact on value adjoining wind farms.

North Carolina State University: NC Clean Energy Technology Center White Paper: Balancing Agricultural Productivity with Ground-Based Solar Photovoltaic (PV) Development (Version 2), May 2019

Tommy Cleveland and David Sarkisian wrote a white paper for NCSU NC Clean Energy Technology Center regarding the potential impacts to agricultural productivity from a solar farm use. I have interviewed Tommy Cleveland on numerous occasions and I have also heard him speak on these issues at length as well. He addresses many of the common questions regarding how solar farms work and a detailed explanation of how solar farms do not cause significant impacts on the soils, erosion and other such concerns. This is a heavily researched paper with the references included.

North Carolina State University: NC Clean Energy Technology Center White Paper: Health and Safety Impacts of Solar Photovoltaics, May 2017

Tommy Cleveland wrote a white paper for NCSU NC Clean Energy Technology Center regarding the health and safety impacts to address common questions and concerns related to solar farms. This is a heavily researched white paper addressing questions ranging from EMFs, fire safety, as well as vegetation control and the breakdown of how a solar farm works.

C. Broker Commentary

In the process of working up the matched pairs used later in this report, I have collected comments from brokers who have actually sold homes adjoining solar farms indicating that the solar farm had no impact on the marketing, timing, or sales price for the adjoining homes. I have comments from brokers noted within the solar farm write ups of this report including brokers from Kentucky, Virginia, Tennessee, and North Carolina. I have additional commentary from other states including New Jersey and Michigan that provide the same conclusion.

V. University Studies

I have also considered the following studies completed by four different universities related to solar farms and impacts on property values.

A. University of Texas at Austin, May 2018

An Exploration of Property-Value Impacts Near Utility-Scale Solar Installations

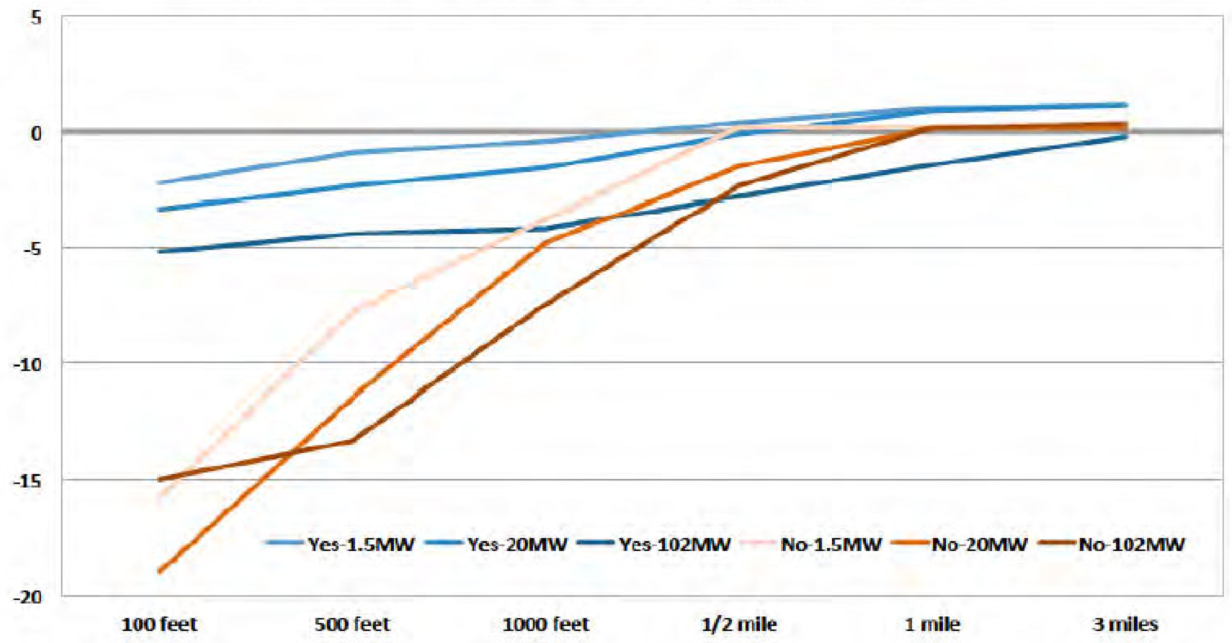
This study considers solar farms from two angles. First it looks at where solar farms are being located and concludes that they are being located primarily in low density residential areas where there are fewer homes than in urban or suburban areas.

The second part is more applicable in that they conducted a survey of appraisers/assessors on their opinions of the possible impacts of proximity to a solar farm. They consider the question in terms of size of the adjoining solar farm and how close the adjoining home is to the solar farm. I am very familiar with this part of the study as I was interviewed by the researchers multiple times as they were developing this. One very important question that they ask within the survey is very illustrative. They asked if the appraiser being surveyed had ever appraised a property next to a solar farm. There is a very noticeable divide in the answers provided by appraisers who have experience appraising property next to a solar farm versus appraisers who self-identify as having no experience or knowledge related to that use.

On Page 16 of that study they have a chart showing the responses from appraisers related to proximity to a facility and size of the facility, but they separate the answers as shown below with appraisers with experience in appraising properties next to a solar farm shown in blue and those inexperienced shown in brown. Even within 100 feet of a 102 MW facility the response from experienced appraisers were -5% at most on impact. While inexperienced appraisers came up with significantly higher impacts. This chart clearly shows that an uninformed response widely diverges from the sales data available on this subject.

Chart B.2 - Estimates of Property Value Impacts (%) by Size of Facility, Distance, & Respondent Type

Have you assessed a home near a utility-scale solar installation?



Furthermore, the question cited above does not consider any mitigating factors such as landscaping buffers or screens which would presumably reduce the minor impacts noted by experienced appraisers on this subject.

The conclusion of the researchers is shown on Page 23 indicated that "Results from our survey of residential home assessors show that the majority of respondents believe that proximity to a solar installation has either no impact or a positive impact on home values."

This analysis supports the conclusion of this report that the data supports no impact on adjoining property values.

B. *University of Rhode Island, September 2020*

Property Value Impacts of Commercial-Scale Solar Energy in Massachusetts and Rhode Island

The University of Rhode Island published a study entitled **Property Value Impacts of Commercial-Scale Solar Energy in Massachusetts and Rhode Island** on September 29, 2020 with lead researchers being Vasundhara Gaur and Corey Lang. I have read that study and interviewed Mr. Corey Lang related to that study. This study is often cited by opponents of solar farms but the findings of that study have some very specific caveats according to the report itself as well as Mr. Lang from the interview.

While that study does state in the Abstract that they found depreciation of homes within 1-mile of a solar farm, that impact is limited to non-rural locations. On Pages 16-18 of that study under Section 5.3 Heterogeneity in treatment effect they indicate that the impact that they found was limited to non-rural locations with the impact in rural locations effectively being zero. For the study they defined "rural" as a municipality/township with less than 850 population per square mile.

They further tested the robustness of that finding and even in areas up to 2,000 population per square mile they found no statistically significant data to suggest a negative impact. They have not specifically defined a point at which they found negative impacts to begin, as the sensitivity study stopped checking at the 2,000-population dataset.

Where they did find negative impacts was in high population density areas that was largely a factor of running the study in Massachusetts and Rhode Island which the study specifically cites as being the 2nd and 3rd most population dense states in the USA. Mr. Lang in conversation as well as in recorded presentations has indicated that the impact in these heavily populated areas may reflect a loss in value due to the scarce greenery in those areas and not specifically related to the solar farm itself. In other words, any development of that site might have a similar impact on property value.

Based on this study I have checked the population for the Cortland Township of Dekalb County. Which has a population of 11,119 in 2025 based on esri data derived from SiteToDoBusiness. Mount Pulaski Township has a total area of 35.03 square miles. This indicates a population density of 317.4 people per square mile which puts this well below the threshold indicated by the Rhode Island Study. I therefore conclude that the Rhode Island Study supports the indication of no impact on adjoining properties for the proposed solar farm project.

esri
THE SCIENCE OF WHERE

2020 Census Profile

Cortland township, IL
Cortland township, IL (1703716483)
Geography: County Subdivision

Prepared by Esri

	2010		2020		2025		Annual Rate		
	Number	Percent	Number	Percent	Number	Percent	2000-2020	2010-2020	2020-2025
Total Population	10,921	100.0%	11,244	100.0%	11,119	100.0%	2.46%	0.29%	-0.21%
Household Population	10,921	100.0%	11,244	100.0%	11,119	100.0%	2.47%	0.29%	-0.21%
Group Quarters	0	0.0%	0	0.0%	0	0.0%	-100.00%	0.00%	0.00%
Population Density	312.0	-	321.0	-	317.4	-			
Total Housing Units	4,245	100.0%	4,357	100.0%	4,511	100.0%	2.49%	0.26%	0.66%
Total Households	3,999	94.2%	4,187	96.1%	4,343	96.3%	2.48%	0.46%	0.70%
Total Vacant	246	5.8%	170	3.9%	168	3.7%	2.69%	-3.63%	-0.23%
Average Household Size	2.73	-	2.69	-	2.56	-	-		-

C. University of Rhode Island, 2023

House of the rising sun: The effect of utility-scale solar arrays on housing prices

The University of Rhode Island published this study completed by the same researchers as the prior Rhode Island study, Vasundhara Gaur and Corey Lang. This study focused on Massachusetts and Rhode Island and found the opposite of the prior study. This study indicates that they found 1.5% to 3.6% declines in property value within 0.5 miles of a solar array and that this is mostly driven by solar projects found on agricultural land.

D. Georgia Institute of Technology, October 2020

Utility-Scale Solar Farms and Agricultural Land Values

This study was completed by Nino Abashidze as Post-Doctoral Research Associate of Health Economics and Analytics Labe (HEAL), School of Economics, Georgia Institute of Technology. This research was started at North Carolina State University and analyzes properties near 451 utility-scale ground-mount solar installations in NC that generate at least 1 MW of electric power. A total of 1,676 land sales within 5-miles of solar farms were considered in the analysis.

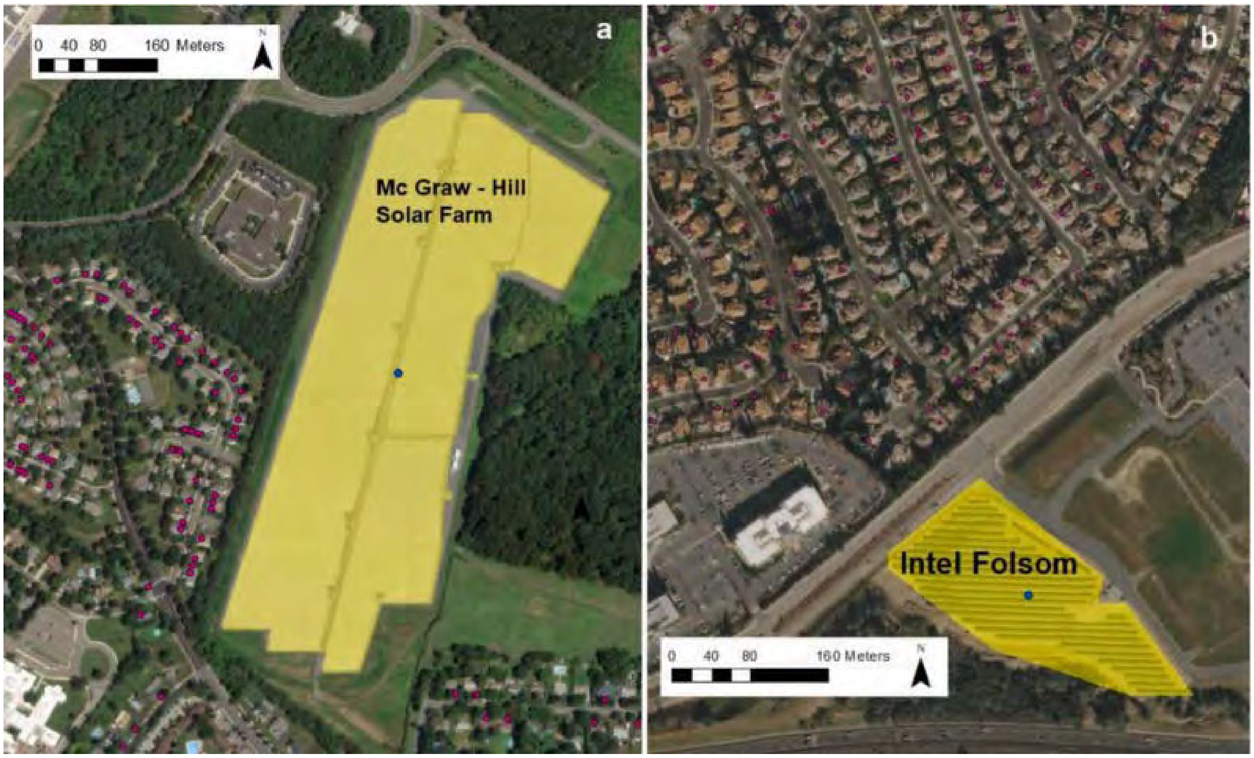
This analysis concludes on Page 21 of the study "Although there are no direct effects of solar farms on nearby agricultural land values, we do find evidence that suggests construction of a solar farm may create a small, positive, option -value for land owners that is capitalized into land prices. Specifically, after construction of a nearby solar farm, we find that agricultural land that is also located near transmission infrastructure may increase modestly in value."

This study supports a finding of no impact on adjoining agricultural property values and in some cases could support a modest increase in value.

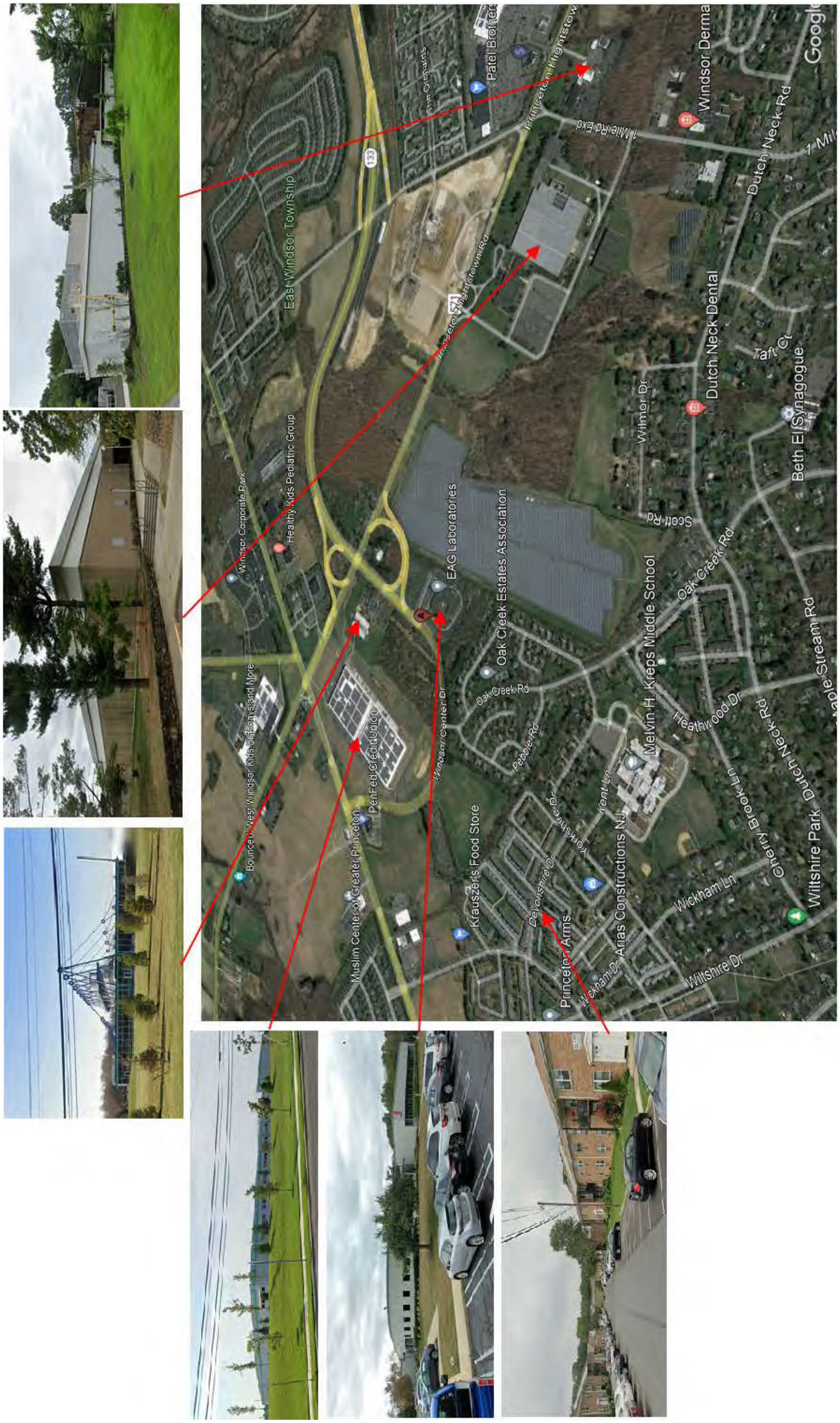
E. Lawrence Berkeley National Lab, March 2023

Shedding light on large-scale solar impacts: An analysis of property values and proximity to photovoltaics across six U.S. states

This study was completed by researchers including Salma Elmallah, Ben Hoen, K. Sydny Fujita, Dana Robson, and Eric Brunner. This analysis considers home sales before and after solar farms were installed within a 1-mile radius and compared them to home sales before and after the solar farms at a 2-4-mile radius. The conclusion found a 1.5% impact within 0.5 mile of a solar farm as compared to homes 2-4 miles from solar farms. This is the largest study of this kind on solar and addresses a number of issues, but also does not address a number of items that could potentially skew these results. First of all, the study found no impact in the three states with the most solar farm activity and only found impacts in smaller sets of data. The data does not in any way discuss actual visibility of solar farms or address existing vegetation screens. This lack of addressing this is highlighted by the fact that they suggest in the abstract that vegetative shading may be needed to address possible impacts. Another notable issue is the fact that they do not address other possible impacts within the radii being considered. This lack of consideration is well illustrated within the study on Figure A.1 where they show satellite images of McGraw Hill Solar Farm in NJ and Intel Folsom in CA. The Folsom image clearly shows large highways separating the solar farm from nearby housing, but with tower office buildings located closer to the housing being considered. In no place do they address the presence of these towers that essentially block those homes from the solar farm in some places. An excerpt of Fig. A.1. is shown below.



For each of these locations, I have panned out a little further on Google Earth to show the areas illustrated to more accurately reflect the general area. For the McGraw Hill Solar Farm you can see there is a large distribution warehouse to the west along with a large offices and other industrial uses. Further to the west is a large/older apartment complex (Princeton Arms). To the east there are more large industrial buildings. However, it is even more notable that 1.67 miles away to the west is Cranbury Golf Club. Given how this analysis was set up, these homes around the industrial buildings are being compared to homes within this country club to help establish impacts from the solar farm. Even considering the idea that each set is compared to itself before and after the solar farm, it is not a reasonable supposition that homes in each area would appreciate at the same rates even if no solar farm was included. Furthermore the site where the solar farm is located an all of the surrounding uses not improved with residential housing to the south is zoned Research Office (RO) which allows for: manufacturing, preparation, processing or fabrication of products, with all activities and product storage taking place within a completely enclosed building, scientific or research laboratories, warehousing, computer centers, pharmaceutical operations, office buildings, industrial office parks among others. Homes adjoining such a district would likely have impacts and influences not seen in areas zoned and surrounded by zoning strictly for residential uses.


East Windsor Township
Windsor Corporate Park
Healthy Kids Pediatric Group
Bounce U West Windsor Kids Birthdays and More
PenFed Credit Union
Muslim Center of Greater Princeton
EAG Laboratories
Oak Creek Estates Association
Windsor Center Dr
Oak Creek Rd
Pebble Rd
Krauszer's Food Store
Princeton Arms
Devonshire Dr
Yorkshire Dr
Kent Ln
Arias Constructions NJ
Wickham Dr
Melvin H. Kreps Middle School
Heathwood Dr
Wickham Ln
Wiltshire Dr
Wiltshire Park
Cherry Brook Ln
Dutch Neck Rd
Scott Rd
Wilmer Dr
Beth El Synagogue
Dutch Neck Dental
Taft Ct
Princeton Hightstown Rd
Patel Brothers
133
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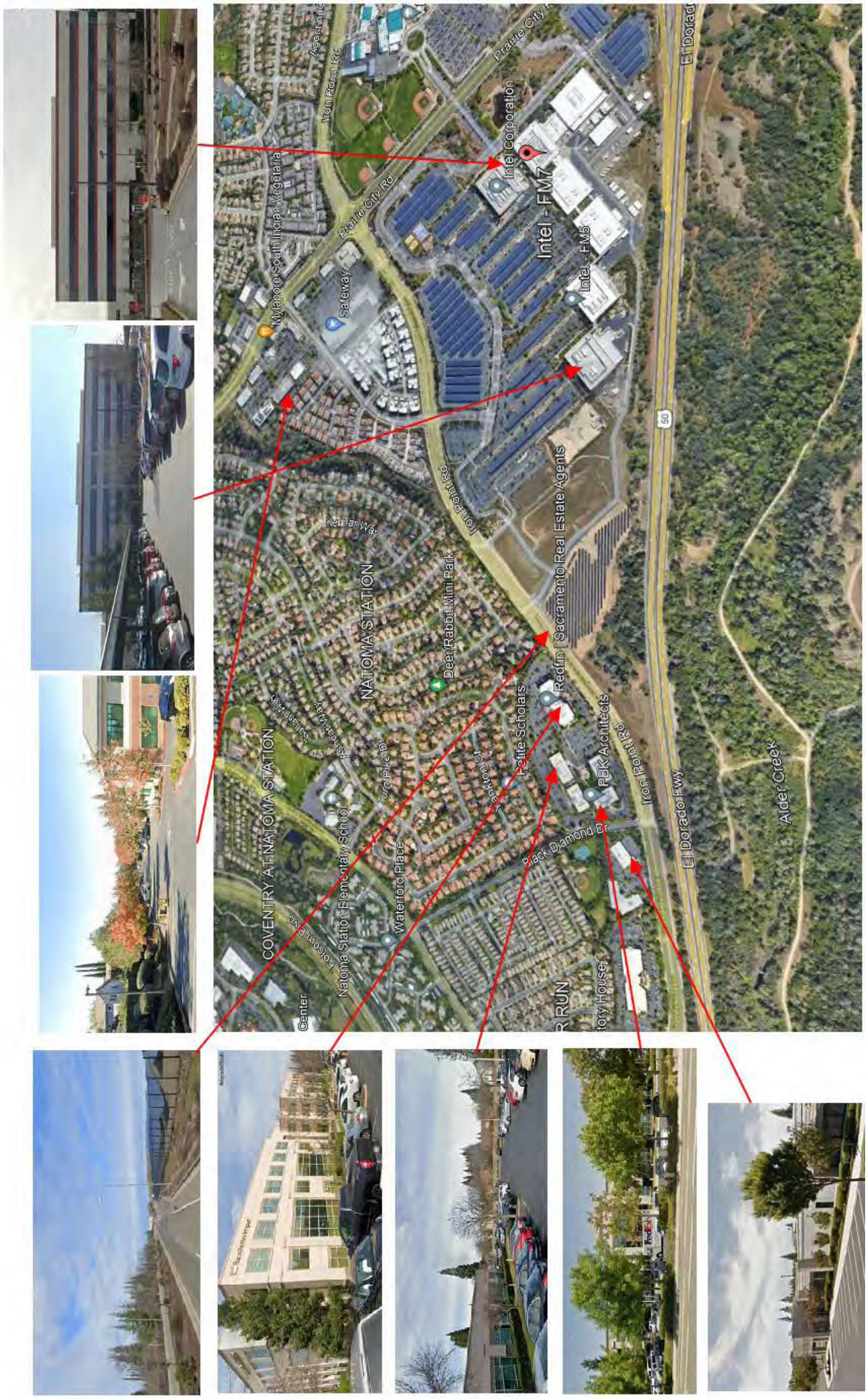
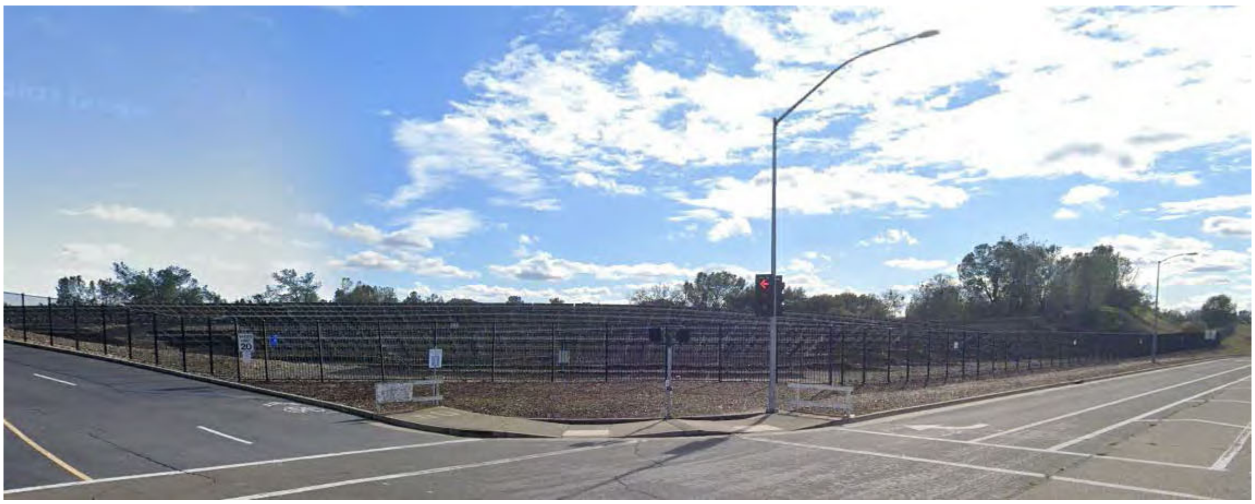

Intel Corporation
Intel - FM7
Intel - FM6
Prairie City Rd
Iron Point Rd
Safeway
Mylapore South Indian Vegetarian
NATOMA STATION
Deer Rabbit Mini Park
Kelmar Way
Redfin | Sacramento Real Estate Agents
Polite Scholars
PBK Architects
Black Diamond Dr
COVENTRY AT NATOMA STATION
Waterford Place
El Dorado Fwy
Alder Creek
50

On the Intel Folsom map I have shown the images of two of the Intel Campus buildings, but there are roughly 8 such buildings on that site with additional solar panels installed in the parking lot as shown in that image. I included two photos that show the nearby housing having clear and close views of adjoining office parking lots. This illustrates that the homes in that 0.5-mile radius are significantly more impacted by the adjoining office buildings than a solar farm located distantly that are not within the viewshed of those homes. Also, this solar farm is located on land adjoining the Intel Campus on a tract that is zoned M-1 PD, which is a Light Industrial/Manufacturing zoning. Nearby homes. Furthermore, the street view at the solar farm shows not only the divided four-lane highway that separates the office buildings and homes from the solar farm, but also shows that there is no landscaping buffer at this location. All of these factors are ignored by this study. Below is another image of the Folsom Solar at the corner of Iron Point Road and Intel West Driveway which shows just how close and how unscreened this project is.



Compare that image from the McGraw Hill Street view facing south from County Rte 571. There is a distant view and much of the project is hidden by a mix of berms and landscaping. The analysis makes no distinction between these projects.

The third issue with this study is that it identifies impacts following development in areas where they note that “more adverse home price impacts might be found where LSPVPS (large-scale photovoltaic project) displace green space (consistent with results that show higher property values near green space." The problem with this statement is that it assumes that the greenspace is somehow guaranteed in these areas, when in fact, they could just as readily be developed as a residential subdivision and have the same impacts. They have made no effort to differentiate loss of greenspace through other development purposes such as schools, subdivisions, or other uses versus the impact of solar farms. In other words, they may have simply identified the impact of all forms of development on property value. This would in fact be consistent with the comments in the Rhode Island study where the researchers noted that the loss of greenspace in the highly urban areas was likely due to the loss of greenspace in particular and not due to the addition of solar panels.

Despite these three shortcomings in the analysis – the lack of differentiating landscape screening, the lack of consideration of other uses within the area that could be impacting property values, and the lack of consideration of alternative development impacts – the study still only found impacts between 0 and 5% with a conclusion of 1.5% within a 0.5-mile radius. As discussed later in this report, real estate is an imperfect market and real estate transactions typically sell for much wider variability than 5% even where there are no external factors operating on property value.

I therefore conclude that the minor impacts noted in this study support a finding of no impact on property value. Most appraisals show a variation between the highest and lowest comparable sale that is substantially greater than 1.5% and this measured impact for all its flaws would just be lost in the static of normal real estate transactions.

F. Loyola University Chicago by Simeng Hao and Gilbert Michaud, 2024

Assessing Property Value Impacts Near Utility-Scale Solar in the Midwest

This was originally part of the Master's Thesis by Simeng Hao in 2023 but updated for publication.

This study considered 70 utility-scale facilities built in the Midwest from 2009 to 2022 using data from the Lawrence Berkley National Laboratory. Using the difference-in-differences, method he found that proximity to solar project increased property values by 0.5% to 2.0%.

Furthermore, the research in this project shows that solar farms tend to be located in places with lower average home values by 2 to 3% compared to other random adjoining zip codes. This is not to say those areas are depressed, but those rural areas on average have lower prices than more suburban or urban areas nearby. This highlights the problem with a number of the studies on this issue in that they compare home values near the solar project to homes further from the solar project, but they are largely identifying the difference between rural and less-rural areas. The impact range identified by the Berkeley Study for example is exactly in line with that random difference identified by Simeng Hao.

The original Master's Thesis included a summary of seven other studies including many of those noted above that considered a total of 3,296 projects with results ranging from 1.7% decline in value to no impact. Only 2 of the studies identified found negative results that ranged from 0.82% to 1.7% impact on property value, while the other five studies found no consistent negative impact.

Given that 5 of the 7 studies identified show no negative impact and the analysis by Mr. Hao shows a positive relationship up to 2%, I consider this analysis to support my conclusions on no impact on property value. While statistical studies note impacts of +/- 2%, as noted earlier in this report, market imperfection is generally greater than that rate and supports a conclusion of no impact. Essentially, while the statistical studies are showing minor variation, applying that to any one particular property whether plus or minus, would be unsupportable given that market imperfection is greater than that purported adjustment.

G. *Purdue University by Binayak Kunwar, 2024*

Impact of Commercial and Utility-Scale Solar Energy on Farmland Price

This was completed as part of the Master of Science Thesis by the author to the Department of Agricultural Economics at Purdue University. This study focuses on farmland prices between 2015 and 2020 in Indiana. This study identified a premium up to 2.1% for higher priced farmland in proximity to solar projects. The study further identified adjustments for size, crop productivity and proximity to urban areas. The study interestingly notes that the higher priced farmland is both with high productivity and closer to urban areas, while the enhancement from adjoining or nearby solar is greatest on those types of farmland.

H. *Virginia Polytechnic Institute and Sates University by Chenyang Hu et al, 2025*

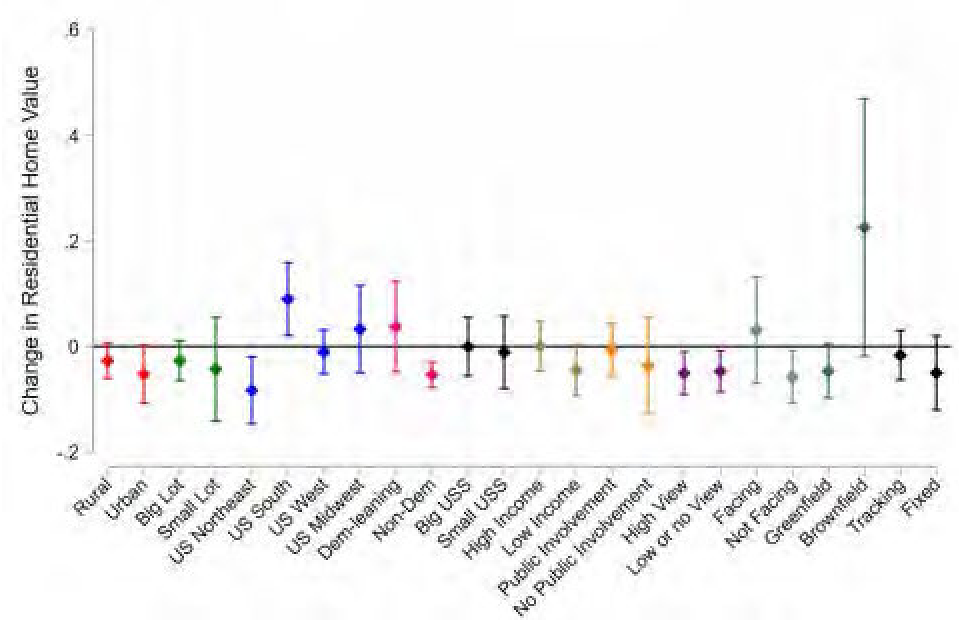
Impact of large-scale solar on property values in the United States: Diverse effects and causal mechanisms

This study follows a similar pattern of the Lawrence Berkeley study using analysis looking at properties within 3 miles of existing solar farms and comparing that data to property data 3 to 6 miles away. The findings of this study indicate a reduction in value for homes within 0.5-miles of 7.2% if it has no view of the project or 7.9% if it has a view of the project. It also concluded on a 4.8% impact up to 3 miles away. The same study concluded on an increase in value for undeveloped or farm land by an average of 19.4% within 2 miles of a solar project.

Of note, this analysis did not consider the size of the homes to be a relevant statistic and made no efforts to compare similar sized homes or adjustments for dissimilar sized homes which is a significant limitation of relying on this data.

Furthermore, this study, like the other studies that use this methodology, assumes that it is reasonable to compare home sales data within the 3-mile radius to activity in the outer ring area. However, this assumption fails to show that this is a reasonable assumption. In countless examples of solar projects we have identified across the country, the 3 to 5 mile radius includes towns and higher development areas closer to town and necessarily is showing a difference between rural values and town values. The Loyola University study illustrates this effect as outlined above.

This study also concluded that there are different factors that can influence these impacts. As shown in the chart below the lines above the line show positive impacts with the biggest positive impact being solar projects in Brownfield areas, but also includes positive impacts in the South, Midwest, Democrat leaning area, and facing of the panels.



Summary of University Studies

I have shown in the chart below a breakdown of the conclusions from these studies. The Low end of the range is showing the greatest negative or lowest positive while the High end is the lowest negative and highest positive. Where the impacts are positive they are showing an increase in value from proximity to a solar project.

The overall range is -7.9% to a +19.04% with an average between -2.81% and +2.88%. These ranges are clearly hovering in a nominal range that correspond with Market Imperfection as identified earlier in this report. With a range that tight, it is not a significant impact shown by these studies and is suggesting a positive potential that is almost as great as the negative potential.

These generalized studies do not address landscaping screens, differences in school districts, physical conditions of the homes, considerations for higher priced subdivisions near lower priced subdivisions, ages of homes, renovations or updates, whether the homes were on gravel or paved roads, lot size differences, amenity differences, lot premiums for river or conservation adjacency, and there was no data verification to identify atypical motivations of buyers and sellers. These generalized studies suggest a level of precision that should be considered with caution by appraisers for adjustments as they do not account for those other factors and they fall within typical market imperfection.

Table 2: Breakdown of University Study Findings

	Source	Type	Year	Low	High	Conclusion	Note on Proximity
A	UTA	Published Study	2018	-5.00%	1.00%		1000 feet
B	URI	Published Study	2020	-1.70%	0.00%	-1.70%	1 mile
						0.00%	1mile rural
C	URI	Published Study	2023	-3.60%	-1.50%		1/2 mile
D	GATech	Published Study	2020	0.00%	0.00%		Farmland
E	Lawrence	Published Study	2023	-5.60%	0.00%	-2.30%	1/4 mile
						-1.50%	1/2 mile
						-0.80%	1/2 to 1 mile
F	Loyola	Published Study	2024	0.50%	2.00%		Proximity
G	Purdue	Masters Thesis	2024	0.80%	2.10%		Proximity
H	VATech	Published Study	2025	-7.90%	19.40%	-7.20%	1/2 mile
						-4.80%	3 mile
						19.40%	Farmland - 2 mi

	Low	High
Average	-2.81%	2.88%
Median	-2.65%	0.50%
High	0.80%	19.40%
Low	-7.90%	-1.50%
Residential		
Average	-3.21%	-0.17%
Median	-3.60%	0.00%
High	0.80%	2.10%
Low	-7.90%	-4.80%
Farmland		
Average	9.70%	9.70%
Median	9.70%	9.70%
High	19.40%	19.40%
Low	0.00%	0.00%

VI. Assessor Surveys

I have been working on a survey of Assessors in multiple states regarding property values related to solar farms and whether or not the local assessors have found any data to support any changes to value on property adjoining solar farms. In this process I have contacted every assessor's office by email and I have received responses by email and by phone from a number of these counties for each state surveyed. I have not completed such a survey in Illinois as of yet.

I have not had any assessor indicate a negative adjustment due to adjacency to a solar farm in any state. These responses total 188 with 170 definitively indicating no negative adjustments are made to adjoining property values, 18 providing no response to the question, and 0 indicating that they do address a negative impact on adjoining property value.

Summary of Assessor Surveys				
State	**Responses**	**No Impact**	**Yes Impact**	**No Comment**
North Carolina	39	39		
Virginia	16	16		
Indiana	31	31		
Colorado	15	7		8
Georgia	33	33		
Kentucky	10	6		4
Mississippi	4	2		2
New Mexico	5	5		
Ohio	24	20		4
South Carolina	11	11		
Totals	188	170		18

VII. Viability of Solar Farms returning to Agricultural Use

A question that often arises with solar farms is the displacement of agricultural land as part of the solar farm development. As noted earlier in this report, a solar farm is a temporary use of the land that at the end of the life of the project (approximately 40 years) will be removed and the land restored to the current condition. Topsoil is to be maintained throughout the project with minimal grading in the initial development and anywhere topsoil is removed, it is to be stockpiled for later restoration.

The viability of restoring the land to agricultural use following 40 years as a solar farm is well supported through a wide variety of resources. The NCSU White Paper identified earlier in this report - **North Carolina State University: NC Clean Energy Technology Center White Paper: Balancing Agricultural Productivity with Ground-Based Solar Photovoltaic (PV) Development (Version 2), May 2019 –** specifically addresses common questions and supports a lack of impacts on soils, erosion, and related issues. This is a heavily researched paper that identifies multiple supporting references and resources.

The American Society of Farm Managers and Rural Appraisers (ASFMRA) has looked at the issue of farms being used for solar and considers it to be a good means of providing farmers with a more diverse and stable income as part of a mix of agricultural incomes. They further consider this to be a good method for preserving farmland for the future. After 40 years of the land being in what amounts to pasture, the land will have rested, which allows the soil quality to improve, and be ready to return to agricultural production if the owners choose to do so.

The US Department of Energy has a report on The 5 Cs of Agrivoltaic Success Factors in the United States: Lesson from InSPIRE Research Study that was published by the National Renewable Energy Laboratory (NREL) in August 2022. The 5 Cs include Crop Selection and Cultivation which addresses the methods, vegetation, and agricultural approaches used for agrivoltaic activities and research. They also include Compatibility, which addresses compatibility with agricultural uses. This paper specifically addresses compaction and soil quality and best practices for maintaining the soils as well as the benefits of pollinator habitat on surrounding farms.

The US Department of Energy also has a report from NREL called ASTRO: Facilitating Advancements in Low-Impact Solar Research, Deployment, and Dissemination that was published in August 2022. This paper also addresses agrivoltaics and working with solar and crops, solar and grazing, as well as solar beekeeping.

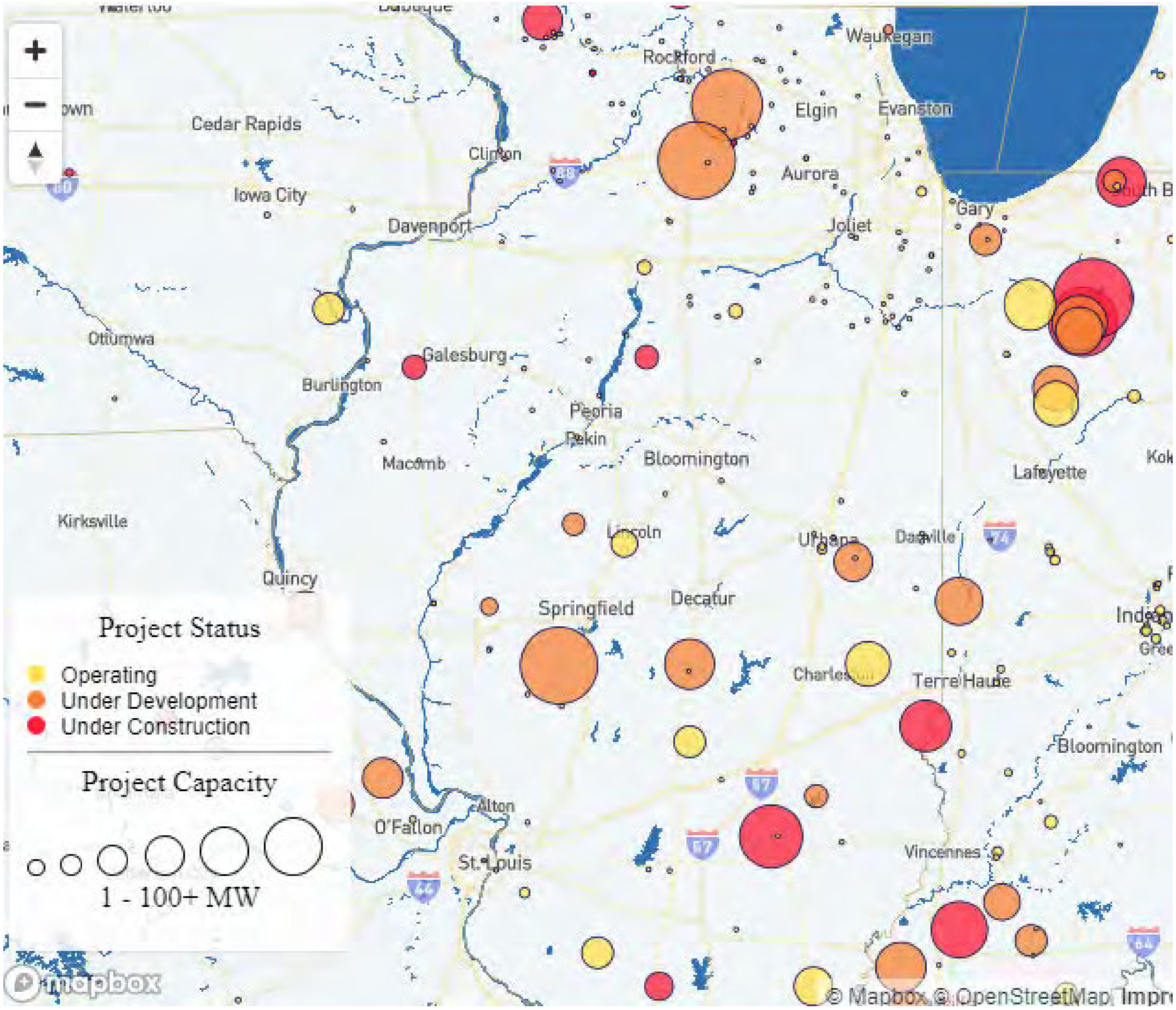
The US Department of Energy NREL estimated in 2016 that the entire energy needs of the US would require approximately 10 million acres of land based on solar panels that were 20% efficient. The total amount of agricultural land in the US is 897 million acres based on the US Department of Agriculture (USDA) as of 2020. This means that approximately 1.11% of US farmland could support 100% of US Energy needs based on those terms. This percentage gets even smaller if accounting for improving efficiency of solar panels as well as the ongoing agrivoltaic efforts for dual use of farmland and solar farms.

Furthermore, the Illinois Conservation Reserve Enhancement Program (CREP) as of Fall 2022 indicated that there are approximately 90,000 acres enrolled through 1,300 easements. This land is being paid by the US government to avoid agricultural production for periods that typically are binding for 15 years. The purpose is to manage crop yields, protect and enhance soils and wildlife. These same functions can occur on land leased for solar farms, without the US government payments.

VIII. Summary of Solar Projects In and Around Illinois

I have researched the solar projects in Illinois. I identified the solar farms through the Solar Energy Industries Association (SEIA) Major Projects List and then excluded the roof mounted facilities. The map below shows the solar farms that SEIA is tracking and shows a number under development. Most of the solar farms in northern Illinois are smaller dots while there are several much larger projects identified as "Under Development."

The proposed solar farm is more consistent with those numerous smaller dots shown in the map.



We have researched 25 solar farms in Illinois. A chart showing the breakdown of adjoining uses, the closest distance from home to panel and where the projects are located is included on the next page.

Solar #	Name	State	County	City	Output	Total Acres	Used Acres	Avg. Dist to home	Closest Home	Adjoining Use by Acre: Res	Agri	Agri/Res	Com
436	Cardinal SEC	IL	Kankakee	Bourbonnais	4	80	40	240	240	1%	75%	0%	24%
437	Grand Ridge	IL	LaSalle	Streator	20	160		601	140	8%	87%	5%	0%
497	Salem Solar	IL	Marion	Salem	10	120	80	747	265	5%	50%	45%	0%
520	Speedway SEC	IL	Will	Shorewood		30.9	8.19	1,299	135	17%	38%	24%	21%
521	Keersville SEC	IL	Will	Braidwood		35.52	20.3	635	285	65%	0%	35%	0%
1012	Wolfcastle	IL	Dekalb	Dekalb	2	40	40	455	455	1%	99%	0%	0%
1014	Depue	IL	Bureau	DePue	20	125.59	125.59	-	-	7%	93%	0%	0%
1015	French Road Solar 2	IL	Kane	Burlington	2	18.97	18.97	-	-	35%	65%	0%	0%
1016	Lily Lake Solar 2	IL	Kane	Lily Lake	2	16.59	16.59	310	310	5%	95%	0%	0%
1019	Cortland	IL	Dekalb	Dekalb	2	20.54	20.54	300	300	7%	93%	0%	0%
1020	Long John	IL	Dekalb	Sandwich	2	31.92	31.92	2,160	1,440	6%	28%	67%	0%
1021	Pine Road	IL	Dekalb	Sandwich		134	134	1,573	155	3%	84%	14%	0%
1023	Kish	IL	Boone	Belvidere	2	54.57	54.57	863	715	10%	80%	0%	10%
1024	Hilltop	IL	Winnebago	Wempleton	2	19.62	19.62	433	355	7%	84%	0%	9%
1025	Rockford	IL	Winnebago	Rockford	4.6	168.25	168.25	-	-	9%	83%	0%	9%
1026	Maple Park	IL	Dekalb	Maple Park	4.96	40.08	40.08	-	-	7%	93%	0%	0%
1055	Tully Monster	IL	Grundy	Morris	9	156.82	70	1469	180	4%	54%	37%	6%
1056	Rooks Creek	IL	Livingston	Pontiac	4.54	41.93	41.93	265	265	1%	99%	0%	0%
1077	Carbon Hill	IL	Grundy	Carbon Hill	7.42	41.33	24.94	285	285	27%	73%	0%	0%
1157	Cherry Grove	IL	Knox	Abingdon	5	63.15	63.15	589	520	16%	76%	8%	0%
1190	Books Solar	IL	Ogle	Leaf River	5	194.71	50.3	1299	470	11%	50%	39%	0%
	Freeport Solar 1	IL	Stephenson	Freeport	2								
	GRNE Solar	IL	Kendall	Yorkville	2.1	7.4							
	Lincoln University	IL	Logan	Lincoln	2	12	12						
	Mulligan	IL	Logan	Lincoln	70	437							
			Total Number of Solar Farms		25								
				Average	6.0	75.9	53.4	795.5	383.2	11.9%	71.3%	13.1%	3.7%
				Median	4.6	41.9	40.0	601.0	285.0	7.2%	80.4%	0.0%	0.0%
				High	20.0	194.7	168.3	2160.0	1440.0	64.6%	99.4%	66.7%	24.1%
				Low	2.0	16.6	8.2	240.0	135.0	0.6%	0.0%	0.0%	0.0%

We specifically looked at two projects in Logan County as shown on the following pages. These projects did not provide market data that could be used for analysis, but we have shown the maps and some details for comparison of these projects to other projects identified in this report.

Lincoln University Solar Project – Logan County

This project was built in 2022 on 11.92 acres for a 2 MW solar project with a tracking system. The closest adjoining homes are to the south, but they do not adjoin and haven't sold recently.

We did identify some nearby sales where we could look at a Sale/Resale Analysis of homes on the other side of the school and church on Nicholson Road. We considered the sale of two homes before the solar project to a later sale of the same home after the solar project to show that the annual appreciation rates are still typical for the area. This analysis was somewhat limited by the distance from the solar panels and these homes, but was the closest analysis that could be identified in the area.

Sale/ReSales Near Union Street Solar Project

								****** Per HPI Calculator ******			
Street #	Str Name	Sfx	City	State	Zip	Closed Date	Sold Price	State	MSA	Years	Annual Price Chg
1286	Nicholson	RD	Lincoln	IL	62656	12/31/2001	$ 117,000				
1286	Nicholson	RD	Lincoln	IL	62656	7/7/2023	$ 270,000	$ 216,363	$ 201,337	21.5	6.1%
1702	Rutledge	DR	Lincoln	IL	62656	12/30/2000	$ 72,000				
1702	Rutledge	DR	Lincoln	IL	62656	5/27/2022	$ 128,900	$ 132,078	$ 119,320	21.4	3.7%

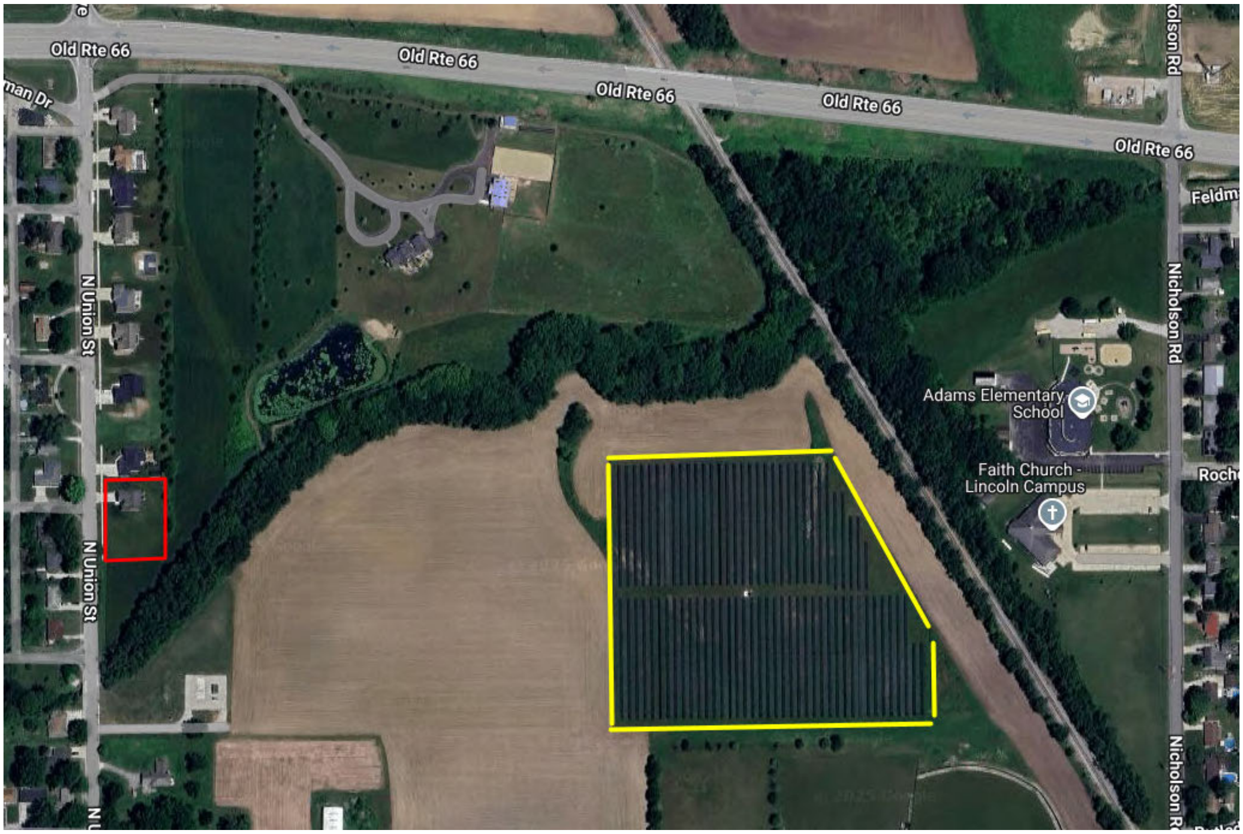
Sale/ReSales from Control Area

Street #	Str Name	Sfx	City	State	Zip	Closed Date	Sold Price	Years	Annual Price Chg
100	Joynt	ST	Latham	IL	62543	12/19/2003	$ 57,000		
100	Joynt	ST	Latham	IL	62543	10/3/2022	$ 74,900	18.8	1.7%
120	Maple	ST	Latham	IL	62543	1/17/2003	$ 70,000		
120	Maple	ST	Latham	IL	62543	1/19/2022	$ 105,000	19.0	2.6%
300	Josephine	ST	Atlanta	IL	61723	7/19/1999	$ 87,900		
300	Josephine	ST	Atlanta	IL	61723	5/3/2024	$ 181,000	24.8	4.3%
507	Race	ST	Atlanta	IL	61723	12/30/2003	$ 71,000		
507	Race	ST	Atlanta	IL	61723	2/23/2024	$ 159,900	20.2	6.2%

<u>Sale/ReSale Analysis of 1400 N Union, Street, Lincoln, IL</u>

This home is located within 1,200 feet of the Lincoln College Solar farm. It sold in June 2022 for $318,000 which is about the same time period as the completion of the solar project. This home sold again two years later in September 2024 for $349,000. Since this sale is located near the solar farm and sold twice during a recent time period, we can analyze the sales to ascertain if the solar farm may have impacted its sale price.

The change in sale price between the two sales dates is $31,000 and reflects a price change of 9.7% and an annualized rate of change of 4%. According to the HPI calculator, the estimated value for this property in 3Q2024 is $367,378. As such, the home sold 5% below the estimated value based on the HPI index.



I interviewed the broker, Seth Goodman, to get his input on the transaction. Mr. Goodman mentioned he is very familiar with the area as he lives nearby on Union Street. He built several of the new homes along Union Street including this one. He discussed that the price range for the new homes along Union Street are in the $300,000 to $400,000 range. This is generally the upper end of the price range for Lincoln. He said most of the demand for these newer homes is emanating from outside of Lincoln and buyer's are willing to drive an extra 30 minutes to employment centers in order to save about $100,000 on the price of the home by buying in Lincoln. He mentioned that he has never had any buyers talk about or express concerns about the solar farm. In his words, "It never been an issue." His opinion was that the Solar Farm has no impact on buyer interest or values in the immediate area.

With regards to the property at 1400 N Union, Mr. Goodman said from the house the Solar Farm is not visible through the treelined creek area, even in the winter months. The home sold the same day it was listed to the 1st buyer that viewed the home. Mr. Goodman felt the home could have sold for a higher price, but the seller was motivated and happy with the 1st offer.

Considering the broker comments, it is our opinion that this home may have sold below its market value which explains the price variance with the HPI index.

Mulligan Solar – Logan County

This project was built in 2024 on 437 acres for a 70 MW solar project with a tracking system. The closest adjoining home is on Parcel 3 above at 210 feet from the nearest panel. No recent sales were identified adjoining this project.

IX. Market Analysis of the Impact on Value from Solar Farms

I have researched hundreds of solar farms in numerous states to determine the impact of these facilities on the value of adjoining property. This research has primarily been in North Carolina, but I have also conducted market impact analyses in Illinois Indiana, Ohio, Virginia, South Carolina, Tennessee, Texas, Oregon, Mississippi, Maryland, New York, California, Missouri, Florida, Montana, Georgia, Louisiana, and New Jersey.

The data collection on the following pages will be used in the Sale/Resale Analysis, Paired Sales Analysis, and the Broker Comment Summary in the following sections of this report.

I have derived a breakdown of the adjoining uses to show where solar farms are located. A summary showing the results of compiling that data over hundreds of solar farms is shown later in the Scope of Research section of this report.

I also consider whether the properties adjoining a solar farm in one location have characteristics similar to the properties abutting or adjoining the proposed site so that I can make an assessment of market impact on each proposed site. Notably, in most cases solar farms are placed in areas very similar to the site in question, which is surrounded by low density residential and agricultural uses. In my over 700 studies, I have found a striking repetition of that same typical adjoining property use mix in over 90% of the solar farms I have looked at. Matched pair results in multiple states are strikingly similar, and all indicate that solar farms – which generate very little traffic, and do not generate noise, dust or have other harmful effects – do not negatively impact the value of adjoining or abutting properties.

A. Illinois Data

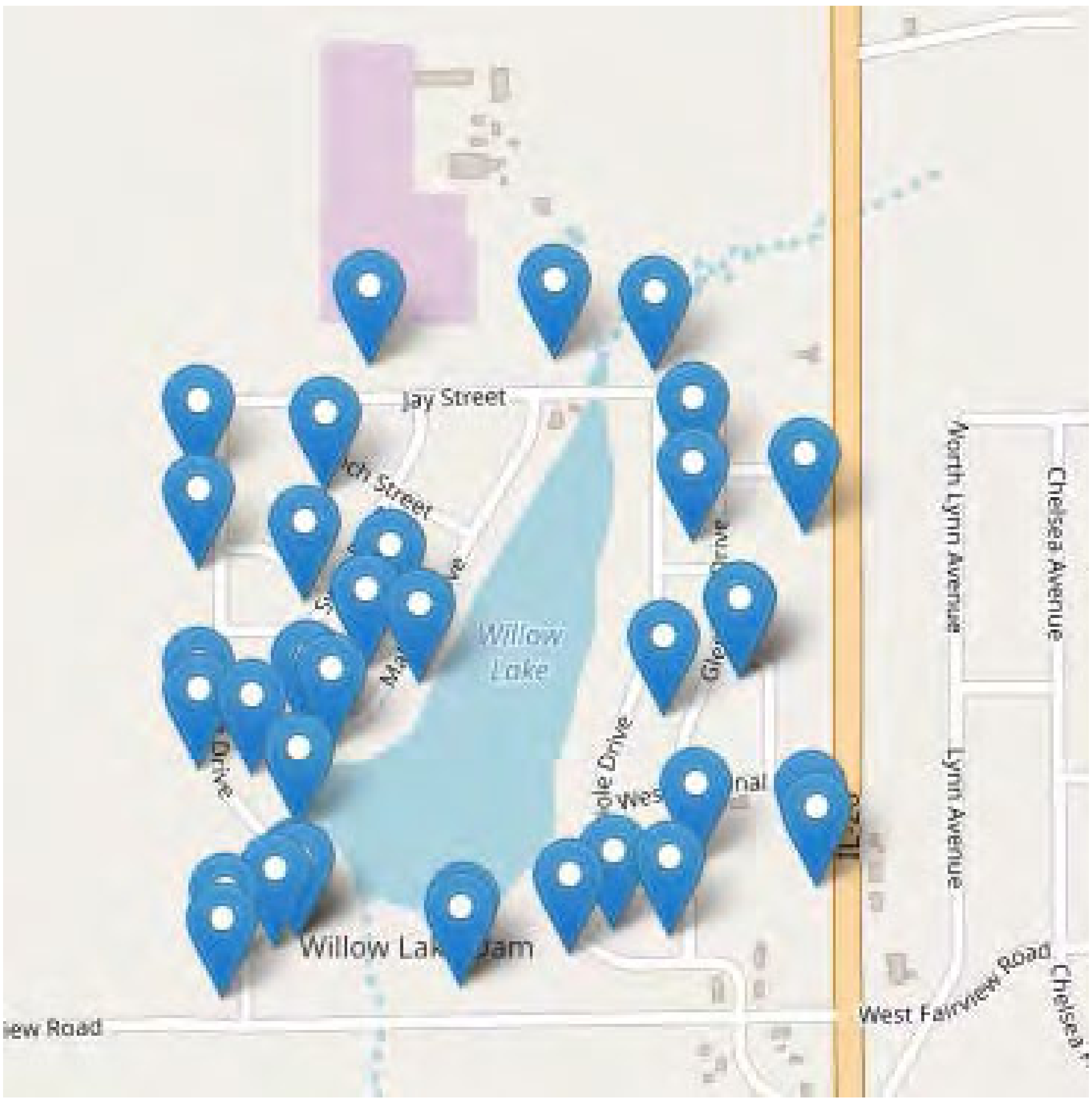
<u>1. Matched Pair – Freeport Solar 1, Freeport, Stephenson County, IL</u>

This project is located north of Jay Street near Freeport as shown in the map above. This 2 MW project was built in 2019.

Before and After the Solar Farm Analysis

Immediately South of the Freeport Solar 1 Farm is a subdivision known as Willow Lakes. This subdivision has an unincorporated location within Stephenson County, about 1 mile north of Freeport. Over the past several years, numerous sales have transacted in the subdivision. From this sales data, we were able to conduct an analysis of the sale prices of single-family homes before and after the presence of the Solar Farm in the market area. We have provided our data, analysis, and conclusions below.

36 Test Area Transactions in the Willow Lake subdivision sold from 2016 to 2023. These sales are of homes situated on ½ acre +/- sites with an average year built of 1972 and gross living area ranging from 950 to 3,000 square feet. Below is a map showing the locations of the sales and a chart summarizing the sales in the Test Area.



TEST AREA TRANSACTIONS

Street Number	Street Name	Street Suffix	City	Closed Date	Listing Market Time	Sold Price	Approx Sq Ft	PSF
2287	Mallard	DR	Freeport	7/22/2015	34	$ 117,000	2694	$ 43.43
2296	Swan	DR	Freeport	3/11/2016	11	$ 100,000	1550	$ 64.52
2055	Oriole	DR	Freeport	11/22/2016	22	$ 87,000	2496	$ 34.86
2418	Glenview	DR	Freeport	1/17/2017	67	$ 88,000	1260	$ 69.84
2226	Glenview	DR	Freeport	3/15/2017	41	$ 79,900	1344	$ 59.45
2048	Oriole	DR	Freeport	11/7/2017	3	$ 125,000	1738	$ 71.92
2049	Eagle	DR	Freeport	4/27/2018	17	$ 93,000	2028	$ 45.86
1344	Fairview	RD	Freeport	8/29/2018	43	$ 70,000	950	$ 73.68
1419	Finch	ST	Freeport	9/21/2018	7	$ 138,000	2210	$ 62.44
2188	Eagle	DR	Freeport	11/30/2018	50	$ 89,900	1392	$ 64.58
2308	Mallard	DR	Freeport	4/26/2019	236	$ 110,500	1782	$ 62.01
2173	Eagle	DR	Freeport	6/24/2019	11	$ 137,000	2720	$ 50.37
2314	Eagle	DR	Freeport	9/12/2019	22	$ 146,200	2196	$ 66.58
2243	Mallard	DR	Freeport	9/13/2019	14	$ 150,000	1924	$ 77.96
1400	Jay	ST	Freeport	11/27/2019	3	$ 128,500	1584	$ 81.12
2028	Oriole	DR	Freeport	12/11/2019	35	$ 132,500	2086	$ 63.52
2280	Mallard	DR	Freeport	6/19/2020	30	$ 118,000	1528	$ 77.23
2062	Dove	ST	Freeport	7/25/2020	30	$ 95,000	1352	$ 70.27
2260	Woodland	CT	Freeport	7/31/2020	26	$ 147,500	1620	$ 91.05
2374	IL RTE. 26 N		Freeport	10/2/2020	54	$ 134,000	2700	$ 49.63
1226	Jay	ST	Freeport	1/15/2021	18	$ 150,000	2009	$ 74.66
2026	Eagle	DR	Freeport	3/25/2021	19	$ 118,000	1680	$ 70.24
1150	Jay	ST	Freeport	8/27/2021	0	$ 110,000	2728	$ 40.32
2231	Mallard	DR	Freeport	10/12/2021	28	$ 195,000	3031	$ 64.34
1344	Fairview	RD	Freeport	10/14/2021	39	$ 105,000	1065	$ 98.59
2084	Il Route 26		Freeport	12/22/2021	32	$ 6,000	800	$ 7.50
2388	Eagle	DR	Freeport	1/24/2022	3	$ 140,000	1577	$ 88.78
2113	Eagle	DR	Freeport	5/12/2022	10	$ 170,000	1496	$ 113.64
2037	Eagle	DR	Freeport	6/10/2022	3	$ 151,000	2205	$ 68.48
1116	Lark	ST	Freeport	6/30/2022	8	$ 168,500	1680	$ 100.30
2116	IL ROUTE 26 N	HWY	Freeport	10/25/2022	120	$ 185,900	2382	$ 78.04
2231	Mallard	DR	Freeport	3/16/2023	184	$ 207,000	3031	$ 68.29
2004	Eagle	DR	Freeport	5/5/2023	10	$ 184,000	2430	$ 75.72
2260	Woodland	CT	Freeport	5/5/2023	44	$ 191,000	1620	$ 117.90
2049	Eagle	DR	Freeport	6/14/2023	17	$ 206,000	2216	$ 92.96
2180	Eagle	DR	Freeport	6/30/2023	7	$ 164,900	1601	$ 103.00

The Control Area Transactions are comprised of sales during the same time period of 2016 to present in unincorporated areas of Freeport. The Control Area has 131 Transactions. The data has a year-built range of 1880 to 2006 with an average year built of 1964. The average lot size is ½ acre +/-. Homes range in size from 950 to 2,800 square feet with an average of 1,936 square feet. Below is a summary of the data.

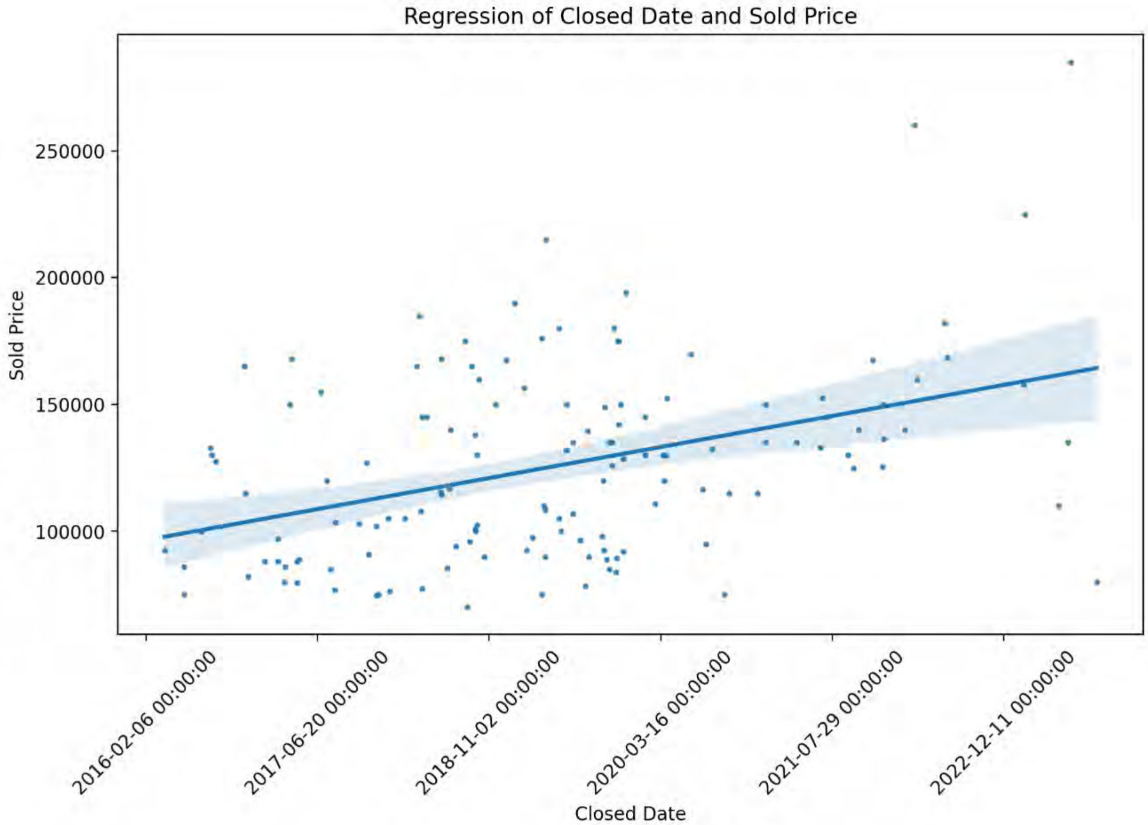
Summary of Transaction Data

	Test Area	Control Area
Average Year Built	1972	1964
Average Sale Price	$131,647	$125,991
Average Marketing Time	36 Days	66 Days
Average Sq. Ft.	1,908	1,936
Average Price per SF	$70.64	$66.90

In both the Test Area and the Control Area, prices have been increasing over the past several years. Below are graphs showing the correlation between the Closed Date and Sale price and a linear regression of sale prices.

Test Area – Willow Lake Subdivision

The graph below shows sale prices in the Control Area Transactions over the same time period with a regression line plotted. The Control Area shows a similar pattern of increasing Sold Prices since 2016.



Control Area – Unincorporated Freeport

To make a more reliable comparison, sold price per square foot was used as the unit of comparison. An analysis of unit prices before and after 2019 (the year the Solar Farm was developed) was conducted to compare appreciation rates in the Test Area to appreciation rates in the Control Area. Below is a summary of this analysis.

The annual rate of increase in price per square foot (PSF) in Willow Lakes prior to 2019 was 5.98%. The annual rate of increase in PSF after 2019 was 7.88%.

Outside the Willow Lake subdivision in other unincorporated areas of Freeport, the annual rate of increase in the Price per Square Foot (PSF) prior to 2019 was 4.48%. After 2019, the annual rate of increase in PSF was 7.93%.

	Before 2019	After 2019
Test Area - Willow Lake Subdivision	5.98%	7.88%
Control Area - Competing Unincorporated Freeport	4.48%	7.93%
Average	5.23%	7.90%

Conclusion

A difference in appreciation rates does not appear to exist between Test Area versus the Control Area before or after the presence of the Solar Farm in the market (2019). Before the Solar Farm, the Test Area and Control Area show similar rates of appreciation within 0.75% +/- of the 5.23% average. When compared to the Control Area, sale prices after 2019 in the Test Area exhibit a similar appreciation trend as the sale prices in the Control Area, within 0.03% +/- of the 7.9% average.

Overall, these findings indicate that there is not a measurable difference in rates of price appreciation for homes proximate to the solar farm.

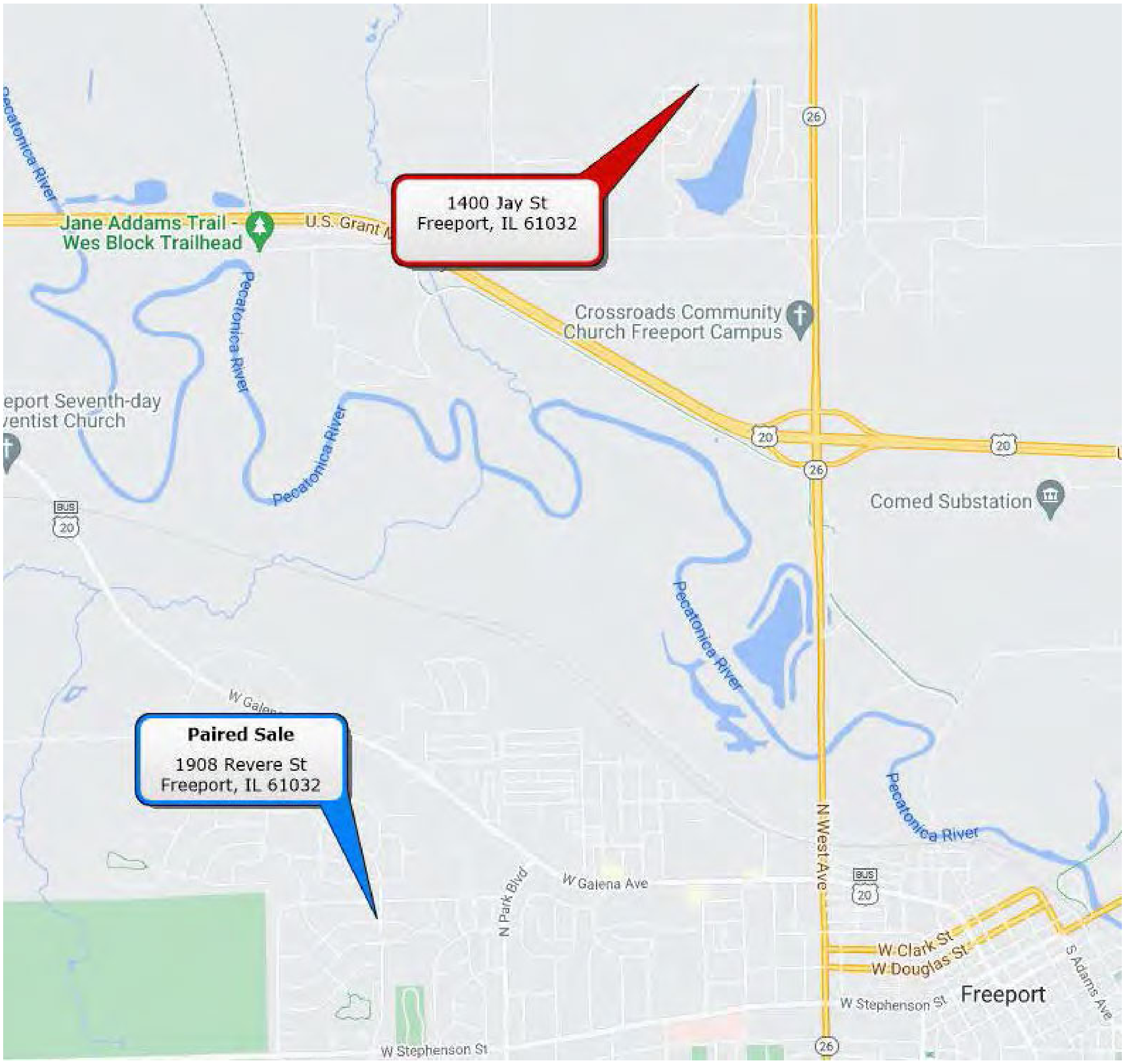
Paired Sale Analysis

Jay Street runs east-west along the northern section of the Willow Lake Subdivision. Some of the homes along the north side of Jay Street back to the Solar Farm. These homes have a direct view of the Solar Farm, with some trees along the lot line providing a partial visual buffer. A transaction of a home adjacent to the Solar Farm was utilized for a Paired Sale Analysis.

The Sale Price of this home at 1400 Jay Street was compared to a sale of a similar home away from and not influenced by proximity to a Solar Farm at 1908 Revere Street. The property at 1908 Revere has a similar split-level design and appeal and sold within 1 month of the sale at 1400 Jay Street.

1400 Jay Street, Freeport, IL

1908 Revere Street, Freeport, IL



Location Map of 1400 Jay Street and the Paired Sale at 1908 Revere Street.

Although these properties are similar, they are not exactly the same. It is necessary to adjust for the subtle differences between the two, in order to isolate any impact on price caused by location. The Paired Sale was adjusted for differences in lot size, age, bathrooms, GLA, and garage. After adjusting for these differences, the differences between the adjusted sale price of the paired sale and the sale price of 1400 Jay Street can be attributed to its proximity and view of the Solar Farm.

	Sale Adjacent to Solar Farm	Paired Sale	
Address	1400 Jay St.	1908 Revere St.	
City	Freeport	Freeport	
Sale Price	$128,500	$126,000	
Price/SF GLA	$81.12	$74.07	
Data Source	MLS	MLS	
Verification	Assessor	Assessor	
Financing	Conv	Conv	
Date of Sale	Nov-19	Oct-19	
Location	Average	Average	
Property Rights	Fee Simple	Fee Simple	
Site SF	16553	11761	1,198
View	Res, Solar Farm	Similar Res	
Design	Raised Ranch	Split Level	
Quality	Average	Average	
Age	38	53	7,500
Appeal	Average	Average	
Condition	Average	Average	
Room Count	7/3/2.1	7/3/1.1	5,000
GLA	1320	1701	-17,145
Basement & Finished	Included Above	Included Above	
Rooms Below Grade			
Functional Utility	Average	Average	
HVAC	GFA/CAC	GFA/CAC	
Garage	2 Car	1 Car	5000
Porch, Patio, Deck	Deck	Deck	
Net Adjustment		1,553	
Adj. Sales Price		$127,553	

Analysis and Conclusion

The Paired Sale has an adjusted sale price of $127,553. The Sale price of 1400 Jay is $128,500. After adjusting for differences in features, no price differential was noted between the sale of 1400 Jay, adjacent to the Solar Farm, and the sale of a home without the attribute of being adjacent to a Solar Farm.

We interviewed the Realtor, Kimberly Taylor, that listed and sold the property at 1400 Jay Street. During our interview, Ms. Taylor mentioned that she has listed and sold several homes in the Willow Lake Subdivision and in her experience "nobody seems to care" about the nearby solar farm. She reported that she has not observed any buyer resistance to purchasing in the Willow Lakes Subdivision or purchasing homes in close proximity to the Solar Farm in the area.

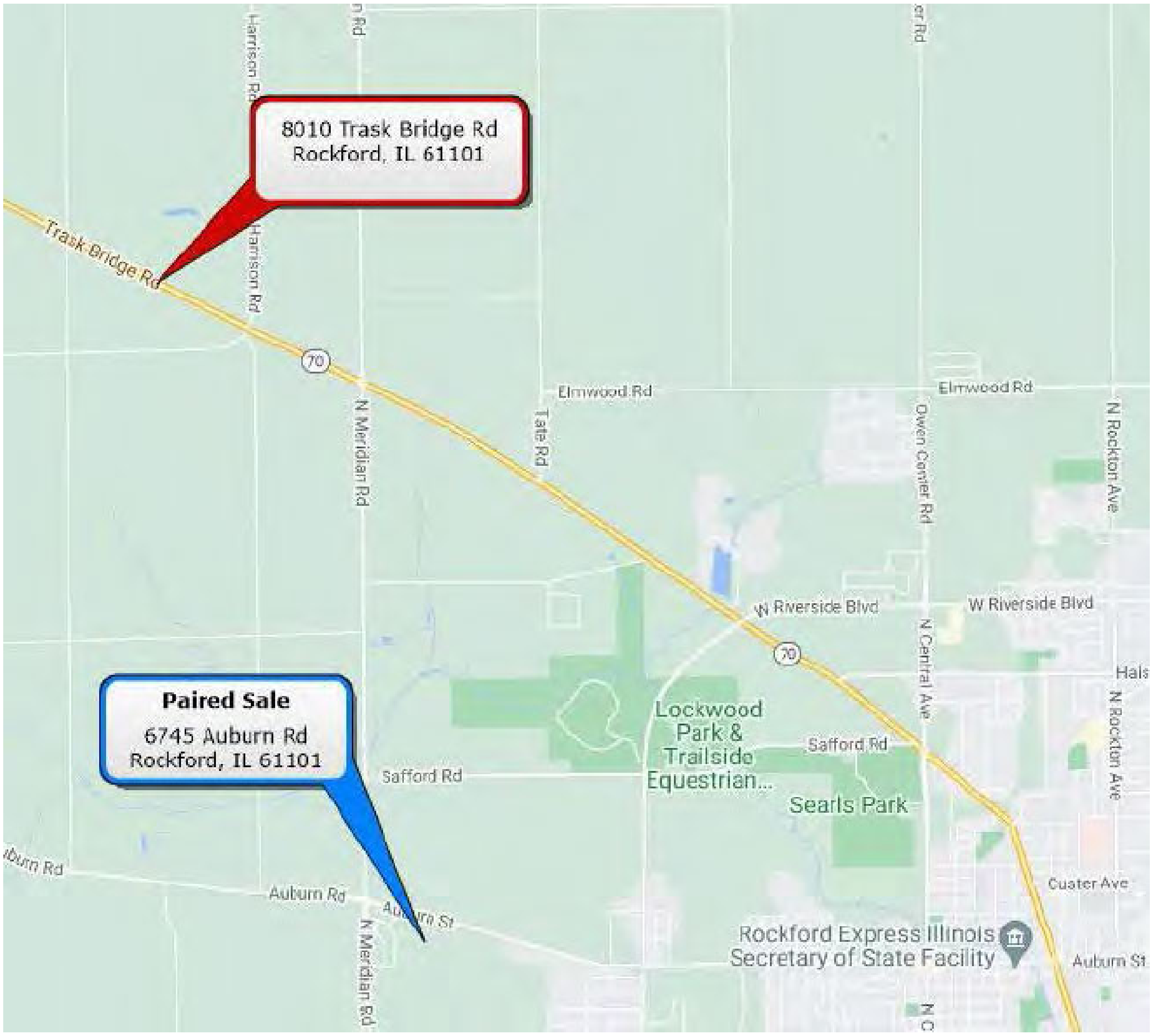
2. Matched Pair – Hilltop Solar, Rockford, Winnebago, IL

This solar farm has a 2 MW output and is located off Trask Bridge Road and was built in 2021.

We considered a nearby sale of 8101 Trask Bridge Road for a paired sale analysis. This property sold in September 2021, after the construction of the Solar Farm. This home has a view of the Solar Farm to the Southwest that is partially buffered by a couple of barns and outbuildings. There is not visible planted vegetation providing a visual buffer.

The listing agent, Olga Kampmeier, that handled this transaction was interviewed. During our interview, Ms. Kampmeier reported that she did not recall any buyers asking or commenting about the nearby solar farm nor did the Solar Farm become an issue discussed by buyers during price negotiations.

The sale of 8010 Trask Bridge Road was compared to a similar home that sold in the same market area during mid-2021. I note that while there is a substation to the north of 8010 Trask Bridge Road and not at this comparable, this simply means that the paired sales analysis is testing for both any potential impact from the solar farm and any potential impact from the substation.



Location Map of 8101 Trask Bridge Road and the Paired Sale at 6745 Auburn Road.

8010 Trask Bridge Road, Rockford, IL

6745 Auburn Road, Rockford, IL

	Sale Adjacent to Solar Farm	Paired Sale	
Address	8010 Trask Bridge Rd.	6745 Auburn Rd.	
City	Rockford	Rockford	
Sale Price	$250,000	$260,000	
Price/SF GLA	$189.39	$161.19	
Data Source	MLS	MLS	
Verification	Assessor	Assessor	
Financing	Conv	Conv	
Date of Sale	Sep-21	Jul-21	
Location	Average	Average	
Property Rights	Fee Simple	Fee Simple	
Site SF	217800	245243	-6,861
View	Fields, Solar Farm	Fields	
Design	Ranch	Ranch	
Quality	Average	Average	
Age	55	71	8,000
Appeal	Average	Average	
Condition	Average	Average	
Room Count	6/3/2.0	6/3/1.0	5,000
GLA	1320	1613	-13,185
Basement & Finished	Full Bsmt	Full Bsmt	
Rooms Below Grade	RR, Bath	Unfinished	12,000
Functional Utility	Average	Average	
HVAC	GFA/CAC	GFA/CAC	
Garage	2 Car	2 Car	
Porch, Patio, Deck	Deck	None	5000
Other	Two Small Barns	Three Larger Barns	-20,000
Net Adjustment		-10,046	
Adj. Sales Price		$249,954	

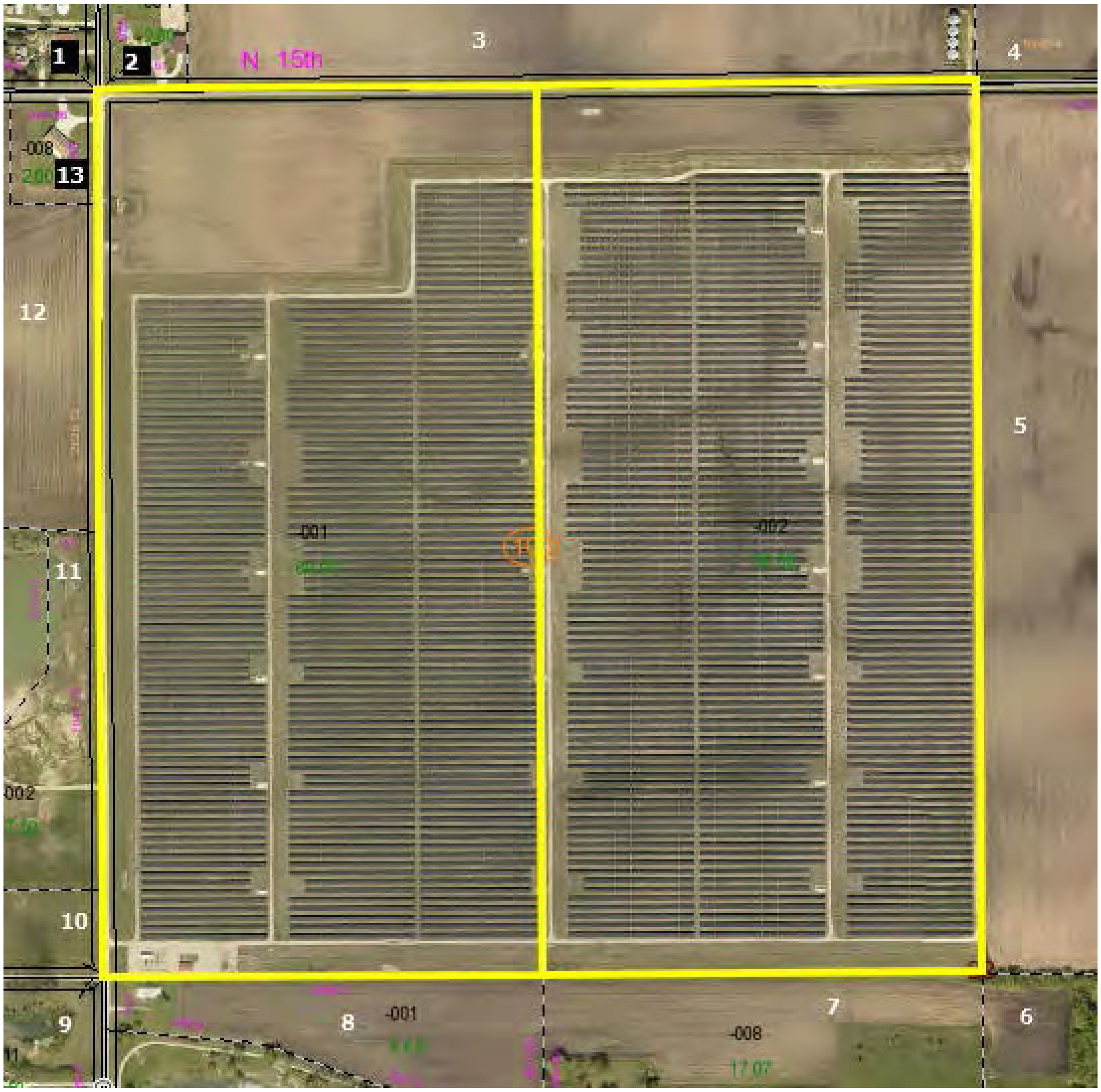
Although these properties are similar, they are not exactly the same. It is necessary to adjust for the subtle differences between the two, in order to isolate any impact on price caused by location, proximity to, and view of the Solar Farm. The Paired Sale was adjusted for differences in lot size, age, bathrooms, GLA, basement finish, deck, and barns. After adjusting for these differences, the differences between the adjusted sale price of the paired sale and the sale price of the 8010 Trask Bridge Road can be attributed to its proximity and view of the Solar Farm.

Analysis and Conclusion

The Paired Sale has an adjusted sale price of $249,954. The Sale price of 8010 Trask Bridge Road is $250,000. After adjusting for differences in features, no price differential was noted between the sale of 8010 Trask Bridge Road, adjacent to the Solar Farm, and the sale of a home without the attribute of being adjacent to a Solar Farm. This home is 440 feet from the nearest solar panel and 930 feet from the nearest equipment at the substation. This analysis shows no impact from either the substation or the solar farm.

Furthermore, the marketing time of the sale at 8010 Trask Bridge Road was 18 days while the marketing time of the Paired sale was 26 days. These are effectively equal market times.

3. Matched Pair – Grand Ridge Solar, Streator, LaSalle County, IL



This solar farm has a 20 MW output and is located on a 160-acre tract. The project was built in 2012.

I have considered the recent sale of Parcel 13 shown above, which sold in October 2016 after the solar farm was built. I have compared that sale to a number of nearby residential sales not in proximity to the solar farm as shown below. Parcel 13 is 480 feet from the closest solar panel. The landscaping buffer is considered light.

Adjoining Residential Sales After Solar Farm Completed

#	TAX ID	Acres	Date Sold	Sales Price	Built	GBA	$/GBA
13	34-21-237-000	2	Oct-16	$186,000	1997	2,328	$79.90

Not Adjoining Residential Sales After Solar Farm Completed

#	TAX ID	Acres	Date Sold	Sales Price	Built	GBA	$/GBA
712 Columbus Rd	32-39-134-005	1.26	Jun-16	$166,000	1950	2,100	$79.05
504 N 2782 Rd	18-13-115-000	2.68	Oct-12	$154,000	1980	2,800	$55.00
7720 S Dwight Rd	11-09-300-004	1.14	Nov-16	$191,000	1919	2,772	$68.90
701 N 2050th Rd	26-20-105-000	1.97	Aug-13	$200,000	2000	2,200	$90.91
9955 E 1600th St	04-13-200-007	1.98	May-13	$181,858	1991	2,600	$69.95

		Adjustments		
TAX ID	**Date Sold**	**Time**	**Total**	**$/Sf**
34-21-237-000	Oct-16		$186,000	$79.90
32-39-134-005	Jun-16		$166,000	$79.05
18-13-115-000	Oct-12	$12,320	$166,320	$59.40
11-09-300-004	Nov-16		$191,000	$68.90
26-20-105-000	Aug-13	$12,000	$212,000	$96.36
04-13-200-007	May-13	$10,911	$192,769	$74.14

	Adjoins Solar Farm		Not Adjoin Solar Farm	
	Average	**Median**	**Average**	**Median**
Sales Price/SF	$79.90	$79.90	$75.57	$74.14
GBA	2,328	2,328	2,494	2,600

Based on the matched pairs I find no indication of negative impact due to proximity to the solar farm.

The most similar comparable is the home on Columbus that sold for $79.05 per square foot. This is higher than the median rate for all of the comparables. Applying that price per square foot to the subject property square footage indicates a value of $184,000.

There is minimal landscaping separating this solar farm from nearby properties and is therefore considered light.

	Adjoins Solar Farm		Not Adjoin Solar Farm	
	Average	**Median**	**Average**	**Median**
Sales Price/SF	$89.41	$89.41	$90.91	$91.99
GBA	1,776	1,776	2,107	2,064

After adjusting the price per square foot is 2.88% less for the home adjoining the solar farm versus those not adjoining the solar farm. This is within the typical range of variation to be anticipated in any real estate transaction and indicates no impact on property value.

Applying the price per square foot for the 336 E 1050 N sale, which is the most similar to the Parcel 12 sale, the adjusted price at $81.24 per square foot applied to the Parcel 12 square footage yields a value of $144,282.

Land Sale Adjustment Chart

		Adjustments		
TAX ID	**Date Sold**	**Time**	**Total**	**$/Acre**
64-06-19-200-003.000-015	Feb-14	$8,976	$158,576	$8,480
64-07-22-401-001.000-005	Jun-17		$520,450	$7,000
64-15-08-200-010.000-001	Jan-17		$115,000	$7,658

2% adjustment/year
Adjusted to 2017

	Adjoins Solar Farm		Not Adjoin Solar Farm	
	Average	**Median**	**Average**	**Median**
Sales Price/Ac	$8,480	$8,480	$7,329	$7,329
Acres	18.70	18.70	44.68	44.68

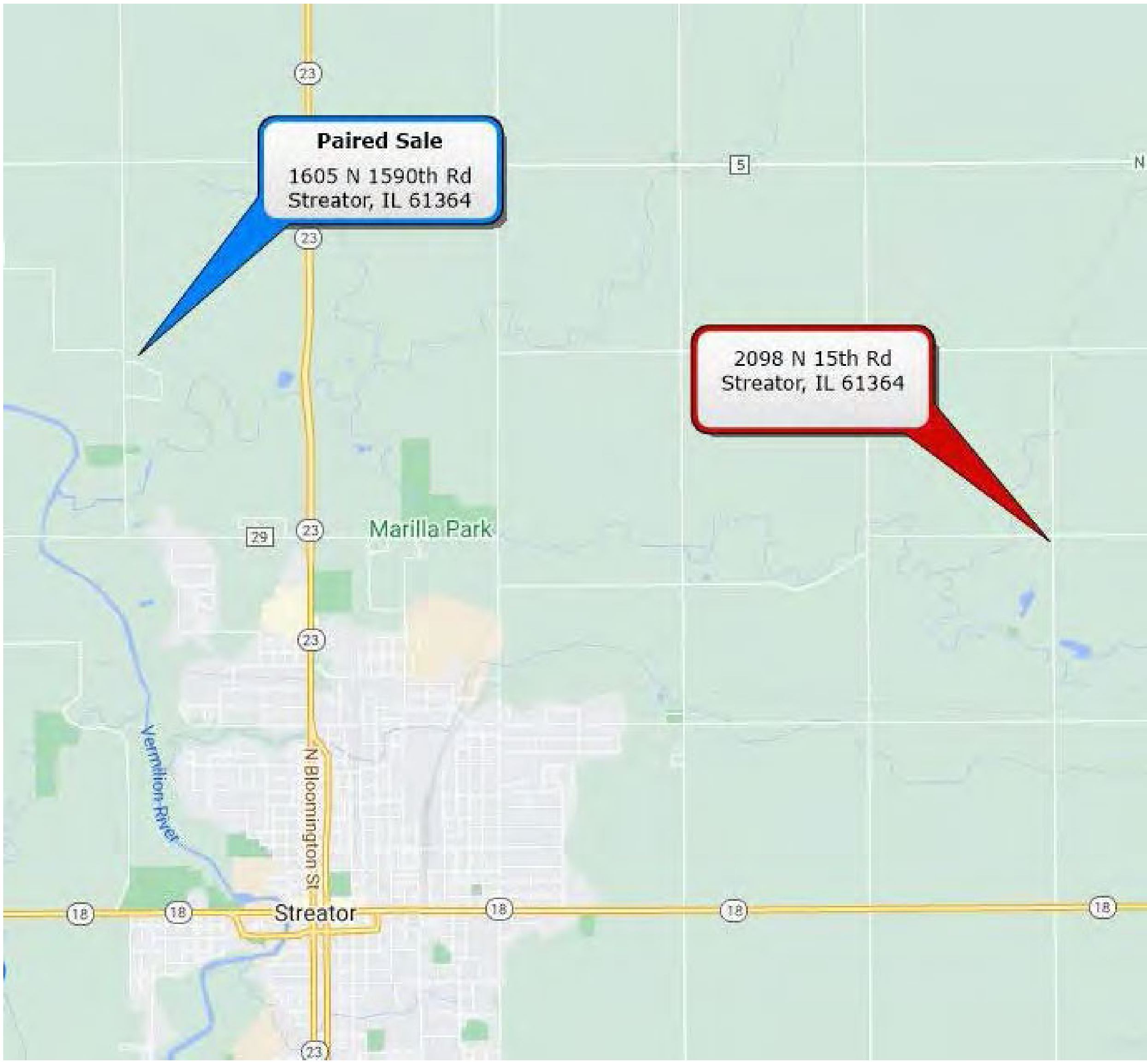
After adjusting the price per acre is higher for the property adjoining the solar farm, but the average and median size considered is higher which suggests a slight discount. This set of matched pair supports no indication of negative impact due to the adjoining solar farm.

Alternatively, adjusting the 2017 sales back to 2014 I derive an indicated price per acre for the comparables at $6,580 per acre to $7,198 per acre, which I compare to the unadjusted subject property sale at $8,000 per acre.

We further analyzed the sale of 2098 N 15th Road situated directly across the street from with an unobstructed view of the Solar Farm.

We attempted to interview the listing agent, Beckie Chismarick, but learned from an associate and co-listing agent, Deborah Spangler, that Beckie has since passed away. During our interview with Beckie, she mentioned that she could not recall any buyers commenting about the Solar Farm; however, she stated that Beckie handled most of the details on that transaction.

The sale of 2098 N 15th Road was compared to a similar home that sold in the same market area.



Location Map of 8101 Trask Bridge Road and the Paired Sale at 6745 Auburn Road.

2098 N 15th Road, Streator, IL

1605 N 1590th Road, Streator, IL

	Sale Adjacent to Solar Farm	Paired Sale	
Address	2098 N 15th	1605 N 1590th	
City	Streator	Streator	
Sale Price	$186,000	$175,000	
Price/SF GLA	$79.90	$83.21	
Data Source	MLS	MLS	
Verification	Assessor	Assessor	
Financing	Conv	Conv	
Date of Sale	Oct-16	Oct-17	-6,125
Location	Average	Average	
Property Rights	Fee Simple	Fee Simple	
Site SF	87120	76230	2,723
View	Fields, Solar Farm	Similar Res.	
Design	Ranch	Ranch	
Quality	Average	Average	
Age	19	11	-12,000
Appeal	Average	Average	
Condition	Average	Average	
Room Count	7/3/3.0	6/3/2.0	5,000
GLA	2328	2103	5,625
Basement & Finished	Full Bsmt	Full Bsmt	
Rooms Below Grade	RR, Bath	Unfinished	12,000
Functional Utility	Average	Average	
HVAC	GFA/CAC	GFA/CAC	
Garage	3 Car	2 Car	3000
Porch, Patio, Deck	Deck	Patio	
Net Adjustment		10,223	
Adj. Sales Price		$185,223	

Although these properties are similar, they are not exactly the same. It is necessary to adjust for the subtle differences between the two, in order to isolate any impact on price caused by location, proximity to, and view of the Solar Farm. The Paired Sale was adjusted for differences in date of sale, lot size, age, bathrooms, GLA, basement finish, and garage. After adjusting for these differences, the differences between the adjusted sale price of the paired sale and the sale price of the 2098 N 15th Road can be attributed to its proximity and view of the Solar Farm.

Analysis and Conclusion

The Paired Sale has an adjusted sale price of $185,223. The Sale price of 2098 N 15th Road was $186,000. After adjusting for differences in features, no price differential was noted between the sale adjacent to the Solar Farm and the sale of a home without the attribute of being adjacent to a Solar Farm.

4. Matched Pair - GRNE Solar, Yorkville, Kendall County, IL

The GRNE Solar Farm in Yorkville, Illinois, is a renewable energy project developed by GRNE Solar in collaboration with Kendall County. Located on a 7.4-acre parcel at the Kendall County Government Campus, the solar farm comprises approximately 6,400 solar modules. These panels are mounted on motorized tracking systems that follow the sun's path, optimizing energy capture throughout the day.

Commissioned in 2021, the solar farm has a capacity of 2.1 megawatts (MW) and is expected to generate over 3,000 megawatt-hours (MWh) annually. This output is sufficient to power approximately 395 homes each year. The energy produced supplies electricity to key county facilities, including the Public Safety Center, County Judicial Center, and Public Health Department.

Financially, the project is structured through a 25-year power purchase agreement (PPA) between Kendall County and GRNE Solar. Under this agreement, GRNE Solar owns, operates, and maintains the solar farm, selling the generated electricity to the county at rates below market prices. This arrangement is projected to save the county over $4 million in energy costs over the contract's duration.

The development was funded through Illinois' Adjustable Block Program, part of the Future Energy Jobs Act, which supports renewable energy projects via funds collected from utility customers. The solar farm was constructed without the use of new taxpayer dollars.

The project includes a 7.5-foot-tall wooden fence surrounding the installation and utilizes anti-reflective coatings on the panels to minimize glare. Noise levels from the tracking motors are minimal, comparable to the hum of a household refrigerator at a distance of 10 feet.

Adjacent to the Solar Farm is the Blackberry Woods Subdivision. Blackberry Woods is a single-family home subdivision located in Yorkville, Illinois, situated south of Veterans Parkway and west of Route 47. The community's development began in the late 2000s, with a newer section of construction starting in 2015 by Meadowbrook Builders.

Below is a photo of the Grand Ridge Solar Farm taken from a vacant lot on Carly Circle facing Northwest.

Matched Pair Analysis

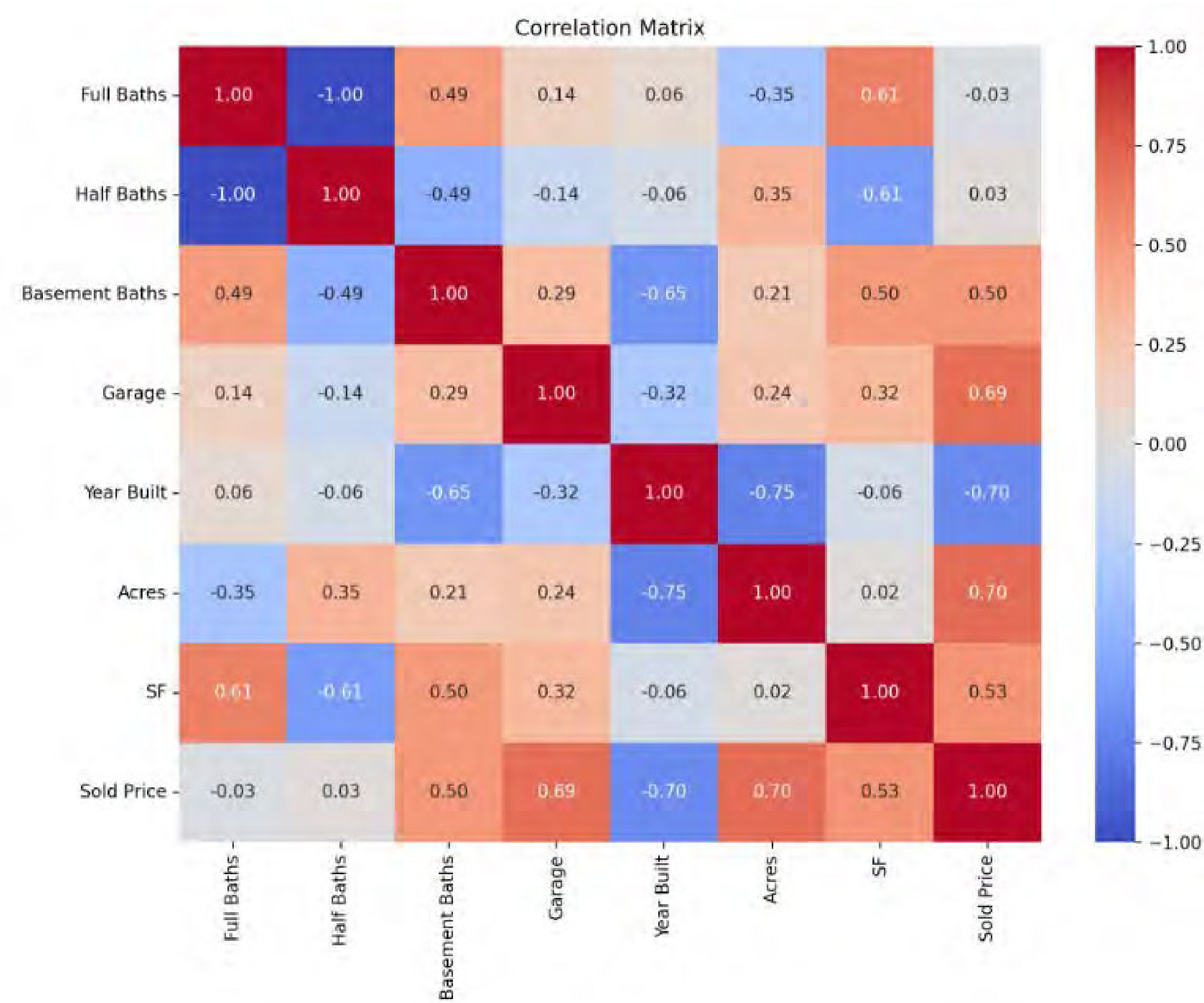
A sale of a home directly backing to the solar farm occurred in July 2024. This sale was at 1007 N Carly Circle for $490,000.

We conducted a paired analysis comparing its sale price to other sales in the neighborhood not backing to the solar farm to determine if the solar farm has an impact on sale price. This analysis is presented below.

St Number	St Name	St Suffix	City	Closed Date	Bedrooms	Full Baths	Half Baths	Basement Baths	Garage	Year Built	Acres	Sold Price	SF	Price per SF
856	Carly	CIR	Yorkville	2023-07-18 00:00:00	5	2	1	1	3	2014	0.343	541200	3390	159.65
825	Carly	CT	Yorkville	2023-09-08 00:00:00	4	2	1	0	3	2014	0.46	524000	2940	178.23
844	CARLY	CT	Yorkville	2023-09-20 00:00:00	4	2	1	1	3	2009	0.38	520000	2554	203.60
1023	Carly	CIR	Yorkville	2023-04-28 00:00:00	4	2	1	0	3	2017	0.2351	510000	3128	163.04
884	Purcell	ST	Yorkville	2025-01-07 00:00:00	4	3	0	1	3	2016	0.1928	475000	3525	134.75
923	Carly	CIR	Yorkville	2023-12-29 00:00:00	4	2	1	0	3	2017	0.21	450000	2758	163.16
991	Carly	CIR	Yorkville	2023-08-14 00:00:00	5	2	1	0	3	2019	0.1997	425000	2420	175.62
911	Purcell	ST	Yorkville	2023-01-20 00:00:00	4	2	1	0	2	2018	0.2198	385000	2589	148.71

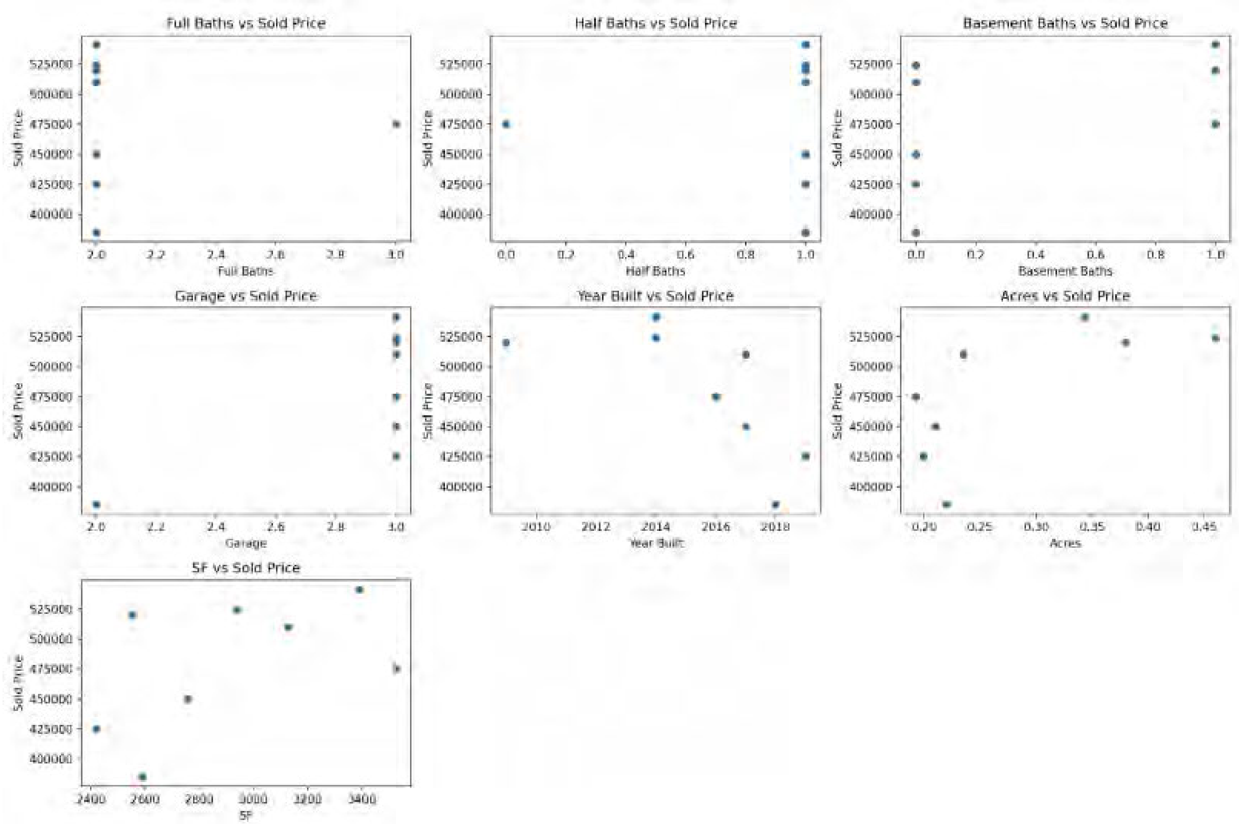
Location Map of Sales

Multi-Regression Analysis



Based on the analysis, there are several important findings:

- The model has a very high R-squared value of 0.981, suggesting that the selected variables explain about 98.1% of the variance in Sold Price.
- From the correlation matrix, we can see which variables have stronger relationships with Sold Price.
- The scatter plots show the relationship between each feature and the Sold Price.


Full Baths vs Sold Price
Half Baths vs Sold Price
Basement Baths vs Sold Price
Garage vs Sold Price
Year Built vs Sold Price
Acres vs Sold Price
SF vs Sold Price
Sold Price
Full Baths
Half Baths
Basement Baths
Garage
Year Built
Acres
SF


Actual vs Predicted Sold Price
Predicted Sold Price
Actual Sold Price
540000
520000
500000
480000
460000
440000
420000
400000
380000

Individual Predictor Significance:

None of the predictors is individually statistically significant (p-values > 0.05), which may be due to the limited sample size (only 8 observations) and potential multicollinearity issues. The multiple regression analysis using all seven predictors (Full Baths, Half Baths, Basement Baths, Garage, Year Built, Acres, and SF) resulted in an extremely high R^2, but with pronounced multicollinearity issues—most notably for Full Baths and Half Baths. Five variables produced correlation values of 0.50 or greater – SF, Acres, Year Built, Garage, and Basement Baths.

Reduced Model Summary:

Using only SF, Acres, and Year Built, the model yields an R^2 of approximately 0.804, suggesting that about 80.4% of the variance in Sold Price is explained by these three predictors. Overall, the reduced model using SF, Acres, and Year Built shows promising overall explanatory power.

The following observations guide the variable selection:

Square Footage (SF):	This variable consistently shows a strong association with Sold Price, as larger homes tend to sell for more. In both the full and reduced regressions, SF appears to be a key predictor.
Acres:	Land size (Acres) also correlates with Sold Price, indicating that properties with more land generally command higher prices.
Year Built:	Although the coefficient for Year Built suggests a negative relationship (newer homes might sell for less within this dataset), including it in the reduced model helps explain additional variance in Sold Price.

Full Model vs. Reduced Model:

The full model (using all seven variables) achieved an extremely high R^2 (~98.1%) but suffered from severe multicollinearity (with extremely high VIFs for Full Baths and Half Baths), which makes it difficult to distinguish the individual contributions.

By contrast, the reduced model—using only SF, Acres, and Year Built—retains a high overall explanatory power ($R^2 \approx 80.4\%$) while avoiding some of the multicollinearity issues noted with the bathroom variables.

Given these considerations, the best variables to predict Sold Price in this dataset appear to be:

- SF
- Acres
- Year Built

Based on our regression model using the best three variables, here's the prediction for a property with:

SF = 2762
Acres = 0.45
Year Built = 2017
Predicted Sold Price: $499,580

1007 Carly Sold for $490,000 which is within 2% of the Sold Price predicted by the model.

Expanded Model using Four Variables:

Based on our regression model using four variables, here's the prediction for a property with:

SF = 2762
Acres = 0.45
Year Built = 2017
Garage = 2
Predicted Sold Price: $450,809

1007 Carly Sold for $490,000 which is within 9.0% of the Sold Price predicted by the model.

Expanded Model using Five Variables:

Based on our regression model using five variables, here's the prediction for a property with:
SF = 2762
Acres = 0.45
Year Built = 2017
Garage = 2
Basement Baths = 0
Predicted Sold Price: $440,959

1007 Carly Sold for $490,000 which is within 11.1% of the Sold Price predicted by the model.

Summary of the Multi-Regression Analysis

The paired analysis of 1007 N Carly Circle with eight other transactions in the neighborhood using three multi-regression models indicated anticipated sale prices within a range of 2% to 11% of the actual sale price. The best model using three variables resulted in a value estimate within 2% of the actual selling price. Two other models with four and five variables resulted in values showing 1007 N Carly sold at a premium of 9-11%. This analysis demonstrated no observable negative impact on sale price due to backing to the solar farm.

Broker Interview

We also interviewed the Broker, Jed Parish, who listed the property at 1007 N Carly Circle when it sold in May 2024. According to Mr. Parish he did not feel the solar farm had any impact on the marketability or sale price of the property. He reported that the property sold with multi-offers and the appraisal for the buyer's mortgage was at or above the contract price. It was his opinion that the solar farm was not a factor having any impact on buyer interest or price.

Marketing Time Analysis

An analysis of the marketing time of 1007 N Carly Circle sale was conducted. 1007 N Carly Circle sold in May 2024 in 16 days on the market. On the following page are other homes in Yorkville with similar features and prices that sold during the same time period. Twenty-seven transactions of similar homes showed an overall range of marketing time from 1 to 92 days with an average Listing Marketing Time of 21 days and a median of 11 days. Below is a summary of this data.

27 Sold - Detached Single Statistics

	High	Low	Average	Median
List Price	$539,900	$354,056	$431,606	$425,000
Sold Price	$530,000	$330,000	$432,343	$427,900
Listing Market Time	92	1	21	11
Market Time	234	1	30	13

This data reveals that the backing to the solar farm had no impact on the marketing time as compared to the overall market.

Detached Single
Sold - Detached Single

#	MLS #	Address	Status	Area	Beds	Baths	Type	LMT	MT	LP	SP	Close Date
1	12061597	2168 Hearthstone	CLSD	560	3	2.1	2 Stories	19	19	$374,900	$330,000	07/11/2024
2	12000420	3365 Ryan	CLSD	560	4	2.1	2 Stories	4	4	$354,056	$361,000	04/19/2024
3	11953080	3345 Seeley	CLSD	560	4	2.1	2 Stories	39	39	$380,000	$380,000	04/09/2024
4	11961165	442 Windett Ridge	CLSD	560	4	2.1	2 Stories	54	55	$398,000	$380,000	06/27/2024
5	12030459	3349 Seeley	CLSD	560	4	2.1	2 Stories	92	92	$390,000	$385,000	08/26/2024
6	12017426	3092 Justice	CLSD	560	3	2.1	2 Stories	9	9	$385,000	$385,000	07/03/2024
7	11990206	2629 Lilac	CLSD	560	4+1 bsmt	3.1	2 Stories	17	17	$399,900	$390,000 (C)	05/31/2024
8	11981039	723 Kentshire	CLSD	560	4	2.1	2 Stories	1	1	$399,900	$399,900	06/14/2024
9	11964976	3104 Justice	CLSD	560	4	2.1	2 Stories	52	99	$405,000	$400,000	04/26/2024
10	12069939	3244 Pinewood	CLSD	560	4	2.1	2 Stories	11	11	$384,900	$405,000	08/06/2024
11	12048112	2492 Anna Maria	CLSD	560	3	2.1	2 Stories	2	2	$408,000	$408,000	06/07/2024
12	11973515	3179 Justice	CLSD	560	4	2.1	2 Stories	1	1	$409,900	$410,000	04/04/2024
13	11965966	2687 Seeley	CLSD	560	4	2.1	2 Stories	48	234	$429,900	$422,500	04/10/2024
14	12049910	3162 Matlock	CLSD	560	4	2.1	2 Stories	13	13	$427,900	$427,900	06/28/2024
15	11952211	576 Warbler	CLSD	560	4	2.1	2 Stories	4	4	$425,000	$430,000	04/15/2024
16	12010888	2958 Grande	CLSD	560	4	2.1	2 Stories	71	71	$425,000	$437,500	05/24/2024
17	11964246	2142 Hartfield	CLSD	560	4	2.1	2 Stories	5	5	$439,900	$445,000	05/16/2024
18	11980022	1432 Ruby	CLSD	560	4	2.1	2 Stories	3	3	$449,900	$456,000	04/25/2024
19	11932580	1654 Shetland	CLSD	560	4	3.1	2 Stories	3	3	$425,000	$460,000	04/30/2024
20	12046638	625 Braemore	CLSD	560	4	2.1	2 Stories	3	3	$462,900	$460,000	06/09/2024
21	11995099	1141 Midnight	CLSD	560	5	3	2 Stories	19	24	$469,900	$469,900	04/15/2024
22	12070928	2274 Richmond	CLSD	560	4	2.1	2 Stories	11	14	$495,000	$490,000	07/29/2024
23	12053088	1007 N Carly	CLSD	560	4	2.1	2 Stories	16	16	$490,000	$490,000	07/01/2024
24	12075661	2672 Mclellan	CLSD	560	4	2.1	2 Stories	22	22	$500,000	$500,000	08/28/2024
25	12057359	2022 Ingemunson	CLSD	560	4	3.1	2 Stories	4	4	$484,500	$505,555	06/17/2024
26	11998390	3183 Matlock	CLSD	560	4	2.1	2 Stories	3	3	$499,000	$515,000	04/12/2024
27	12044929	2187 Burr	CLSD	560	4	2.1	2	29	43	$539,900	$530,000	06/21/2024

Analysis and Conclusion

This study evaluates whether proximity to the GRNE Solar Farm in Yorkville, Illinois, has any observable impact on residential property values and marketability. The solar farm, located on a 7.4-acre parcel adjacent to the Blackberry Woods subdivision, was commissioned in 2021 and features 6,400 solar panels on tracking systems. It is owned and operated by GRNE Solar under a 25-year power purchase agreement with Kendall County.

A matched-pair and multi-regression analysis was conducted using the July 2024 sale of 1007 N Carly Circle—a home directly backing to the solar installation—as the test case. This property sold for $490,000. Multiple regression models using key variables such as square footage (SF), lot size (Acres), and Year Built predicted sale prices ranging from approximately $440,959 to $499,580, all within 2% to 11% of the actual sale price. This home is 120 feet from the nearest solar panel based on measurements using GoogleEarth.

A broker interview with the listing agent further supported the quantitative findings. The agent reported strong market demand, multiple offers, and no buyer objections related to the property's adjacency to the solar farm.

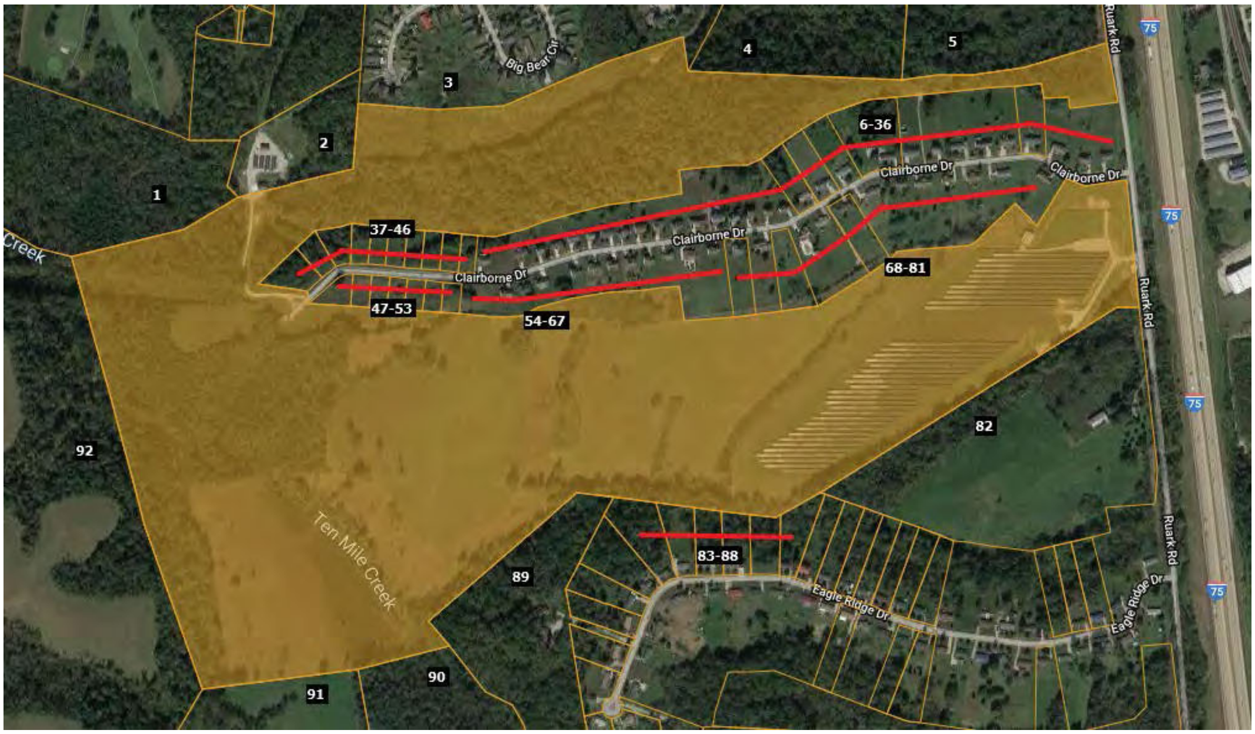
Additionally, a marketing time analysis revealed that the property sold within 16 days—comparable to or faster than the average and median marketing times (21 and 11 days, respectively) for similar properties in the area.

The study finds no evidence that proximity to the GRNE Solar Farm negatively impacts residential property value or marketability in the Blackberry Woods subdivision. The sale of 1007 N Carly Circle, when analyzed through paired sales comparison, multiple regression, broker insight, and marketing time data, aligns with overall market trends and valuations. The solar farm does not appear to be a disamenity, and its presence does not adversely affect buyer interest or pricing.

B. Data from States Adjoining Illinois

I have in this section included paired sales data from Indiana, Kentucky and Michigan. For the purposes of this analysis, I have considered Michigan to adjoin Illinois despite the separation due to Lake Michigan.

<u>1. Matched Pair – Crittenden Solar, Crittenden, Grant County, KY</u>



This solar farm was built in December 2017 on a 181.70-acre tract but utilizing only 34.10 acres. This is a 2.7 MW facility with residential subdivisions to the north and south.

I have identified five home sales to the north of this solar farm on Clairborne Drive and one home sale to the south on Eagle Ridge Drive since the completion of this solar farm. The home sale on Eagle Drive is for a $75,000 home and all of the homes along that street are similar in size and price range. According to local broker Steve Glacken with Cutler Real Estate these are the lowest price range/style home in the market. I have not analyzed that sale as it would unlikely provide significant data to other homes in the area.

Mr. Glacken has been selling lots at the west end of Clairborne for new home construction. He indicated in 2020 that the solar farm near the entrance of the development has been a complete non-factor and none of the home sales are showing any concern over the solar farm. Most of the homes are in the $250,000 to $280,000 price range. The vacant residential lots are being marketed for $28,000 to $29,000. The landscaping buffer is considered light, but the rolling terrain allows for distant views of the panels from the adjoining homes along Clairborne Drive.

The first home considered is a bit of an anomaly for this subdivision in that it is the only manufactured home that was allowed in the community. It sold on January 3, 2019. I compared that sale to three other manufactured home sales in the area making minor adjustments as shown on the next page to account for the differences. After all other factors are considered the adjustments show a -1% to +13% impact due to the adjacency of the solar farm. The best indicator is 1250 Cason, which shows a 3% impact. A 3% impact is within the normal static of real estate transactions and therefore not considered indicative of a positive impact on the property, but it strongly supports an indication of no negative impact.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
	Adjoins	250 Claiborne	0.96	1/3/2019	$120,000	2000	2,016	$59.52	3/2	Drive	Manuf	
	Not	1250 Cason	1.40	4/18/2018	$95,000	1994	1,500	$63.33	3/2	2-Det	Manuf	Carport
	Not	410 Reeves	1.02	11/27/2018	$80,000	2000	1,456	$54.95	3/2	Drive	Manuf	
	Not	315 N Fork	1.09	5/4/2019	$107,000	1992	1,792	$59.71	3/2	Drive	Manuf	

Adjustments

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	250 Claiborne								$120,000			373
Not	1250 Cason	$2,081		$2,850	$26,144		-$5,000	-$5,000	$116,075	3%		
Not	410 Reeves	$249		$0	$24,615				$104,865	13%		
Not	315 N Fork	-$1,091		$4,280	$10,700				$120,889	-1%		
											5%	

I also looked at three other home sales on this street as shown below. These are stick-built homes and show a higher price range.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
	Adjoins	300 Claiborne	1.08	9/20/2018	$212,720	2003	1,568	$135.66	3/3	2-Car	Ranch	Brick
	Not	460 Claiborne	0.31	1/3/2019	$229,000	2007	1,446	$158.37	3/2	2-Car	Ranch	Brick
	Not	2160 Sherman	1.46	6/1/2019	$265,000	2005	1,735	$152.74	3/3	2-Car	Ranch	Brick
	Not	215 Lexington	1.00	7/27/2018	$231,200	2000	1,590	$145.41	5/4	2-Car	Ranch	Brick

Adjustments

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	300 Claiborne								$213,000			488
Not	460 Claiborne	-$2,026		-$4,580	$15,457	$5,000			$242,850	-14%		
Not	2160 Sherman	-$5,672		-$2,650	-$20,406				$236,272	-11%		
Not	215 Lexington	$1,072		$3,468	-$2,559	-$5,000			$228,180	-7%		
											-11%	

This set of matched pairs shows a minor negative impact for this property. I was unable to confirm the sales price or conditions of this sale. The best indication of value is based on 215 Lexington, which required the least adjusting and supports a -7% impact.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
	Adjoins	350 Claiborne	1.00	7/20/2018	$245,000	2002	1,688	$145.14	3/3	2-Car	Ranch	Brick
	Not	460 Claiborne	0.31	1/3/2019	$229,000	2007	1,446	$158.37	3/2	2-Car	Ranch	Brick
	Not	2160 Sherman	1.46	6/1/2019	$265,000	2005	1,735	$152.74	3/3	2-Car	R/FBsmt	Brick
	Not	215 Lexington	1.00	7/27/2018	$231,200	2000	1,590	$145.41	5/4	2-Car	Ranch	Brick

Adjustments

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	350 Claiborne								$245,000			720
Not	460 Claiborne	-$3,223		-$5,725	$30,660	$5,000			$255,712	-4%		
Not	2160 Sherman	-$7,057		-$3,975	-$5,743				$248,225	-1%		
Not	215 Lexington	-$136		$2,312	$11,400	-$5,000			$239,776	2%		
											-1%	

The following photograph shows the light landscaping buffer and the distant view of panels that was included as part of the marketing package for this property. The panels are visible somewhat on the left and somewhat through the trees in the center of the photograph. The first photograph is from the home, with the second photograph showing the view near the rear of the lot.

This set of matched pairs shows a no negative impact for this property. The range of adjusted impacts is -4% to +2%. The best indication is -1%, which as described above is within the typical market static and supports no impact on adjoining property value.

Adjoining Residential Sales After Solar Farm Approved

Parcel	Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
	Adjoins	370 Claiborne	1.06	8/22/2019	$273,000	2005	1,570	$173.89	4/3	2-Car	2-Story	Brick
	Not	2160 Sherman	1.46	6/1/2019	$265,000	2005	1,735	$152.74	3/3	2-Car	R/FBsmt	Brick
	Not	2290 Dry	1.53	5/2/2019	$239,400	1988	1,400	$171.00	3/2.5	2-Car	R/FBsmt	Brick
	Not	125 Lexington	1.20	4/17/2018	$240,000	2001	1,569	$152.96	3/3	2-Car	Split	Brick

Adjustments

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	370 Claiborne								$273,000			930
Not	2160 Sherman	$1,831		$0	-$20,161				$246,670	10%		
Not	2290 Dry	$2,260		$20,349	$23,256	$2,500			$287,765	-5%		
Not	125 Lexington	$9,951		$4,800					$254,751	7%		
											4%	

This set of matched pairs shows a general positive impact for this property. The range of adjusted impacts is -5% to +10%. The best indication is +7%. I typically consider measurements of +/-5% to be within the typical variation in real estate transactions. This indication is higher than that and suggests a positive relationship.

The photograph from the listing shows panels visible between the home and the trampoline shown in the picture.

Adjoining Residential Sales After Solar Farm Approved

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	330 Claiborne	1.00	12/10/2019	$282,500	2003	1,768	$159.79	3/3	2-Car	Ranch	Brick/pool
Not	895 Osborne	1.70	9/16/2019	$249,900	2002	1,705	$146.57	3/2	2-Car	Ranch	Brick/pool
Not	2160 Sherman	1.46	6/1/2019	$265,000	2005	1,735	$152.74	3/3	2-Car	R/FBsmt	Brick
Not	215 Lexington	1.00	7/27/2018	$231,200	2000	1,590	$145.41	5/4	2-Car	Ranch	Brick

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	330 Claiborne								$282,500			665
Not	895 Osborne	$1,790		$1,250	$7,387	$5,000		$0	$265,327	6%		
Not	2160 Sherman	$4,288		-$2,650	$4,032			$20,000	$290,670	-3%		
Not	215 Lexington	$9,761		$3,468	$20,706	-$5,000		$20,000	$280,135	1%		
											1%	

This set of matched pairs shows a general positive impact for this property. The range of adjusted impacts is -3% to +6%. The best indication is +6%. I typically consider measurements of +/-5% to be within the typical variation in real estate transactions. This indication is higher than that and suggests a positive relationship. The landscaping buffer on these is considered light with a fair visibility of the panels from most of these comparables and only thin landscaping buffers separating the homes from the solar panels.

I also looked at four sales that were during a rapid increase in home values around 2021, which required significant time adjustments based on the FHFA Housing Price Index. Sales in this time frame are less reliable for impact considerations as the peak buyer demand allowed for homes to sell with less worry over typical issues such as repairs.

The home at 250 Claiborne Drive sold with no impact from the solar farm according to the buyer's broker Lisa Ann Lay with Keller Williams Realty Service. As noted earlier, this is the only manufactured home in the community and is a bit of an anomaly. There was an impact on this sale due to an appraisal that came in low likely related to the manufactured nature of the home. Ms. Lay indicated that there was significant back and forth between both brokers and the appraiser to address the low appraisal, but ultimately, the buyers had to pay $20,000 out of pocket to cover the difference in appraised value and the purchase price. The low appraisal was not attributed to the solar farm, but the difficulty in finding comparable sales and likely the manufactured housing.

Adjoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	250 Claiborne	1.05	1/5/2022	$210,000	2002	1,592	$131.91	4/2	Drive	Ranch	Manuf
Not	255 Spillman	0.64	3/4/2022	$166,000	1991	1,196	$138.80	3/1	Drive	Ranch	Remodel
Not	546 Waterworks	0.28	4/29/2021	$179,500	2007	1,046	$171.61	4/2	Drive	Ranch	3/4 Fin B
Not	240 Shawnee	1.18	6/7/2021	$180,000	1977	1,352	$133.14	3/2	Gar	Ranch	N/A

Solar	Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	250 Claiborne							$210,000			365
Not	255 Spillman	-$379	$9,130	$43,971	$10,000		-$20,000	$208,722	1%		
Not	546 Waterworks	$1,772	-$4,488	$74,958			-$67,313	$184,429	12%		
Not	240 Shawnee	$1,501	$22,500	$25,562		-$10,000		$219,563	-5%		
										3%	

The photograph of the rear view from the listing is shown below.

The home at 260 Claiborne Drive sold with no impact from the solar farm according to the buyer's broker Jim Dalton with Ashcraft Real Estate Services. He noted that there was significant wood rot and a heavy smoker smell about the house, but even that had no impact on the price due to high demand in the market.

Adjoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	260 Claiborne	1.00	10/13/2021	$175,000	2001	1,456	$120.19	3/2	Drive	Ranch	N/A
Not	355 Oakwood	0.58	10/27/2020	$186,000	2002	1,088	$170.96	3/2	Gar	Ranch	3/4 Fin B
Not	30 Ellen Kay	0.50	1/30/2020	$183,000	1988	1,950	$93.85	3/2	Gar	2-Story	N/A
Not	546 Waterworks	0.28	4/29/2021	$179,500	2007	1,046	$171.61	4/2	Drive	Ranch	3/4 Fin B

Solar	Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	260 Claiborne							$175,000			390
Not	355 Oakwood	$18,339	-$930	$50,329		-$10,000	-$69,750	$173,988	1%		
Not	30 Ellen Kay	$31,974	$11,895	-$37,088		-$10,000		$179,781	-3%		
Not	546 Waterworks	$8,420	-$5,385	$56,287			-$67,313	$171,510	2%		
										0%	

The photograph of the rear view from the listing is shown below.

These next two were brick and with unfinished basements which made them easier to compare and therefore more reliable. For 300 Claiborne I considered the sale of a home across the street that did not back up to the solar farm and it adjusted to well below the range of the other comparables. I have included it, but would not rely on that which means this next comparable strongly supports a range of 0 to +3% and not up to +19%.

djoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	300 Claiborne	0.89	12/18/2021	$290,000	2002	1,568	$184.95	3/3	2-Car	Br Rnch	Bsmt
Not	405 Claiborne	0.41	2/1/2022	$267,750	2004	1,787	$149.83	3/2	2-Car	Br Rnch	Bsmt
Not	39 Pinhook	0.68	3/31/2022	$299,000	1992	1,680	$177.98	3/2	2-Car	Br Rnch	Bsmt
Not	5 Pinhook	0.70	4/7/2022	$309,900	1992	1,680	$184.46	3/2	2-Car	Br Rnch	Bsmt

Solar	Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	300 Claiborne							$290,000			570
Not	405 Claiborne	-$3,384	-$2,678	-$26,251				$235,437	19%		
Not	39 Pinhook	-$8,651	$14,950	-$15,947				$289,352	0%		
Not	5 Pinhook	-$9,576	$15,495	-$16,528				$299,291	-3%		
										5%	

The photograph of the rear view from the listing is shown below.

This same home, 300 Claiborne sold again on October 14, 2022 for $332,000, or $42,000 higher or 15% higher than it had just 10 months earlier. The FHFA Home Price Index indicates an 8.3% increase over that time for the overall market, suggesting that this home is actually increasing in value faster than other properties in the area. An updated photo from the 2022 listing is shown below.

The home at 410 Claiborne included an inground pool with significant landscaping around it that was a challenge. Furthermore, two of the comparables had finished basements. I made no adjustment for the pool on those two comparables and considered the two factors to cancel out

Adjoining Residential Sales After Solar Farm Built

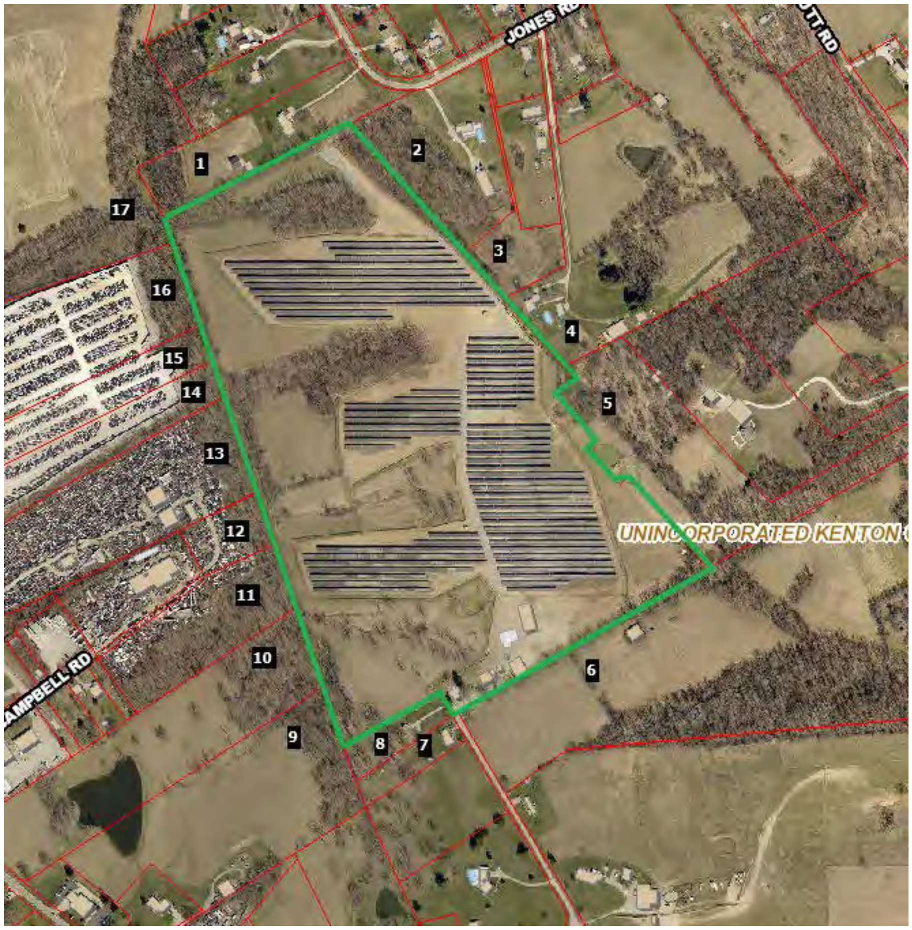
Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other
Adjoins	410 Claiborne	0.31	2/10/2021	$275,000	2006	1,595	$172.41	3/2	2-Car	Br Rnch	Bsmt/Pool
Not	114 Austin	1.40	12/23/2020	$248,000	1994	1,650	$150.30	3/2	2-Car	Br Rnch	Bsmt
Not	125 Liza	0.29	6/25/2021	$315,000	2005	1,913	$164.66	4/3	2-Car	Br Rnch	Ktchn Bsmt
Not	130 Hannahs	0.42	2/9/2021	$295,000	2007	1,918	$153.81	3/3	2-Car	Br Rnch	Fin Bsmt

Solar	Address	Time	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff	Distance
Adjoins	410 Claiborne							$275,000			1080
Not	114 Austin	$3,413	$14,880	-$6,613			$20,000	$279,680	-2%		
Not	125 Liza	-$11,945	$1,575	-$41,890	-$10,000			$252,740	8%		
Not	130 Hannahs	$83	-$1,475	-$39,743	-$10,000			$243,864	11%		
										6%	

The nine matched pairs considered in this analysis includes five that show no impact on value, one that shows a negative impact on value, and three that show a positive impact. The negative indication supported by one matched pair is -7% and the positive impacts are +6% and +7%. The two neutral indications show impacts of -5% to +5%. The average indicated impact is +2% when all nine of these indicators are blended.

Furthermore, the comments of the local real estate brokers strongly support the data that shows no negative impact on value due to the proximity to the solar farm.

2. Matched Pair – Walton 2, Walton, Kenton County, KY

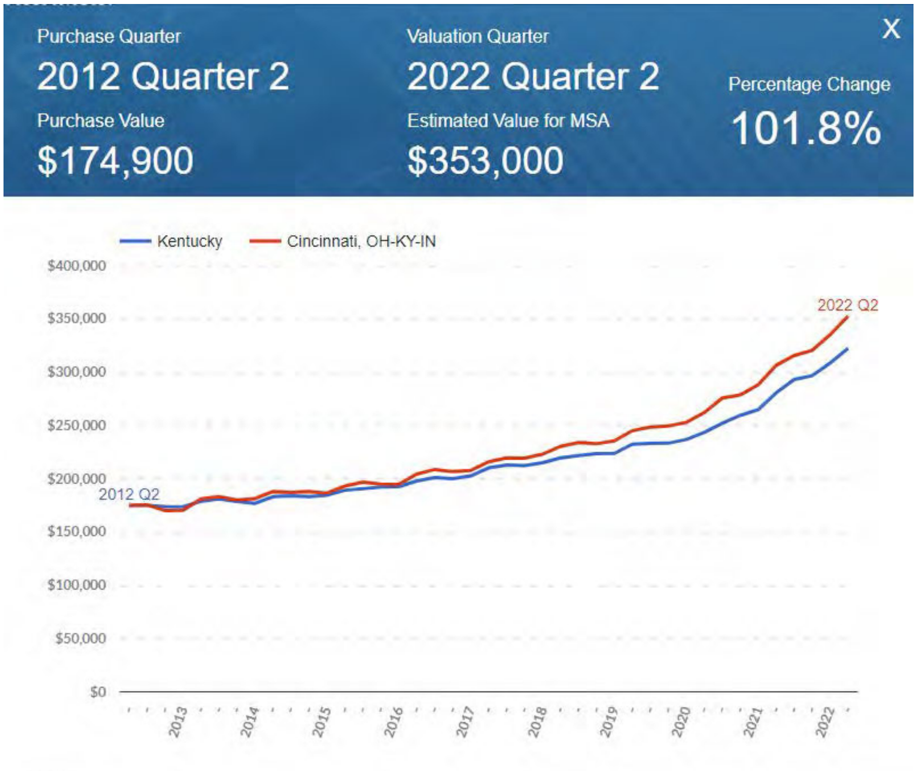


This project was built in 2017 on 58.03 acres for a 2 MW project with the closest home 120 feet from the closest panel.

The home located on Parcel 1 (783 Jones Road, Walton, KY) in the map above sold on May 4, 2022 for $346,000. This home is 410 feet from the nearest solar panel. I have considered a Sale/Resale analysis of this home as it previously sold on May 7, 2012 for $174,900. This analysis compares that 2012 purchase price and uses the FHFA House Price Index Calculator to identify what real estate values in the area have been appreciating at to determine where it was expected to appreciate to. I have then compared that to the actual sales price to determine if there is any impact attributable to the addition of the solar farm.

As can be seen on the calculator form, the expected value for $174,900 home sold in 2nd quarter 2012 would be $353,000 for 2nd quarter 2022. This is within 2% of the actual sales price and supports a finding of no impact on property value.

I have not attempted a paired sales analysis with other sales, as this property also has the nearby recycling and car lot that would be a potential factor in comparing to other sales. But based on aerial imagery, these same car lots were present in 2012 and therefore has no additional impact when comparing this home sale to itself.


Purchase Quarter
2012 Quarter 2
Purchase Value
$174,900
Valuation Quarter
2022 Quarter 2
Estimated Value for MSA
$353,000
Percentage Change
101.8%
X
Kentucky
Cincinnati, OH-KY-IN
$400,000
$350,000
$300,000
$250,000
$200,000
$150,000
$100,000
$50,000
$0
2012 Q2
2022 Q2
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

3. Matched Pair – Turkey Creek, Lancaster, Garrard County, KY

This project was built in 2022 on 297.05 acres out of a 752.80-acre parent tract assemblage for a 50 MW project where the closest home is 240 feet from the closest panel. This project was announced in 2019 with approvals in 2020.

I identified a sale at 166 Long Branch Drive, Lancaster that sold on November 25, 2020 after the solar farm was announced for $180,000. The prior sale of the property on February 28, 2019 was for $160,000. Adjusting the earlier sale by the FHFA Home Price Index, the anticipated increase in value was $181,000. This is a difference of 1% which is within typical market deviation and supports a finding of no impact on property value due to the announcement of the solar farm. This home is approximately 250 feet from the nearest solar panel.

I also identified 209 Ashlock Drive that sold on June 14, 2022 near the time construction was to be begin at this solar project. This home sold for $500,000 for a 3,968 s.f. home with 4 BR, 4.5 BA built in 1985 on 3.06 acres. This is a unique home and it is over 1,000 feet to the nearest solar panel. It was purchased out of a larger tract that now includes 5 additional lots and this home adjoins an industrial use to the northwest. All of these factors make it difficult to analyze this sale. I have therefore not attempted to do so as any result would be non-credible given these other factors.

I also identified 1439 Stanford Road that sold on June 27, 2023 for $1,300,000 for this 3,400 s.f. historic home on 206 acres. The home is over 1,500 feet from the panels and the site includes acreage zoned for commercial use according to the listing. There are too many unique features to this for a valid paired sales analysis. I have not attempted one for this sale.

I identified 239 Ashlock Drive that sold on June 20, 2024 for $329,900 for this 1,600 s.f. brick ranch with 3 BR, 2.5 BA, with 2-car garage built in 2024 on 1 acre. This home is approximately 700 feet from the nearest panel. It is located on the north side of Elmwood Court and therefore one lot away from adjoining the solar project. This home was sold by Hannah Hulett with Danny Ayres Realty & Auction. The home was listed on April 19, 204 for $339,900 and then reduced to $329,900 on May 1, 204. The home went under contract on May 16, 2024 and sold on June 20, 2024 for $329,900. The purchase price works out to be $206.19 per square foot.

There were not many new homes in that size range in the area for comparison. I considered 126 Bethany Trace that sold on April 14, 2023 for $300,000 for a 1,385 s.f. home with 2 car garage, 3 BR and 2 BA built in 2023 on 0.26 acres. The purchase price works out to $216.61 per s.f. This is a little higher than the subject property, but it is also 215 s.f. smaller, which would suggest a slightly higher price per s.f. This home is on a smaller lot but also sold for $10,000 less than asking price and was on the market for 3 months before closing. I will not rely heavily on this comparison as I only found this one comparable sale of a new home in a similar time frame.

Merriwood Development, LLC purchased 15 lots along Elmwood Court on May 18, 2023 for $750,000, or $50,000 per lot. These lots were developed in 2022/2023 by Wimbledon Holdings and WRH Investments following the purchase of the raw land on March 25, 2022. The raw land was purchased for development after the solar farm was approved and the subdivision infrastructure was developed during the construction of the solar farm. The developer clearly foresaw no negative impact on the property from the solar farm or they would not have invested in the development. The sales price is not a good indication of market value as Wimbledon and Merriwood are noted as related entities.

I searched for recent lot sales in the area and found 1 to 3 acre lots to the northeast selling for $15,000 to $30,000 each. The lots at Merriwood are in close proximity to Garrard County High School off Industry Road.

Lot 96 sold to Robert and Avonda Noe on January 24, 2023 for $44,900 and was subsequently developed with a single family home. This lot directly adjoins the solar farm with the nearest panel 625 feet away. The panels appear to be visible in the background of the tax card photo.

Lot 97 sold to Michael and Jill Stevens on July 28, 2023 for $60,800. This lot directly adjoins the solar farm with a likely home site 820 feet from the nearest panel.

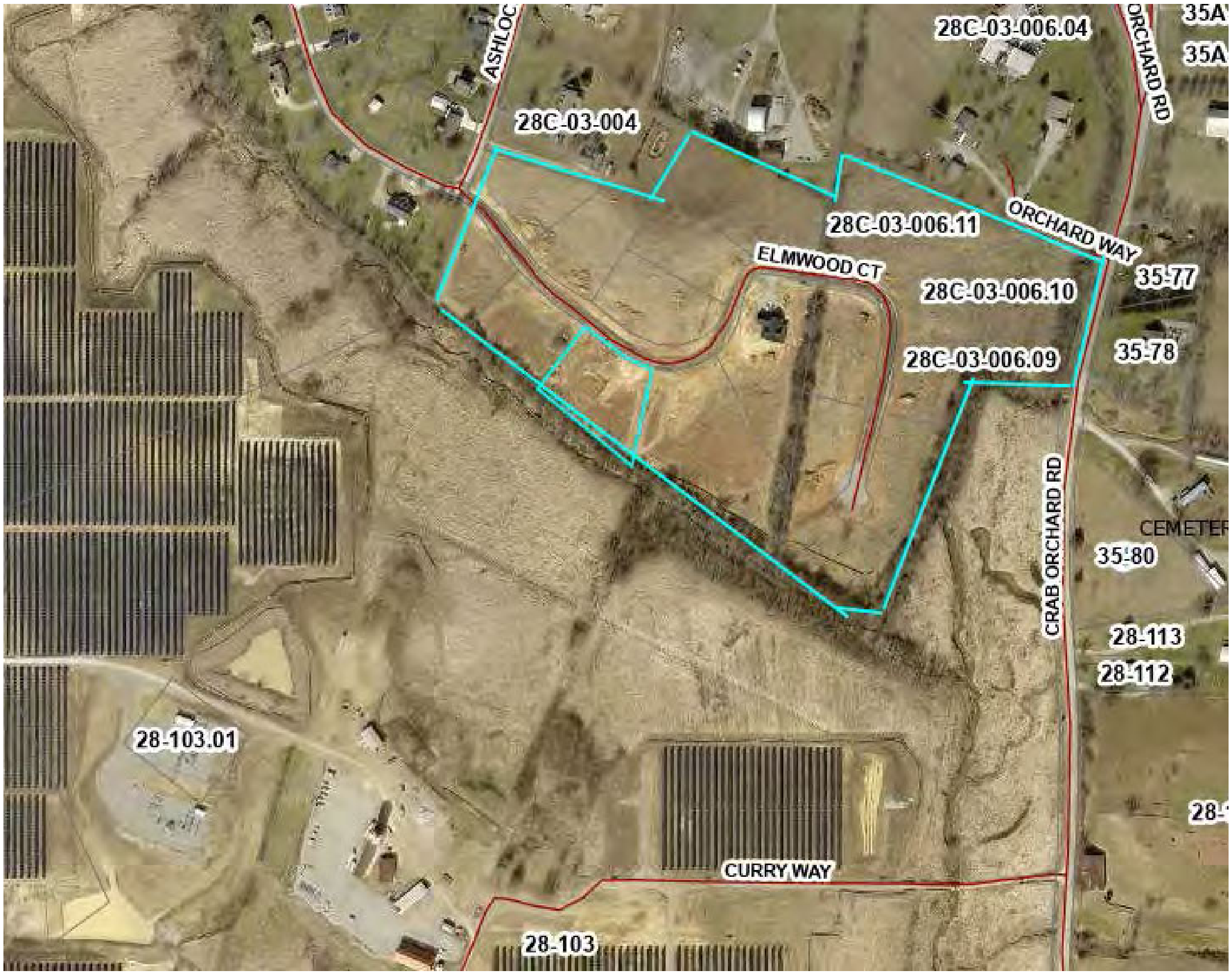
Lot 98 was sold to Walter and Hannah Hulett for $1 as an entity related to Wimbledon Holdings. This is the home visible in the map just underneath the word Elmwood Court. The Huletts are WRH Investments, LLC that developed the site with Wimbledon Holdings, LLC.

Lot 100 sold on July 28, 2023 to Jimmie McCulley for $39,900. This lot does not directly adjoin the solar farm.

Lot 101 sold on November 22, 2023 to Willie and Tiffany Skeens for $50,000. This lot directly adjoins the solar farm with a likely home site 450 feet from the nearest panel.

Additional lots were transferred to Elmwood Builders, LLC that is noted as affiliated with Merriwood Development, LLC for $1 each.

The various lot prices range from $39,900 to $60,800 with the low end of the range being a lot non-adjacent to the solar farm and the high end being adjacent to the solar farm. The sales data on the lots do not support any finding of a negative impact on property value. Comparing the most common lot value of $50,000 per lot suggests an impact range of -10% for Lot 96 that sold for $44,900 to +22% for Lot 97 that sold for $60,800. Those two lots are adjacent to each other. Blending the two impacts suggests a 12% enhancement for adjoining the solar farm. But given the wide ranges of lot values in this development, I consider this to simply support a finding of no impact on property value.


28C-03-006.04
ORCHARD RD
ASHLOC
28C-03-004
28C-03-006.11
ORCHARD WAY
ELMWOOD CT
28C-03-006.10
35-77
35-78
28C-03-006.09
CRAB ORCHARD RD
CEMETER
35-80
28-113
28-112
28-103.01
CURRY WAY
28-103

4. Mount Olive Creek Solar, Russell Springs, Russell County, KY

This project is proposed to be built by 2025 on 420.82 acres out of a parent tract assemblage of 526.02 acres for this 60 MW project.

I identified a home sale at 2985 KY-1729 that sold on December 2, 2022 for $150,000. This home is around 1,250 feet from the nearest panel which is located to the northeast and through the intersection of Sano Road and Sulphur Creek Road (Highway 1729). It fronts on the highway and adjoins a church. Given these various issues, it would be difficult to complete a paired sales analysis on this home. However, this home did sell on September 18, 2018 for $110,000 prior to the solar farm construction. Adjusting this purchase price upward by the FHFA Home Price Index for the area, this home would have been expected to appreciate to $158,000. This was within 5% of the anticipated sales price and supports a finding of no impact on property value. Still given the distance to the solar farm and the other factors, I will not rely heavily on this indicator.

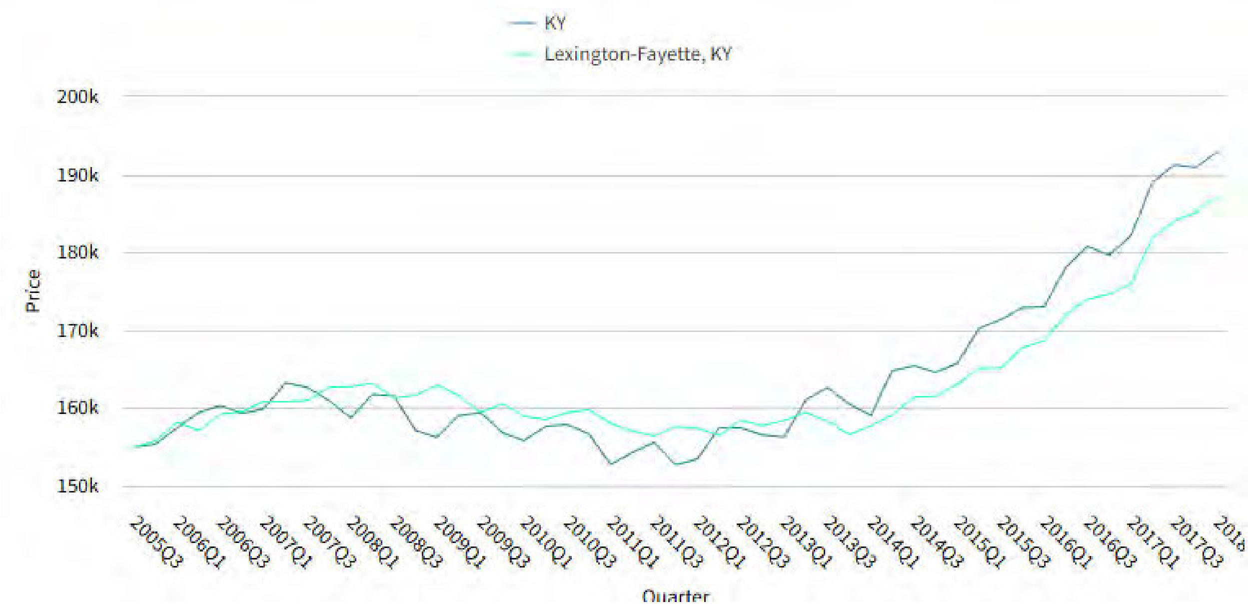
5. E. W. Brown Solar, Harrodsburg, KY

This project was built in 2016 on 50 acres for a 10 MW project. This solar facility adjoins three coal-fired units shown to the north which makes it difficult to do a paired sales analysis on the nearby homes. I have however considered Sale/Resale analysis as the impact of the nearby coal power plant as well as the impact of the river frontage is the same in both sales prices, which leaves the primary difference of the solar project as what we are testing for.

A home at 837 Hardin Hts sold on September 12, 2005 for $155,000 before the solar project and sold again on March 29, 2018 for $212,500 after the solar farm was built. The tax assessor identified both of these sales at Arms-Length transactions. Over that time period, the FHFA HPI indicates that a home that sold in 2005 in the area for $155,000 would be expected to appreciate to $187,274. This strongly supports a finding of no impact on this home value due to the solar project. The river frontage and the proximity to the power plant was the same in both the before and after. The solar panels are 1,015 feet from the nearest point on this home.

I will not rely heavily on this indicator, but it is included for additional information.

Estimated Value for MSA: $187,274	Estimated Value for State: $192,956	MSA Percentage Change: 20.82%



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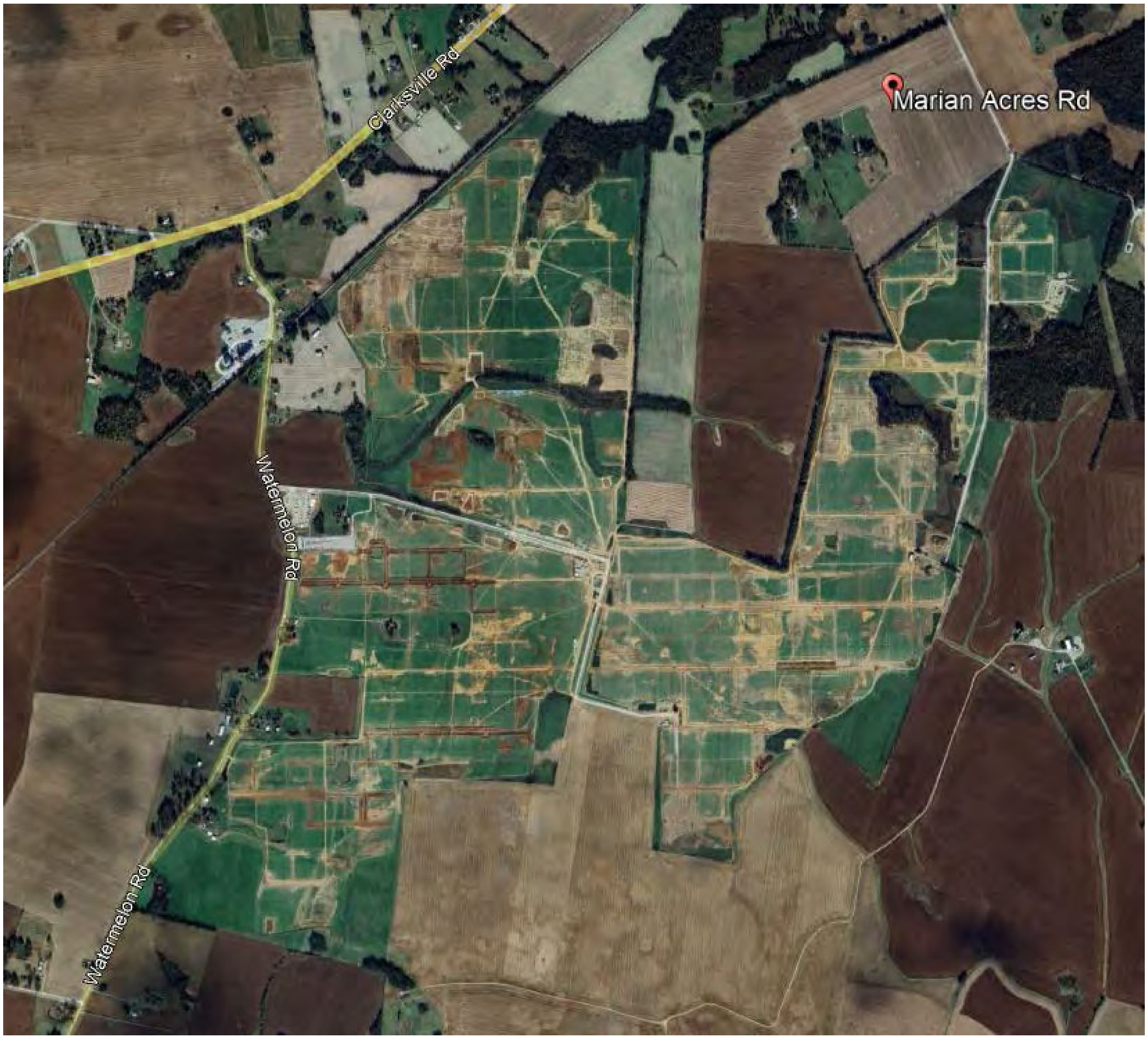
6. Logan County Solar, Russelville, Logan County, KY



This project began construction in 2023 and proposed to be complete in early 2025. It is located on 1,100 acres for a 173 MW project.

I identified a May 17, 2022 sale of 528 Watermelon Road for $275,000 for a home on 1.29 acres with 2,370 s.f. with 3 BR and 2 BR built in 1940 with 2 carport spaces. This homes is 1,460 feet from the nearest panel through an existing wooded patch. The distance and age makes it difficult to compare this home in this area to similar properties for a paired sale analysis. This home last sold on September 12, 2016 for $149,000. Using the FHFA Home Price Index the anticipated appreciated value as of the date of the most recent sale was expected to be $234,000. This Sale/Resale analysis suggests a 17.5% increase in value due to the solar farm.

I also identified 557 J Montgomery Road that sold on December 8, 2021 for $185,000 for a 4 BR, 2 BA with 2,200 s.f. of living space on 1 acre that was built in 1980. This home has a pool that is noted as needing work but was otherwise in average condition. I spoke with Dewayne Whittaker the listing agent who indicated that the proposed nearby solar farm had no impact on the sales price or marketing of the home. This home previously sold on May 5, 2016 for $114,000 and also on June 17, 2008 for $125,000. The 2008 sales price was higher than the 2016 due to the crash in the housing market in 2008. Adjusting each of these former sales to a December 2021 value expectation based on the FHFA Home Price Index, I derive expectations of $174,000 from the 2016 sale and $210,000 from the 2008 sale. The Sale/Resale difference from the 2008 sale is considered more reliable as it covers a shorter period of time. It shows a 6% increase in value over the expected value and supports a mild increase in value due to the adjacency to the solar farm. This home is over 1,900 feet to the nearest panel through existing woods. Given the distance involved this is not a strong indicator for properties closer to solar panels.

Similarly, 263 Donald Lane sold on October 3, 2022 for $263,400 for a brick ranch with 4 BR, 2.5 BA with 1,704 s.f. of living area on 5 acres. This home is about 1400 feet from the nearest panel through existing woods. This home previously sold in May 2010 for $141,000. Adjusting this for time using the FHFA HPI, I derive an expected value of $262,000. This is within 1% of the actual closed price and strongly supports a finding of no impact at this distance. It is not a strong indicator for properties closer to panels.

7. Matched Pair – Demille Solar, Demille Road, Lapeer, Lapeer County, MI

This solar farm is located on 160 acres of a parent tract assemblage of 311.40 acres with a 28.4 MW output. This was built in 2017.

I have identified several home sales adjoining this solar farm at the southeast corner where the red line shows adjoining Parcels 5 through 17 on the map above.

The first is Parcel 8 in the map above, 1120 Don Wayne Drive that sold in August 2019. I have compared this to multiple home sales as shown below. I consider 1231 Turrill to be the best comparable of this set as it required the least adjustment and was the most similar in size, age, and date of sale.

Adjoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Dist.
Adjoins	1120 Don Wayne	0.47	8/28/2019	$194,000	1976	1,700	$114.12	3/3.5	2-Car	Ranch	Brick/FinBsmt	310
Not	1127 Don Wayne	0.51	9/23/2019	$176,900	1974	1,452	$121.83	3/2	2-Car	Ranch	Brick/Ufin Bsmt	
Not	1231 Turrill	1.21	4/25/2019	$182,000	1971	1,560	$116.67	3/2	2-Car	Ranch	Brick/Wrkshp	
Not	1000 Baldwin	3.11	8/1/2017	$205,000	1993	1,821	$112.58	3/2.5	2-Car	Ranch	Vinyl	

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	1120 Don Wayne								$194,000		-1%
Not	1127 Don Wayne	-$258		$1,769	$24,171	$10,000			$212,582	-10%	
Not	1231 Turrill	$1,278	-$10,000	$4,550	$13,067	$10,000			$200,895	-4%	
Not	1000 Baldwin	$8,718	-$20,000	-$17,425	-$10,897	$10,000			$175,396	10%	

Next I considered Parcel 9, 1126 Don Wayne Drive, which I have compared to two similar home sales nearby that are not adjoining a solar farm as shown below. This home sold in May 2018 after the solar farm was built.

Adjoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Dist.
Adjoins	1126 Don Wayne	0.47	5/16/2018	$160,000	1971	1,900	$84.21	3/2.5	2-Car	Ranch	Brick,FinBsmt	310
Not	70 Sterling Dr	0.32	8/2/2018	$137,500	1960	1,800	$76.39	3/1.5	1-Car	Ranch	Brick	
Not	3565 Garden Dr	0.34	5/15/2019	$165,000	1960	2,102	$78.50	3/1.5	2-Car	Ranch	Brick	

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	1126 Don Wayne								$160,000		-3%
Not	70 Sterling Dr	-$603		$7,563	$6,111	$10,000	$5,000		$165,571	-3%	
Not	3565 Garden Dr	-$3,374		$9,075	-$12,685	$5,000			$163,016	-2%	

I looked at Parcel 11, 1138 Don Wayne Drive that sold in August 2019. I have compared this to three similar sales as shown below. I attributed no value to the pool at 1138 Don Wayne Drive.

Adjoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Dist.
Adjoins	1138 Don Wayne	0.47	8/28/2019	$191,000	1975	2,128	$89.76	4/1.5	2-Car	2-Story	Brick	380
Not	1331 W Genessee	0.45	10/25/2019	$160,707	1940	1,955	$82.20	4/1.5	Drive	1.5 Story	Vinyl/UnBsmt	
Not	1128 Gwen Dr	0.47	8/24/2018	$187,500	1973	2,040	$91.91	3/2.5	2-Car	2 Story	Brick/UnBsmt	
Not	1227 Oakridge	1.05	6/11/2017	$235,000	1980	2,500	$94.00	4/2.5	2-Car	2 Story	Brk/PFinBsmt	

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	1138 Don Wayne								$191,000		-1%
Not	1331 W Genessee	-$524		$16,874	$11,377		$10,000		$198,434	-4%	
Not	1128 Gwen Dr	$3,887		$1,875	$6,471	-$10,000			$189,733	1%	
Not	1227 Oakridge	$10,667	-$10,000	-$5,875	-$27,974	-$10,000			$191,818	0%	

Parcel 13, 1168 Alice Drive, sold in October 2019. I spoke with Tanya Biernat the buyer's agent who handled that sale and she indicated that the property was placed on the market below market for a fast sale by the sellers. The buyers expressed no concern regarding the adjacent solar farm and it had no impact on marketing or selling the property, though it did sell for a low price. I also spoke with Chantel Fink's office, the selling agent. They confirmed that the solar farm was not an issue in the sales price or marketing of the property. Given that this sale was noted as below market for a fast sale, I have not attempted to set it up as a matched pair.

Parcel 14, 1174 Alice Drive, sold in January 2019. I have compared that sale to three similar properties as shown below. I included 1135 Gwen Drive as a nearby comparable, but it is not a good comparable. According to the broker, Paul Coulter, that home had many recent and significant upgrades that made it superior to similar housing in the neighborhood. It is notably the highest sales price in the neighborhood. I have shown that one but I made no adjustment for those upgrades, but I won't rely on that sale for the matched pairs. I consider the 1127 Don Wayne Drive comparable to be a more reasonable comparison. I spoke with Chris Fergurson the broker for that sale who confirmed that it was arm's length and that while across Don Wayne Drive from the homes that adjoin the solar farm, this home had no view of the solar farm and was not an issue in marketing this home.

Adjoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Dist.
Adjoins	1174 Alice Dr	0.54	1/14/2019	$165,000	1973	1,400	$117.86	3/1.5	2-Car	Ranch	Brick/Fin Bsmt	280
Not	1127 Don Wayne	0.51	9/23/2019	$176,900	1974	1,452	$121.83	3/2	2-Car	Ranch	Brick/Ufin Bsmt	
Not	1135 Gwen Dr	0.43	7/26/2019	$205,000	1967	1,671	$122.68	3/2	2-Car	Ranch	Brick/Ufin Bsmt	
Not	1160 Beth Dr	0.46	6/20/2019	$147,500	1970	1,482	$99.53	4/1.5	2-Car	Ranch	Brick/Fin Bsmt	

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	1174 Alice Dr								$165,000		2%
Not	1127 Don Wayne	-$2,504		-$885	-$5,068	-$5,000			$163,443	1%	
Not	1135 Gwen Dr	-$2,223		$6,150	-$26,597	-$5,000			$177,330	-7%	
Not	1160 Beth Dr	-$1,301		$2,213	-$6,529				$141,883	14%	

The four matched pairs identified show a range of -3% to +2% based on the average difference for each set of matched pairs. This is a very similar range I have found in most sales adjoining solar farms and strongly supports the assertion that the solar farm is not having a negative impact on adjoining property values.

Furthermore, two brokers active in the sale of a home adjoining the solar farm both confirmed that Parcel 13 was not impacted by the presence of the solar farm on the adjacent tract.

8. Matched Pair – Turrill Solar, Turrill Road, Lapeer, Lapeer County, MI

This solar farm is located on approximately 230 acres with a 19.6 MW output. This was built in 2017.

I have identified several home sales adjoining this solar farm on the west side of this solar farm on Cliff Drive.

The first is 1060 Cliff Drive that sold in September 2018. I compared this to multiple nearby home sales as shown below.

Adjoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
Adjoins	1060 Cliff Dr	1.03	9/14/2018	$200,500	1970	2,114	$94.84	4/2.5	2-Car	2 Story	Brick	290
Not	1331 W Genessee	0.45	10/25/2019	$160,707	1940	1,955	$82.20	4/1.5	Drive	1.5 Story	Vinyl/Unfin Bsmt	
Not	1128 Gwen Dr	0.47	8/24/2018	$187,500	1973	2,040	$91.91	3/2.5	2-Car	2 Story	Brick/Unfin Bsmt	
Not	1227 Oakridge	1.05	6/11/2017	$235,000	1980	2,500	$94.00	4/2.5	2-Car	2 Story	Brk/Prt Fin Bsmt	

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	1060 Cliff Dr								$200,500		-2%
Not	1331 W Genessee	-$3,666	$10,000	$14,464	$10,456	$10,000	$10,000		$211,961	-6%	
Not	1128 Gwen Dr	$221	$10,000	-$2,813	$5,441				$200,350	0%	
Not	1227 Oakridge	$6,073		-$11,750	-$29,027				$200,296	0%	

Next I considered 1040 Cliff Drive as shown below. Comparing to the 1127 Don Wayne Drive, I show no impact. I included 1135 Gwen Drive as a nearby comparable, but it is not a good comparable. According to the broker, Paul Coulter, that home had many recent and significant upgrades that made it superior to similar housing in the neighborhood. It is notably the highest sales price in the neighborhood. I have shown that one but I made no adjustment for those upgrades, but I won't rely on that sale for the matched pairs. This leaves 1127 Don Wayne Drive which shows no impact and 1160 Beth Drive, which had the fewest adjustments shows a 12% premium or enhancement for adjoining the solar farm. I consider the Don Wayne Drive match up to be the better of these two comparables even with a higher number of adjustments.

Adjoining Residential Sales After Solar Farm Built

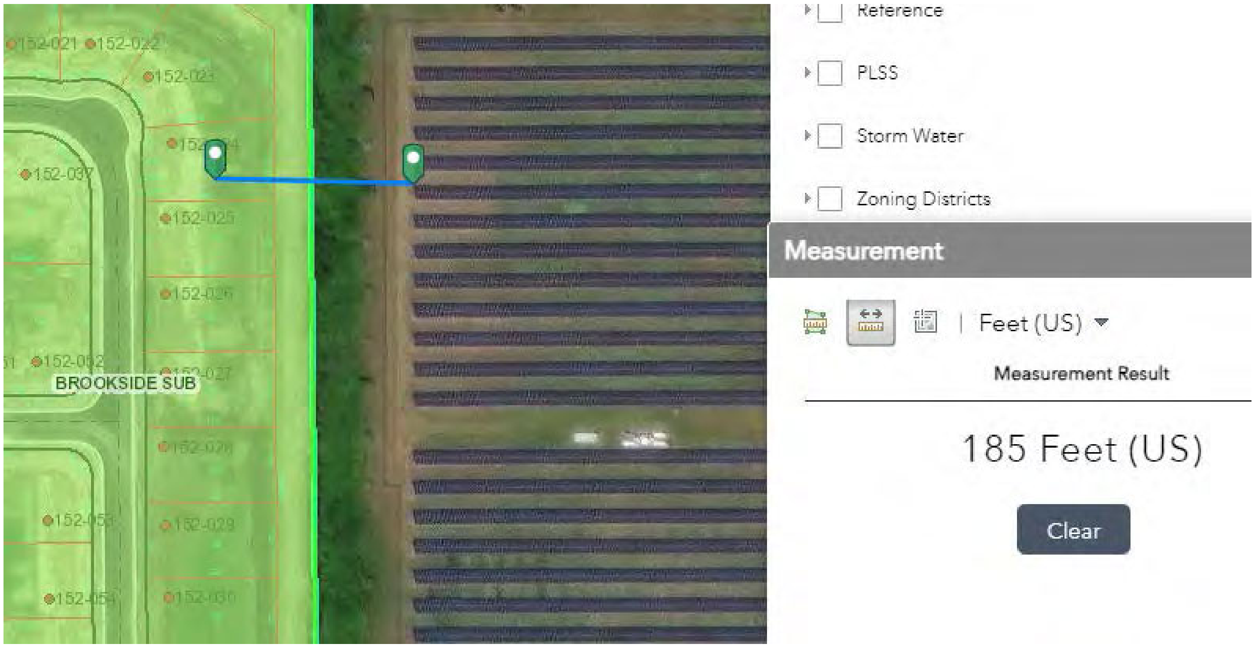
Solar	Address	Acres	Date Sold	Sales Price	Built	GBA	$/GBA	BR/BA	Park	Style	Other	Distance
Adjoins	1040 Cliff Dr	1.03	6/29/2017	$145,600	1960	1,348	$108.01	3/1.5	3-Car	Ranch	Brick/Wrkshp	255
Not	1127 Don Wayne	0.51	9/23/2019	$176,900	1974	1,452	$121.83	3/2	2-Car	Ranch	Brick/Ufin Bsmt	
Not	1135 Gwen Dr	0.43	7/26/2019	$205,000	1967	1,671	$122.68	3/2	2-Car	Ranch	Brick/Ufin Bsmt	
Not	1160 Beth Dr	0.46	6/20/2019	$147,500	1970	1,482	$99.53	4/1.5	2-Car	Ranch	Brick/Fin Bsmt	

Solar	Address	Time	Site	YB	GLA	BR/BA	Park	Other	Total	% Diff	Avg % Diff
Adjoins	1040 Cliff Dr								$145,600		1%
Not	1127 Don Wayne	-$8,110		-$12,383	-$10,136	-$5,000	$5,000		$146,271	0%	
Not	1135 Gwen Dr	-$8,718		-$7,175	-$31,701	-$5,000	$5,000		$157,406	-8%	
Not	1160 Beth Dr	-$5,975		-$7,375	-$10,669		$5,000		$128,481	12%	

The two matched pairs identified show a range of -2% to +1% based on the average difference for each set of matched pairs. This is a very similar range I have found in most sales adjoining solar farms and strongly supports the assertion that the solar farm is not having a negative impact on adjoining property values.

9. Matched Pair – Portage Solar, Portage, Porter County, IN

This solar project has a 2 MW output and is located on a portion of a 56-acre tract. The project was built in 2012. As can be seen by the more recent map, Lennar Homes is now developing a new subdivision on the vacant land just west of this solar project called Brookside. There have been seventeen home sales identified in this subdivision at prices ranging from $349,000 to $414,990. Clearly they anticipate no negative impacts from the adjoining solar project. While I have not identified any finished homes sold directly adjoining the solar project I note that the likely home sites will be 185 feet from the nearest solar panel based on the measurement shown below. The lot plan has 13 lots that will adjoin the solar project at that distance with no significant setbacks or lot layout that attempts to minimize the number of lots in this area of the tract, which further supports the assertion that Lennar Homes does not ascribe a significant impact to the solar project.



I have considered the recent sale of Parcels 5 and 12. Parcel 5 is an undeveloped tract, while Parcel 12 is a residential home. I have compared each to a set of comparable sales to determine if there was any impact due to the adjoining solar project. This home is 1,320 feet from the closest solar panel.

Adjoining Residential Sales After Solar Farm Completed

#	TAX ID	Acres	Date Sold	Sales Price	Built	GBA	$/GBA
12	64-06-19-326-007.000-015	1.00	Sep-13	$149,800	1964	1,776	$84.35

Nearby Residential Sales After Solar Farm Completed

#	TAX ID	Acres	Date Sold	Sales Price	Built	GBA	$/GBA
2501 Architect Dr	64-04-32-202-004.000-021	1.31	Nov-15	$191,500	1959	2,064	$92.78
336 E 1050 N	64-07-09-326-003.000-005	1.07	Jan-13	$155,000	1980	1,908	$81.24
2572 Pryor Rd	64-05-14-204-006.000-016	1.00	Jan-16	$216,000	1960	2,348	$91.99

Adjoining Land Sales After Solar Farm Completed

#	TAX ID	Acres	Date Sold	Sales Price	$/AC
5	64-06-19-200-003.000-015	18.70	Feb-14	$149,600	$8,000

Nearby Land Sales After Solar Farm Completed

#	TAX ID	Acres	Date Sold	Sales Price	$/AC
	64-07-22-401-001.000-005	74.35	Jun-17	$520,450	$7,000
	64-15-08-200-010.000-001	15.02	Jan-17	$115,000	$7,658

Residential Sale Adjustment Chart

TAX ID	Date Sold	Adjustments Time	Total	$/Sf
64-06-19-326-007.000-015	Sep-13	$8,988	$158,788	$89.41
64-04-32-202-004.000-021	Nov-15	$3,830	$195,330	$94.64
64-07-09-326-003.000-005	Jan-13	$9,300	$164,300	$86.11
64-05-14-204-006.000-016	Jan-16		$216,000	$91.99

2% adjustment/year
Adjusted to 2017

	Adjoins Solar Farm		Not Adjoin Solar Farm	
	Average	**Median**	**Average**	**Median**
Sales Price/SF	$89.41	$89.41	$90.91	$91.99
GBA	1,776	1,776	2,107	2,064

After adjusting the price per square foot is 2.88% less for the home adjoining the solar project versus those not adjoining the solar project. This is within the typical range of variation to be anticipated in any real estate transaction and indicates no impact on property value.

Applying the price per square foot for the 336 E 1050 N sale, which is the most similar to the Parcel 12 sale, the adjusted price at $81.24 per square foot applied to the Parcel 12 square footage yields a value of $144,282.

Land Sale Adjustment Chart

TAX ID	Date Sold	Adjustments Time	Total	$/Acre
64-06-19-200-003.000-015	Feb-14	$8,976	$158,576	$8,480
64-07-22-401-001.000-005	Jun-17		$520,450	$7,000
64-15-08-200-010.000-001	Jan-17		$115,000	$7,658

2% adjustment/year
Adjusted to 2017

	Adjoins Solar Farm		Not Adjoin Solar Farm	
	Average	**Median**	**Average**	**Median**
Sales Price/Ac	$8,480	$8,480	$7,329	$7,329
Acres	18.70	18.70	44.68	44.68

After adjusting the price per acre is higher for the property adjoining the solar project, but the average and median size considered is higher which suggests a slight discount. This set of matched pair supports no indication of negative impact due to the adjoining solar project. Alternatively, adjusting the 2017 sales back to 2014 I derive an indicated price per acre for the comparables at $6,580 per acre to $7,198 per acre, which I compare to the unadjusted subject property sale at $8,000 per acre.

10. Matched Pair – Dominion Indy III, Indianapolis, Marion County, IN

This solar project has an 11.9 MW output and is located on a portion of a 134-acre tract. The project was built in 2013/2014.

There are a number of homes on small lots located along the northern boundary and I have considered several sales of these homes from the time period closest to the solar project having been built – between 2005 and 2017. I have compared those homes to a set of nearby not adjoining home sales as shown below. The adjoining homes that sold range from 380 to 420 feet from the nearest solar panel, with an average of 400 feet.

Adjoining Residential Sales After Solar Farm Completed

#	TAX ID	Acres	Date Sold	Sales Price	Built	GBA	$/GBA
2	2013249	0.38	12/9/2015	$140,000	2006	2,412	$58.04
4	2013251	0.23	9/6/2017	$160,000	2006	2,412	$66.33
5	2013252	0.23	5/10/2017	$147,000	2009	2,028	$72.49
11	2013258	0.23	12/9/2015	$131,750	2011	2,190	$60.16
13	2013260	0.23	3/4/2015	$127,000	2005	2,080	$61.06
14	2013261	0.23	2/3/2014	$120,000	2010	2,136	$56.18

Nearby Not Adjoining Residential Sales After Solar Farm Completed

#	TAX ID	Acres	Date Sold	Sales Price	Built	GBA	$/GBA
5836 Sable Dr	2013277	0.14	Jun-16	$141,000	2005	2,280	$61.84
5928 Mosaic Pl	2013845	0.17	Sep-15	$145,000	2007	2,280	$63.60
5904 Minden Dr	2012912	0.16	May-16	$130,000	2004	2,252	$57.73
5910 Mosaic Pl	2000178	0.15	Aug-16	$146,000	2009	2,360	$61.86
5723 Minden Dr	2012866	0.26	Nov-16	$139,900	2005	2,492	$56.14

			Adjustments	
TAX ID	Date Sold	Time	Total	$/Sf
2013249	12/9/2015	$5,600	$145,600	$60.36
2013251	9/6/2017		$160,000	$66.33
2013252	5/10/2017		$147,000	$72.49
2013258	12/9/2015	$5,270	$137,020	$62.57
2013260	3/4/2015	$5,080	$132,080	$63.50
2013261	2/3/2014	$7,200	$127,200	$59.55
2013277	6/1/2016	$2,820	$143,820	$63.08
2013845	9/1/2015	$5,800	$150,800	$66.14
2012912	5/1/2016	$2,600	$132,600	$58.88
2000178	8/1/2016	$2,920	$148,920	$63.10
2012866	11/1/2016	$2,798	$142,698	$57.26

2% adjustment/year
Adjusted to 2017

	Adjoins Solar Farm		Not Adjoin Solar Farm	
	Average	Median	Average	Median
Sales Price/SF	$64.13	$63.03	$61.69	$63.08
GBA	2,210	2,163	2,333	2,280

This set of homes provides very strong indication of no impact due to the adjacency to the solar project and includes a large selection of homes both adjoining and not adjoining in the analysis.

There have been three additional nearby sales of homes to the north more recently than those identified above

A two-story home located at 5737 Sable Drive of brick and siding construction built in 2010 with 3 BR, 2.5 BA, 2,136 SF and a 2-car garage sold for $172,000 on April 25, 2019. This works out to $80.52 per square foot. This home is approximately 230 feet from the nearest solar panel.

A similar home located at 6006 Jackie Lane in the same neighborhood but not near the solar project sold on August 5, 2019 for $178,400 for a 4 BR, 2.5 BA, 2,332 SF and a 2-car garage, or $76.50 per square foot. This is an older dwelling built in 1997 and adjusting the price per s.f. upward by 6.5% for that difference in age as well as downward by 1.5% for growth in the market for time for the 5 months difference in sales date, I derive an adjusted price per square foot of $80.33 per square foot. This is within a reasonable range (less than 1% difference) from the price per square foot of the home adjoining the solar project. I consider this to be good support for an indication of no impact on property value.

Another home located at 5813 Sable Drive sold on January 1, 2021 for $190,645 for a brick and siding two-story home built in 2005 with 3 BR, 2.5 BA, 2,080 SF and a 2-car garage. This works out to $91.57 per square foot. This home is approximately 230 feet from the nearest solar panel.

A similar home located at 5834 Jackie Lane in the same neighborhood but not near the solar project sold on May 12, 2021 for $224,000 for a brick and siding home built in 2005 with 3 BR, 2.5 BA, 2600 SF and a 2-car garage. This works out to $86.15 per square foot. Adjusting this upward by 5% for being a larger house where there is often a slight discount per square foot for a home and downward 1% for growth in the market over time, I derive an adjusted indication of value of $89.60 per square foot. This shows about a 2% increase in value for the property adjoining the solar project. I consider this to support an indication of no impact on property value.

Finally, I considered the recent sale at 5909 Sable Drive that sold on June 3, 2019 for $169,900 for this two-story brick and siding home built in 2006 with 3 BR, 2.5 BA, 2,412 SF, and two car garage. This works out to $70.44 per square foot. This home is approximately 410 feet from the nearest solar panel.

A similar home located at 6006 Jackie Lane in the same neighborhood but not near the solar project sold on August 5, 2019 for $178,400 for a 4 BR, 2.5 BA, 2,332 SF and a 2-car garage, or $76.50 per square foot. This is an older dwelling built in 1997 and adjusting the price per s.f. upward by 4.5% for that difference in age as well as downward by 0.5% for growth in the market for time for the 2 months difference in sales date, I derive an adjusted price per square foot of $79.56 per square foot. This shows a 13% impact on value. I have included a photo from the listing of the view from the backyard where solar panels are in the background and barely visible in the one central section.

I spoke with Beth Guthrie with Keller Williams Realty Indy Metro Northeast who was the buyer's agent. She indicated that the solar project did not have any impact on the sales price for the buyers or in the appraisal of the property for the financing of the property. I therefore conclude that this matched pair is just an outlier.

11. Matched Pair – Bremen Solar, Bremen, Marshall County, IN

This 6.8 MW solar project was built in 2022 on 36.74 acres. The closest adjoining homes is 60 feet and the average distance is 133 feet. This project has no landscaping screen despite numerous homes being in close proximity and is not consistent with most of the project that I have researched.

A manufactured home at 1141 Gilbert Lane sold for $186,000 on May 1, 2023 and most recently sold prior to that on January 7, 2022 for $160,000. Adjusting for the change in time based on the FHFA HPI Calculator for the South Bend area, the indicated expected value is $189,000. This indicates a 1.6% difference below the expected which is within typical market imperfection and supports a finding of no impact on property value. This home does not directly adjoin the solar project and is 310 feet from the nearest panel.

12. Matched Pair – Anderson 6 Solar, Andreson, Madison County, IN

This 6.8 MW solar project was built in 2022. The homes to the east are within 75 feet of the solar panels shown. The closest home to the south is 155 feet from the nearest panel. The closest home to the west is 115 feet from the nearest panel. The closest home to the north is 85 feet from the nearest panel.

A home located at 2819 S Layton Road, Anderson, IN located to the northwest of this solar farm sold in October 6, 2023 after construction was complete on the solar farm. This home is 345 feet from the nearest panel. This home is a 3 BR, 2 BA 2-story frame construction built in 1899 with significant updates, a detached 2-car garage and 1,946 s.f. on 1.38 acres. The sales price was $210,000 or $107.91 per s.f. This home sold in just over 30 days and at a price well above the asking price of $194,500. I reached out to Dawn Rusk with Keller Williams-Morrison, the broker who listed the property for sale.

This same home sold for $150,000 in February 2021. Typical appreciation in this market based on the FHFA House Price Index for the Indianapolis-Carmel-Anderson MSA would be 32% over that period, or $198,000. The actual sales price after the construction of the solar farm was higher than the value before the solar farm. Comparing the sales price of $210,000 to the anticipated $198,000 from typical appreciation shows a difference of 6%, suggesting a mild enhancement from the solar farm. However, given the rapid increases in this time frame, this mild difference could be attributable to the minor shifts in months within each quarter as the FHFA HPI is only by quarter. I therefore consider this to be a strong indication of no impact on property value.


Purchase Quarter
2021 Quarter 1
Purchase Value
$150,000
Valuation Quarter
2023 Quarter 4
Estimated Value for MSA
$198,000
Percentage Change
32.0%
X
Indiana
Indianapolis-Carmel-Anderson, IN
$200,000
$190,000
$180,000
$170,000
$160,000
$150,000
2021 Q1
2023 Q4
2021
Q2
Q3
Q4
2022
Q2
Q3
Q4
2023
Q2
Q3
Q4

13. Matched Pair – Logansport Solar, Logansport, Cass County, IN

This is a 16 MW solar project built in 2022. The closest adjoining home to the west is 170 feet. The closest adjoining home to the north is 225 feet. The closest adjoining home to the east is 90 feet. The uses to the south are commercial or industrial.

A nearby home at 1015 Pink Street (260 feet to the east of the nearest solar panel sold on December 28, 2021. This was during construction of the solar farm. This home sold for $135,000 after being listed for sale for $129,900. It sold within 30 days. This was a 2,048 s.f. home with 4 BR, 2 BA, built in 1954 with 4 garage spaces on 0.49 acres. I spoke with the broker Cindy J Heinzman with Galloway, Murray & Scheetz who indicated that the sellers were simply downsizing and that the solar farm had no impact on the marketing or the sales price of the home.

14. Matched Pair – Dunn's Bridge 1, Wheatfield, Jasper and Starke Counties, IN

This is a 435 MW solar project with a 75 MW BESS was under construction in 2023 and expected to be operational by the end of 2024. Based on the current aerial image, the closest adjoining home to the west is 205 feet. The closest adjoining home to the north is 260 feet. The closest adjoining home to the east is 90 feet. The closest home to the south is 260 feet.

I located a nearby sale at 1546 E 1225 N, Wheatfield, IN that sold on February 11, 2022, which would have been after approval of the project, but likely before construction began. This home is 3,130 s.f. home on 15.90 acres built in 2004 and is 910 feet from the nearest panel. The unique size and features make it difficult to compare this home as a paired sale. I reached out to Dan Walstra with Countryside Realty, the buyer's agent for this home, for comments. This home went on the market in December 2021 for $499,900 and sold in February 2022 for the asking price. According to Mr. Walstra the sales price was not impacted by the solar farm and the buyers were happy with that as an adjoining neighbor as they would be quiet and would not include any new residential development.

15. Matched Pair – Crane Solar Facility, Burns City, Martin County, IN

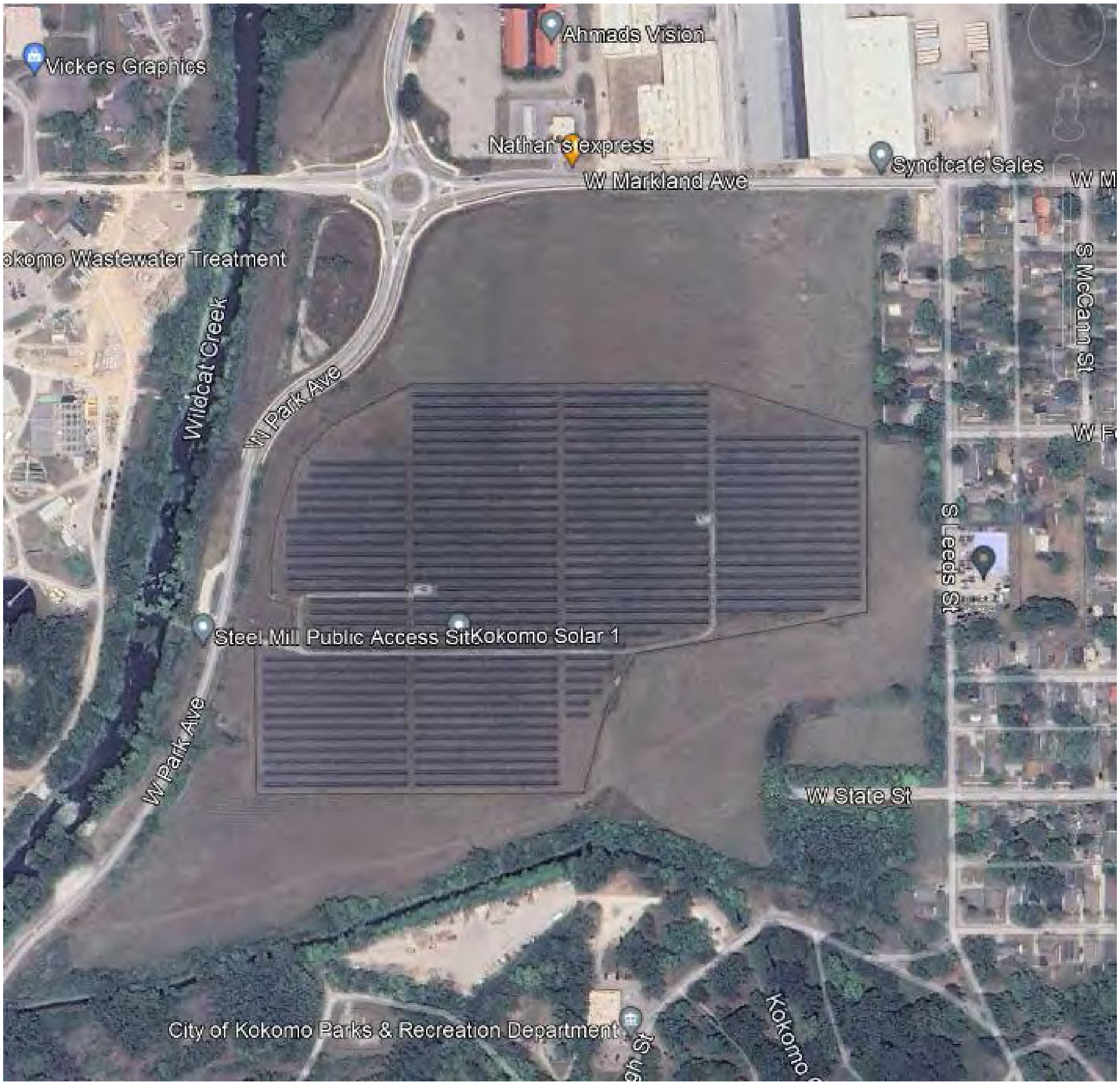
This 24.3 MW solar project built in 2017 is located on the former front nine holes at Eagle View Golf Course at Naval Support Activity Crane.

A home located at 21893 Golf Club Lane, Loogootee sold on September 26, 2022 for $296,000 for a 2,232 s.f. ranch with 2 BR, 2 BA, with a 3-car garage, built in 1992 on 10 acres. The purchase price works out to $132.62 per s.f. The assessed land value is 11% of the overall assessed value. This home is 440 feet from the nearest solar panel.

I have compared this to 12889 N US 231, Odon that sold on July 27, 2022 for $325,000 for a 2,640 s.f. home with 5 BR, 3 BA, with a 3-car garage, built in 1992 on 2.65 acres. The purchase price works out to $123.11 per s.f. This home is slightly larger which typically has a slightly lower price per square foot. It is also on a smaller lot, which also supports a lower price point. However, this home has 5 BR and 3 BA, which is significantly superior to the comparable. The assessed land value is 7% of the overall assessed value. I have adjusted this upward by $16,000 for the difference in land value for an adjusted indication of value of $341,000, or $129.17 per s.f. Adjusting this downward for size by $21,081 and downward for the bathroom by $15,000, the total adjusted value is $304,919. This indicates a -3% impact on property value, which is within the margin of typical variation. I also did not adjust for the difference in 3 bedrooms. Typically, a 2 BR house sells for less than a 3 BR, so there likely is an impact associated with that difference from 5.

Comparing these two sales, the proximity to the solar farm shows no impact on the property value.

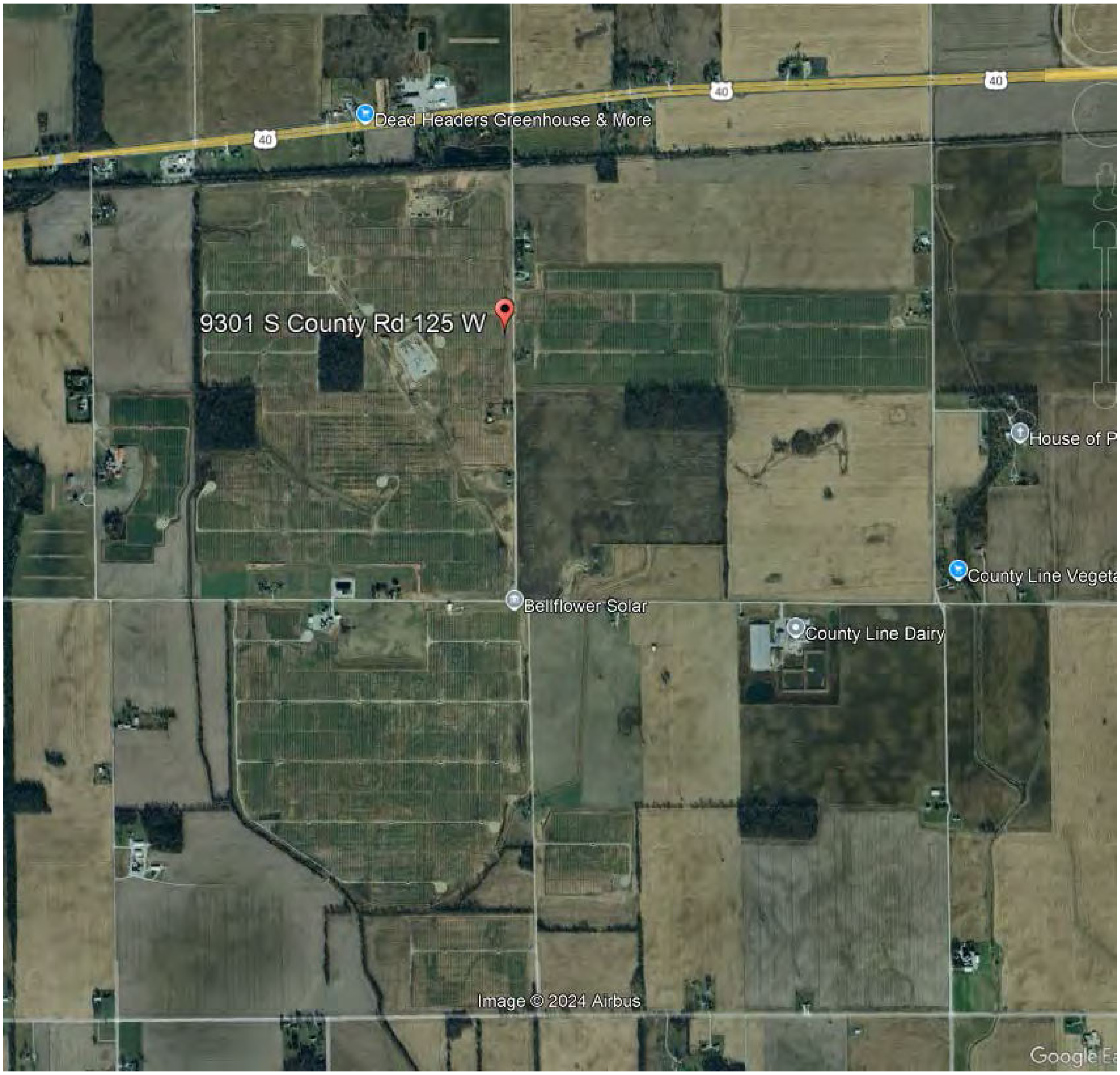
16. Matched Pair – Kokomo Solar 1, Kokomo, Howard County, IN



This is a 5.4 MW solar project built in 2016. The closest adjoining home is 145 feet from the closest panel.

That closest home sold on December 21, 2023 for $129,900 for this 1,252 s.f. ranch at 1049 S. Leeds Street with 2 BR, 1 BA, 2 car garage, built in 1925 on 0.19 acres. This home has a new roof and was fully updated. I reached out to the broker Jennifer Lane with Keller Williams who indicated that the proximity to the solar farm had no impact on the property value or the marketing. She noted that the floorplan was a limitation to the marketing of the home as it only had 2 BR and 1 BA.

17. Matched Pair – Bellflower Solar 1, Henry & Rush County, IN



This 152.5 MW solar project is located on the south side of US 40 Highway east of State Road 3. This was built in 2023.

I identified the sale of a home at 2312 W US Highway 40, Spiceland that sold on April 19, 2024 for $155,000 for a 4 BR, 1 BA, 2,760 s.f. two-story home with a 3-car garage built in 1900 on 4.82 acres. I reached out to Jason Loveless with F.C. Tucker/Crossroads Real Estate who indicated that the marketing and sales price were not negatively impacted by the adjoining solar project. This home is 2,200 feet from the nearest solar panel and were not visible according to the broker. Given the age of the improvements this was a difficult home to complete a paired sales analysis. I have relied on the broker comments for this.

I also looked at the sale of a home located at 9559 S County Road 225 W, Lewisville. This custom built timber/log home sold on January 4, 2024 for $650,000 for this 3,409 s.f. 3 BR, 3.5 BA, 2 car garage, finished basement home built in 2018 on 3.39 acres. This home is 360 feet from the nearest solar panel. I reached out to Kayla Walker with F.C. Tucker/Crossroads Real Estate about this sale.

She indicated that this home had sold several times in the last few years due to some unfortunate life circumstances for the original owner. That owner apparently tried to buy the home back 6 months after this most recent sale once those issues were resolved but the current owners were not interested. She noted that there was one social media post saying “there is a solar panel project across the road good luck selling,” but no one else responded to that comment. The home sold quickly and the solar project had no impact on the sales price or marketing of this property.

I considered a Sale/Resale analysis on this property due to the unique nature of this home. The most recent sale prior to the solar farm construction was on December 30, 2022 for $634,000, which would have been after the solar farm was approved and possibly during construction. I therefore have not completed a Sale/Resale analysis on this property. The home sold again on May 17, 2023 for $635,721 before finally selling on January 4, 2024 for $650,000.

I have completed the following paired sales analysis on this home.

Adjoining Residential Sales After Solar Farm Built

Solar	Address	Acres	Date Sold	Sales Price	Eff. Built	GBA	$/GLA	BR/BA	Park	Style
Adjoins	9559 S CR 225 W	3.88	1/4/2024	$650,000	2018	3,409	$190.67	3/3.5	Det. 2 Gar	Timber
Not	9582 S CR 125 E	5.10	7/8/2024	$725,000	1979	3,851	$188.26	5/4	2 Gar	
Not	1068 Landmark	1.87	7/17/2023	$565,900	2020	3,550	$159.41	4/3.5	3 Gar	
Not	5520 W Riley	5.01	12/8/2022	$520,500	1998	3,080	$168.99	3/2.5	3 Gar	Brick

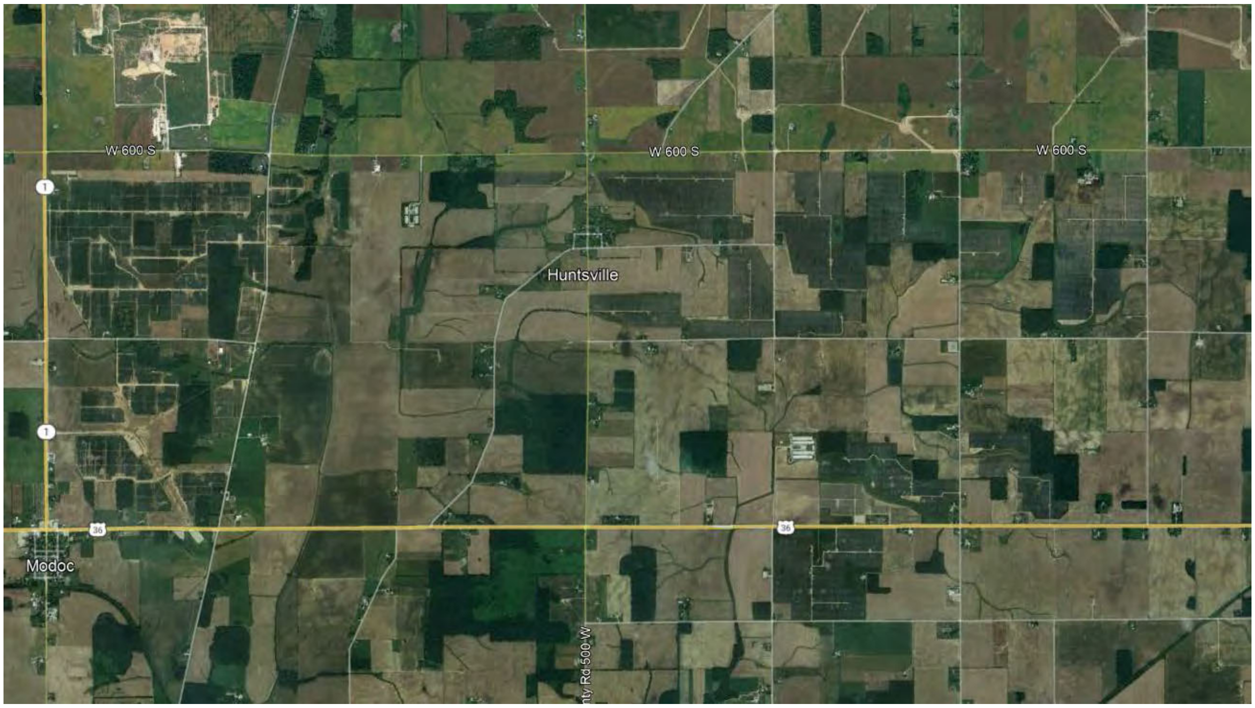
Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Total	% Diff	Avg % Diff	Distance
9559 S CR 225 W							$650,000			360
9582 S CR 125 E	-$14,778	-$10,000	$28,275	-$33,285	-$10,000	-$10,000	$675,212	-4%		
1068 Landmark	$10,605	$20,000	-$1,132	-$8,991		-$15,000	$571,382	12%		
5520 W Riley	$22,360	-$10,000	$10,410	$22,240	$20,000	-$15,000	$570,510	12%		
									7%	

These comparables required a fair bit of adjustment, but two of them indicate a positive impact on property value and that includes the comparable requiring the least amount of adjustment. Relying on the average from these three comparables, I derive an impact of +7%.

18. Matched Pair – Riverstart Solar, Winchester, Randolph County, IN

This 200 MW solar farm was completed in January 2022.



The home located to the west of the solar farm between the western and eastern side at 6535 S 500 West sold for $129,900 4BR, 1BA house with a tax card year built of 1900. This 1,592 s.f. dwelling sold February 10, 2022 and is a 2-story house. This property is in close proximity to the solar farm and is 1,205 feet away from the closest panel.

I have compared this to 3 nearby sales to compare them to this property. I have utilized the actual year built per the tax cards for each of these.

Adjoining Residential Sales After Solar Farm Built

Pa	Solar	Address	Acres	Date Sold	Sales Price	Built	GLA	$/GLA	BR/BA	Park	Style	Other
	Adjoins	6535 S 500 W	2.00	2/10/2022	$129,900	1900	1,592	$81.60	4/1	Park	2 Stry	No wind nearby
	Not	1076 N Old Hwy 27	0.80	2/11/2022	$149,900	1880	1,719	$87.20	4/1.5	Det. 2 Gar	1.5 Stry	No solar/wind nearby
	Not	113 N Main St	0.34	10/24/2022	$142,900	1900	1,872	$76.34	3/2	2 Gar	2 Stry	No solar/wind nearby
	Not	109 S Main St	0.16	1/23/2023	$111,000	1860	1,716	$64.69	3/2	Det. 1 Gar	2 Stry	No solar/wind nearby

Adjoining Sales Adjusted

Address	Time	Site	YB	GLA	BR/BA	Park	Total	% Diff	Avg % Diff	Distance
6535 S 500 W							$129,900			1205
1076 N Old Hwy 27	$0	$10,000	$8,994	-$4,430	-$5,000	-$10,000	$149,464	-15%		
113 N Main St	-$5,716	$10,000	$0	-$8,550	-$10,000	-$10,000	$118,634	9%		
109 S Main St	-$9,990	$20,000	$13,320	-$3,208	-$10,000	-$5,000	$116,122	11%		
									1%	

This matched pair indicates no impact for being in close proximity to the solar farm.

I have also identified 3928 W 600 South which sold adjoining the solar farm to the north which sold for $250,000 for a 5BR, 2BA house with a tax card effective year built of 2000. This 2,305 s.f. dwelling sold February 17, 2022 and is a ranch with a detached 2 car garage. This property is in close proximity to the solar farm and is 677 feet away from the closest panel.

Adjoining Residential Sales After Solar Farm Built					Eff.						
Solar	**Address**	**Acres**	**Date Sold**	**Sales Price**	**Built**	**GBA**	**$/GLA**	**BR/BA**	**Park**	**Style**	**Other**
Adjoins	3928 W 600 S	3.00	2/17/2022	$250,000	2000	2,305	$108.46	5/2	Det. 2 Gar	Ranch	Wind nearby
Not	1614 S Old Hwy 27	1.10	8/31/2021	$250,000	2014	2,148	$116.39	3/2	3 Gar	BR Rnch	No solar/wind
Not	4095 N 1000	2.13	1/14/2022	$281,250	2010	2,579	$109.05	3/2.5	2 Gar	BR Rnch	Basement No S/W
Not	3432 S Indian Trail	1.37	3/14/2023	$280,000	2002	1,927	$145.30	3/2.5	2 Gar	BR Rnch	No solar/wind

Adjoining Sales Adjusted										Avg	
Address	**Time**	**Site**	**YB**	**GLA**	**BR/BA**	**Park**	**Other**	**Total**	**% Diff**	**% Diff**	**Distance**
3928 W 600 S								$250,000			677
1614 S Old Hwy 27	$9,315		-$10,500	$7,309		-$10,000	-$10,000	$236,124	6%		
4095 N 1000	$2,096		-$8,438	-$11,952	-$10,000	-$5,000	-$10,000	$237,956	5%		
3432 S Indian Trail	-$23,934		-$1,680	$21,970	-$5,000	-$5,000	-$10,000	$256,356	-3%		
										3%	

I also considered a Sale/Resale Analysis looking at an earlier sale of this same property prior to the solar farm on July 6, 2020 for $180,000 and an earlier sale on March 1, 2021 for $219,000.

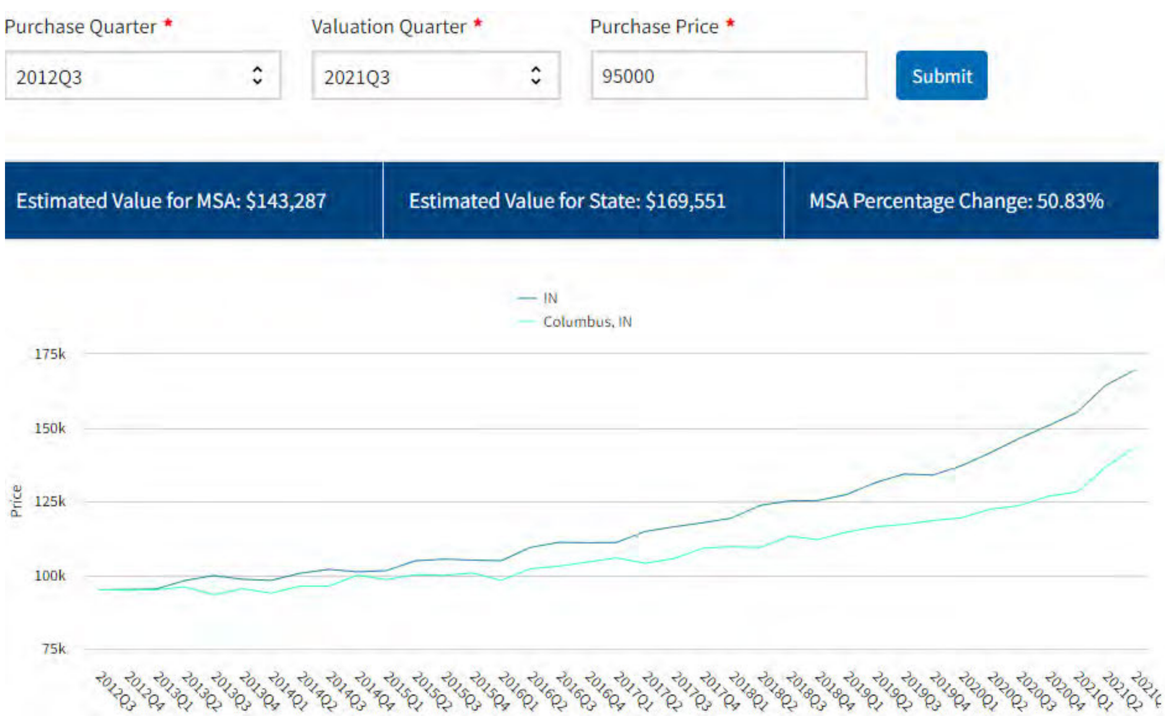
Adjusting the 2020 sale upward based on the FHFA HPI, I derive an expected value as of February 2022 of $225,677, which is lower than the actual closed sales price and shows a 10% premium for the sales price. This strongly supports a finding of no impact on property value.

Adjusting the 2021 sale upward based on the FHFA HPI, I derive an expected value as of February 2022 of $264,556. This is 6% less than the actual sales price and suggests a mild negative impact.

However blending the two indicators, it suggests a +2% increase in value. Using the blended rate is a better indicator as the increase between 2020 and 2021 was disproportionately higher than typical for the market. This suggests that the 2020 sale may have been a little low for that time, but it is just as likely that the 2021 sale was a little high. Using the average helps to blend these potential market imperfections. In the comparables chart I have blended these sales to reflect that 2% impact.

The Sale/Resale analysis as well as the paired sales analysis support a finding of no impact on property value due to the solar farm.

I have also identified 7141 S State Road 1 which sold in close proximity to the solar farm to the west which sold on September 24, 2021 for $165,000 for a 4BR, 2BA house with a tax card year built of 1900. This 2,040 s.f. dwelling sold September 24, 2021 and is a 2-story house with a 2-car garage. The home includes a 3,240 s.f. pole barn with 3 stalls and fenced pasture. This home is 1,070 feet away from the closest panel. This sold during the construction process of the solar farm. I attempted a paired sales analysis, but the horse improvements on the subject property complicated this. I therefore focused on a Sale/Resale analysis. This home last sold on October 12, 2012 for $95,000. Adjusting this upward based on the FHFA HPI, the anticipated value of the home as of 9/24/2021 would be $143,287 based on the MSA or $169,551 based on the state average. This strongly supports a finding of no impact on property value and actually suggests a positive impact on property value.



The median income for the population within 1 mile of a solar farm is $63,405 with a median housing unit value of $184,049. All of these comparable solar farms have homes within a 1-mile radius under $300,000 on average, though I have matched pairs in other states over $1,600,000 in price adjoining large solar farms. The adjoining uses show that residential and agricultural uses are the predominant adjoining uses.

Based on the similarity of adjoining uses and demographic data between these sites and the subject property, I consider it reasonable to compare these sites to the subject property.

Each of these solar farms has adjoining home sales that support a conclusion of no impact on adjoining property values.

X. Conclusions from Market Research

A. Demographic Data from IL Solar Projects And Adjoining States

The solar developments identified in the earlier section are not all of the ones that I looked at, but all of the ones where I found usable data. Projects where there were no sales for analysis have not been shown.

Below I have simply summarized the demographic data around the solar projects identified where I found usable data to illustrate the mix of uses and demographics around these projects. Based on the similarity of adjoining uses and demographic data between these sites and the subject property, I consider it reasonable to compare these sites to the subject property.

Matched Pair Summary							**Adj. Uses By Acreage**				**1 mile Radius (2020 Data)**		
	Name	**City**	**State**	**Acres**	**MW**	**Topo Shift**	**Res**	**Ag**	**Ag/Res**	**Com/Ind**	**Population**	**Med. Income**	**Avg. Housing Unit**
1	Grand Ridge	Streator	IL	160	20.00	1	8%	87%	5%	0%	96	$70,158	$187,037
2	Portage	Portage	IN	56	2.00	0	19%	81%	0%	0%	6,642	$65,695	$186,463
3	Dominion	Indianapolis	IN	134	8.60	20	3%	97%	0%	0%	3,774	$61,115	$167,515
4	Crittenden	Crittenden	KY	34	2.70	40	22%	51%	27%	0%	1,419	$60,198	$178,643
5	Demille	Lapeer	MI	160	28.40	10	10%	68%	0%	22%	2,010	$47,208	$187,214
6	Turrill	Lapeer	MI	230	19.60	10	75%	59%	0%	25%	2,390	$46,839	$110,361
7	Bremen	Bremen	IN	37	6.80	15	40%	60%	0%	0%	388	$62,855	$232,857
8	Walton 2	Walton	KY	58	2.00	90	21%	0%	60%	19%	880	$81,709	$277,717
9	Crane	Burns City	IN	182	24.30	100	N/A	N/A	N/A	N/A	114	$68,227	$273,077
10	Kokomo 1	Kokomo	IN	83	5.40	5	30%	36%	0%	34%	8,656	$50,193	$168,723
11	Bellflower 1	Lewisville	IN	N/A	152.50	N/A	N/A	N/A	N/A	N/A	45	$78,261	$215,789
12	Riverstart	Winchester	IN	N/A	200.00	N/A	N/A	N/A	N/A	N/A	47	$75,000	$169,565
13	Logansport	Logansport	IN	N/A	6.80	N/A	N/A	N/A	N/A	N/A	4,534	$51,694	$122,099
14	Anderson 6	Anderson	IN	N/A	6.80	N/A	N/A	N/A	N/A	N/A	736	$77,343	$181,635
15	Dunns Brdge	Wheatfield	IN	N/A	435.00	N/A	N/A	N/A	N/A	N/A	208	$71,098	$203,986
16	Mt. Olive Crk	Russell Spr	KY	421	60.00	N/A	N/A	N/A	N/A	N/A	149	$60,646	$152,778
17	EW Brown	Harrodsburg	KY	50	10.00	N/A	3%	44%	29%	25%	182	$68,772	$294,444
18	Logan Cnty	Russellville	KY	1,100	173.00	N/A	N/A	N/A	N/A	N/A	177	$54,545	$284,459
19	Hilltop	Winnebago	IL	20	2.00	7%	84%	5%	0%	N/A	58	$85,248	$227,500
20	Freeport	Freeport	IL	N/A	2.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
21	GRNE	Yorkville	IL	7	2.10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

				Adj. Uses By Acreage				**1 mile Radius (2010-2020 Data)**		
	Acres	**MW**	**Topo Shift**	**Res**	**Ag**	**Ag/Res**	**Com/Ind**	**Population**	**Med. Income**	**Avg. Housing Unit**
Average	109	11.26	23	25%	63%	12%	8%	2,200	$61,972	$190,976
Median	96	7.70	13	20%	64%	0%	0%	1715	$61,985	$186,750
High	230	28.40	90	75%	97%	60%	25%	6,642	$81,709	$277,717
Low	34	2.00	0	3%	0%	0%	0%	96	$46,839	$110,361

B. Sale/Resale Analysis

In the market data I was able to identify a number of home sales where I was able to complete a Sale/Resale Analysis. The summary of that data is shown below.

Residential Dwelling Sale/Resale Analysis

Pair	Solar Farm	City	State	Area	MW	Approx Distance	Tax ID/Address	Date	Sale Price	Adj. Sale Price	% Diff
1	Bremen	Bremen	IN	Suburban	6.8	310	1141 Gilbert	May-23	$186,000		
							1141 Gilbert	Jan-22	$160,000	$189,000	-2%
2	Riverstart	Winchester	IN	Rural	200	677	3928 W 600 S	Feb-22	$250,000		
							3928 W 600 S	Mar-21	$219,000	$245,000	2%
3	Riverstart	Winchester	IN	Rural	200	1070	7141 S SR 1	Sep-21	$165,000		
							7141 S SR 1	Oct-12	$95,000	$143,287	13%
4	Anderson 6	Anderson	IN	Suburban	6.8	345	2819 S Layton	Oct-23	$210,000		
							2819 S Layton	Feb-21	$150,000	$198,000	6%
5	Crittenden	Crittenden	KY	Suburban	2.7	500	280 Clairborne	Mar-24	$295,500		
							280 Clairborne	Apr-06	$119,200	$282,245	4%
6	Crittenden	Crittenden	KY	Suburban	2.7	488	300 Clairborne	Sep-18	$212,720		
							300 Clairborne	Jul-14	$173,000	$208,183	2%
7	Walton 2	Walton	KY	Suburban	2	410	783 Jones	May-22	$346,000		
							783 Jones	May-12	$174,900	$353,000	-2%
8	Turkey Crk	Lancaster	KY	Rural	50	250	166 Long Branch	Nov-20	$180,000		
							166 Long Branch	Feb-19	$160,000	$181,000	-1%
9	Turkey Crk	Lancaster	KY	Rural	50	1050	209 Ashlock	Jun-22	$180,000		
							209 Ashlock	Feb-19	$160,000	$181,000	-1%
10	Mt Olive Crk	Russell Spng	KY	Rural	60	1250	2985 KY 1729	Dec-22	$150,000		
							2985 KY 1729	Sep-18	$110,000	$158,000	-5%
11	EW Brown	Harrodsburg	KY	Rural	10	1015	837 Hardin Hts	Mar-18	$212,500		
							837 Hardin Hts	Sep-05	$155,000	$187,274	12%
12	Logan Cnty	Russellville	KY	Rural	173	1460	528 Watermelon	May-22	$275,000		
							528 Watermelon	Sep-16	$149,000	$234,000	15%
13	Logan Cnty	Russellville	KY	Rural	173	1900	557 J Montgomery	Dec-21	$185,000		
							557 J Montgomery	May-16	$114,000	$174,000	6%
14	Logan Cnty	Russellville	KY	Rural	173	1400	263 Donald	Oct-22	$263,400		
							263 Donald	May-10	$141,000	$262,000	1%

	MW	Avg. Distance
Average	79.29	866
Median	50.00	846
High	200.00	1,900
Low	2.00	250

	Indicated Impact
Average	4%
Median	2%
High	15%
Low	-5%

The Sale/Resale Analysis includes 14 examples with impacts ranging from -5% to +15% with an average impact of +4% and a median impact of +2%. These suggest neutral to slightly positive relationship between solar and adjoining homes.

The closest adjoining home is 250 feet and the range of solar projects range from 2 MW up to 200 MW.

The Sale/Resale Analysis uses no appraiser judgement and links the consideration of appreciation to the FHFA Home Price Index. The advantage of this approach is that there is only one factor to address and it is linked to a national source. The disadvantage is that there is generally a more limited pool of homes that are usable in this type of analysis. Homes with significant updates or renovations between sales are less reliable and extended periods of time between the sales could lead to less reliable results.

I have attempted to minimize any usage of homes with updates, though there are a few examples of those as discussed in the data. I have also attempted to minimize the usage of homes with extended period of time between the first and second sale.

C. *Paired Sale/Matched Pair Analysis*

In the market data I was able to identify a number of home sales where I was able to complete a Paired Sale or Matched Pair Analysis. The summary of that data is shown on the next page.

The Matched Pairs includes 33 examples with impacts ranging from -7% to +12% with an average impact of +1% and a median impact of 0%. The closest adjoining home is 120 feet and the range of solar projects range from 2 MW up to 435 MW.

Residential Dwelling Matched Pairs Adjoining Solar Farms in Illinois and Adjoining States

Pair	Solar Farm	City	State	Area	MW	Approx Distance	Tax ID/Address	Sale Date	Sale Price	Adj. Sale Price	% Diff
1	Grand Ridge	Streator	IL	Rural	20	480	1497 E 21st	Oct-16	$186,000		
							712 Columbus	Jun-16	$166,000	$184,000	1%
2	Grand Ridge	Streator	IL	Rural	20	485	2098 N 15th	Oct-16	$186,000		
							1605 N 1590th	Oct-17	$175,000	$185,223	0%
3	Freeport	Freeport	IL	Rural	2	225	1400 Jay	Nov-19	$128,500		
							1908 Revere	Oct-19	$126,000	$127,553	1%
4	Hilltop	Winnebago	IL	Rural	2	440	8010 Trask Bridge	Sep-21	$250,000		
							6745 Auburn	Jul-21	$260,000	$249,954	0%
5	GRNE	Yorkville	IL	Suburban	2.1	120	1007 N Carly	Jul-24	$490,000		
							856 Carly	Jul-23	$541,200	$499,580	-2%
6	Demille	Lapeer	MI	Suburban	28	310	1120 Don Wayne	Aug-19	$194,000		
							1231 Turrill	Apr-19	$182,000	$200,895	-4%
7	Demille	Lapeer	MI	Suburban	28	310	1126 Don Wayne	May-18	$160,000		
							3565 Garden	May-19	$165,000	$163,016	-2%
8	Demille	Lapeer	MI	Suburban	28	380	1138 Don Wayne	Aug-19	$191,000		
							1128 Gwen	Aug-18	$187,500	$189,733	1%
9	Demille	Lapeer	MI	Suburban	28	280	1174 Alice	Jan-19	$165,000		
							1127 Don Wayne	Sep-19	$176,900	$163,443	1%
10	Turrill	Lapeer	MI	Suburban	20	290	1060 Cliff	Sep-18	$200,500		
							1128 Gwen	Aug-18	$187,500	$200,350	0%
11	Turrill	Lapeer	MI	Suburban	20	255	1040 Cliff	Jun-17	$145,600		
							1127 Don Wayne	Sep-19	$176,900	$146,271	0%
12	Crittenden	Crittenden	KY	Suburban	2.7	373	250 Claiborne	Jan-19	$120,000		
							315 N Fork	May-19	$107,000	$120,889	-1%
13	Crittenden	Crittenden	KY	Suburban	2.7	488	300 Claiborne	Sep-18	$213,000		
							1795 Bay Valley	Dec-17	$231,200	$228,180	-7%
14	Crittenden	Crittenden	KY	Suburban	2.7	720	350 Claiborne	Jul-18	$245,000		
							2160 Sherman	Jun-19	$265,000	$248,225	-1%
15	Crittenden	Crittenden	KY	Suburban	2.7	930	370 Claiborne	Aug-19	$273,000		
							125 Lexington	Apr-18	$240,000	$254,751	7%
16	Crittenden	Crittenden	KY	Suburban	2.7	365	250 Claiborne	Jan-22	$210,000		
							240 Shawnee	Jun-21	$166,000	$219,563	-5%
17	Crittenden	Crittenden	KY	Suburban	2.7	390	260 Claiborne	Oct-21	$175,000		
							355 Oakwood	Oct-20	$186,000	$173,988	1%
18	Crittenden	Crittenden	KY	Suburban	2.7	570	300 Claiborne	Dec-21	$290,000		
							39 Pinhook	Mar-22	$299,000	$289,352	0%
19	Crittenden	Crittenden	KY	Suburban	2.7	1080	410 Claiborne	Feb-21	$275,000		
							114 Austin	Dec-20	$248,000	$279,680	-2%
20	Portage	Portage	IN	Rural	2	1320	836 N 450 W	Sep-13	$149,800		
							336 E 1050 N	Jan-13	$155,000	$144,282	4%
21	Dominion	Indianapolis	IN	Rural	8.6	400	2013249 (Tax ID)	Dec-15	$140,000		
							5723 Minden	Nov-16	$139,900	$132,700	5%
22	Dominion	Indianapolis	IN	Rural	8.6	400	2013251 (Tax ID)	Sep-17	$160,000		
							5910 Mosaic	Aug-16	$146,000	$152,190	5%
23	Dominion	Indianapolis	IN	Rural	8.6	400	2013252 (Tax ID)	May-17	$147,000		
							5836 Sable	Jun-16	$141,000	$136,165	7%
24	Dominion	Indianapolis	IN	Rural	8.6	400	2013258 (Tax ID)	Dec-15	$131,750		
							5904 Minden	May-16	$130,000	$134,068	-2%
25	Dominion	Indianapolis	IN	Rural	8.6	400	2013260 (Tax ID)	Mar-15	$127,000		
							5904 Minden	May-16	$130,000	$128,957	-2%

Residential Dwelling Matched Pairs Adjoining Solar Farms in Illinois and Adjoining States

Pair	Solar Farm	City	State	Area	MW	Approx Distance	Tax ID/Address	Sale Date	Sale Price	Adj. Sale Price	% Diff
26	Dominion	Indianapolis	IN	Rural	8.6	400	2013261 (Tax ID)	Feb-14	$120,000		
							5904 Minden	May-16	$130,000	$121,930	-2%
27	Logansport	Logansport	IN	Suburban	16	260	1015 Pink	Dec-21	$135,000		
							1015 Pink	Dec-21	$135,000	$135,000	0%
28	Dunns Bridge	Wheatfield	IN	Suburban	435	910	1546 E 1225 N	Feb-22	$499,900		
							1546 E 1225 N	Feb-22	$499,900	$499,900	0%
29	Crane	Burns City	IN	Rural	24.3	440	21893 Golf Club	Sep-22	$296,000		
							12889 N US 231	Jul-22	$325,000	$304,919	-3%
30	Kokomo 1	Kokomo	IN	Urban	5.4	145	1049 S. Leeds	Dec-23	$129,900		
							1049 S. Leeds	Dec-23	$129,900	$129,900	0%
31	Bellflower 1	Lewisville	IN	Rural	152	360	9559 S CR 225 W	Jan-24	$650,000		
							1068 Landmark	Jul-23	$565,900	$571,382	12%
32	Riverstart	Winchester	IN	Rural	200	1205	6535 S 500 W	Feb-22	$129,900		
							113 N Main	Oct-22	$142,900	$118,634	9%
33	Riverstart	Winchester	IN	Rural	200	677	3928 W 600 S	Feb-22	$250,000		
							4095 N 1000	Jan-22	$281,250	$237,956	5%

	MW	Avg. Distance
Average	39.58	491
Median	8.60	400
High	435.00	1,320
Low	2.00	120

	% Dif
Average	1%
Median	0%
High	12%
Low	-7%

D. Summary of Broker Opinions from Research

From the research identified in the earlier section, I was able to identify and speak with the brokers identified below. The full comments provided by the brokers are shown in the market research, but the summary below shows that 15 of the 15 brokers who had sold a home adjoining a solar development in Illinois and adjoining states identified no impact on property value.

Broker Comments

#	Solar Farm	City	State	Area	MW	Approx Distance	Tax ID/Address	Date	Sale Price	Impact	Broker
1	Hilltop	Winnebago	IL	Rural	2	440	8010 Trask Bridge	Sep-21	$250,000	No	Olga Kampmeier
2	Freeport	Freeport	IL	Rural	2	225	1400 Jay	Nov-19	$128,500	No	Kimberly Taylor
3	GRNE	Yorkville	IL	Suburban	2.1	120	1007 N Carly	Jul-24	$490,000	No	Jed Parish
4	Demille	Lapeer	MI	Suburban	28.4	280	1168 Alice	Nov-19	$176,000	No	Tanya Biernat
5	Demille	Lapeer	MI	Suburban	28.4	280	1168 Alice	Nov-19	$176,000	No	Chantel Fink
6	Crittenden	Crittenden	KY	Suburban	2.7	365	250 Clairborne	Jan-22	$210,000	No	Lisa Ann Lay
7	Crittenden	Crittenden	KY	Suburban	2.7	390	260 Clairborne	Oct-21	$175,000	No	Jim Dalton
8	Crittenden	Crittenden	KY	Suburban	2.7	500	289 Clairborne	Mar-24	$295,500	No	Carol Jackson
9	Crittenden	Logan Cnty	KY	Rural	173	1900	557 J Montgomery	Dec-21	$185,000	No	Dewayne Whittaker
10	Kokomo 1	Kokomo	IN	Urban	5.4	145	1049 S. Leeds	Dec-23	$129,900	No	Jennifer Lane
11	Logansport	Logansport	IN	Suburban	16	260	1015 Pink	Dec-21	$135,000	No	Cindy Heinzman
12	Dunns Bridge	Wheatfield	IN	Suburban	435	910	1546 E 1225 N	Feb-22	$499,900	No	Dan Walstra
13	Bellflower	Spiceland	IN	Rural	152.5	2200	2312 US Hwy 40	Apr-24	$155,000	No	Jason Loveless
14	Bellflower	Spiceland	IN	Rural	152.5	360	9559 S Cnty Rd 225	Jan-24	$650,000	No	Kayla Walker
15	Dominion Ind	Indianapolis	IN	Suburban	11.9	410	5909 Sable	Jun-19	$169,900	No	Beth Guthrie

Yes	0
No	15
Maybe	0

Broker Comment Breakdown

	MW	Avg. Distance
Average	67.82	586
Median	11.90	365
High	435.00	2,200
Low	2.00	120

15 Data Points

	Sale Price	Impact	
Average	$255,047	15	**NO**
Median	$176,000	0	**Yes**
High	$650,000	0	**Maybe**
Low	$128,500		

XI. Supporting Data

A. National Data

Matched Pair Summary							Adj. Uses By Acreage				1 mile Radius (2020 Data)		
						Topo						Med.	Avg. Housing
	Name	City	State	Acres	MW	Shift	Res	Ag	Ag/Res	Com/Ind	Population	Income	Unit
1	AM Best	Goldsboro	NC	38	5.00	2	38%	0%	23%	39%	1,523	$37,358	$148,375
2	Mulberry	Selmer	TN	160	5.00	60	13%	73%	10%	3%	467	$40,936	$171,746
3	Leonard	Hughesville	MD	47	5.00	20	18%	75%	0%	6%	525	$106,550	$350,000
4	Gastonia SC	Gastonia	NC	35	5.00	48	33%	0%	23%	44%	4,689	$35,057	$126,562
5	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	$79,114	$281,731
6	Tracy	Bailey	NC	50	5.00	10	29%	0%	71%	0%	312	$43,940	$99,219
7	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	$75,000	$291,667
8	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	$63,678	$256,306
9	Grand Ridge	Streator	IL	160	20.00	1	8%	87%	5%	0%	96	$70,158	$187,037
10	Dominion	Indianapolis	IN	134	8.60	20	3%	97%	0%	0%	3,774	$61,115	$167,515
11	Mariposa	Stanley	NC	36	5.00	96	48%	0%	52%	0%	1,716	$36,439	$137,884
12	Clarke Cnty	White Post	VA	234	20.00	70	14%	39%	46%	1%	578	$81,022	$374,453
13	Flemington	Flemington	NJ	120	9.36	N/A	13%	50%	28%	8%	3,477	$105,714	$444,696
14	Frenchtown	Frenchtown	NJ	139	7.90	N/A	37%	35%	29%	0%	457	$111,562	$515,399
15	McGraw	East Windsor	NJ	95	14.00	N/A	27%	44%	0%	29%	7,684	$78,417	$362,428
16	Tinton Falls	Tinton Falls	NJ	100	16.00	N/A	98%	0%	0%	2%	4,667	$92,346	$343,492
17	Simon	Social Circle	GA	237	30.00	71	1%	63%	36%	0%	203	$76,155	$269,922
18	Candace	Princeton	NC	54	5.00	22	76%	24%	0%	0%	448	$51,002	$107,171
19	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	$80,773	$320,076
20	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	$58,688	$183,435
21	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	$60,037	$276,347
22	Demille	Lapeer	MI	160	28.40	10	10%	68%	0%	22%	2,010	$47,208	$187,214
23	Turrill	Lapeer	MI	230	19.60	10	75%	59%	0%	25%	2,390	$46,839	$110,361
24	Sunfish	Willow Spring	NC	50	6.40	30	35%	35%	30%	0%	1,515	$63,652	$253,138
25	Picture Rocks	Tucson	AZ	182	20.00	N/A	6%	88%	6%	0%	102	$81,081	$280,172
26	Avra Valley	Tucson	AZ	246	25.00	N/A	3%	94%	3%	0%	85	$80,997	$292,308
27	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	$51,410	$155,208
28	Camden Dam	Camden	NC	50	5.00	0	17%	72%	11%	0%	403	$84,426	$230,288
29	Grandy	Grandy	NC	121	20.00	10	55%	24%	0%	21%	949	$50,355	$231,408
30	Champion	Pelion	SC	100	10.00	N/A	4%	70%	8%	18%	1,336	$46,867	$171,939
31	Eddy II	Eddy	TX	93	10.00	N/A	15%	25%	58%	2%	551	$59,627	$139,088
32	Somerset	Somerset	TX	128	10.60	N/A	5%	95%	0%	0%	1,293	$41,574	$135,490
33	DG Amp Piqua	Piqua	OH	86	12.60	2	26%	16%	58%	0%	6,735	$38,919	$96,555
34	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	$36,737	$143,320
35	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	$90,909	$403,571
36	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	$120,861	$483,333
37	Whitehorn	Gretna	VA	N/A	50.00	N/A	N/A	N/A	N/A	N/A	166	$43,179	$168,750
38	Altavista	Altavista	VA	720	80.00	N/A	N/A	N/A	N/A	N/A	7	$50,000	$341,667
39	Hattiesburg	Hattiesburg	MS	400	50.00	N/A	10%	85%	5%	0%	1,065	$28,545	$129,921
40	Bremen	Bremen	IN	37	6.80	15	40%	60%	0%	0%	388	$62,855	$232,857
41	North Rock	Fulton	WI	472	50.00	N/A	3%	40%	57%	0%	236	$86,238	$370,062
42	Wood County	Saratoga	WI	1,200	150.00	N/A	N/A	N/A	N/A	N/A	187	$74,110	$204,545
43	Solidago	Isle of Wight	VA	193	20.00	N/A	N/A	N/A	N/A	N/A	62	$88,375	$312,500
44	Buckingham	Cumberland	VA	240	39.80	50	4%	6%	90%	0%	120	$59,445	$251,562
45	Crane	Burns City	IN	182	24.30	100	N/A	N/A	N/A	N/A	114	$68,227	$273,077
46	Kokomo 1	Kokomo	IN	83	5.40	5	30%	36%	0%	34%	8,656	$50,193	$168,723
47	White Tail 1	Mowersville	PA	135	13.50	20	2%	73%	25%	0%	254	$81,086	$354,297
48	Twiggs	Dry Branch	GA	N/A	200.00	N/A	N/A	N/A	N/A	N/A	15	$55,000	$50,000
49	Kings Bay	Kings Bay	GA	N/A	30.00	N/A	N/A	N/A	N/A	N/A	721	$102,293	$364,808
50	Dougherty	Albany	GA	N/A	120.00	N/A	N/A	N/A	N/A	N/A	30	$60,354	$204,167
51	Whitetail 2	St Thomas	PA	293	20.00	N/A	N/A	N/A	N/A	N/A	107	$85,844	$274,265
52	Elk Hill 1	Mercersburg	PA	N/A	20.00	N/A	N/A	N/A	N/A	N/A	791	$72,722	$372,932
53	Elk Hill 2	Mercersburg	PA	N/A	15.00	N/A	N/A	N/A	N/A	N/A	454	$81,208	$484,672
54	Cottontail 1	York	PA	N/A	20.00	N/A	N/A	N/A	N/A	N/A	1,495	$84,872	$315,508
55	Cottontail 2	York	PA	N/A	20.00	N/A	N/A	N/A	N/A	N/A	707	$61,415	$383,896

Matched Pair Summary							Adj. Uses By Acreage					1 mile Radius (2020 Data)		
						Topo							Med.	Avg. Housing
	Name	City	State	Acres	MW	Shift	Res	Ag	Ag/Res	Com/Ind		Population	Income	Unit
56	Grazing Yak	Calhan	CO	272	35.00	N/A	0%	97%	3%	0%		40	$78,104	$623,214
57	San Luis Vlly	Hooper	CO	308	35.00	N/A	5%	95%	0%	0%		11	$59,164	$450,000
58	SR Jenkins	Ft. Lupton	CO	142	13.00	N/A	2%	90%	8%	0%		129	$114,961	$802,703
59	Big Horn 1	Pueblo	CO	2,760	240.00	N/A	0%	44%	2%	54%		20	$75,000	$400,000
60	Bison/Raw	Wellington	CO	1,160	52.00	N/A	0%	93%	7%	0%		0	$0	$0
61	Alamosa	Mosca	CO	163	30.00	N/A	0%	87%	13%	0%		7	$0	$0
62	Pioneer	Bennett	CO	611	110.00	N/A	3%	81%	16%	0%		67	$82,329	$497,991
63	Sandhill/SunE	Mosca	CO	N/A	10.00	N/A	N/A	N/A	N/A	N/A		4	$0	$0
64	Bellflower 1	Lewisville	IN	N/A	152.50	N/A	N/A	N/A	N/A	N/A		45	$78,261	$215,789
65	Riverstart	Winchester	IN	N/A	200.00	N/A	N/A	N/A	N/A	N/A		47	$75,000	$169,565
66	Mustang	Robbins	NC	50	5.00	N/A	N/A	N/A	N/A	N/A		941	$54,430	$369,398
67	North Star	North Branch	MN	1,099	100.00	N/A	18%	73%	7%	2%		218	$119,700	$323,413
68	Logansport	Logansport	IN	N/A	6.80	N/A	N/A	N/A	N/A	N/A		4,534	$51,694	$122,099
69	Anderson 6	Anderson	IN	N/A	6.80	N/A	N/A	N/A	N/A	N/A		736	$77,343	$181,635
70	Dunns Brdge	Wheatfield	IN	N/A	435.00	N/A	N/A	N/A	N/A	N/A		208	$71,098	$203,986
71	Bedford	Chesapeake	VA	N/A	70.00	N/A	N/A	N/A	N/A	N/A		993	$127,047	$509,365
72	Mt. Olive Crk	Russell Spr	KY	421	60.00	N/A	N/A	N/A	N/A	N/A		149	$60,646	$152,778
73	EW Brown	Harrodsburg	KY	50	10.00	N/A	3%	44%	29%	25%		182	$68,772	$294,444
74	Logan Cnty	Russellville	KY	1,100	173.00	N/A	N/A	N/A	N/A	N/A		177	$54,545	$284,459
75	Bluebird	La France	SC	N/A	3.00	N/A	N/A	N/A	N/A	N/A		634	$81,446	$302,527
76	Centerfield	Chesterfield	SC	N/A	75.00	N/A	N/A	N/A	N/A	N/A		248	$51,170	$91,364
77	Harts Mill	Tarboro	NC	N/A	80.00	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A
78	Lenoir	Kinston	NC	N/A	5.00	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A
79	Tate	Castalia	NC	N/A	5.00	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A
80	Hardin	Alger	OH	N/A	150.00	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A
81	Hillcrest	Mt Orab	OH	N/A	200.00	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A
	Average			426	58.16	33	19%	56%	19%	7%		1,046	$66,621	$262,918
	Median			182	20.00	18	12%	63%	7%	0%		385	$65,953	$254,722
	High			3,500	617.00	160	98%	98%	94%	54%		8,656	$127,047	$802,703
	Low			35	3.00	0	0%	0%	0%	0%		0	$0	$0

From these 81 solar developments I have identified 33 Sale/Resale data points, 162 Matched Pair data points and 46 broker comments.

Sale/Resale Comparable Stats			**33 Data Points**	
		Avg.		**Indicated**
	MW	**Distance**		**Impact**
Average	60.09	648	**Average**	5%
Median	20.00	375	**Median**	4%
High	200.00	2,000	**High**	15%
Low	2.00	150	**Low**	-5%

Matched Pair Comparable Stats			**162 Data Points**	
		Avg.		**Indicated**
	MW	**Distance**		**Impact**
Average	62.30	536	**Average**	1%
Median	14.00	400	**Median**	0%
High	617.00	1,950	**High**	12%
Low	2.00	135	**Low**	-10%

Broker Comment Breakdown		
	MW	**Avg. Distance**
Average	54.42	569
Median	20.00	490
High	435.00	2,200
Low	2.00	105

46 Data Points			
	Sale Price	**Impact**	
Average	$306,874	44	**NO**
Median	$259,500	1	**Yes**
High	$835,000	0	**Maybe**
Low	$94,000		

B. Larger Solar Farms Data

I have also considered larger solar farms to address impacts related to larger projects. Projects have been increasing in size and most of the projects between 100 and 1000 MW are newer with little time for adjoining sales. I have included a breakdown of solar farms with 20 MW to 80 MW facilities with one at 617 MW facility.

Matched Pair Summary - @20 MW And Larger							**Adj. Uses By Acreage**				**1 mile Radius (2010-2020 Data)**		
	Name	**City**	**State**	**Acres**	**MW**	**Topo Shift**	**Res**	**Ag**	**Ag/Res**	**Com/Ind**	**Population**	**Med. Income**	**Avg. Housing Unit**
1	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	$79,114	$281,731
2	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	$75,000	$291,667
3	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	$63,678	$256,306
4	Grand Ridge	Streator	IL	160	20.00	1	8%	87%	5%	0%	96	$70,158	$187,037
5	Clarke Cnty	White Post	VA	234	20.00	70	14%	39%	46%	1%	578	$81,022	$374,453
6	Simon	Social Circle	GA	237	30.00	71	1%	63%	36%	0%	203	$76,155	$269,922
7	Walker	Barhamsville	VA	485	20.00	N/A	12%	68%	20%	0%	203	$80,773	$320,076
8	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	$58,688	$183,435
9	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	$60,037	$276,347
10	Demille	Lapeer	MI	160	28.40	10	10%	68%	0%	22%	2,010	$47,208	$187,214
11	Turrill	Lapeer	MI	230	19.60	10	75%	59%	0%	25%	2,390	$46,839	$110,361
12	Picure Rocks	Tucson	AZ	182	20.00	N/A	6%	88%	6%	0%	102	$81,081	$280,172
13	Avra Valley	Tucson	AZ	246	25.00	N/A	3%	94%	3%	0%	85	$80,997	$292,308
14	Sappony	Stony Crk	VA	322	20.00	N/A	2%	98%	0%	0%	74	$51,410	$155,208
15	Grandy	Grandy	NC	121	20.00	10	55%	24%	0%	21%	949	$50,355	$231,408
16	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	$36,737	$143,320
17	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	$90,909	$403,571
18	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	$120,861	$483,333
19	Whitehorn	Gretna	VA	N/A	50.00	N/A	N/A	N/A	N/A	N/A	166	$43,179	$168,750
20	Altavista	Altavista	VA	720	80.00	N/A	N/A	N/A	N/A	N/A	7	$50,000	$341,667
21	Solidago	Isle of Wight	VA	193	20.00	N/A	N/A	N/A	N/A	N/A	62	$88,375	$312,500
22	Hattiesburg	Hattiesburg	MS	400	50.00	N/A	10%	85%	5%	0%	1,065	$28,545	$129,921
23	North Rock	Fulton	WI	472	50.00	N/A	3%	40%	57%	0%	236	$86,238	$370,062
24	Wood County	Saratoga	WI	1,200	150.00	N/A	N/A	N/A	N/A	N/A	187	$74,110	$204,545
25	Buckingham	Cumberland	VA	240	39.80	50	4%	6%	90%	0%	120	$59,445	$251,562
26	Crane	Burns City	IN	182	24.30	100	N/A	N/A	N/A	N/A	114	$68,227	$273,077
27	Twiggs	Dry Branch	GA	N/A	200.00	N/A	N/A	N/A	N/A	N/A	15	$55,000	$50,000
28	Kings Bay	Kings Bay	GA	N/A	30.00	N/A	N/A	N/A	N/A	N/A	721	$102,293	$364,808
29	Dougherty	Albany	GA	N/A	120.00	N/A	N/A	N/A	N/A	N/A	30	$60,354	$204,167
30	Whitetail 2	St Thomas	PA	293	20.00	N/A	N/A	N/A	N/A	N/A	107	$85,844	$274,265
31	Elk Hill 1	Mercersburg	PA	N/A	20.00	N/A	N/A	N/A	N/A	N/A	791	$72,722	$372,932
32	Cottontail 1	York	PA	N/A	20.00	N/A	N/A	N/A	N/A	N/A	1,495	$84,872	$315,508
33	Cottontail 2	York	PA	N/A	20.00	N/A	N/A	N/A	N/A	N/A	707	$61,415	$383,896
34	Grazing Yak	Calhan	CO	272	35.00	N/A	0%	97%	3%	0%	40	$78,104	$623,214
35	San Luis Vlly	Hooper	CO	308	35.00	N/A	5%	95%	0%	0%	11	$59,164	$450,000
36	Big Horn 1	Pueblo	CO	2,760	240.00	N/A	0%	44%	2%	54%	20	$75,000	$400,000
37	Bison/Raw	Wellington	CO	1,160	52.00	N/A	0%	93%	7%	0%	0	$0	$0
38	Alamosa	Mosca	CO	163	30.00	N/A	0%	87%	13%	0%	7	$0	$0
39	Pioneer	Bennett	CO	611	110.00	N/A	3%	81%	16%	0%	67	$82,329	$497,991
40	Bellflower 1	Lewisville	IN	N/A	152.50	N/A	N/A	N/A	N/A	N/A	45	$78,261	$215,789
41	Riverstart	Winchester	IN	N/A	200.00	N/A	N/A	N/A	N/A	N/A	47	$75,000	$169,565
42	North Star	North Branch	MN	1,099	100.00	N/A	18%	73%	7%	2%	218	$119,700	$323,413
43	Dunns Brdge	Wheatfield	IN	N/A	435.00	N/A	N/A	N/A	N/A	N/A	208	$71,098	$203,986
44	Bedford	Chesapeake	VA	N/A	70.00	N/A	N/A	N/A	N/A	N/A	993	$127,047	$509,365
45	Mt. Olive Crk	Russell Spr	KY	421	60.00	N/A	N/A	N/A	N/A	N/A	149	$60,646	$152,778
46	Logan Cnty	Russellville	KY	1,100	173.00	N/A	N/A	N/A	N/A	N/A	177	$54,545	$284,459
47	Centerfield	Chesterfield	SC	N/A	75.00	N/A	N/A	N/A	N/A	N/A	248	$51,170	$91,364
48	Harts Mill	Tarboro	NC	N/A	80.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
49	Hardin	Alger	OH	N/A	150.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
50	Hillcrest	Mt Orab	OH	N/A	200.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Average			660	89.20		14%	66%	18%	5%	448	$68,164	$269,520
	Median			400	56.00		7%	74%	5%	0%	166	$71,098	$274,265
	High			3,500	617.00		75%	98%	94%	54%	2,446	$127,047	$623,214
	Low			121	19.60		0%	0%	0%	0%	0	$0	$0

The breakdown of adjoining uses, population density, median income and housing prices for these projects are very similar to those of the larger set. The matched pairs for each of these were considered earlier and support a finding of no negative impact on the adjoining home values.

I have included a breakdown of solar farms with 50 MW to 617 MW facilities adjoining.

Matched Pair Summary							**Adj. Uses By Acreage**				**1 mile Radius (2010-2020 Data)**		
	Name	**City**	**State**	**Acres**	**MW**	**Topo Shift**	**Res**	**Ag**	**Ag/Res**	**Com/Ind**	**Population**	**Med. Income**	**Avg. Housing Unit**
1	Summit	Moyock	NC	2,034	80.00	4	4%	0%	94%	2%	382	$79,114	$281,731
2	Manatee	Parrish	FL	1,180	75.00	20	2%	97%	1%	0%	48	$75,000	$291,667
3	McBride	Midland	NC	627	75.00	140	12%	10%	78%	0%	398	$63,678	$256,306
4	Innov 46	Hope Mills	NC	532	78.50	0	17%	83%	0%	0%	2,247	$58,688	$183,435
5	Innov 42	Fayetteville	NC	414	71.00	0	41%	59%	0%	0%	568	$60,037	$276,347
6	Barefoot Bay	Barefoot Bay	FL	504	74.50	0	11%	87%	0%	3%	2,446	$36,737	$143,320
7	Miami-Dade	Miami	FL	347	74.50	0	26%	74%	0%	0%	127	$90,909	$403,571
8	Spotyslvania	Paytes	VA	3,500	617.00	160	37%	52%	11%	0%	74	$120,861	$483,333
9	Hattiesburg	Hattiesburg	MS	400	50.00	N/A	10%	85%	5%	0%	1,065	$28,545	$129,921
10	North Rock	Fulton	WI	472	50.00	N/A	3%	40%	57%	0%	236	$86,238	$370,062
11	Wood County	Saratoga	WI	1,200	150.00	N/A	N/A	N/A	N/A	N/A	187	$74,110	$204,545
12	Twiggs	Dry Branch	GA	N/A	200.00	N/A	N/A	N/A	N/A	N/A	15	$55,000	$50,000
13	Dougherty	Albany	GA	N/A	120.00	N/A	N/A	N/A	N/A	N/A	30	$60,354	$204,167
14	Big Horn 1	Pueblo	CO	2,760	240.00	N/A	0%	44%	2%	54%	20	$75,000	$400,000
15	Bison/Raw	Wellington	CO	1,160	52.00	N/A	0%	93%	7%	0%	0	$0	$0
16	Pioneer	Bennett	CO	611	110.00	N/A	3%	81%	16%	0%	67	$82,329	$497,991
17	Bellflower 1	Lewisville	IN	N/A	152.50	N/A	N/A	N/A	N/A	N/A	45	$78,261	$215,789
18	Riverstart	Winchester	IN	N/A	200.00	N/A	N/A	N/A	N/A	N/A	47	$75,000	$169,565
19	North Star	North Branch	MN	1,099	100.00	N/A	18%	73%	7%	2%	218	$119,700	$323,413
20	Dunns Brdge	Wheatfield	IN	N/A	435.00	N/A	N/A	N/A	N/A	N/A	208	$71,098	$203,986
21	Bedford	Chesapeake	VA	N/A	70.00	N/A	N/A	N/A	N/A	N/A	993	$127,047	$509,365
22	Mt. Olive Crk	Russell Spr	KY	421	60.00	N/A	N/A	N/A	N/A	N/A	149	$60,646	$152,778
23	Logan Cnty	Russellville	KY	1,100	173.00	N/A	N/A	N/A	N/A	N/A	177	$54,545	$284,459
24	Centerfield	Chesterfield	SC	N/A	75.00	N/A	N/A	N/A	N/A	N/A	248	$51,170	$91,364
25	Harts Mill	Tarboro	NC	N/A	80.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26	Hardin	Alger	OH	N/A	150.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
27	Hillcrest	Mt Orab	OH	N/A	200.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Average			1,080	141	41	13%	63%	20%	4%	416	$70,169	$255,296
	Median			627	80	2	11%	74%	6%	0%	182	$72,604	$236,048
	High			3,500	617	160	41%	97%	94%	54%	2,446	$127,047	$509,365
	Low			347	50	0	0%	0%	0%	0%	0	$0	$0

The breakdown of adjoining uses, population density, median income and housing prices for these projects are very similar to those of the larger set. The matched pairs for each of these were considered earlier and support a finding of no negative impact on the adjoining home values.

The data for these larger solar farms is shown in the National data breakdowns with similar landscaping, setbacks and range of impacts that fall mostly in the +/-5% range as can be seen earlier in this report.

On the following page I show a summary of 238 projects ranging in size from 50 MW up to 1,000 MW with an average size of 119.7 MW and a median of 80 MW. The average closest distance for an adjoining home is 365 feet, while the median distance is 220 feet. The closest distance is 50 feet. The mix of adjoining uses is similar with most of the adjoining uses remaining residential or agricultural in nature. This is the list of solar farms that I have researched for possible matched pairs and not a complete list of larger solar farms in those states.

Total Number of Solar Farms Researched Over 50 MW 238

						Adjoining Use by Acre			
	Output (MW)	**Total Acres**	**Used Acres**	**Avg. Dist to home**	**Closest Home**	**Res**	**Agri**	**Agri/Res**	**Com**
Average	119.7	1521.4	1223.3	1092	365	10%	68%	18%	4%
Median	80.0	987.3	805.5	845	220	7%	72%	12%	0%
High	1000.0	19000.0	9735.4	6835	6810	98%	100%	100%	70%
Low	50.0	3.0	3.0	241	50	0%	0%	0%	0%

XII. Distance Between Homes and Panels

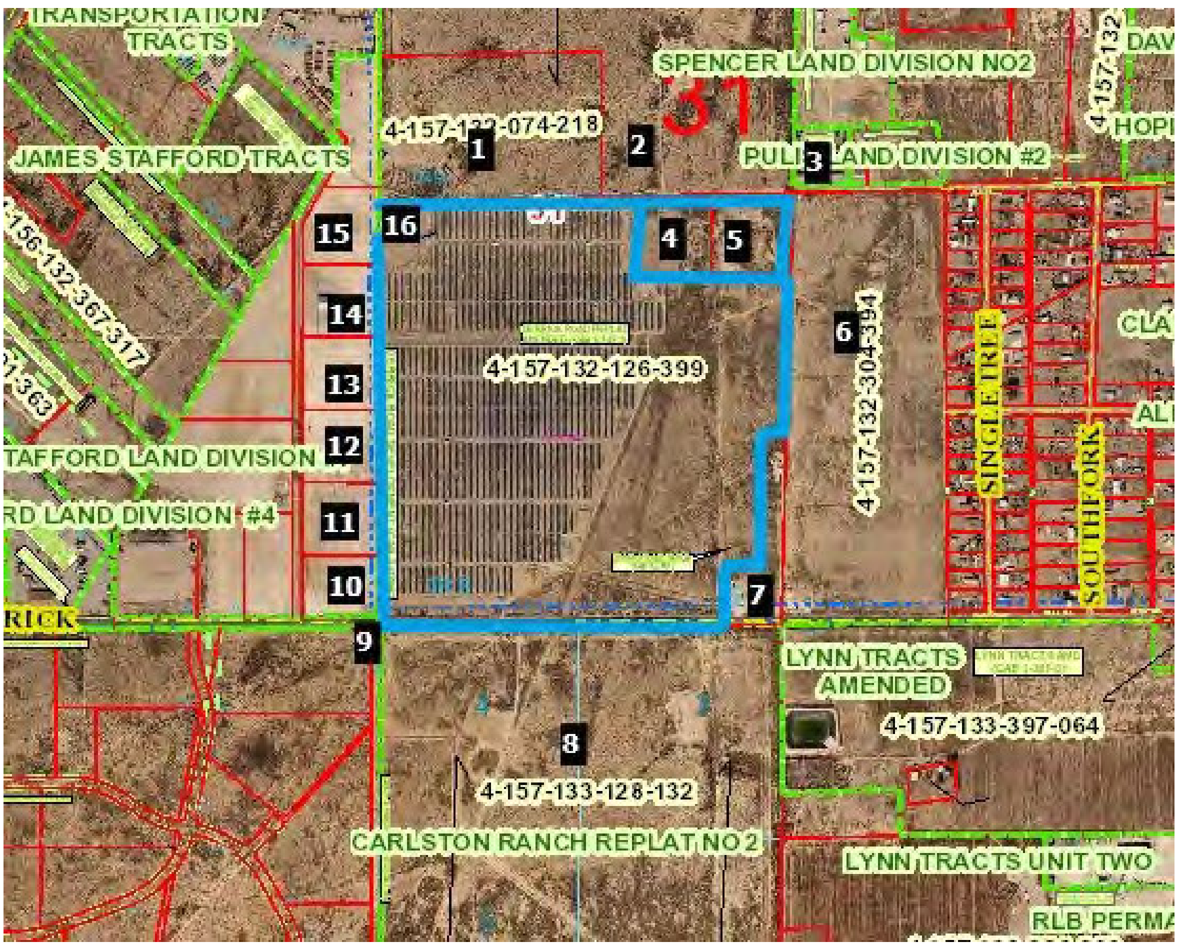
I have measured distances at matched pairs as close as 105 feet between panel and home to show no impact on value. This measurement goes from the closest point on the home to the closest solar panel. This is a strong indication that at this distance there is no impact on adjoining homes.

However, in tracking other approved solar farms, I have found that it is common for there to be homes within 100 to 150 feet of solar panels. Given the visual barriers in the form of privacy fencing or landscaping, there is no sign of negative impact.

I have also tracked a number of locations where solar panels are between 50 and 100 feet of single-family homes. In these cases the landscaping is typically a double row of more mature evergreens at time of planting. There are many examples of solar farms with one or two homes closer than 100-feet, but most of the adjoining homes are further than that distance.

At greater distances the need for landscaping or visual barriers diminishes. The visual analysis done for a solar farm with no landscaping barrier is shown below from the SPS5 Hope Solar Farm in New Mexico.

SPS5 Hope Solar Farm, Carlsbad, Eddy County, New Mexico



This solar farm is 10.1 MW solar farm with nearby residential uses. The closest homes to the east are around 1,800 feet from the nearest panels. The closest homes to the north are around 2,700 feet from the nearest panels. The closest homes to the south are around 3,000 feet from the nearest panel.

I did not identify any recent adjoining home sales for analysis.

This solar farm has no screen and is visible from W. Derrick Road that runs along the southern side of the project. I was unable to find current imagery using GoogleEarth Streetview to determine visibility from the nearby homes as the solar farm was built after the most recent streetview image.
I did run a series of test images along W. Derrick Road using GoogleEarth Streetview to determine relative visibility of the site at different distances. None of these images are anything more than a screen capture of the Streetview at distances of 180 feet, 500 feet, 1,000 feet and 2,000 feet. The panels are detectable within the image at each distance shown, but even at 500 feet they are difficult to discern and blend with the rest of the terrain.

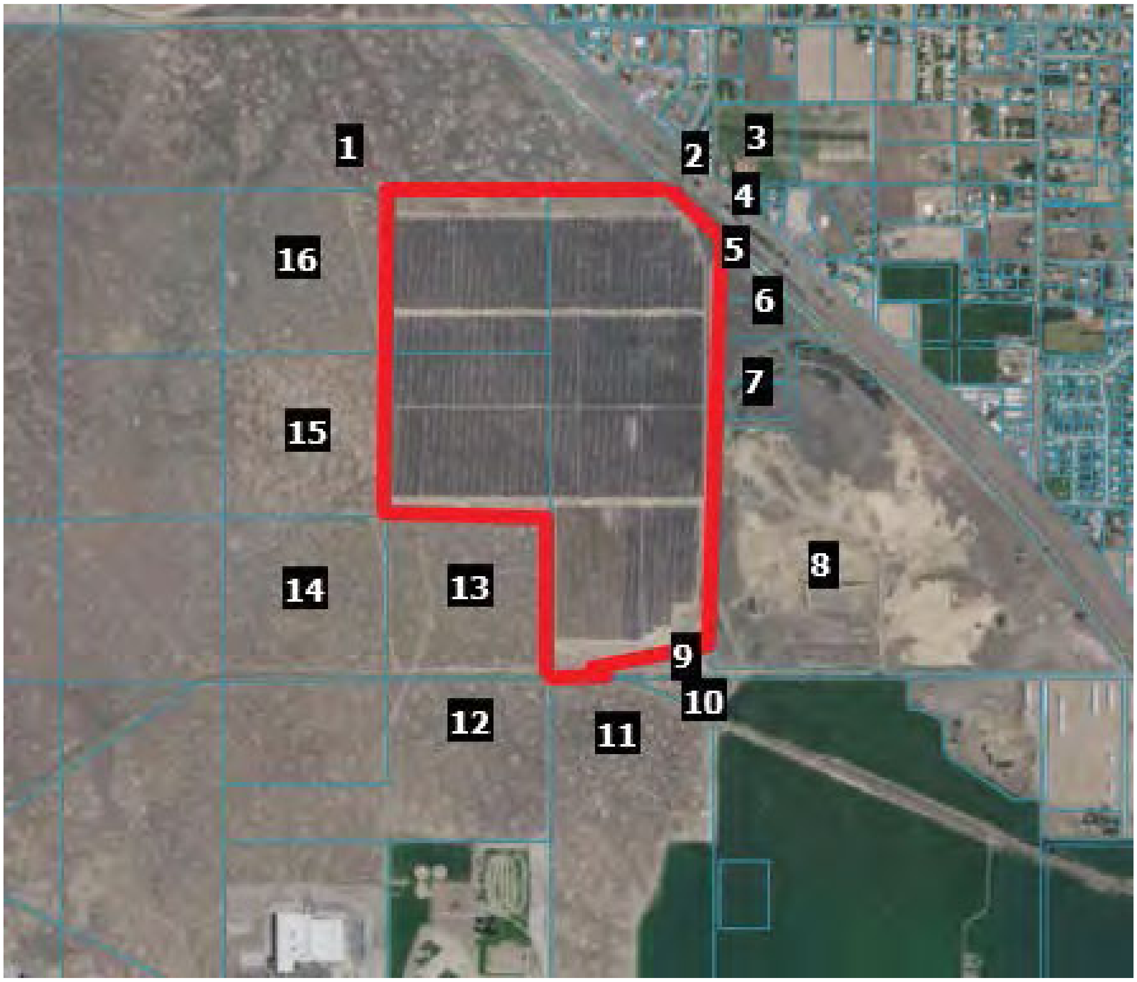
Image facing north from W. Derrick Road from Streetview at 180 feet from the nearest panel

Image facing northeast from W. Derrick Road from Streetview at 500 feet from nearest panel.

Image facing northeast from W. Derrick Road from Streetview at 1,000 feet from nearest panel

Image facing northeast from W. Derrick Road from Streetview at 2,000 feet from nearest panel.

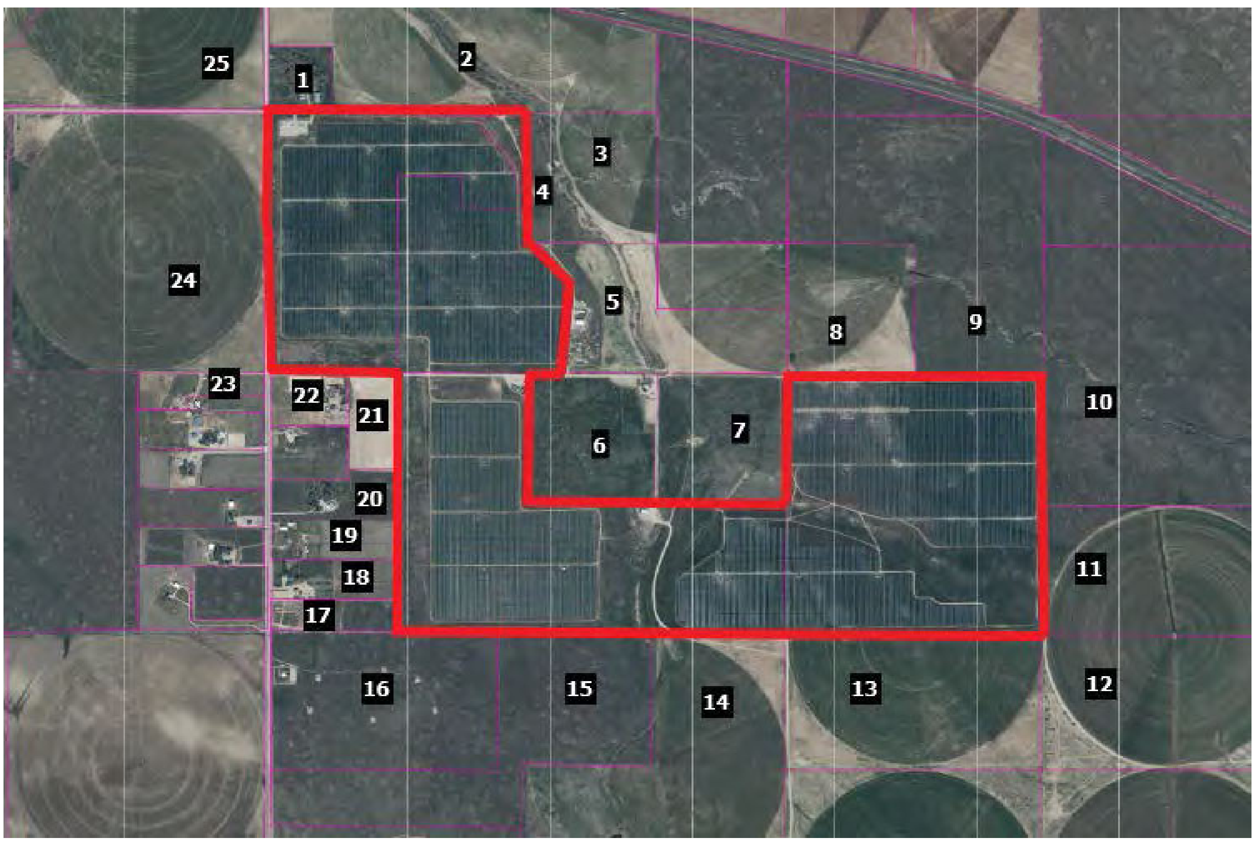
Mountain Home Solar, Mountain Home, Elmore County, ID



This 20 MW solar project was built in 2018.

For further comparison, I considered the closest point that the GoogleEarth image had for this solar project which is located at about 1934 Sunset Strip. The distance measured from this location on GoogleEarth is 415 feet from the nearest panel to where the image was taken from. The panels to the right of the image are further away and the far right of the image there are no panels for comparison.

Idaho Solar 1, Boise, Ada County, ID



This project was built in 2016 for a 40 MW solar project.

I was able to find a street view image on the north side of this project on Barker Road. I measured off a distance of 210 feet from the closest panel and then took this image from that point. The panels are visible but quickly blend in with the background at this distance. The trees and shrubs break up the view somewhat, but were not planted as an intentional screen for the solar project.

I also went to the east end of the solar project and measured off 210 feet to take an image in the other direction. This shows a similar view with panels and fencing visible, but again they make up a small percentage of the overall view. The small shrubs shown to the right of the photo would provide a softening of the image if expanded where the project is closer to homes.

At these distances, I would expect some landscaping screening if there were a home involved. I was not able to get a view of this project from 500 feet as the street view imagery did not extend far enough along that road from one side and the substation blocks the view from the other end.

XIII. Topography

As shown on the summary charts for the solar farms, I have been identifying the topographic shifts across the solar farms considered. Differences in topography can impact visibility of the panels, though typically this results in distant views of panels as opposed to up close views. The topography noted for solar farms showing no impact on adjoining home values range from as much as 160-foot shifts across the project. Given that appearance is the only factor of concern and that distance plus landscape buffering typically addresses up close views, this leaves a number of potentially distant views of panels. I specifically note that in Crittenden in KY there are distant views of panels from the adjoining homes that showed no impact on value.

General rolling terrain with some distant solar panel views are showing no impact on adjoining property value.

XIV. Scope of Research

I have researched approximately 1,000 solar farms and sites on which solar farms are existing and proposed in Indiana, Ohio, Virginia, Illinois, Tennessee, North Carolina, Kentucky as well as other states to determine what uses are typically found in proximity with a solar farm. The data I have collected and provide in this report strongly supports the assertion that solar farms are having no negative consequences on adjoining agricultural and residential values.

Beyond these references, I have quantified the adjoining uses for a number of solar farm comparables to derive a breakdown of the adjoining uses for each solar farm. The chart below shows the breakdown of adjoining or abutting uses by total acreage.

Percentage By Adjoining Acreage

	Res	Ag	Res/AG	Comm	Ind	Avg Home	Closest Home	All Res Uses	All Comm Uses
Average	19%	53%	20%	2%	6%	887	344	91%	8%
Median	11%	56%	11%	0%	0%	708	218	100%	0%
High	100%	100%	100%	93%	98%	5,210	4,670	100%	98%
Low	0%	0%	0%	0%	0%	90	25	0%	0%

Res = Residential, Ag = Agriculture, Com = Commercial

Total Solar Farms Considered: 705

I have also included a breakdown of each solar farm by number of adjoining parcels to the solar farm rather than based on adjoining acreage. Using both factors provide a more complete picture of the neighboring properties.

Percentage By Number of Parcels Adjoining

	Res	Ag	Res/AG	Comm	Ind	Avg Home	Closest Home	All Res Uses	All Comm Uses
Average	61%	24%	9%	2%	4%	887	344	93%	6%
Median	65%	19%	5%	0%	0%	708	218	100%	0%
High	100%	100%	100%	60%	78%	5,210	4,670	105%	78%
Low	0%	0%	0%	0%	0%	90	25	0%	0%

Res = Residential, Ag = Agriculture, Com = Commercial

Total Solar Farms Considered: 705

Both of the above charts show a marked residential and agricultural adjoining use for most solar farms. Every single solar farm considered included an adjoining residential or residential/agricultural use.

XV. Specific Factors Related To Impacts on Value

I have completed a number of Impact Studies related to a variety of uses and I have found that the most common areas for impact on adjoining values typically follow a hierarchy with descending levels of potential impact. I will discuss each of these categories and how they relate to a solar farm.

1. Hazardous material
2. Odor
3. Noise
4. Traffic
5. Stigma
6. Appearance

1. Hazardous material

A solar farm presents no potential hazardous waste byproduct as part of normal operation. Any fertilizer, weed control, vehicular traffic, or construction will be significantly less than typically applied in a residential development and especially most agricultural uses.

The various solar farms that I have inspected and identified in the addenda have no known environmental impacts associated with the development and operation.

2. Odor

The various solar farms that I have inspected produced no odor.

3. Noise

Whether discussing passive fixed solar panels, or single-axis trackers, there is no negative impact associated with noise from a solar farm. The transformer has a hum similar to an HVAC that can only be heard in close proximity and the buffers on the property are sufficient to make emitted sounds effectively inaudible from the adjoining properties. A wide variety of noise studies have been conducted on solar farms to illustrate compatibility between solar properties and nearby residential uses.

The various solar farms that I have inspected were inaudible from the roadways.

4. Traffic

The solar farm will have no onsite employee's or staff. The site requires only minimal maintenance. Relative to other potential uses of the site (such as a residential subdivision), the additional traffic generated by a solar farm use on this site is insignificant.

5. Stigma

There is no stigma associated with solar farms and solar farms and people generally respond favorably towards such a use. While an individual may express concerns about proximity to a solar farm, there is no specific stigma associated with a solar farm. Stigma generally refers to things such as adult establishments, prisons, rehabilitation facilities, and so forth.

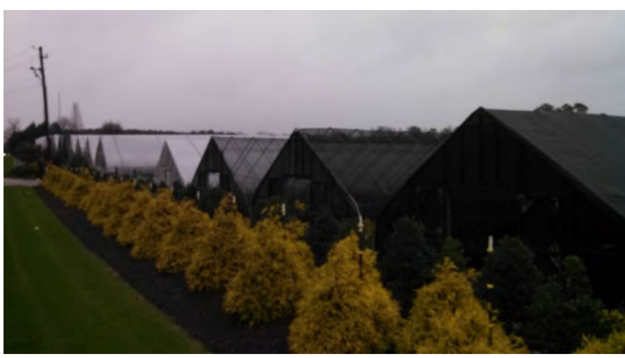
Solar panels have no associated stigma and in smaller collections are found in yards and roofs in many residential communities. Solar farms are adjoining elementary, middle and high schools as well as churches and subdivisions. I note that one of the solar farms in this report not only adjoins a church, but is actually located on land owned by the church. Solar panels on a roof are often cited as an enhancement to the property in marketing brochures.

I see no basis for an impact from stigma due to a solar farm.

6. Appearance

I note that larger solar farms using fixed or tracking panels are a passive use of the land that is in keeping with a rural/residential area. As shown below, solar farms are comparable to larger greenhouses. This is not surprising given that a greenhouse is essentially another method for collecting passive solar energy. The greenhouse use is well received in residential/rural areas and has a similar visual impact as a solar farm.






The solar panels are all less than 15 feet high, which means that the visual impact of the solar panels will be similar in height to a typical greenhouse and lower than a single-story residential dwelling. Were the subject property developed with single family housing, that development would have a much greater visual impact on the surrounding area given that a two-story home with attic could be three to four times as high as these proposed panels.

Whenever you consider the impact of a proposed project on viewshed or what the adjoining owners may see from their property it is important to distinguish whether or not they have a protected viewshed or not. Enhancements for scenic vistas are often measured when considering properties that adjoin preserved open space and parks. However, adjoining land with a preferred view today conveys no guarantee that the property will continue in the current use. Any consideration of the impact of the appearance requires a consideration of the wide variety of other uses a property already has the right to be put to, which for solar farms often includes subdivision development, agricultural business buildings such as poultry, or large greenhouses and the like.

Dr. Randall Bell, MAI, PhD, and author of the book **Real Estate Damages**, Third Edition, on Page 146 “Views of bodies of water, city lights, natural settings, parks, golf courses, and other amenities are considered desirable features, particularly for residential properties.” Dr. Bell continues on Page

147 that "View amenities may or may not be protected by law or regulation. It is sometimes argued that views have value only if they are protected by a view easement, a zoning ordinance, or covenants, conditions, and restrictions (CC&Rs), although such protections are relatively uncommon as a practical matter. The market often assigns significant value to desirable views irrespective of whether or not such views are protected by law."

Dr. Bell concludes that a view enhances adjacent property, even if the adjacent property has no legal right to that view. He then discusses a "borrowed" view where a home may enjoy a good view of vacant land or property beyond with a reasonable expectation that the view might be partly or completely obstructed upon development of the adjoining land. He follows that with "This same concept applies to potentially undesirable views of a new development when the development conforms to applicable zoning and other regulations. Arguing value diminution in such cases is difficult, since the possible development of the offending property should have been known." In other words, if there is an allowable development on the site then arguing value diminution with such a development would be difficult. This further extends to developing the site with alternative uses that are less impactful on the view than currently allowed uses.

This gets back to the point that if a property has development rights and could currently be developed in such a way that removes the viewshed such as a residential subdivision, then a less intrusive use such as a solar farm that is easily screened by landscaping would not have a greater impact on the viewshed of any perceived value adjoining properties claim for viewshed. Essentially, if there are more impactful uses currently allowed, then how can you claim damages for a less impactful use.

XVI. Conclusion on Solar Farm

The paired sales analysis shows no negative impact in home values due to abutting or adjoining a solar farm as well as no impact to abutting or adjacent vacant residential or agricultural land. The criteria that typically correlates with downward adjustments on property values such as noise, odor, and traffic all support a finding of no impact on property value.

The distances indicated for the subject property is consistent with the paired sales showing no impact on adjoining property values given the distances involved and the proposed landscaping screen.

Very similar solar farms in very similar areas have been found by hundreds of towns and counties not to have a substantial injury to abutting or adjoining properties, and many of those findings of no impact have been upheld by appellate courts. Similar solar farms have been approved adjoining agricultural uses, schools, churches, and residential developments.

I have found no difference in the mix of adjoining uses or proximity to adjoining homes based on the size of a solar farm and I have found no significant difference in the matched pair data adjoining larger solar farms versus smaller solar farms. The data in the Southeast is consistent with the larger set of data that I have nationally, as is the more specific data located in and around Indiana.

Based on the data and analysis in this report, it is my professional opinion that the solar farm proposed at the subject property will have no negative impact on the value of adjoining or abutting property. I note that some of the positive implications of a solar farm that have been expressed by people living next to solar farms include protection from future development of residential developments or other more intrusive uses, reduced dust, odor and chemicals from former farming operations, protection from light pollution at night, it is quiet, and there is no traffic.

XVIII. Certification

I certify that, to the best of my knowledge and belief:

1. The statements of fact contained in this report are true and correct;

2. The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are my personal, unbiased professional analyses, opinions, and conclusions;

3. I have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved;

4. I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment;

5. My engagement in this assignment was not contingent upon developing or reporting predetermined results;

6. My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of the appraisal;

7. The reported analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute;

8. My analyses, opinions and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice.

9. The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives;

10. I have not made a personal inspection of the property that is the subject of this report, and;

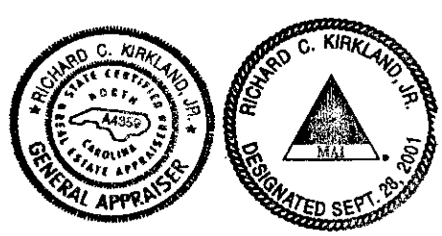
11. No one provided significant real property appraisal assistance to the person signing this certification.

12. As of the date of this report I have completed the continuing education program for Designated Members of the Appraisal Institute;

13. I have not completed any other appraisal related assignments regarding this project within the three years prior to engagement in this current assignment.

Disclosure of the contents of this appraisal report is governed by the bylaws and regulations of the Appraisal Institute and the National Association of Realtors.

Neither all nor any part of the contents of this appraisal report shall be disseminated to the public through advertising media, public relations media, news media, or any other public means of communications without the prior written consent and approval of the undersigned.



Richard C. Kirkland, Jr., MAI
State Certified General Appraiser

XIX. Certification

I certify that, to the best of my knowledge and belief:

1. The statements of fact contained in this report are true and correct;

2. The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are my personal, unbiased professional analyses, opinions, and conclusions;

3. I have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved;

4. I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment;

5. My engagement in this assignment was not contingent upon developing or reporting predetermined results;

6. My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of the appraisal;

7. The reported analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute;

8. My analyses, opinions and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice.

9. The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives;

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11. No one provided significant real property appraisal assistance to the person signing this certification.

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Lee Ovington, MAI, SRA
State Certified General Appraiser

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PROFESSIONAL EXPERIENCE

Kirkland Appraisals, LLC, Raleigh, N.C.	2003 – Present
Commercial appraiser	
Hester & Company, Raleigh, N.C.	
Commercial appraiser	1996 – 2003

PROFESSIONAL AFFILIATIONS

MAI (Member, Appraisal Institute) designation #11796	2001
NC State Certified General Appraiser # A4359	1999
VA State Certified General Appraiser # 4001017291	
SC State Certified General Appraiser # 6209	
KY State Certified General Appraiser # 5522	
TN State Certified General Appraiser # 6240	
FL State Certified General Appraiser # RZ3950	
GA State Certified General Appraiser # 321885	
MI State Certified General Appraiser # 1201076620	
PA State Certified General Appraiser # GA004598	
OH State Certified General Appraiser # 2021008689	
IN State Certified General Appraiser # CG42100052	
IL State Certified General Appraiser # 553.002633	
LA State Certified General Appraiser # APR.05049-CGA	
TX State Certified General Appraiser # 1380528 G	
ND State Certified General Appraiser # CG-224129	
OR State Certified General Appraiser # C001665	

EDUCATION

Bachelor of Arts in English, University of North Carolina, Chapel Hill	1993

CONTINUING EDUCATION

Valuation of Residential Solar	2025
Fair Housing Bias and Discrimination	2025
The Cost Approach	2025
Uncovering and Valuing Current Luxury Home Trends	2025
Uniform Standards of Professional Appraisal Practice Update	2024
ASFMRA Integrated Approaches to Value (A360)	2024
ASFMRA Best in Business Ethics	2023
Appraising Natural Resources Series – Oil, Gas & Minerals	2023
Appraisal of Industrial and Flex Buildings	2023
Commercial Land Valuation	2023
Fair Housing, Bias and Discrimination	2023

Pennsylvania State Mandated Law for Appraisers	2023
What NOT to Do (NCDOT Course)	2023
The Income Approach – A Scope of Work Decision	2023
Valuation of Residential Solar	2022
Introduction to Commercial Appraisal Review	2022
Residential Property Measurement and ANSI	2022
Business Practices and Ethics	2022
Uniform Standards of Professional Appraisal Practice Update	2022
Sexual Harassment Prevention Training	2021
Appraisal of Land Subject to Ground Leases	2021
Michigan Appraisal Law	2020
Uniform Standards of Professional Appraisal Practice Update	2020
Uniform Appraisal Standards for Federal Land Acquisitions (Yellow Book)	2019
The Cost Approach	2019
Income Approach Case Studies for Commercial Appraisers	2018
Introduction to Expert Witness Testimony for Appraisers	2018
Appraising Small Apartment Properties	2018
Florida Appraisal Laws and Regulations	2018
Uniform Standards of Professional Appraisal Practice Update	2018
Appraisal of REO and Foreclosure Properties	2017
Appraisal of Self Storage Facilities	2017
Land and Site Valuation	2017
NCDOT Appraisal Principles and Procedures	2017
Uniform Standards of Professional Appraisal Practice Update	2016
Forecasting Revenue	2015
Wind Turbine Effect on Value	2015
Supervisor/Trainee Class	2015
Business Practices and Ethics	2014
Subdivision Valuation	2014
Uniform Standards of Professional Appraisal Practice Update	2014
Introduction to Vineyard and Winery Valuation	2013
Appraising Rural Residential Properties	2012
Uniform Standards of Professional Appraisal Practice Update	2012
Supervisors/Trainees	2011
Rates and Ratios: Making sense of GIMs, OARs, and DCFs	2011
Advanced Internet Search Strategies	2011
Analyzing Distressed Real Estate	2011
Uniform Standards of Professional Appraisal Practice Update	2011
Business Practices and Ethics	2011
Appraisal Curriculum Overview (2 Days – General)	2009
Appraisal Review - General	2009
Uniform Standards of Professional Appraisal Practice Update	2008
Subdivision Valuation: A Comprehensive Guide	2008
Office Building Valuation: A Contemporary Perspective	2008
Valuation of Detrimental Conditions in Real Estate	2007
The Appraisal of Small Subdivisions	2007
Uniform Standards of Professional Appraisal Practice Update	2006
Evaluating Commercial Construction	2005
Conservation Easements	2005
Uniform Standards of Professional Appraisal Practice Update	2004
Condemnation Appraising	2004
Land Valuation Adjustment Procedures	2004
Supporting Capitalization Rates	2004
Uniform Standards of Professional Appraisal Practice, C	2002
Wells and Septic Systems and Wastewater Irrigation Systems	2002
Appraisals 2002	2002

Analyzing Commercial Lease Clauses	2002
Conservation Easements	2000
Preparation for Litigation	2000
Appraisal of Nonconforming Uses	2000
Advanced Applications	2000
Highest and Best Use and Market Analysis	1999
Advanced Sales Comparison and Cost Approaches	1999
Advanced Income Capitalization	1998
Valuation of Detrimental Conditions in Real Estate	1999
Report Writing and Valuation Analysis	1999
Property Tax Values and Appeals	1997
Uniform Standards of Professional Appraisal Practice, A & B	1997
Basic Income Capitalization	1996

Ovington Appraisal

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www.ovington.com

Lee Ovington is a Certified General Appraiser in the State of Illinois. Certified General is the highest certification legally possible in the State of Illinois and allows the appraiser to perform valuations of all types of property.

Professional Experience

Real Estate Appraiser – 1986 to Present
Real Estate Broker – 1986 to Present
President of Ovington Appraisal Service
President of Realty Professionals, Inc.

Education

1986 - Bachelor of Science in Finance, Northern Illinois University, DeKalb, IL

Continuing Education

2023 – Advanced Land Valuation, Appraisal Institute
2023 – Manufactured Home Appraisal, McKissock
2023 – Environmental Hazard Impact on Value, American Education Institute
2023 – Business Practices and Ethics, Appraisal Institute
2022 - Historic Preservation Easements, Appraisal Institute
2022 – USPAP Update, Appraisal Institute
2021 - Assessment Appeals, Appraisal Institute
2020 – USPAP Update, Appraisal Institute
2019 - Rural Valuation, Appraisal Institute
2018 - Fundamentals of Separating Intangible Value, Appraisal Institute
2018 – USPAP Update, Appraisal Institute
2017- Appraising Conservation Easements, Appraisal Institute
2016 - Business Practice and Ethics, Appraisal Institute
2015 - Collateral Underwriter, Appraisal Institute
2015 - Chicago Real Estate Market Conditions, Appraisal Institute
2013 - Insurance Replacement Valuation, Appraisal Institute
2013 – Appraisal Curriculum Overview, Appraisal Institute
2013 – Advanced Search Strategies, Appraisal Institute
2012 - FHA and the Appraisal Process, Appraisal Institute
2012 – IRS Valuation, Appraisal Institute
2011 - Multifamily Acquisition Pricing, Appraisal Institute
2011 - Analyzing Tenant Credit Risk, Appraisal Institute
2011 – USPAP Update, Appraisal Institute
2009 - Appraising the Tough Ones, Appraisal Institute

2009 - Subdivision Analysis, Appraisal Institute
2007 - Report Writing 540, Appraisal Institute
2007 - Eminent Domain and Condemnation, Appraisal Institute
2007 - Advanced Applications 550, Appraisal Institute
2006 - Advanced Cost and Sales Approaches 530, Appraisal Institute
2006 - Highest and Best Use 520, Appraisal Institute
2005 - Rates, Ratios, and DCF, Appraisal Institute
2005 – USPAP Update, Appraisal Institute
2005 – Scope of Work, Appraisal Institute
2003 - USPAP Update, Appraisal Institute
2001 - Advanced Income Capitalization 510, Appraisal Institute
1999 - USPAP 430, Appraisal Institute
1997 - General Application 320, Appraisal Institute
1997 - Basic Income Capitalization 310, Appraisal Institute
1997 - Residential Income Capitalization, Appraisal Institute
1997 - Income Capitalization 2.2, N.A.I.F.A.
1997 - Income Property Appraising 2.1, N.A.I.F.A.
1993 - Appraisal Procedures, Appraisal Institute.
1990 - Standards of Professional Practice, Appraisal Institute.
1989 - Residential Valuation, Appraisal Institute.
1989 - Real Estate Appraisal Principles, Appraisal Institute.
1989 - Home Construction, Society of Real Estate Appraisers.

Memberships / Affiliations

Member of the Appraisal Institute
Member of the National Association of Realtors.
Member of the Fox Valley Association of Realtors.
Member of the Illinois Coalition of Appraisal Professionals

Professional Designations

MAI & SRA Designations - Appraisal Institute.
HUD Approved FHA Appraiser.
Approved Appraiser - Illinois Department of Transportation.
Certified General Real Estate Appraiser, Illinois #553-001203.
Real Estate Broker, Illinois, #075-091261.
Qualified Expert Witness - Illinois 16th Judicial Circuit.

Exhibit O – FAA Notice Criteria Tool Results

OE/AAA Pre-screening Results

Tue Sep 02 2025 13:41:37 GMT-0400 (Eastern Daylight Time)

Structure: Solar Panel

Latitude	Longitude	Height	Site Elevation	AMSL
41.926907	-88.683191	10	876	886
41.926916	-88.679589	10	874	884
41.923292	-88.683157	10	880	890
41.923332	-88.679555	10	877	887

Based on the information you provided, you are not required to file notice with the FAA.

Exhibit P – Wetland / Cultural Reports

Aquatic Resources Delineation Report

Grand Parade Solar Distributed Energy Resources Project

DeKalb County, Illinois

June 2025

Prepared for:

Grand Parade Solar DER, LLC
[redacted]

Prepared by:

Tetra Tech, Inc.
1634 Eastport Plaza Drive
Collinsville, IL 62234

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ACRONYMS/ABBREVIATIONS

Acronyms/ Abbreviations	Definition
1987 Manual	1987 USACE Wetland Delineation Manual
APT	Antecedent Precipitation Tool
CFR	Code of Federal Regulations
CWA	Clean Water Act
DER	Distributed Energy Resources
DWRM	Division of Water Resource Management
ESRI	Environmental Systems Research Institute
FEMA	Federal Emergency Management Agency
FR	Federal Regulations
FIRM	Flood Insurance Rate Maps
GIS	Geographic Information System
GPS	Global Positioning System
Grand Parade	Grand Parade Solar Distributed Energy Resources, LLC
IDNR	Illinois Department of Natural Resources
IEPA	Illinois Environmental Protection Agency
MLRA	Major Land Resource Area
NHD	National Hydrology Dataset
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
NWP	Nationwide Permit
NWPR	Navigable Waters Protection Rule
OHWM	Ordinary High-Water Mark
Project	Grand Parade Solar DER Project
Project Area	A Collection of Privately Owned Properties Totaling Approximately 79.73 Acres
Regional Supplement	*Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest, Version 2.0*
RHA	Rivers and Harbors Act
RPW	Relatively Permanent Waters
TNW	Traditional Navigable Waters
Tetra Tech	Tetra Tech, Inc.

Acronyms/ Abbreviations	Definition
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USDOA	United States Department of the Army
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geographical Project
WQC	Water Quality Certification
WOTUS	waters of the United States

1.0 INTRODUCTION

Tetra Tech, Inc. (Tetra Tech) was retained by Grand Parade Solar Distributed Energy Resources (DER), LLC (Grand Parade), to provide aquatic resources delineation services for the proposed Grand Parade Solar DER Project (Project) in DeKalb County, Illinois. The Project is a utility-scale solar energy facility to be developed on privately owned land totaling approximately 79.73 acres (Project Area) as shown on Figure 1. The Project will include solar photovoltaic panels and associated racking, inverters, collection lines, access roads, an underground collection lines, and a substation transformer which will connect to an existing distribution line.

Tetra Tech assessed the Project Area for the presence of aquatic resources (e.g., wetlands, streams, open waters, etc.) that could potentially be jurisdictional waters of the United States (WOTUS) and to delineate the boundaries of these features according to the current federal and state guidance in the State of Illinois. Included within this Aquatic Resources Delineation Report is a description of the Project Area, methods used to delineate or identify potential WOTUS, desktop review results, field survey results, and references used to support the conclusions. Field data forms and select photographs taken during the onsite efforts are provided in Appendix A.

2.0 REGULATORY FRAMEWORK

2.1 FEDERAL REGULATIONS

Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (RHA) respectively established programs to regulate the discharge of dredged or fill material into WOTUS (Section 404 of the CWA) and any proposed work or structure in, over, or under any navigable WOTUS (Section 10 of the RHA). These federal laws are administered by the United States Army Corps of Engineers (USACE), with United States Environmental Protection Agency (USEPA) oversight. The laws regulate different types of WOTUS, but certain WOTUS are regulated by both statutes. There are no anticipated navigable WOTUS within the Project; therefore, none of the potential WOTUS identified within would be subject to the RHA and only Section 404 of the CWA would be applicable. The proposed Project is located within the USACE Rock Island District.

The "discharge" of dredged and fill material is defined as follows:

- Discharge of Dredged Material – Any addition of dredged material (including the redeposit of dredged or excavated material other than incidental fallback) into a WOTUS. USACE and USEPA regard the use of mechanized earth-moving equipment to conduct land clearing, ditching, channelization, in-stream mining, side-casting, temporary stockpiling, and other ground-disturbing activities within a WOTUS as resulting in a discharge of dredged material.
- Discharge of Fill Material – Any addition of fill material into a WOTUS. An example of a discharge of fill material would be the placement of clean soil into a wetland to create dry land so that a road could be built on the site. Another example would be placing or extending a culvert within a streambed.

Several classes of water bodies are subject to federal jurisdiction under the CWA, including traditional navigable waters (TNWs); non-navigable tributaries of TNWs that are perennial or seasonal relatively permanent waters (RPWs); and wetlands that directly abut RPWs (USACE 2007). In the absence of adjacent wetlands, lateral jurisdiction over nontidal waters extends to the ordinary high-water mark (OHWM). The definition of the OHWM is "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 Code of Federal Regulations [CFR] 328.3(e)). Wetlands with "jurisdictional status" are WOTUS as defined by Section 404 of the CWA. These types of wetlands are regulated by USACE and USEPA.

On January 18, 2023, the USEPA and the United States Department of the Army (USDOA) published the final rule in the federal register establishing a revised definition of WOTUS (88 Federal Regulations [FR] 3004: USDOA & USEPA 2023). The definition became effective on March 20, 2023. This rule vacated and remanded the previous Navigable Waters Protection Rule (NWPR; USEPA 2025a) and the interim pre-2015 regulatory regime including the guidance issued in the United State Supreme Court decisions in *Rapanos v. United States*, *Carabell v. United States*, and *Solid Waste Agency of Northern Cook County v. United States*.

On May 25, 2023, the United States Supreme Court issued its opinion in *Sackett v. Environmental Protection Agency* (Sackett 2023). The opinion addresses the definition of WOTUS pursuant to the CWA. Parts of the definition of WOTUS were determined to be invalid under the United States Supreme Court's interpretation of the CWA. Therefore, on August 29, 2023, the USEPA and USDOA amended key aspects of the regulatory text to conform to the United States Supreme Court's decision. This final rule conforms the definition of WOTUS to the United States Supreme Court's May 25, 2023, decision in the case of *Sackett v. Environmental Protection Agency* (USEPA 2025b).

In addition, due to ongoing litigation, the January 2023 Rule is not currently operative in certain states. The USEPA and USDOA will implement the January 2023 Rule, as amended by the conforming rule, in 23 states. In the other

27 states, the USEPA and USDOA are interpreting WOTUS consistent with the pre-2015 regulatory regime and the United States Supreme Court's decision in *Sackett v. Environmental Protection Agency* until further notice. Illinois is one of the 23 states where the January 2023 Rule is being implemented consistent with the United States Supreme Court's decision in *Sackett v. Environmental Protection Agency*.

Under the January 2023 Rule, as amended by the conforming rule, the term WOTUS includes the following:

(1) Waters which are

(i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(ii) The territorial seas; or

(iii) Interstate waters;

(2) Impoundments of waters otherwise defined as WOTUS under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;

3) Tributaries of waters identified in paragraph (a)(1) or (2) of this section:

(i) That are relatively permanent, standing or continuously flowing bodies of water;

(4) Wetlands adjacent to the following waters:

(i) Waters identified in paragraph (a)(1) of this section; or

(ii) Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3)(i) of this section and with a continuous surface connection to those waters; or

(5) Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3)(i) of this section.

The following are not WOTUS even where they otherwise meet the terms of paragraphs (a)(2) through (5) of this section:

(1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the CWA;

(2) Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with the USEPA;

(3) Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;

(4) Artificially irrigated areas that would revert to dry land if the irrigation ceased;

(5) Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;

(6) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;

(7) Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of WOTUS; and

(8) Swales and erosional features (e.g., gullies, small washes) characterized by low volume, infrequent, or short duration flow.

Discharges of dredged or fill material may be permanent or temporary. Permanent discharges include those that will permanently impact a WOTUS by filling, flooding, excavation, or drainage. Permanent effects to WOTUS are considered a “loss of waters of the U.S.” if the discharges change an aquatic area to dry land, increase the bottom elevation of a WOTUS, or change the use of a water body. In addition to losses of physical areas of WOTUS as a result of discharges, USACE regulates the loss of functions or values of WOTUS in some circumstances when actual permanent discharges are not involved, such as clearing a forested wetland or changing the hydrology of a WOTUS upstream or downstream of a permitted activity.

Examples of temporary discharges include the placement of fill within WOTUS for temporary project components such as cofferdams or temporary access roads (including crane paths), where the fill will be removed in its entirety and the area will be restored to its pre-construction contours upon project completion. Note that, in some cases, the USACE considers temporary project components as causing a permanent loss of WOTUS. An example is when fill for a temporary access road will remain within a wetland for such a long period of time that it impacts the potential for the wetland to reestablish after the fill is removed.

Discharges of dredged or fill material and other work in waters subject to regulation under Section 404 or Section 10 typically require permit authorization before it occurs unless the activity is exempt from regulation. Section 404 and Section 10 permits that are commonly issued by the USACE include Standard Individual Permits and General Permits, which include Nationwide Permits (NWPs) and Regional General Permits.

Permit applications for all projects involving impacts to wetlands or other WOTUS must be accompanied by a wetland delineation using the procedures established in the 1987 USACE Wetland Delineation Manual (Environmental Laboratory 1987; 1987 Manual).

2.2 STATE REGULATIONS

Proposed projects in Illinois that will impact a WOTUS require the Illinois Environmental Protection Agency (IEPA) to issue a Section 401 Water Quality Certification (WQC) before a federal permit or license can be granted. IEPA has issued conditional WQCs with general and permit-specific conditions for Section 404 NWPs which may be applicable to a solar development project. If the Project does not meet the conditions of a pre-issued WQC, then an individual WQC will be required to authorize the Project.

The Illinois Department of Natural Resources (IDNR) Division of Water Resource Management (DWRM) issues permits for work in and along the rivers, lakes, and streams of the state, for activities in and along the public waters, and for the construction and maintenance of dams. Generally, the DWRM issues an individual formal permit to the applicant to demonstrate compliance with the rules. The DWRM has issued statewide and regional general permits to streamline permitting. The statewide and regional permits describe a general project type and set limits on the scope of the work. If the proposed project meets all the specified limits, the project is approved under the statewide or regional permit (IDNR 2025). Illinois statewide permits include the following:

Statewide Permit #01 - Construction in the flood fringe of the Rock River below its confluence with the Green River.
Statewide Permit #02 - Construction of bridge and culvert crossings of streams in rural areas.
Statewide Permit #03 - Authorizing mooring facilities used exclusively for barge fleeting purposes.
Statewide Permit #04 - Aerial utility crossings.
Statewide Permit #05 - Minor boat docks.
Statewide Permit #06 - Minor non-obstructive floodway construction activities.
Statewide Permit #07 – Outfalls.
Statewide Permit #08 - Underground pipeline and utility crossings.
Statewide Permit #09 - Minor shoreline, stream bank, and channel protection activities.
Statewide Permit #10 - Accessory structures and additions to existing residential buildings.
Statewide Permit #11 - Minor maintenance dredging activities.
Statewide Permit #12 - Bridge and culvert replacement structures and bridge widenings.
Statewide Permit #13 - Temporary construction activities.
Statewide Permit #14 - Special uses of public waters.

The State of Illinois does not exert jurisdiction over or require a permit for impacts to geographically isolated wetlands which are not determined to be jurisdictional under the current federal regulations.

3.0 PROJECT AREA DESCRIPTION AND LOCATION

The proposed Project is to be developed on privately owned property totaling approximately 79.73 acres in DeKalb County, Illinois (Figure 1). The Project Area is outside of Cortland, Illinois.

The Project Area is located within the Major Land Resource Area (MLRA) known as the Illinois and Iowa Dep Loess and Drift Section of the Central Lowland Province of the Interior Plains Physiographic Region. Elevations within the Project Area range from approximately 270 feet to 1,520 feet above mean sea level. Local relief is typically 3 to 10 feet in eastern part of this MLRA. This region is underlain mostly by Pennsylvanian shale, siltstone, and limestone with Ordovician and Silurian limestone in the extreme northern part. Coal beds occur mostly east of the Illinois River. Glacial drift covers the entire MLRA, except for some areas along the major streams where underlying bedrock is exposed. The glacial drift is Wisconsin or Illinoian in age in the eastern half of the area and consists of distinct till units as well as sorted, stratified outwash United Stated Department of Agriculture [USDA] Natural Resources Conservation Service [NRCS] 2022).

4.0 METHODOLOGY

4.1 DESKTOP REVIEW

Tetra Tech initially completed a desktop survey for aquatic resources in December 2023. During the desktop survey, publicly available information was utilized to identify potential wetlands and surface waters within or adjacent to the Project. Publicly available data included Google Earth Pro®, NRCS Web Soil Project data, United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) data, the U.S. Geological Project (USGS) National Hydrography Dataset (NHD), and Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) was reviewed by a Tetra Tech natural resource specialist.

The following sections describe the results of the desktop screening for potential regulatory constraints associated with WOTUS present in the Project AOI.

4.1.1 Aerial Photograph Review

Potential wetlands and other aquatic resources were identified based the presence of wetland or stream signatures during a review of aerial photography available on Google Earth Pro®. The proposed Project Area was overlain onto digital versions of aerial photographs using Environmental Systems Research Institute (ESRI) Geographic Information System (GIS) software and Google Earth Pro® (ESRI 2025; Google Earth Pro® 2025).

4.1.2 Soil Project Review

Soil survey data for DeKalb County, Illinois was obtained from the NRCS website (USDA NRCS 2019). These maps depict the distribution of soil series and mapping units. This information was used to study the distribution of hydric soils in the Project Area. Soil, as it relates to wetlands delineations, must be a hydric soil for the area to qualify as a wetland in accordance with the 1987 Manual and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region, Version 2.0* (USACE 2010; the Regional Supplement). Hydric soils are defined as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (Environmental Laboratory 1987). The NRCS soils data was overlain onto digital versions of aerial photographs using ESRI GIS software and Google Earth Pro®. The distribution of hydric soils within the Project Area is depicted on Figure 2.

4.1.3 NWI Data Review

Federal data regarding mapped wetlands was reviewed for the Project Area. The NWI data for the Project Area was downloaded from the USFWS website (USFWS 2025). The NWI data was overlain onto digital versions of aerial photographs using ESRI GIS software and Google Earth Pro®.

4.1.4 NHD Data

The NHD was downloaded from the USGS NHD website (USGS 2025). The NHD is a geospatial dataset that maps surface water networks and hydrologic drainage areas, representing rivers, streams, canals, lakes, ponds, glaciers, coastlines, dams, and streams gages, and related features. No NHD was associated with the Project Boundary.

4.1.5 FEMA DATA

FEMA GIS Data were reviewed for the Project Area and analyzed to determine if FEMA Floodplains were present.

4.2 FIELD PROJECTS

4.2.1 Aquatic Resources Delineation Method

Following review of available background information, Tetra Tech biologists conducted field investigations within the Project Area on May 7, 2025, to determine the presence and extent of aquatic resources, and delineate any aquatic resources. The field investigations were based on the current federal definition of wetlands (see subsection 2.1 above).

Wetland characteristics were investigated in accordance with the 1987 Manual and the Regional Supplement. Typically, the initial sample plot was oriented within the feature being investigated at a location determined to have the highest potential to exhibit wetland characteristics. This determination was based on local topography, presence of defined bed and bank, undercutting, sediment deposition, presence of standing or flowing water, or vegetation. If positive indicators of wetland vegetation, hydrology, and hydric soils as defined by the 1987 Manual were present at Plot "A", then data from additional sample plots would be collected to determine the transition from wetland to non-wetland habitats. The delineated boundary of each wetland is then established at the location where at least one of the above three parameters failed to meet wetland criteria.

Vegetation within each sample plot was characterized to determine dominance of either hydrophytic or non-hydrophytic vegetation. Dominance was estimated based on the percent aerial coverage within the sample plot with a 5-foot radius for herbaceous vegetation, a 15-foot radius for saplings and shrubs, and a 30-foot radius for trees and woody vines. Wetland indicator status for all plant species followed the USACE *National Wetland Plant List*, *Version 3.6* (USACE 2022). Hydrology was assessed by evaluating each sample plot for field indicators of wetland hydrology such as inundation, depth to free water in soil pits, soil saturation, water marks, drift lines, oxidized root channels, drainage patterns, and topographic position.

At sample plot locations with a dominance and/or prevalence of hydrophytic vegetation, soils were characterized to a minimum depth of 18 inches using a Munsell Soil Color Chart, visual observation, and standard soil texturing methodology to identify hydric or non-hydric soil characteristics as defined in *Field Indicators of Hydric Soils in the United States, A Guide for Identifying and Delineating Hydric Soils, Version 9.0* (NRCS 2024). For each sample plot location, an 8-inch-diameter test pit was excavated to a minimum depth of 18 inches and allowed to stand for a sufficient duration to allow the surficial ground water to stabilize. From each test pit, a 2x6x18-inch pedon was extracted from the observation pit wall, split in half, measured, compared to Munsell Soil Color Charts (Munsell Color 2012), and photographed with scale. Soil logs and photographs were recorded on the field data form.

Plot location data was collected using an Arrow 100 Unit. The Arrow 100 unit utilizes Satellite Based Augmentation System and Wide Area Augmentation System, which employs a system of satellites and ground stations that provide Global Positioning System (GPS) signal corrections and centimeter precision. During data collection activities, an iPAD equipped with the Collector application was used and connected to the GPS units through Bluetooth.

4.2.2 Waterbody Identification

Potentially jurisdictional waterbodies include streams, lakes, and ponds. Potentially jurisdictional streams were identified in the field by the presence of a continuous channel that exhibited evidence of frequent or reoccurring water flow such as a defined bed, bank, and an OHWM (USACE 2007). Potentially jurisdictional open waterbodies (e.g., ponds and lakes) were identified in the field by the presence of an OHWM and the relatively permanent presence of standing water (USACE 2007).

Physical and biological characteristics of the identified streams were evaluated to determine flow regime, USACE Waters Type (USACE 2007), and Cowardin classifications (Cowardin et al. 1979). Physical characteristics evaluated included, but were not limited to, channel morphology, substrate size and type, and base flow conditions. Biological characteristics evaluated included, but were not limited to, the presence of fish, aquatic macroinvertebrates, and vegetation rooted within the OHWM.

USACE Water Types were investigated using methods for the identification of WOTUS consistent with the newly published final rule including the guidance issued in the January 2025 National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams and the Rapid Ordinary High Water Mark Field Identification Fact Sheet (USACE 2025).

4.3 ANTECEDENT PRECIPITATION TOOL

The Antecedent Precipitation Tool (APT) determines whether antecedent precipitation is normal by comparing rainfall data from the previous three months to the same three-month period over a rolling 30-year record. Specifically, the APT calculates antecedent precipitation following the "combined method" which uses 30-day rolling totals and weighting factors. Using daily rainfall data, the APT calculates 30-day rolling totals for each of the three 30-day periods preceding the observation date. For each period, a weighted condition value is assigned by determining whether the 30-day total falls within, above, or below the 30th to 70th percentiles of precipitation total from the same date range over the preceding 30 years. The weighted condition values are then summed across the three 30-day periods to calculate a final precipitation normalcy index score. An index score of 9 or lower indicates antecedent precipitation conditions are drier than normal; a score of 10-14 indicates conditions are normal; and a score of 15 or higher indicates conditions are wetter than normal (USEPA 2022).

5.0 DESKTOP REVIEW RESULTS

5.1 WETLANDS AND STREAMS

Based on the desktop review of the available aerial imagery, NWI data, and NHD data, six sites were identified as potential aquatic resources within the Project Area (Figure 3).

5.2 FLOODPLAINS

The entire Project Area was identified as Zone X, meaning that these areas have minimal flood hazard (FEMA 2025). The floodplain data is presented on Figures 3.

5.3 SOIL PROJECT

During the review of the soil survey data, eight soil types were found within the Project Area (Figure 2). Of these, one was identified as a hydric soil. Table 1 lists the NRCS soils along with soil descriptions and hydric ratings.

Table 1: NRCS Soils Identified in the Project Area

Soil Map Unit	Soil Description	Hydric Rating	Acreage in Project Area	Percent of Project Area
154A	Flanagan silt loam, 0 to 2 percent slopes	No	5.9	7.4%
171A	Catlin silt loam, 0 to 2 percent slopes	No	1.8	2.3%
171B	Catlin silt loam, 2 to 5 percent slopes	No	6.1	7.6%
221B2	Parr silt loam, 2 to 5 percent slopes	No	3.7	4.6%
356A	Elpaso silty loam, 2 to 5 percent slopes, eroded	Yes	42.3	53.0%
512B	Danabrook silt loam, 2 to 5 percent slopes	No	19.7	24.8%
667A	Kaneville silt loam, 0 to 2 percent slopes	No	0.0	0.0%
667B	Kaneville silt loam, 2 to 5 percent slopes	No	0.3	0.3%

6.0 FIELD PROJECT RESULTS

6.1 SITE VEGETATION

All of the vegetation encountered in the Project Area consisted of species typical of agricultural fields. Detailed vegetation observations for the potential wetland locations investigated are documented on the field data forms in Appendix A.

6.2 SITE HYDROLOGY

Land within the region has been subjected to historic modification of landform and hydrology. Most of the modification was conducted to facilitate agricultural production by alteration and/or realignment of the drainage contours and stormwater discharge.

The index score, as determined by the APT, for May 7, 2025, was a 9, indicating drier than normal conditions for the Project Area at the time of the field reconnaissance. The results of the APT are presented in Appendix B.

Detailed hydrology observations for the data points were documented on the field data forms presented in Appendix A.

6.3 WETLANDS AND STREAMS

There were six locations within the Project Area that exhibited wetland or stream characteristics identified during the desktop review. These areas were subsequently investigated during the field survey conducted during the mobilization May 7, 2025. Field surveys confirmed that none of the locations met the criteria for classification as a potential aquatic resource.

The results of the aquatic resources survey are summarized in Table 2 and are shown on Figures 4.

Table 2: Tetra Tech Summary of Investigated Areas

Location ID	Facility Type	Feature Type	Cowardin Classification	Jurisdictional	Area Description
40-5-20-5	Within AOI	Swale	None	NA	Farmed swale.
40-5-20-7	Within AOI	Agricultural Field	None	NA	Nothing evident, farmed effectively drained.
40-5-20-8	Within AOI	Agricultural Field	None	NA	Nothing evident, farmed effectively drained.
40-5-20-9	Within AOI	Agricultural Field	None	NA	Nothing evident, farmed effectively drained.
40-5-20-10	Within AOI	Agricultural Field	None	NA	Nothing evident, farmed effectively drained.
40-5-20-11	Within AOI	Terrace	None	NA	Terrace in an agricultural field.

NA – Not Applicable

7.0 CONCLUSION AND RECOMMENDATIONS

7.1 WETLANDS AND OTHER WATERS OF THE U.S.

Tetra Tech biologists conducted field investigations of the Project Area on May 7, 2025. During the initial desktop evaluation, six sites were identified that exhibited potential wetland or stream characteristics. These sites are summarized in Table 2 and shown on Figure 4.

Of the six locations investigated during the field reconnaissance, it is Tetra Tech's opinion that none of the locations would meet the definitive criteria for a WOTUS.

It is Tetra Tech's professional opinion that none of the sites will be classified as jurisdictional by the USACE – Rock Island District; however, only the USACE can make that determination. The sites investigated did not possess positive wetland indicators for vegetation, hydrology, or hydric soils; the characteristics of a stream such as OHWM or defined bed and bank; or they did not meet the current definition of a WOTUS as interpreted by the current federal and state guidance described in Section 2.0.

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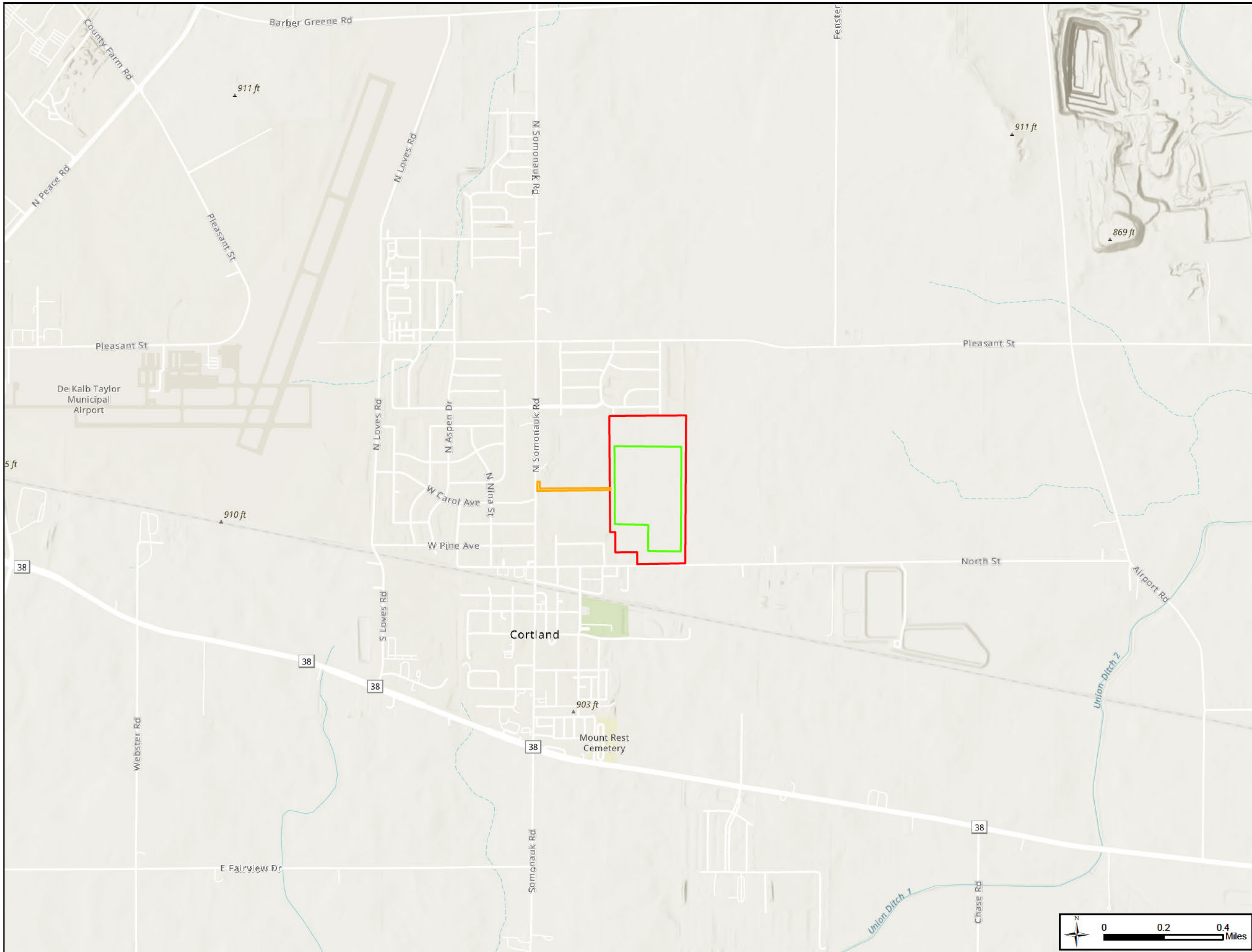
FIGURES



Legend

- Buildable Area
- TROW
- Project Area

TETRA TECH

Project Vicinity Map

Grand Parade Solar Project
Dekalb County
Illinois

Figure 1

6/25/2025

Legend

- POI
- Access Road
- Underground TROW
- Buildable Area
- TROW
- Project Area

NRCS Soils

- Not Hydric
- Hydric

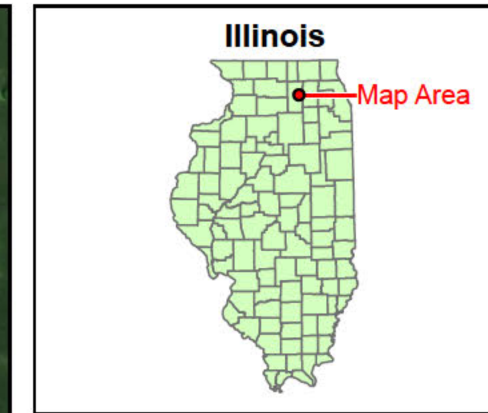
TETRA TECH

NRCS Soils Map

Grand Parade Solar Project
DeKalb County
Illinois

Figure 2

6/25/2025



Legend

- POI
- Access Road
- Underground TROW
- Buildable Area
- TROW
- Project Area
- NWI Wetlands

FEMA Flood Zone

- Zone X

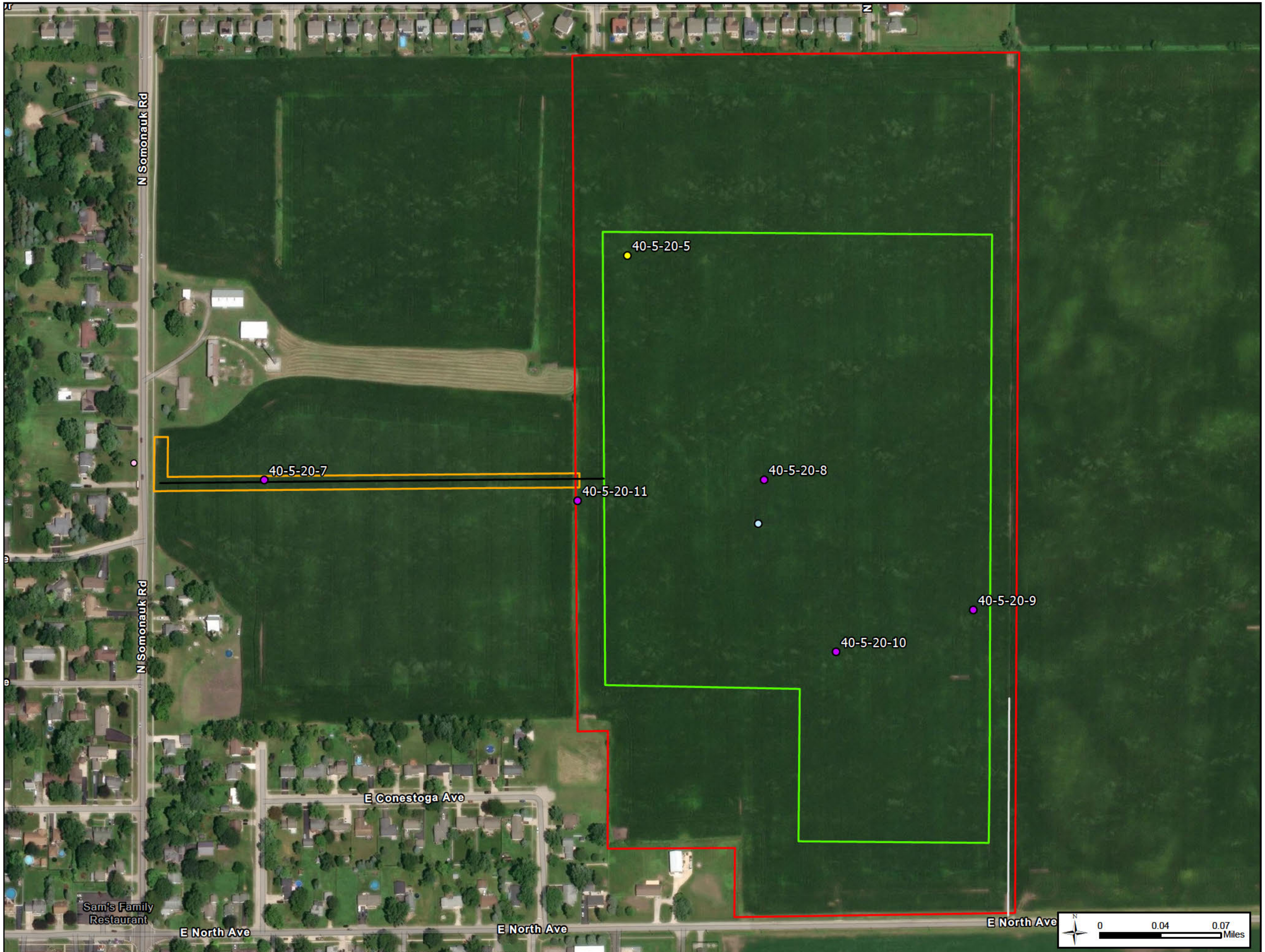
TETRA TECH

NWI Wetlands and FEMA Flood Hazard Map

Grand Parade Solar Project
DeKalb County
Illinois

Figure 3

5/14/2025



Legend

- Non Wetland Data Point
- Swale Point
- Tile Drain System
- POI
- Access Road
- Underground TROW
- Buildable Area
- Project Area
- TROW

TETRA TECH

Aquatic Resources Delineation Map

Grand Parade Solar Project
DeKalb County
Illinois

Figure 4

5/14/2025

APPENDIX A
FIELD DATA FORMS

Location

40-5-20-5

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Midwest Region** See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	***OMB Control #: 0710-0024, Exp: 9/30/2027*** ***Requirement Control Symbol EXEMPT:*** ***(Authority: AR 335-15, paragraph 5-2a)***

Project/Site: Grand Parade Solar DER Project City/County: DeKalb Sampling Date: 05/07/2025

Applicant/Owner: Apex Clean Energy State: IL Sampling Point: 40-5-20-5

Investigator(s): Tetra Tech, Inc. Section, Township, Range: S20 T40N R5E

Landform (hillside, terrace, etc.): Swale Local relief (concave, convex, none): concave

Slope (%): 2 Lat: 41.927888 Long: -88.683350 Datum: WGS 84

Soil Map Unit Name: Elpaso silty clay loam, 0 to 2 percent slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation___, Soil___, or Hydrology___ significantly disturbed? Are “I X Yes X No ___

Are Vegetation___, Soil___, or Hydrology___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling p X

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes ___	No X	

Remarks:
Based on the data collected, this location does not meet the definition of a wetland as defined by the USACE 1987 Wetland Delineation manual and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Zea mays*	65	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	65	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	65	x 5 =	325
Column Totals:	65 (A)		325 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)
Vegetation dominated by non-hydrophytes. Photos: View East (Page 1), View West (Page 1).

SOIL

Sampling Point: 40-5-20-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Iron Monosulfide (A18)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
Soil profile not investigated at this location. Location does not exhibit evident signs of a typical hydrophytic vegetative community nor did it possess primary or secondary indicators of hydrology; therefore, hydric soil was assumed not to be present and a soil pit was not required.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Areial Photos

Remarks:
Farmed swale.

Location 10-5-20-5: View East 5/7/2025

Location 10-5-20-5: View West 5/7/2025

Location

40-5-20-7

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Midwest Region** See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	***OMB Control #: 0710-0024, Exp: 9/30/2027*** ***Requirement Control Symbol EXEMPT:*** ***(Authority: AR 335-15, paragraph 5-2a)***

Project/Site: Grand Parade Solar DER Project City/County: DeKalb Sampling Date: 05/07/2025

Applicant/Owner: Apex Clean Energy State: IL Sampling Point: 40-5-20-7

Investigator(s): Tetra Tech, Inc. Section, Township, Range: S20 T40N R5E

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): none

Slope (%): 1 Lat: 41.925996 Long: -88.687413 Datum: WGS 84

Soil Map Unit Name: Flanagan silt loam, 0 to 2 percent slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "I X Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling p X

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes ___	No X	

Remarks:
Based on the data collected, this location does not meet the definition of a wetland as defined by the USACE 1987 Wetland Delineation manual and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
=Total Cover			
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
=Total Cover			
Herb Stratum (Plot size: 5')			
1. *Zea mays*	65	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
=Total Cover	65		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
=Total Cover			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	65	x 5 =	325
Column Totals:	65 (A)		325 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)
Vegetation dominated by non-hydrophytes. Photos: View North (Page 1), View South (Page 1).

SOIL

Sampling Point: 40-5-20-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Iron Monosulfide (A18)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Iron-Manganese Masses (F12)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______
Depth (inches): ______

Hydric Soil Present? Yes ___ No X

Remarks:
Soil profile not investigated at this location. Location does not exhibit evident signs of a typical hydrophytic vegetative community nor did it possess primary or secondary indicators of hydrology; therefore, hydric soil was assumed not to be present and a soil pit was not required.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Areial Photos

Remarks:
Nothing Evident, Farmed Through = Site shows no evident signs of a typical hydrophitic vegetative community, and is presently or has recently been farmed.

Location 10-5-20-7: View North 5/7/2025

Location 10-5-20-7: View South 5/7/2025

Location

40-5-20-8

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Midwest Region** See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	***OMB Control #: 0710-0024, Exp: 9/30/2027*** ***Requirement Control Symbol EXEMPT:*** ***(Authority: AR 335-15, paragraph 5-2a)***

Project/Site: Grand Parade Solar DER Project City/County: DeKalb Sampling Date: 05/07/2025

Applicant/Owner: Apex Clean Energy State: IL Sampling Point: 40-5-20-8

Investigator(s): Tetra Tech, Inc. Section, Township, Range: S20 T40N R5E

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): none

Slope (%): 1 Lat: 41.926014 Long: -88.681807 Datum: WGS 84

Soil Map Unit Name: Elpaso silty clay loam, 0 to 2 percent slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "I X Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling p X

Hydrophytic Vegetation Present? Yes ___ No X Hydric Soil Present? Yes ___ No X Wetland Hydrology Present? Yes ___ No X	**Is the Sampled Area within a Wetland?**	**Yes** ___ **No** X

Remarks:
Based on the data collected, this location does not meet the definition of a wetland as defined by the USACE 1987 Wetland Delineation manual and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Zea mays*	65	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	65	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	65	x 5 =	325
Column Totals:	65 (A)		325 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)
Vegetation dominated by non-hydrophytes. Photos: View North (Page 1), View South (Page 1).

SOIL

Sampling Point: 40-5-20-8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Iron Monosulfide (A18)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Iron-Manganese Masses (F12)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
Soil profile not investigated at this location. Location does not exhibit evident signs of a typical hydrophytic vegetative community nor did it possess primary or secondary indicators of hydrology; therefore, hydric soil was assumed not to be present and a soil pit was not required.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Areial Photos

Remarks:
Nothing Evident, Farmed Through = Site shows no evident signs of a typical hydrophitic vegetative community, and is presently or has recently been farmed.

Location 10-5-20-8: View North 5/7/2025

Location 10-5-20-8: View South 5/7/2025

Location

40-5-20-9

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Midwest Region** See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	*OMB Control #: 0710-0024, Exp: 9/30/2027* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: Grand Parade Solar DER Project City/County: DeKalb Sampling Date: 05/07/2025
Applicant/Owner: Apex Clean Energy State: IL Sampling Point: 40-5-20-9
Investigator(s): Tetra Tech, Inc. Section, Township, Range: S20 T40N R5E
Landform (hillside, terrace, etc.): rolling Local relief (concave, convex, none): concave
Slope (%): 5 Lat: 41.924931 Long: -88.679456 Datum: WGS 84
Soil Map Unit Name: Danabrook silt loam, 2 to 5 percent slopes NWI classification: NA
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "I X Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling p X

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks:
Based on the data collected, this location does not meet the definition of a wetland as defined by the USACE 1987 Wetland Delineation manual and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Zea mays*	65	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	65	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	65	x 5 =	325
Column Totals:	65 (A)		325 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)
Vegetation dominated by non-hydrophytes. Photos: View North (Page 1), View South (Page 1).

SOIL

Sampling Point: 40-5-20-9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Iron Monosulfide (A18)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Iron-Manganese Masses (F12)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No X

Remarks:
Soil profile not investigated at this location. Location does not exhibit evident signs of a typical hydrophytic vegetative community nor did it possess primary or secondary indicators of hydrology; therefore, hydric soil was assumed not to be present and a soil pit was not required.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___
Water Table Present? Yes ___ No X Depth (inches): ___
Saturation Present? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Areial Photos

Remarks:
Nothing Evident, Farmed Through = Site shows no evident signs of a typical hydrophitic vegetative community, and is presently or has recently been farmed.

Location 10-5-20-9: View North 5/7/2025

Location 10-5-20-9: View South 5/7/2025

Location

40-5-20-10

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Midwest Region** See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	*OMB Control #: 0710-0024, Exp: 9/30/2027* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: Grand Parade Solar DER Project City/County: DeKalb Sampling Date: 05/07/2025

Applicant/Owner: Apex Clean Energy State: IL Sampling Point: 40-5-20-10

Investigator(s): Tetra Tech, Inc. Section, Township, Range: S20 T40N R5E

Landform (hillside, terrace, etc.): rolling Local relief (concave, convex, none): concave

Slope (%): 1 Lat: 41.924576 Long: -88.680992 Datum: WGS 84

Soil Map Unit Name: Elpaso silty clay loam, 0 to 2 percent slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "I X Yes X No ___

Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling p X

Hydrophytic Vegetation Present? Yes ___ No X Hydric Soil Present? Yes ___ No X Wetland Hydrology Present? Yes ___ No X	**Is the Sampled Area within a Wetland? Yes ___ No** X

Remarks:
Based on the data collected, this location does not meet the definition of a wetland as defined by the USACE 1987 Wetland Delineation manual and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0).

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Zea mays*	65	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	65	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	65	x 5 =	325
Column Totals:	65 (A)		325 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)
Vegetation dominated by non-hydrophytes. Photos: View North (Page 1), View South (Page 1).

SOIL

Sampling Point: 40-5-20-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Iron Monosulfide (A18)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:
Soil profile not investigated at this location. Location does not exhibit evident signs of a typical hydrophytic vegetative community nor did it possess primary or secondary indicators of hydrology; therefore, hydric soil was assumed not to be present and a soil pit was not required.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Areial Photos

Remarks:
Nothing Evident, Farmed Through = Site shows no evident signs of a typical hydrophitic vegetative community, and is presently or has recently been farmed.

Location 10-5-20-10: View North 5/7/2025

Location 10-5-20-10: View South 5/7/2025

Location

40-5-20-11

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Midwest Region See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	*OMB Control #: 0710-0024, Exp: 9/30/2027* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: Grand Parade Solar DER Project City/County: DeKalb Sampling Date: 05/07/2025

Applicant/Owner: Apex Clean Energy State: IL Sampling Point: 40-5-20-11

Investigator(s): Tetra Tech, Inc. Section, Township, Range: S20 T40N R5E

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): convex

Slope (%): 10 Lat: 41.925832 Long: -88.683898 Datum: WGS 84

Soil Map Unit Name: Danabrook silt loam, 2 to 5 percent slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "I X Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling p X

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes ___	No X	

Remarks:
Based on the data collected, this location does not meet the definition of a wetland as defined by the USACE 1987 Wetland Delineation manual and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0).

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Bromus inermis*	60	Yes	UPL
2. *Asclepias syriaca*	5	No	UPL
3. *Taraxacum officinale*	10	No	UPL
4. *Poa pratensis*	25	Yes	UPL
5.			
6.			
7.			
8.			
9.			
10.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	100	x 5 =	500
Column Totals:	100 (A)		500 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)
Vegetation dominated by non-hydrophytes. Photos: View North (Page 1), View South (Page 1).

SOIL

Sampling Point: 40-5-20-11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Iron Monosulfide (A18)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Iron-Manganese Masses (F12)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
Soil profile not investigated at this location. Location does not exhibit evident signs of a typical hydrophytic vegetative community nor did it possess primary or secondary indicators of hydrology; therefore, hydric soil was assumed not to be present and a soil pit was not required.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Areial Photos

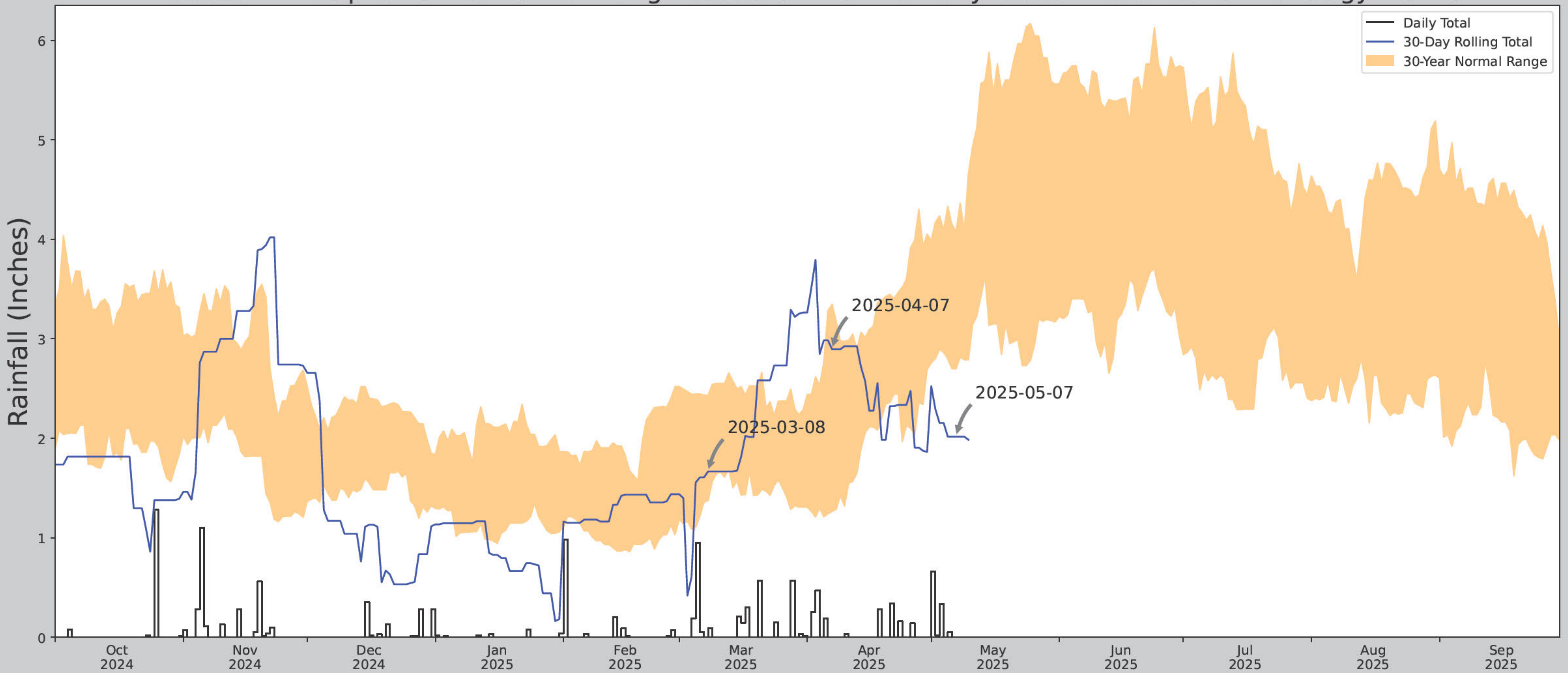
Remarks:
Terrace in an agricultural field.

Location 10-5-20-11: View North 5/7/2025

Location 10-5-20-11: View South 5/7/2025

APPENDIX B
ANTECEDENT PRECIPITATION TOOL RESULTS

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	41.926046, -88.681732
Observation Date	2025-05-07
Elevation (ft)	872.402
Drought Index (PDSI)	Mild drought (2025-04)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2025-05-07	2.698032	4.077953	2.015748	Dry	1	3	3
2025-04-07	1.264173	3.346457	2.893701	Normal	2	2	4
2025-03-08	1.372441	2.430315	1.665354	Normal	2	1	2
Result							Drier than Normal - 9

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
DE KALB	41.9342, -88.7756	877.953	4.858	5.551	2.213	11208	89
DE KALB 1.4 W	41.9292, -88.7791	881.89	0.39	3.937	0.177	9	0
DE KALB 0.7 SW	41.9227, -88.7607	878.937	1.104	0.984	0.498	22	1
DE KALB 0.3 ENE	41.9324, -88.747	895.997	1.475	18.044	0.69	3	0
DE KALB 3.2 WNW	41.9441, -88.8108	892.06	1.934	14.107	0.898	15	0
DE KALB 3.5 WSW	41.9109, -88.8139	887.139	2.543	9.186	1.168	1	0
SHABBONA 5 NNE	41.8431, -88.8514	860.892	7.404	17.061	3.458	64	0
GENOA 2SW	42.0742, -88.7075	826.116	10.286	51.837	5.162	31	0

US Army Corps of Engineers

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Cultural Resources Desktop Review

Proposed Grand Parade Solar Project DeKalb County, Illinois

November 2023

Prepared for

Grand Parade Solar, LLC
[redacted]

Prepared by

TETRA TECH

390 Union Blvd., Suite 400
Lakewood, CO 80228

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1.0 INTRODUCTION

The purpose of this report is to describe the results of a site file search and literature review for the proposed Grand Parade Solar Project (Project) in DeKalb County, Illinois. For the purposes of this review, the term "Project Area" refers to the area encompassing the solar arrays, access roads, collection lines, transmission line and associated infrastructure (Figures 1 and 2). The site file search for any archaeological resources covered a 1-mile buffer around the Project Area and this area is referred to as the "Research Area." The Research Area is located within the Sycamore (1988) quadrangle. The legal locations of the Research Area are listed in Table 1.

Table 1 Legal Locations of the Grand Parade Solar Research Area

Township	Range	Section(s)
40 North	5 West	16-21, 28-30

2.0 CULTURAL RESOURCES REGULATIONS AND POTENTIAL APPLICABILITY

A number of State and Federal laws intended to protect cultural resources may apply to the proposed Project. The following laws may apply to actions on Federal, State, or private land on which Federal actions (e.g., Federal permitting or funding) are required, or where state and local statutes apply:

Federal: National Historic Preservation Act (NRHP)- Section 106

The principal federal law addressing cultural resources is the NHPA of 1966, as amended (16 United States Code, Section 470), and its implementing regulations (36 Code of Federal Regulations [CFR], Part 800) that primarily address compliance with Section 106 of the NHPA. Section 106 of the NHPA (16 United States Code, Section 40 et seq.) requires federal agencies to take into account the effects of their proposed actions on properties eligible for inclusion in the NRHP. The regulations describe the process for identifying and evaluating historic properties; for assessing the effects of federal actions on historic properties; and for consulting with interested parties, including the State Historic Preservation Office (SHPO) and Indian tribes, to develop measures that would avoid, reduce, or minimize adverse effects on cultural resources. The term "historic properties" refers to cultural resources that are listed on or meet specific criteria of eligibility for listing on to the NRHP.

Section 106 of the NHPA describes the procedures for identifying and evaluating eligible properties, for assessing the effects of federal actions on eligible properties, and for consulting to avoid, reduce, or minimize adverse effects. Eligible properties need not be formally listed on the NRHP. As part of the Section 106 process, federal agencies are required to consult with the SHPO. Section 106 does not require the preservation of historic properties, but it ensures that the decisions of federal agencies concerning the treatment of these places result from meaningful considerations of cultural and historic values and of the options available to protect the properties. If a project is an undertaking, as defined by 36 CFR 800.3, it is subject to Section 106 and consideration under other federal requirements.

State: The Illinois State Agency Historic Resources Protection Act (ISAHRPA)– State 707

Enacted in 1990, this statute requires agencies of Illinois government to notify the IHPA of any undertaking that may adversely affect an archaeological property (historic or prehistoric). Portions of the Project intersect the IAS Archaeological Resource Potential Area and General Land Office (GLO) locations. Since the Project will disturb more than 1 acre, the Project will require an Illinois EPA SWPPP permit and archaeological and architectural surveys will be required for these intersecting areas pursuant to the issuance of the permit.

The Illinois Human Skeletal Remains Protection Act – 20 ILCS 3440 and 17 IAC 4170

Passed in 1989, this law protects all unregistered graves, grave artifacts, and grave markers (including prehistoric mounds) that are over 100 years old and are not located in a cemetery that is registered with the State Comptroller's Office under the Cemetery Care Act (760 ILCS 100, 1998). It offers protection from all disturbances including, but not limited to, excavation (including cultivation), vandalism, removal, defacement, or desecration in any way. Violations of the law are charged as either misdemeanor or felony offenses and are subject to criminal penalties. This law is administered by the Illinois Historic Preservation Division, and it is their preference that graves or cemeteries be undisturbed and preserved in place.

Local: No known county or municipal statues pertain to the Project at this time. Local requirements may arise as a part of the Project's Conditional Use Permit.

3.0 RESULTS OF DESKTOP REVIEW FOR CULTURAL RESOURCES

Tetra Tech, Inc. (Tetra Tech) conducted a site file search and literature review through the Illinois State Archaeological Survey (ISAS) Cultural Resource Management (CRM) Report Archive database and the Illinois Historic Preservation Agency (IHPA) Historic Architectural Resources Geographic Information System (HARGIS) database on November 22, 2023. These databases include records of all archaeological investigations that have been conducted and all cultural resources (prehistoric and historic archaeological sites and historic architectural resources) that have been previously recorded within the Research Area. In addition, records of properties listed on the National Register of Historic Places (NRHP), and cemeteries present in the Research Area are included in the CRM report and HARGIS databases.

The GIS data provided for the Research Area was produced by digitizing site locations from an electronic map. Although the digitization of these locations may be accurate, it is based upon data collected from multiple sources over a 40-year span and therefore may not accurately represent a given site location or site boundary's full extent.

3.1 Previously Conducted Cultural Resource Investigations

Within the Research Area, 14 investigations have been undertaken (Table 2). The prior investigations consist of cultural resource surveys for airport, municipal development, pipeline, cell tower and solar energy projects. None of the prior investigations occurred within the Project Area.

Table 2 Site File Search Data: Previously Conducted Archaeological Investigations within the Grand Parade Solar Research Area

Manuscript Number	Author(s)	Title	Year
100	Theodore J. Karamanski and David J. Keene	Archaeological Resource Survey of Proposed Courtland Gardens Site, Courtland, Illinois	1981
3972	Mary L. Simon	Dekalb Taylor Municipal Airport Project No. 90A-16-1421	1991
9616	Thomas E. Berres	A Phase I Archaeological Survey of the Dekalb-Taylor Municipal Airport, DeKalb County, Illinois	1999
12638	Thomas E. Berres	A Phase I Archaeological Survey of the 78 Acre Cortland Project, DeKalb County, Illinois	2000
13241	Kevin P. McGowan	Guardian Pipeline Project: Late Fall 1999 Investigations in Illinois	2001
13940	K. Shane Vanderford, Buck Farley and Andrew Briick	DeKalb Taylor Municipal Airport City of DeKalb	2003
14109	Meghan M. Moran and Richard B. Johnson	A Phase I Archaeological Reconnaissance Survey of the 141.48 Acre Hartmann Property in Cortland Township, DeKalb County, Illinois	2004
14704	Kevin P. McGowan	Archaeological Reconnaissance of the 250-Acre Olsen/Perkins Property Development in DeKalb County, Illinois	2004
15043	Kevin P. McGowan and Marcy A. Prchal	Archaeological Reconnaissance of the 350-Acre Anest Property in Dekalb County, Illinois	2005
16076	Kevin P. McGowan	Telecommunications Facility T-Mobile - Farm	2007
16708	Jennifer Pearce	DeKalb Municipal Airport Improvements	2007
23424	Rachel L. Klabacka-Williams	A Phase I Archaeological Survey of the Proposed Cortland Solar Site LLC., Cortland Township, DeKalb County, Illinois	2019
90266	Unknown	No Information Available Online	2002
99999	Unknown	No Information Available Online	ND

3.2 Previously Identified Cultural Resources

Nine cultural resources have been previously documented within the Research Area (Table 3). The resources consist of eight archaeological sites and one cemetery. None of the cultural resources are located within the Project Area.

Table 3 Site File Search Data: Previously Recorded Archaeological Resources within the Grand Parade Solar Research Area

Site Number	Time Period	Site Type	NRHP Eligibility
11D113	Prehistoric	Lithic Flake and Tool Scatter	Eligible
11D159	Prehistoric	Lithic Flake and Tool Scatter	Not Eligible
11D160	Prehistoric	Lithic Flake Scatter	Not Eligible
11D289	Historic	Farmstead	Not Eligible
11D294	Historic	Domestic Debris Scatter	Not Eligible
11D295	Historic	Domestic Debris Scatter	Not Eligible
11D296	Prehistoric	Biface Fragment	Not Eligible
11D297	Historic	Farmstead	Not Eligible

3.3 Cemeteries and Historic Architectural (HARGIS) Structures

One historic cemetery (556, Mound Rest Cemetery) was identified within the Research Area during the records search. The cemetery is not located within the Project Area.

No Illinois HARGIS sites were identified within the Project or Research Areas.

3.4 National Register of Historic Places Properties and Districts

No NRHP properties or districts are located within the Project or Research Areas. The closest NRHP property is the Haish Memorial Library (80004319), located in the town of DeKalb approximately 3.2 miles west of the Project Area.

3.5 Potential Historic Resources and General Land Office Plat Review

The search of the IHPA's GLO plats of DeKalb County (1860, 1868, 1871, 1892, 1905, 1929, 1939 and 1957) depicted that 95 potential historic resources are located within the Research Area. These potential resources include a two railroad grades and 93 farm and residence related structures. None of the 95 potential resources are located within the Project Area.

4.0 SUMMARY

The majority of the Project Area has been impacted by modern and historic farming activities. The IHPA website shows that the Project Area is not within the Archaeological Resource Potential Area and no GLO locations or previously recorded cultural resources are located within the Project Area. No federal nexus exists for the Project and the Project is not subject to a cultural resource survey based on state requirement. However, an architectural survey of above ground structures within 0.5 miles surrounding the Project may need to be conducted.

Tetra Tech recommends that a detailed Unanticipated Discovery Protocol (UDP) be developed and implemented in the event that an unanticipated discovery of archaeological resources or human remains occurs. The UDP should detail the specific protocols and notifications required by the Illinois Human Skeletal Remains Protection Act for discovery of human remains or previously unknown archeological resources.

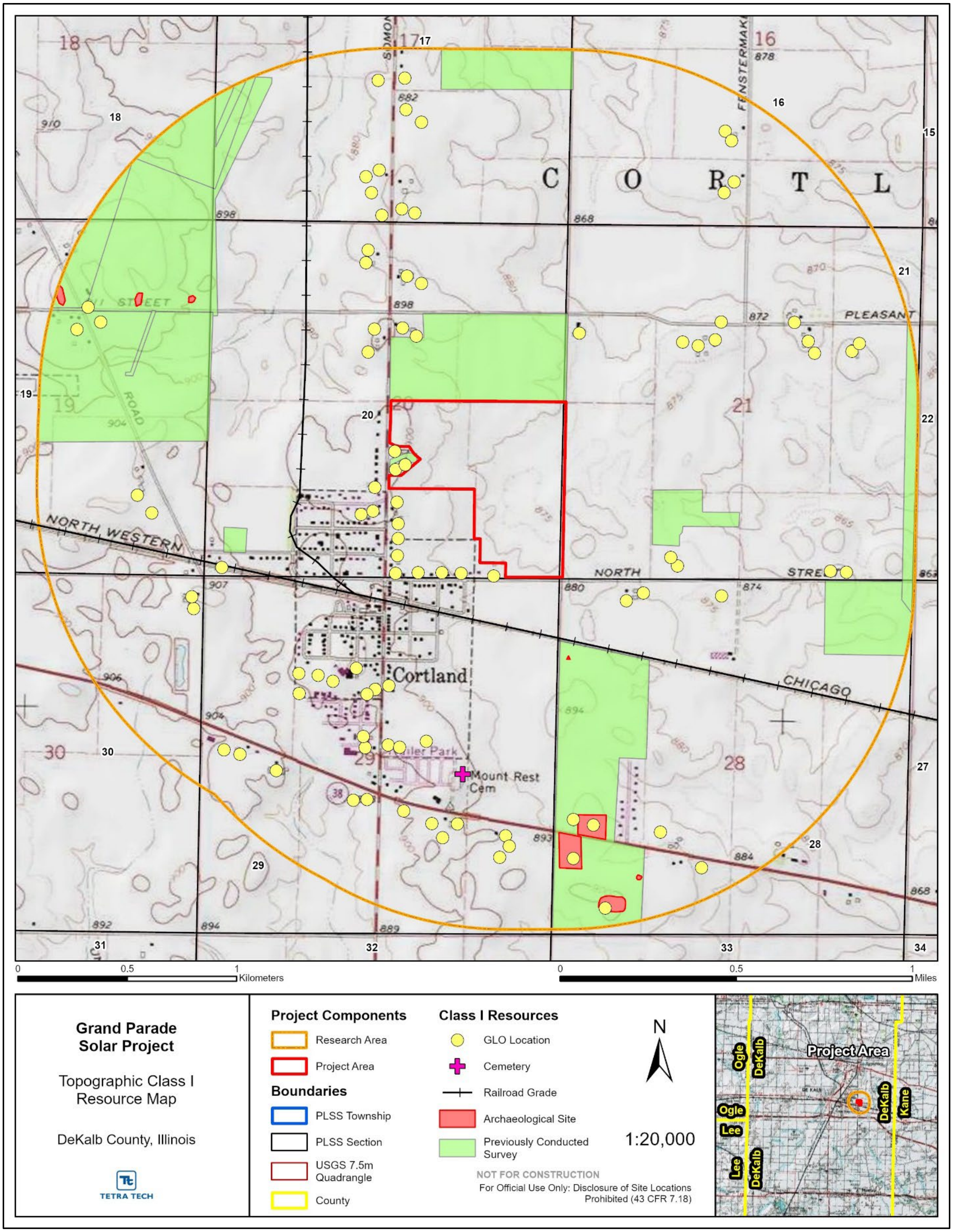


Figure 1 USGS Topographic Map of Previously Recorded Cultural Resources within the Grand Parade Solar Research Area.

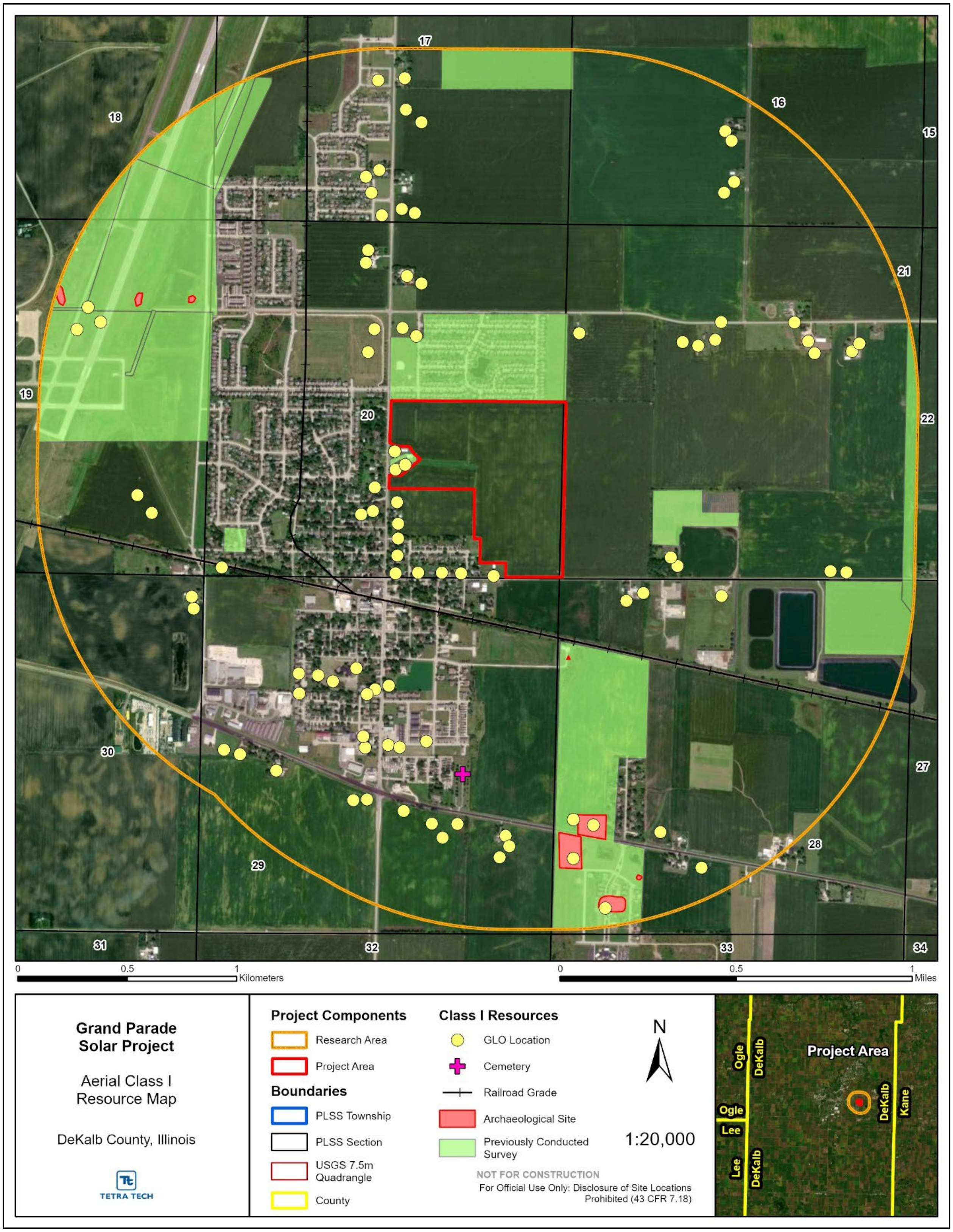


Figure 2 USGS Aerial Imagery Map of Previously Recorded Cultural Resources within the Grand Parade Solar Research Area.

Exhibit Q - IPaC

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

DeKalb County, Illinois

Local office

Illinois-Iowa Ecological Services Field Office

(309) 757-5800
(309) 757-5807

Illinois & Iowa Ecological Services Field Office
1511 47th Ave
Moline, IL 61265-7022

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Indiana Bat Myotis sodalis Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered
Tricolored Bat Perimyotis subflavus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Birds

NAME	STATUS
Whooping Crane Grus americana No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/758	EXPN

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
Eastern Prairie Fringed Orchid Platanthera leucophaea Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/601	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

Additional information can be found using the following links:

- Eagle Managment https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season ( )

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

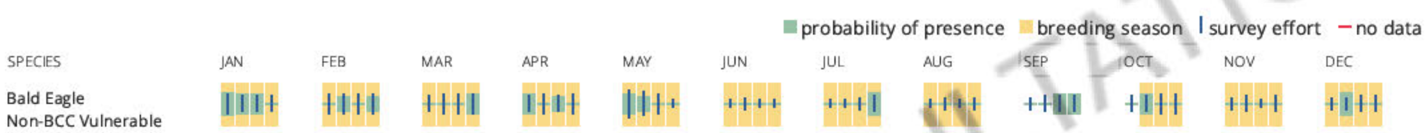
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds

- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/ documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Golden-plover *Pluvialis dominica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Pectoral Sandpiper *Calidris melanotos* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Short-billed Dowitcher *Limnodromus griseus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence( )

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

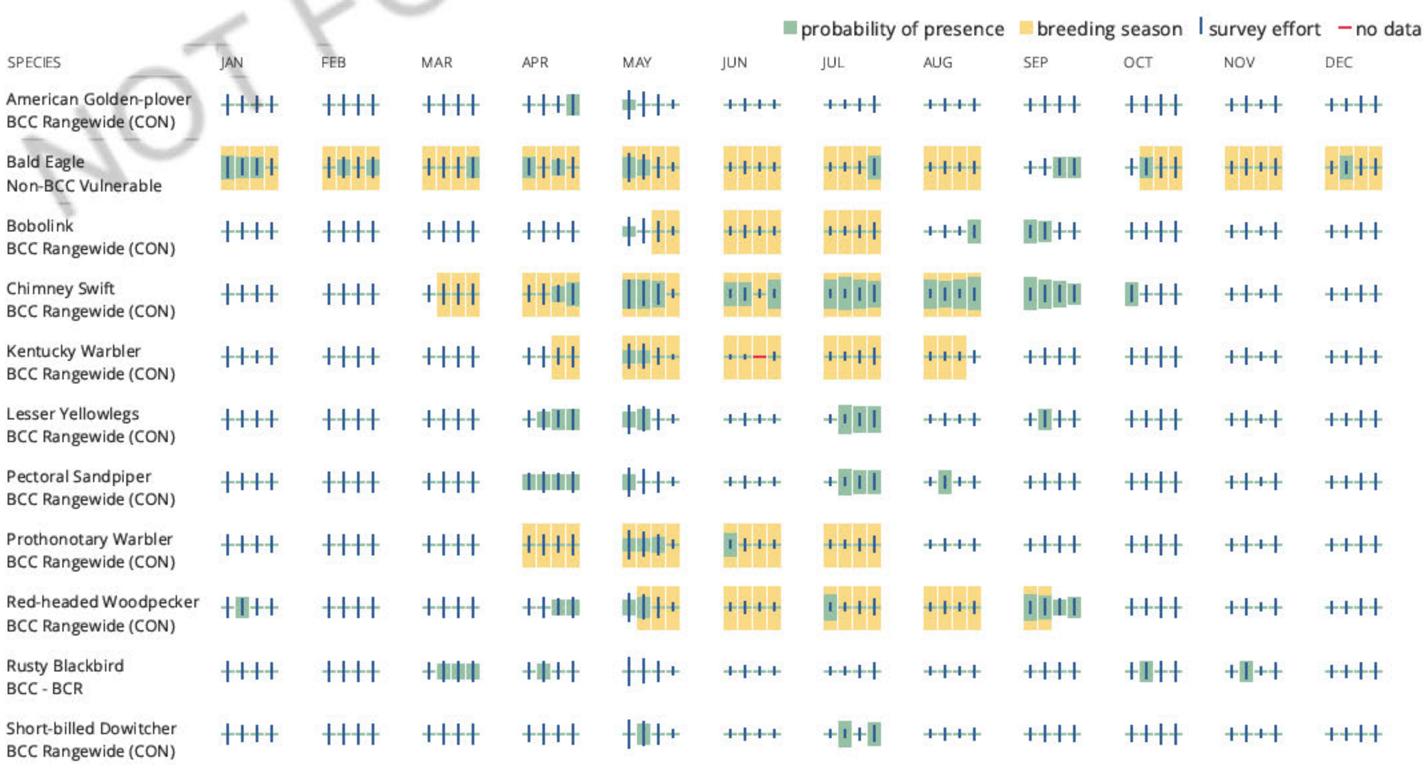
Breeding Season ( )
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort( )
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data ( )
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Wood Thrush
BCC Rangewide (CON)

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Exhibit R – FEMA Firmette

Legend

- POI
- Access Road
- Underground TROW
- Buildable Area
- TROW
- Project Area
- NWI Wetlands

FEMA Flood Zone

- Zone X

TETRA TECH

NWI Wetlands and FEMA Flood Hazard Map

Grand Parade Solar Project
DeKalb County
Illinois

Figure 3

5/14/2025

Exhibit S – EcoCAT

EcoCAT
Ecological Compliance Assessment Tool

Applicant: Grand Parade Solar, LLC
Contact: Cady Merrick
Address: [redacted]

IDNR Project Number: 2606030
Date: 09/29/2025
Alternate Number: 2405942

Project: Grand Parade Solar
Address: E. North Avenue, Cortland

Description: Solar Farm

Natural Resource Review Results

Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location.

Consultation is terminated. This consultation is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: DeKalb

Township, Range, Section:
40N, 5E, 20

IL Department of Natural Resources Contact
Adam Rawe
217-785-5500
Division of Ecosystems & Environment

Government Jurisdiction
Town of Cortland
Brandy Williams
59 S Somonauk Road
Cortland, Illinois 60112

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

Terms of Use

By using this website, you acknowledge that you have read and agree to these terms. These terms may be revised by IDNR as necessary. If you continue to use the EcoCAT application after we post changes to these terms, it will mean that you accept such changes. If at any time you do not accept the Terms of Use, you may not continue to use the website.

1. The IDNR EcoCAT website was developed so that units of local government, state agencies and the public could request information or begin natural resource consultations on-line for the Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act, and Illinois Interagency Wetland Policy Act. EcoCAT uses databases, Geographic Information System mapping, and a set of programmed decision rules to determine if proposed actions are in the vicinity of protected natural resources. By indicating your agreement to the Terms of Use for this application, you warrant that you will not use this web site for any other purpose.

2. Unauthorized attempts to upload, download, or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act.

3. IDNR reserves the right to enhance, modify, alter, or suspend the website at any time without notice, or to terminate or restrict access.

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EcoCAT operates on a state of Illinois computer system. We may use software to monitor traffic and to identify unauthorized attempts to upload, download, or change information, to cause harm or otherwise to damage this site. Unauthorized attempts to upload, download, or change information on this server is strictly prohibited by law.

Unauthorized use, tampering with or modification of this system, including supporting hardware or software, may subject the violator to criminal and civil penalties. In the event of unauthorized intrusion, all relevant information regarding possible violation of law may be provided to law enforcement officials.

Privacy

EcoCAT generates a public record subject to disclosure under the Freedom of Information Act. Otherwise, IDNR uses the information submitted to EcoCAT solely for internal tracking purposes.

Ecological Compliance Assessment Tool

EcoCAT Receipt

Project Code 2606030

APPLICANT	DATE
Grand Parade Solar, LLC Cady Merrick [redacted]	9/29/2025

DESCRIPTION	FEE	CONVENIENCE FEE	TOTAL PAID
EcoCAT Consultation	$ 125.00	$ 2.81	$ 127.81

TOTAL PAID $ 127.81

Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702
217-785-5500
dnr.ecocat@illinois.gov

Exhibit T – Vegetation Management Plan

Vegetation Management Plan: Agrivoltaics for the Proposed Grand Parade Solar Project Town of Cortland, DeKalb County, Illinois

Prepared for:

Grand Parade Solar, LLC

Prepared by:

Western EcoSystems Technology, Inc.

400 West 7th Street, Suite 200
Bloomington, Indiana 47404

October 24, 2025

WEST

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REPORT REFERENCE

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1 INTRODUCTION

Grand Parade Solar, LLC (Grand Parade Solar) is developing the proposed Grand Parade Solar Project (Project) in the Town of Cortland, DeKalb County, Illinois (Figure 1). Western EcoSystems Technology, Inc. (WEST), completed a Vegetation Management Plan: Agrivoltaics (VMPA) to assist Project planning. The objectives of the VMPA are to provide guidance and direction on the implementation and maintenance of agricultural activities and pollinator-friendly habitat within the Project area in accordance with the Illinois Power Agency (IPA)'s Illinois Shines Program (Program). This document is intended to satisfy the agrivoltaics requirements for Part I of the Program application by including a description of the planned agricultural use and its viability at the site, and the intent of Grand Parade Solar to use agrivoltaics throughout the lifetime of the renewable energy credit (REC) contract (IPA 2024). This document is also intended to satisfy the pollinator-friendly habitat requirements for Part I of the Program application by demonstrating the commitment of Grand Parade Solar to implement pollinator-friendly habitat consistent with the Pollinator-Friendly Solar Site Act (PFSSA; 525 Illinois Compiled Statutes [ILCS] 55 [2018]).

The purpose of this VMPA is to provide Grand Parade Solar with technical guidance in facilitating landowner-driven agrivoltaics activities within the fenced area occupied by photovoltaic (PV) panels in the Project area (Project footprint). The Program defines agrivoltaics as "[a] dual-use configuration where solar photovoltaic energy generation and agricultural production (crops, livestock, and livestock products as defined by 505 ILCS 5/3.02), are directly integrated and simultaneously producing within the footprint of the project" (IPA 2024).

2 PROJECT DESCRIPTION

The Project area encompasses 116.9 acres (ac; 45.7 hectares [ha]) in DeKalb County, Illinois, located 0.4 miles (mi; 0.6 kilometers [km]) northeast of the town of Cortland, IL (Figure 1). The Project will be a 5-megawatt, alternating current, photovoltaic power energy generation system. Construction is expected to start in late 2026 with commercial operations beginning in early 2027. The Project footprint infrastructure falls within an area totaling 29.47 ac (11.93 ha; Figure 2). The Project will have a ground-mount tracking (with back tracking) PV system with single-axis tracking with bifacial modules (Appendix A). The panels will be mounted 5.25 feet (ft; 1.60 meters [m]) above the ground and will allow an expected 68% of sunlight to reach the ground beneath them. The minimum clearance from the panel's bottom edge to the ground will be at least 18 inches (46 centimeters [cm]), and the maximum clearance from the top edge to the ground will be 8.5 ft (2.6 m). Panels will be spaced in rows ~15.75 ft (4.80 m) apart. The solar panels will be set back 15–20 ft (five to six m) from the security fence.

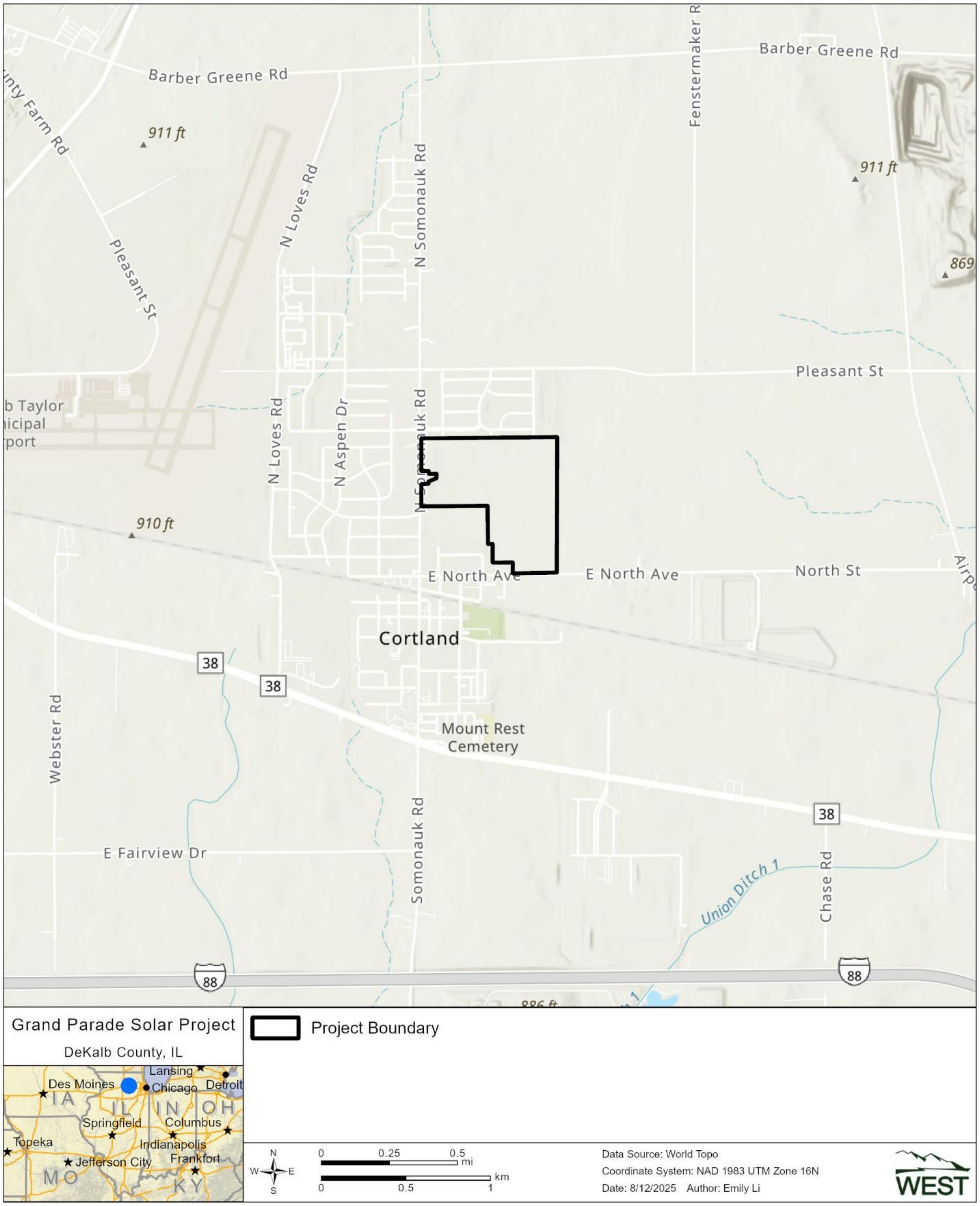

Figure 1. Location of the Grand Parade Solar Project and Town of Cortland in DeKalb County, Illinois.

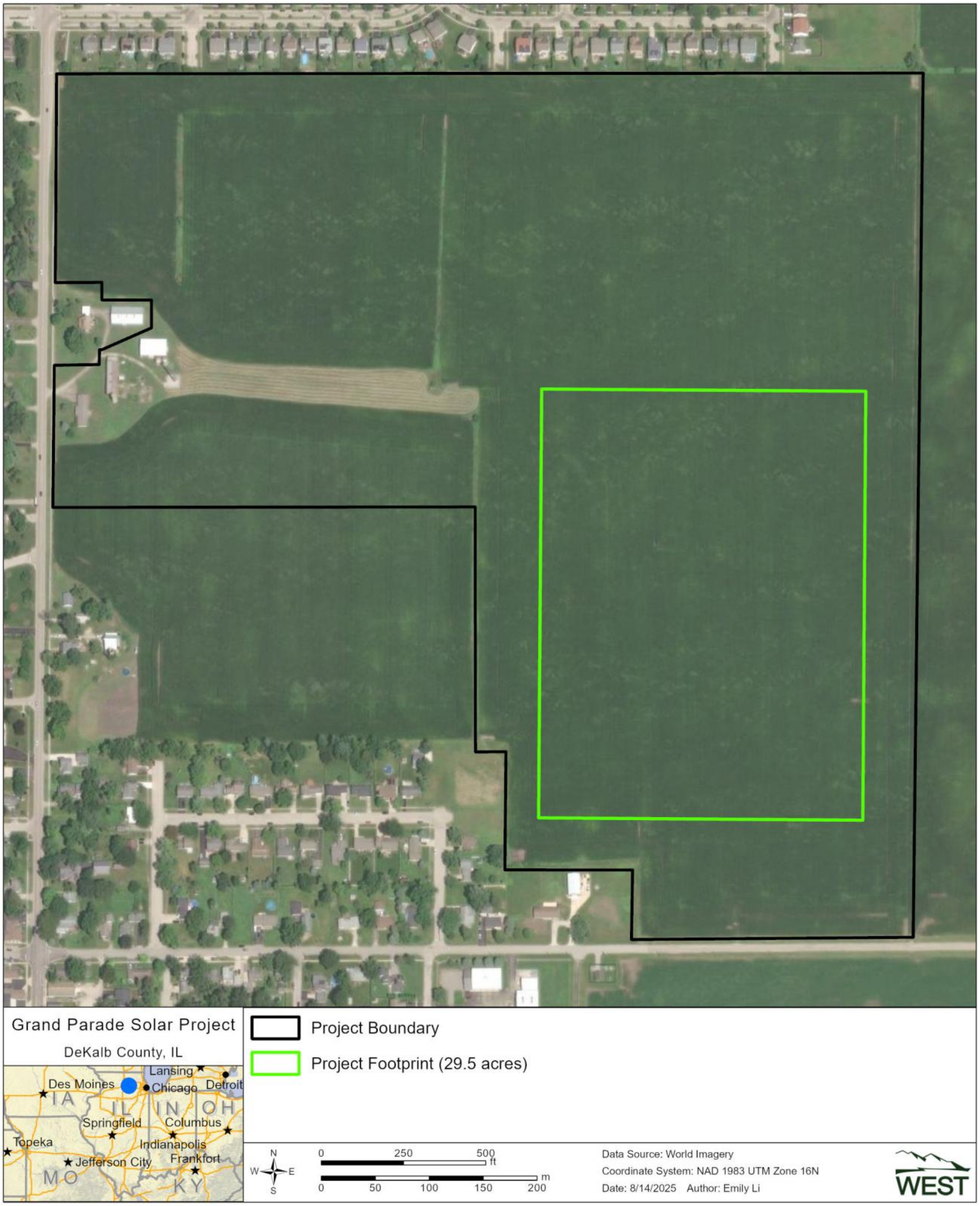

Figure 2. Project footprint for the Grand Parade Solar Project in the Town of Cortland, DeKalb County, Illinois.

2.1 Project Area

The entirety of the Project area falls in the Central Corn Belt Plain Level III Ecoregion (US Environmental Protection Agency [USEPA] 2012, 2013). The Central Corn Belt Plain is a glaciated plain once dominated by prairies but is now mostly made up of agricultural land. The Central Corn Belt Plains include concentric morainal ridges, and the hydrology has been severely altered in its conversion to agricultural land throughout the 19th century (Woods et al. 2006). The topography within the Project area is relatively flat, with elevations ranging from 875–902 ft (267–275 m).

Vegetation in the Project area and surrounding region was historically characterized by level uplands dominated by tallgrass prairie. Scattered groves of trees and marshes occurred in level uplands, with river valleys and moraines also being forested (Woods et al. 2006). Most native vegetation in this ecoregion has been replaced with agriculture comprising crops primarily including soybean (*Zea mays*), corn (*Glycine max*), and wheat (*Triticum* spp.). Additionally, the land within the Central Corn Belt Plain is used for livestock grazing. Within the Project area, most of the land is currently used for corn and soybean production (Grand Parade Solar 2025).

According to the National Land Cover Database (2024), cultivated crops account for most of the land cover within the Project area (95.7%; Table 1) and developed land (4.3%) is present along the edges of the Project area.

Table 1. Land cover types, acreage, and percent composition within the Grand Parade Solar Project, Town of Cortland, DeKalb County, Illinois.

Land Cover Type	Acres	Percent Composition
Cultivated Crops	110.7	95.7
Developed[1]	5.0	4.3
Total	**115.7**	**100**

[1] Developed land cover types may include open space, low intensity, medium intensity, and high intensity.

Source: National Land Cover Database 2024.

2.2 Soils and Hydrology

Soil types in the Project area can help determine what plant species are appropriate to include in seed mixes. The US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS; 2024b) Web Soil Survey designates nine soil map units and six soil series within the Project area comprising both hydric (45.7%) and non-hydric (54.3%) soils. The soil series include the hydric soil series Elpaso silty clay loam and the non-hydric soil series Flanagan silt loam, Catlin silt loam, Parr silt loam, Danabrook silt loam, and Kaneville silt loam (USDA NRCS 2024b). Elpaso silty clay loam is a poorly drained soil and comprises 45.7% of the Project area. Flanagan silt loam is somewhat poorly drained and represents 5.9% of the Project area. Catlin silt loam, Parr silt loam, Danabrook silt loam, and Kaneville silt loam are all moderately well drained and constitute the remaining 48.4% of the Project area. Catlin silt loam, Parr silt loam, Danabrook silt loam, and Kaneville silt loam have naturally slow infiltration rates. Flanagan silt loam has a slow infiltration rate when drained but a very slow infiltration rate when undrained. Elpaso silty clay loam has a moderate infiltration rate when drained but a very slow infiltration rate when undrained. Both Flanagain silt loam and Elpaso silty clay loam have a very slow infiltration rate when undrained, but, when drained, have slow and moderate infiltration rates, respectively. Slow infiltration rates can lead to ponding and periods of soil inundation, and soils with slow and very slow infiltration rates also have high runoff potential (USDA NRCS 2016, 2024b).

Vegetation in areas with non-hydric soils must tolerate dryer soil conditions, while vegetation in areas with hydric soils must be able to tolerate wet growing conditions. Therefore, seed mixes for the Project will include species that tolerate drier soil and upland conditions, as well as species that tolerate moist and wet conditions.

A review of the US Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI; 2024) and US Geological Survey (USGS; 2024) National Hydrography Dataset (NHD) indicates that a freshwater emergent wetland constitutes 0.2 ac (0.1 ha) of the Project area, but no other wetlands or water bodies are present at the Project.

3 REGULATORY BASIS FOR THE VEGETATION MANAGEMENT PLAN: AGRIVOLTAICS

This VMPA provides a strategy for vegetation management in compliance with the Program (IPA 2024), the PFSSA (525 ILCS 55), the Illinois Noxious Weed Law (505 ILCS 100), the Illinois Exotic Weed Act (525 ILCS 10), the Project's Agricultural Impact Mitigation Agreement (AIMA, Grand Parade Solar, LLC) pursuant to the Renewable Energy Facilities Agricultural Impact Mitigation Act (505 ILCS 147) and the Town of Cortland Zoning Regulations for Solar Energy Systems Ordinance (Town of Cortland Zoning Regulations Section 9-3-34). These regulations are described in more detail below.

3.1 Illinois State Laws

3.1.1 Illinois Shines Program

Illinois Shines is a state-administered program offering incentives to facilitate the development of new PV distributed generation and community solar projects by issuing REC delivery contracts (IPA 2024). Grand Parade Solar will collaborate with the landowner whose property falls within the Project area to implement agrivoltaics on site following all Program rules. IPA defines agrivoltaics as "[a] dual-use configuration where solar photovoltaic energy generation and agricultural production (crops, livestock, and livestock products as defined by 505 ILCS 5/3.02) are directly integrated and simultaneously producing within the footprint of the project."

3.1.2 Illinois Pollinator-Friendly Solar Site Act

The Illinois General Assembly passed the PFSSA in 2018. New solar projects receive preliminary recognition as a pollinator-friendly solar site if the projects obtain a score of 85 or higher on the *Illinois Planned Pollinator Habitat on Solar Sites Scorecard* (Planned Pollinator Scorecard; Illinois Department of Natural Resources [IDNR] 2024c; Appendix B) during the development process. The Planned Pollinator Scorecard was developed by the IDNR and the University of Illinois

Department of Entomology to guide vegetation management that supports native pollinators. Once vegetation is established (after three years) and once every five years thereafter, solar project managers must complete the *Illinois Established Pollinator Habitat on Solar Sites Scorecard* (Established Pollinator Scorecard) to maintain the pollinator-friendly recognition (IDNR 2024c, 2024d). A vegetation management plan (VMP) must be submitted with the Planned Pollinator Scorecard and renewed every time an Established Pollinator Scorecard is submitted (IDNR 2023b). The IDNR has provided guidelines for developing a VMP and establishing and managing vegetation on pollinator-friendly solar sites (IDNR 2023a, 2023b). This VMPA is intended to fulfill the requirements of the VMP and may be submitted by Grand Parade Solar to IDNR with the Planned Pollinator Scorecard.

3.1.3 Ecological Compliance Assessment Tool

The IDNR Ecological Compliance Assessment Tool (EcoCAT; 2024a) is used to review project plans prior to disturbance and determine if there is likely to be a risk of impact to sensitive natural resources in the proposed Project area. A formal EcoCAT request for consultation with IDNR is made when a project may be authorized, funded, or performed by a federal agency, state agency, or local government. Once a formal EcoCAT is completed and no notable resources are identified within the Project area, no further consultation with IDNR is required. If notable resources are identified an IDNR staff member will be assigned to review the generated information and provide consultation on project plans regarding guidelines set by the Illinois Endangered Species Protection Act, the Illinois Natural Areas Preservation Act, and the Interagency Wetland Policy Act of 1989.

Grand Parade Solar submitted a formal EcoCAT request to IDNR on October 19, 2023, to fulfill the consultation requirements of the Illinois Endangered Species Protection Act (1972) and the Illinois Natural Areas Preservation Act (525 Illinois Compiled Statues (ILCS) 30 1963), as well as partial requirements of the PFSSA (Section 3.1.2) and CSES ordinance (Section 3.2.1).

3.1.4 Standard Solar Agricultural Impact Mitigation Agreement

The AIMA is an agreement between the energy facility owner and the Illinois Department of Agriculture (IDOA) to ensure the integrity of any agricultural land that is impacted by the construction and decommissioning of a commercial solar energy facility. Compliance with the AIMA includes best efforts to separately preserve and restore topsoil and subsoil; remove all rocks greater than three inches (eight cm) that are found within the uppermost 42 inches (107 cm) of soil; prevent excessive erosion following a Stormwater Pollution Prevention Plan; and ensure weed control and that all vegetation within the proposed boundaries is properly maintained. Within a year following the end of the solar facility’s useful life, the facility owner will file with the county a Decommissioning Plan and provide financial assurance to cover all costs of removing all solar related equipment and facilities (IDOA Bureau of Land and Water Resources [BLWR] 2019).

3.1.5 Illinois Noxious and Exotic Weed Laws

Noxious weeds in the state are regulated by the Illinois Noxious Weed Law (505 ILCS 100 [2018]) and Illinois Exotic Weed Act (525 ILCS 10 [1963]; Appendix C). The Illinois Noxious Weed Law identifies nine weeds with detrimental effects on public health, agriculture, or livestock production that must be controlled on public and private property. The intent of the Illinois Exotic Weed Act is to limit the spread of non-native plants that naturalize and degrade natural resources and state-listed species. These plants cannot be sold or propagated without a permit from the IDNR. Property owners do not need to control plants on the Illinois Exotic Weed Act list but should take actions to prevent their spread, such as mowing or removing flowerheads before the plants set seed.

3.2 Local Laws

3.2.1 Town of Cortland Regulations

The Town of Cortland Zoning Regulations for Solar Energy Systems Ordinance requires native perennial vegetation to be installed and maintained throughout the entire Project area, including under and around PV arrays. The purpose of the vegetation is to prevent "soil erosion and the management of stormwater run-off". Additionally, topsoil shall not be removed from the Project area, except for remediation purposes. Finally, a natural resource review consultation is required to be submitted through the IDNR EcoCat program (Section 3.1.3).

Upon decommissioning, the Town of Cortland zoning administrator must be notified in writing of the end of the Project's operation. Within 120 consecutive calendar days of such notice, or 120 consecutive calendar days following the end of operations, whichever comes first, Grand Parade Solar will restore all soil and vegetation within the Project area.

4 POLLINATOR-FRIENDLY HABITAT

Grand Parade Solar intends to implement restoration practices at the Project following PFSSA requirements with the purpose of certifying the Project as a "pollinator-friendly solar site". This VMPA provides guidance for vegetation management at the Project footprint consistent with the Planned Pollinator Scorecard. A pollinator-friendly solar site prioritizes restoration of a perennial vegetation cover using native species to create a diverse habitat that supports pollinator biodiversity. Diverse, native habitat supports pollinators while also providing food and cover for other wildlife, reducing wind and surface soil erosion, reducing the need for pesticide and fertilizer, and improving soil by increasing organic matter and water-holding capacity (Adamson et al. 2017, Illinois Farm Bureau 2023).

Seeding mixes for a solar site's pollinator-friendly habitat planting should include a mix of native wildflowers, bunch grasses, and/or shrubs/trees to provide a variety of food and habitat resources for wildlife. The Planned Pollinator Scorecard recommends that 75% of the seed mix should be native forbs, with at least three species blooming in each season—spring, summer, and fall—to provide long-term food sources for native pollinators. Additional grass and/or shrub/tree species should be planted for native bee nesting, though constructed habitat for bees, such as nesting boxes, may also be incorporated. Short- and long-term maintenance strategies for the Project area will prioritize pollinator conservation. Insecticides will not be used within areas selected for pollinator-friendly habitat, and extra measures can be taken to prevent chemical drift from adjacent areas (IDNR 2019, 2024c; Appendix B).

4.1 Management Goals and Objectives

According to the IDNR guidelines, VMPs must include recommended species, seeding rates and dates, establishment procedures, and management actions, such as erosion control, noxious weed control, mowing, and chemical spot treatment, to protect beneficial pollinator plants (IDNR 2023b). Additionally, restoring perennial vegetation in the Project area will improve water quality for the surrounding area by increasing infiltration and reducing stormwater runoff.

4.2 Site Preparation

Site preparation is essential for successful establishment of perennial pollinator habitat. Site preparation includes activities to remove noxious weeds and prepare the soil for seeding.

4.2.1 Weed Management

Following the Illinois Noxious Weed Law, all species listed on the Illinois noxious weed species list found onsite shall be controlled and managed. Species listed under the Illinois Exotic Weed Act are recommended for control to reduce their negative impact on biodiversity. Noxious weeds in the Project area will be treated with mechanical, chemical, and/or cultural control methods prior to seeding or planting. Noxious weed seeds can persist in the soil for years and may germinate earlier and grow faster than desired groundcover species. Noxious weed control will prevent the establishment of tall-growing noxious plants that will shade PV arrays as well as outcompete planted species, shading out desired species in the PV arrays. When considering controlling species on the exotic weed list, priority should be given to exotic weed species that occur within or near areas that will be impacted by the Project, as the weed populations in these areas of disturbance will have the greatest potential for spread and/or expansion.

General weed management practices are undertaken to mitigate the impacts of known noxious and exotic weeds, as well as emerging threats and localized weedy species that may inhibit establishment of pollinator and forage seed mixes. These general practices fall into broad categories such as cultural and mechanical tactics that when adopted provide favorable outcomes in the short- and long-term. Successful noxious and exotic weed management will be accomplished by the development of a management plan involving the principles of Integrated Vegetation Management (IVM). The goal of IVM is to promote desirable, low-growing plant communities that will resist invasion by using appropriate, environmentally sound, and cost-effective control methods (USEPA 2008).

Control and treatment of noxious and exotic weeds prior to, during, and after helps to reduce the occurrence of noxious and exotic weeds and promote the establishment of desirable vegetation during the life of the Project. Spot mowing or non-selective, non-persistent herbicide application by spot-spraying is recommended for smaller weed infestations to reduce the amount and cost of chemicals used. For large weed infestations, broadcast spraying may be a more feasible option for control. Broadcast spraying increases the opportunity for off-target herbicide drift (North Dakota State University 2022). Therefore, care should be taken to apply herbicides during periods of low wind, when a temperature inversion is unlikely, and by adjusting spray nozzles to apply larger droplets, which are less likely to be carried by wind or to volatize. Registration with

FieldWatch is recommended to comply with preventing drift to off-site crops and adjacent lands (FieldWatch, Inc. 2024). With proper application, off-target damage and residual effects from herbicide use will be minimal, and the effects are not expected to outweigh the ecological benefits of controlling and containing noxious and exotic weeds.

In addition to implementing targeted treatment to known infestations of noxious and exotic weeds within the Project area, additional areas may require similar treatment in the future where new weeds emerge from the seed bank as a result of soil disturbance. Licensed herbicide applicators (IDOA 2024) should be able to distinguish target noxious and exotic weed species from non-target species, as well as prevent off-target damage to desirable vegetation. Timing treatments based on the appropriate growth stage of target weed species is essential for effective management. Regular site inspections will provide guidance on treatment timing and location, depending on the species present.

Best management practices (BMPs) to implement during all Project phases include (Bethke et al. 2020):

- Minimize ground disturbance.
- Revegetate as much disturbed area as possible.
- Treatment or control noxious and exotic weed infestations within and adjacent to areas that will be impacted during construction and operations Phases.
- Remove the plants or seed heads, at a minimum, from the site, if mature noxious and exotic plant seeds are present on plants at the time of treatment.
- Use certified weed-free mulch or straw.
- Wash construction equipment before entering the work site and maintain portable wash stations for vehicles and equipment. Place such wash stations at staging areas or at designated entrance/exit locations.
- Salvage topsoil in areas where grading is necessary, such as long term and frequently used access roads. This should occur during grading operations, and the topsoil should be preserved in stockpiles for later use on site in areas that will be revegetated. All topsoil disturbed in the Project area should be salvaged, stockpiled, and managed to reduce erosion (IDOA BLWR 2019, USDA NRCS 2020).
- Train onsite staff during Project operation to identify species on the Illinois Noxious and Exotic Weed lists to promote successful, long-term exotic plant weed management.
- Follow label instructions when handling and applying herbicides.

4.2.2 Seedbed Preparation

Tilling is not recommended because it can stimulate weed growth in certain times of the year, disrupt soil structure, destroy beneficial fungal and bacterial networks, and increase erosional capacity (Al-Kaisi et al. 2024, USDA NRCS 2024a). If soil is not compacted, minimal seedbed preparation is needed when using a no-till drill. For broadcast seeding, topsoil scarification will need to be performed before the ground can be firmed using a cultipacker or similar equipment.

Testing the soil for compaction prior to initiating any decompaction activities is critical because mechanical decompaction, especially if done so repeatedly, can result in extensive damage to soil structure, soil organic matter, and formation of soil aggregates (Magdoff and van Es 2021). This can impede restoration of plant communities on the site. Decompaction can be measured using a penetrometer (IDOA BLWR 2015; Magdoff and van Es 2021).

Where subsoil is too heavily compacted to allow plant root growth (e.g., laydown yards, roads), soil decompaction may be necessary (Magdoff and van Es 2021). In this case, during dry periods, soil should be de-compacted through deep tillage methods such as deep strip tillage (IDOA BLWR 2015). Soil, especially the Elpaso silty clay loam that is present within the Project area and has a clay component, can harden and become difficult to work with if de-compacted immediately before or after rain events. Therefore, soil work should be avoided if rain is predicted and delayed until soil dries following a precipitation event.

4.2.3 Erosion Control

BMPs for erosion control during construction include minimizing soil disturbance, stabilizing soils with a cover crop, smoothing eroded gullies or washes prior to seeding, perimeter screening, stabilized construction entrances, and stockpile management (Association of Illinois Soil and Water Conservation Districts 2013; USEPA 2024b). Prior to perennial vegetation seeding, cover crops will be terminated at the late flowering stage with a rolling-crimping machine to create a protective mulch on the soil surface.

4.3 Seed Selection

Planting species that are native to the region and adapted to the microclimate/environmental conditions of the Project is a key part of establishing successful pollinator habitat that meets the requirements of the PFSSA. The Project's location and soil conditions should be considered when selecting species for the seed mixes. Other attributes of each species should be considered as well when designing the seed mixes, such as plant height when compiling a seed mix for under the PV arrays. WEST has provided a proposed array seed mix for under the panels and between panel rows, a proposed buffer seed mix to be considered for use outside of the array areas but within the Project footprint, and a proposed cover crop mix to provide temporary cover prior to final seeding (Appendix D). The final seed mix design will be determined by Grand Parade Solar and will depend on seed availability from local vendors. WEST has also provided a list of native plant species, including bloom time and wetland indicator status that could be considered for use in design of the final seed mix (Appendix E).

Recommended criteria for species selection that will earn points on the Planned Pollinator Scorecard are included below (IDNR 2019, 2023a):

- Select species that are adapted to local soil and climate conditions based on their wetland indicator statuses. Due to site conditions, species with indicator statuses of facultative upland, facultative, and facultative wetland should be considered for the Project.
- Plant a diverse seed mix to promote biodiversity. Ideally the seed mix should be all native species, with 75% or more being native forbs.

- Ensure that, within the seed mix, at least three species will be blooming in each season—spring, summer, and fall—to ensure seasonal availability of resources for pollinators.
- Source native seed from a vendor that is within 150 mi (241 km) of the Project.

4.3.1 Seed Vendors

Seed source regions are based on geography, landforms, watersheds, and species range distribution. Regional seed sources generally have a broad genetic makeup to best establish and persist in revegetation projects (Tallgrass Prairie Center 2018). Seed should be sourced from local commercial vendors to ensure genetic viability and adaptability to regional climates. Coordination with the seed vendor will determine necessary and appropriate inoculants for species included in the mix.

Contact details for possible vendors are listed in Appendix F. Additional local vendors may be identified in consultation with the Town of Cortland.

4.4 Pollinator Habitat Installation

WEST recommends seeding prior to construction. Vegetation should be installed only when forecasted weather conditions are favorable to successful seeding, planting, and establishment. Drought or excessive moisture may reduce seeding and planting success. Seeding should not occur when excessive wind could carry material beyond the designated work area or result in material not being uniformly applied. No work should take place on unusually wet surface areas. Plugs can be planted in addition to seeding to increase diversity and establish vegetation more quickly. Buffer and array seed mixes should be planted broadly within their respective vegetation zones (Appendix G). Specific seeding locations should be determined by Grand Parade Solar during Project planning to fulfill requirements for the PFSSA while ensuring compatibility with selected agrivoltaics activities (Section 6).

When conditions allow, the preferred seed method is to use a no-till drill, as it minimizes soil disturbance while providing the seed-to-soil contact needed for germination. The flat, gentle topography within the Project footprint allows for the option to use a no-till drill to install seed mixes, which would reduce the seeding rate required and distribute seed uniformly throughout the Project for successful groundcover establishment. Broadcast seeding and/or hydroseeding are other seeding methods to be considered when no-till drilling is not a viable option. Seed should be planted at a rate that will establish into sufficient cover; ideally, these rates are 20 seeds per square ft on slopes equal or less to 5%, or 40 seeds per square ft on slopes greater than 5%. Seeds should be planted to a target depth of 0.13–0.25 inches (0.32–0.64 cm) and may be seeded directly into bare ground. If broadcast seeding, the area should be covered with straw mulch and rolled with a cultipacker or harrow to increase seed-to-soil contact. The seeding window for native forbs and bunch grasses in Illinois is generally November 15 – June 15, regardless of seeding method. Dormant seeding during late fall or early winter (November 1 – March 15) is preferred because native seeds benefit form cold and wet stratification during the winter. Seed may also be planted March 1 – June 15 (USDA NRCS 2021). Unusual temperature and soil moisture conditions may require adjustment to the seeding window at the time of planting

(IDNR 2023a). Seeding windows should be determined after selection of seed mixes and determination of the construction schedule.

4.5 Pollinator Habitat Maintenance

Both short- and long-term maintenance will play an essential role in the successful establishment and persistence of the pollinator habitat. While timing and activities may vary based on environmental conditions and operational needs of the Project, the general guidelines provided by the IDNR and consistent with the PFSSA are recommended (IDNR 2019, 2023a). BMPs for pollinator habitat maintenance include:

- Perform regular mowing of the Project area in the first year, mowing at a height of 10 inches (25 cm) or more to prevent noxious/undesirable weeds from outcompeting the planted seedlings.
- Continue with spot mowing in the first few years after planting to continue weed suppression.
- Minimize use of herbicide, using it only to spot-treat specific areas of noxious/undesirable weeds. Chemicals should only be applied in ideal environmental conditions and by a licensed applicator. Communicate and register with local chemical applicators to prevent drift. Follow label instructions.
- Mow on a rotational basis long-term (Year 3+) to reduce thatch buildup, leaving parts of the habitat cover intact for pollinator and other wildlife use in each year.
- Interseed or deploy plant plugs as necessary to meet the requirements of the Established Pollinator Scorecard (IDNR 2024b).
- Deploy haying or livestock grazing (e.g., sheep, chickens) for management of biomass and thatch removal. These practices should be conducted rotationally such that no more than half the planted area is hayed or grazed in a year to provide habitat refuges for insects. If grazing is used, a separate grazing plan is recommended. See Section 6 for guidelines and BMPs related to implementing grazing and/or haying activities in the Project footprint. Ensure coordination with graziers and farmers before taking action.

5 VEGETATIVE SCREENING

Perennial trees and/or shrubs will be planted along the northern and southern perimeters of the Project area. Vegetative screening materials must be native trees, shrubs, or a combination of the two and must be installed prior to Project activation and operation. Tree and shrub quantities and densities will be refined or adjusted during the engineering and design phase to capture sufficient screening dependent upon the species used (e.g., arborvitae [*Thuja occidentalis]*, if planted in a single row, would be 6-8 ft apart).

Trees and shrubs will be planted, backfilled, and mulched to maintain adequate moisture and weed suppression. Careful planting and maintenance are critical to meet quality and quantity requirements for trees and shrubs and may change depending on the timing of planting. Irrigating vegetative screening plants from one to three years after planting can increase survival rates, especially during drought conditions. Once established, native plants will require little, if any, supplemental irrigation (Peper et al. 2009).

6 AGRIVOLTAICS

6.1 Agrivoltaic Activity Selection and Recommendations

The VMPA incorporates input from Grand Parade Solar and the Project landowner to provide recommended options for agrivoltaics that are compatible for continued use with solar panels. The capabilities and interests of the landowner and Grand Parade Solar to participate in agrivoltaics have informed selection of agrivoltaics activities that are best suited for the Project (Grand Parade Solar 2025).

WEST recommends three rotational agrivoltaics activities for Grand Parade Solar: crop production, sheep grazing, and chicken farming. These activities have been chosen because they can be applied rotationally in the Project footprint to enable continued agricultural use of land beneath the PV canopy and between the PV rows for the lifetime of the REC delivery contract, thus balancing electricity generation and agricultural production per Program requirements (IPA 2024). The recommended activities will assist in managing vegetation while maintaining agricultural productivity and soil health. Agrivoltaics is not currently considered in the Town of Cortland Solar Energy Systems Ordinance. As such, not all agrivoltaics activities described herein comply with the Ordinance as it is currently written. Sheep grazing and chicken farming (Sections 6.2.1 and 6.2.2) could still be carried out in compliance with the Ordinance, provided that native, pollinator habitat is grazed. Crop production (Section 6.2.3) within the Project area would not comply with current Ordinance requirements. However, all potential agrivoltaics options are presented in full below, should the Town amend their Ordinance in the future to include agrivoltaics.

The selected activities are suited for the Project because sheep grazing and chicken farming can be implemented successfully with little specialized equipment and some crops can be grown successfully underneath and between the PV modules, as well as in buffer areas. The panel clearance of 1.5 to 8.5 ft (0.5 to 2.6 m) will accommodate the continuous growth of forage and use by grazing sheep and farming chickens, underneath and between the PV modules. Plant species for grazing forage and crop production were selected to be compatible with the design of the PV system (IPA 2024).

Annual reporting of the agrivoltaics activities for the lifetime of the REC delivery contract will describe the productivity of the sheep and chicken flocks and crops, including pounds (lbs) or numbers of animals grazed, crops harvested, flock size growth, and any potential changes to the sheep or chicken flocks or crop production.

In accordance with the Program (Section 3.1.1), at least 50% of the Project footprint must feature agricultural production at the time of project energization (IPA 2024). WEST recommends that these activities be applied rotationally within the Project such that 50% or greater of the Project footprint produces agricultural goods in each year of the Project. Any agrivoltaics activities adopted in the Project area must comply with the state laws and regulations described above (Section 3).

6.2 Implementation Strategy

6.2.1 Sheep Grazing

WEST proposes sheep grazing as an agrivoltaics activity for the Project based on its compatibility with the Project's design and Program requirements. Sheep grazing offers a way to manage vegetation in the Project footprint while providing a source of income for graziers using the same acreage of land (Beckwith 2021). Proper perimeter fencing can serve as a predator deterrent, the PV panels provide shading and shelter for sheep, and the land used for PV arrays can support pasture species for ruminant nutrition. In turn, grazing sheep on solar sites can be a cost-effective method to control onsite vegetation and prevent panel shading, while providing meaningful benefits for the local environment such as reducing soil erosion (Kochendoerfer and Thonney 2021). Sheep are complete grazers and will graze grasses, legumes, and forbs, reducing the need for mechanical control methods such as mowing.

WEST recommends that a grazier be contracted prior to finalization of the implementation strategy to play an active role in ensuring that site preparation and implementation is compatible with flock needs and the grazier's preferences. A list of graziers that serve the region can be found in Appendix H.

6.2.1.1 Site Preparation

Effective site preparation is critical for the successful integration of sheep grazing in solar facilities. It involves selecting appropriate forage species, planning for and installing necessary infrastructure, and ensuring the environment is conducive to both solar operations and sheep health (see Section 6.2.1.5). Grand Parade Solar has two options for implementing sheep grazing as an agrivoltaics activity within the Project footprint. First, the pollinator habitat area(s) can be used for sheep grazing, which has the dual benefit of agricultural production and management of vegetative biomass and thatch removal consistent with pollinator habitat management (IDNR 2023a). Alternatively, part of the Project footprint could be planted with a traditional and regionally appropriate seed mix or a native forage mix for sheep grazing (see Appendix I). A typical pasture blend for solar sites is 60-70% grasses (two to four species), 30% legumes (two to four species) and up to 10% forbs per square foot (Agrivoltaic Solutions, LLC [AVS] 2020).

Refer to Section 4.2 for guidance on managing weeds, seedbed preparation, and erosion control during the site preparation phase. Grand Parade Solar and the grazier should discuss pesticide and fertilizer use during site preparation to ensure compatibility with grazing activities and other activities, such as pollinator-friendly habitat, within the Project footprint (Vermont Agency of Agriculture, Food & Markets [VAAFM] 2021).

6.2.1.2 Planting

Proper planning and installation of pasture can help ensure successful establishment of forage, and, subsequently, adequate nutrition for sheep throughout the growing season. If pollinator habitat will be grazed, refer to Section 4. If portions of the Project footprint will be planted with seed mixes specifically for sheep grazing, refer to Section 4.4 for guidance on seeding methodology.

6.2.1.3 Flock Introduction

Flock introduction includes determination of the stocking rate. The stocking rate, or the number of animals or number of lbs of total livestock weight (animal unit [AU]) per acre of the entire grazed area, is a crucial factor in managing sheep flocks on pastures. Stocking rate influences pasture health and sustainability, therefore impacting the health and productivity of the flock. One AU equals five ewes and represents the consumption of about 25 lbs of dry matter a day. The stocking rate is listed in AU months (AUMs), or the amount of forage intake of one AU for 30 days. Stocking rates are based on an estimated animal-to-forage balance on land that has good soil drainage, fertility, pH, and appropriate vegetative species for sheep grazing (Main Department of Agriculture, Conservation & Forestry [MDACF] and UMaine Extension 2021). Based on the average of AUMs associated with the soil types on site, the number of sheep that may be grazed within the Project footprint ranges from 2.5–6.0 mature sheep per ac. The exact stocking rate will be determined by the grazier, as stocking rate is also dependent on other factors including the production system used (i.e. winter lambing versus spring lambing), the grazing system used, forage systems used (i.e. perennial pastures versus a combination of perennials and annuals), forage types, and soil type (Umberger 2009).

6.2.1.4 Livestock and Forage Management

Grand Parade Solar and the grazier should collaborate to develop a grazing plan that details grazing within the Project footprint, including whether grazing will be continuous, controlled, or rotational. If rotational grazing is selected for the grazing plan, temporary paddocks may be set up within the Project footprint to control the movement of sheep. Residency time in each paddock would be determined in consultation with the grazier and managed based on the height of the vegetation. Adjustments may be made to the grazing plan as necessary. Ongoing vegetation management can include invasive species control, forage height and quality monitoring, and re-seeding. Soil conservation measures such as prevention of overgrazing may be required.

Each mature sheep is expected to consume approximately 1,898 lbs of forage each year (Filley 2020). Assuming 2.5–6.0 sheep are grazed per ac, consumption of 4,745–11,388 lbs of forage per ac per year. Per Program requirements, annual reporting will include the acreage grazed, flock size growth, and any potential changes for the following year (IPA 2024).

6.2.1.5 Sheep Grazing BMPs for Grand Parade Solar Project

BMP	Management Action	Responsible Party
Forage selection	Select an appropriate number of grass, legume, and forb species that are nontoxic and will provide adequate nutrition for sheep, are adapted to Project region and soils, meet Project height restrictions, and support the ecological integrity of the Project. Avoid incorporating too many species to prevent competition and difficulty of grazing management (Undersander 2016). Grand Parade Solar and the grazier should collaborate on determining the final seed mix design.	Apex & Grazier
Forage Installation	Seed the forage cover prior to construction. Allow forage to establish and reach the target grazing height before rotational grazing can commence (MDACF and UMaine Extension 2021). Forage may require light grazing or mowing beforehand to help vegetation fully establish. Avoid grazing the new planting when soil is wet.	Apex
Supplemental Nutrition	Determine if the quality and quantity of the forage (based on species composition, maturity of the pasture, etc.) meet the nutritional needs of the flock or if supplemental feed sources will need to be incorporated (Umburger 2009).	Grazier
Water Access	Ensure a dependable source of water is present at the Project while sheep are present, and that appropriate methods of delivering water are secured. Watering options include, but are not limited to, wells with livestock waterers, re-fillable tote tanks, or portable water troughs that are moved between paddocks.	Apex & Grazier
Site Access Design	Determine site access requirements (farm roads, fence gates, loading zones, corridors between paddocks, etc.) to navigate livestock trailers and move and pen sheep in different paddocks for rotational grazing while ensuring Operations and Management (O&M) personnel have clear and separate access routes that minimize flock disturbance.	Apex & Grazier
Design Safety & Movement	Determine spacing, alignment, and height requirements of infrastructure that minimize interference to flock and sheepdog movement during unloading/loading, grazing, and rotating between paddocks. Install adequate paddock fencing and perimeter fencing around the Project footprint that will successfully exclude predators (AVS 2020).	Apex & Grazier
Flock Introduction & Stocking	Flock introduction timing should be coordinated between site personnel and the grazier to ensure animal welfare and operational efficiency. Stocking rate should be determined prior to introducing sheep on site (Umburger 2009). Stocking rates will need to be adjusted based on the season and grazing heights; WEST recommends Grand Parade Solar rely on the grazier's expertise to determine optimal stocking rate. The USDA NRCS lists recommendations for stocking rates that may provide additional guidance as well.	Apex & Grazier
Communication	Collaborate regularly with the grazier throughout the planning and operation phases of the Project to ensure additional needs for flock movement and maintenance are met.	Apex & Grazier

6.2.2 Chicken Farming

Integrating chicken farming with solar energy projects presents a sustainable and innovative approach for land use that benefits the chicken farmer (farmer), the solar operator, and the environment. By combining these two activities, farmers can enhance land productivity and create a synergistic environment where PV arrays provide shade for chickens, reducing heat stress, and protecting them from weather and raptors, while the chickens help manage vegetation and pest populations around the panels, reducing maintenance costs. Pastured chickens (i.e., grazing or free-range chickens rather than caged chickens) are the most compatible production system with solar energy sites and may include production of meat and/or eggs.

WEST recommends that a farmer should be contracted prior to finalization of the implementation strategy and should play an active role to ensure that site preparation and implementation is compatible with flock needs and the farmer's preferences. A list of farmers that serve the region can be found in Appendix H.

On February 8, 2022, the USDA Animal Plant Health Inspection Service [APHIS] confirmed the presence of highly pathogenic avian influenza (HPAI) in a commercial flock. As of the time of writing this VMPA (August 15, 2025), there are zero cases of HPAI in commercial flocks within the last 30 days (USDA 2025). However, wild birds continue to spread the virus and will likely increase the rate of spread during the fall and spring migration seasons. Hence, HPAI is a relevant concern for both commercial and hobbyist poultry flocks. Apex should work with the landowner and contracted farmer to weigh the risk of chicken farming as an agrivoltaics practice at the time of implementation.

6.2.2.1 Site Preparation

Effective site preparation will support both the solar PV system and the chicken farming activities and involves selecting appropriate forage species, planning for and installing necessary infrastructure, and ensuring the environment is conducive to both solar operations and flock health (see Section 6.2.2.4). Grand Parade Solar has two options for implementing chicken farming as an agrivoltaics activity within the Project footprint. First, the pollinator habitat area(s) can be used for chicken farming, which has the dual benefit of agricultural production and management of vegetative biomass and thatch removal consistent with pollinator habitat management (IDNR 2023a). Alternatively, part of the Project footprint could be planted with a traditional and regionally appropriate seed mix or a native forage mix for chicken grazing (see Appendix I).

Refer to Section 4.2 for guidance on managing weeds, seedbed preparation, and erosion control during the site preparation phase. Grand Parade Solar and the farmer should discuss pesticide and chemical fertilizer use to ensure compatibility with grazing activities and other activities, such as pollinator-friendly habitat, within the Project footprint (VAAFM 2021).

Shelter is critical for pastured chickens. The kind of chicken enterprise (eggs or meat) will dictate the type of shelter required. Types of housing for pastured chickens include fixed houses, portable houses, and pasture pens in a range of sizes and designs (Fanatico 2006). WEST recommends that Grand Parade Solar work with the farmer to determine suitable shelter designs and sizing for the Project footprint.

Chickens are prey to many animals including birds of prey, snakes, and mammals; therefore, predator control is important. A predator-proof perimeter fence would provide protection from some large mammals, and portable electric fencing can provide an additional layer of protection.

6.2.2.2 Planting

Proper planning and installation of pasture can help ensure successful establishment of forage, and, subsequently, adequate nutrition for chickens throughout the growing season. If pollinator habitat will be grazed, refer to Section 4.

6.2.2.3 Flock Introduction

Flock introduction to the site should be coordinated between Grand Parade Solar and the contracted farmer to ensure animal welfare, operational efficiency, and minimal impact on solar infrastructure. The number and breed of chickens, and primary agricultural product (i.e., meat or eggs), will determine the amount of space needed for grazing and shelters (Bullen et al. 2021). Stocking density for chickens should not exceed 1,000 meat chickens per ac or 400 egg-laying hens per ac on rotated pasture (Fanatico 2006).

6.2.2.4 Chicken Farming BMPs for Grand Parade Solar Project

BMP	Management Action	Responsible Party
Forage Selection	Select an appropriate number of grass, legume, and forb species that are nontoxic and will provide adequate nutrition for chickens, are adapted to Project region and soils, meet Project height restrictions, and support the ecological integrity of the Project. Avoid incorporating too many species to prevent competition and difficulty of grazing management (Undersander 2016). Grand Parade Solar and the farmer should collaborate on determining the final seed mix design.	Apex & Farmer
Forage Installation	Seed the forage cover prior to construction. Allow forage to establish and reach the target grazing height before rotational grazing can commence (MDACF and UMaine Extension 2021). Forage may require light grazing or mowing beforehand to help vegetation fully establish. Avoid grazing the new planting when soil is wet. Chickens prefer short vegetation and may benefit from co-location with sheep to graze forage down to preferred heights. Mechanical mowing could also be used to reduce forage height.	Apex
Supplemental Nutrition	Determine if the quality and quantity of the forage (based on species composition, maturity of the pasture, etc.) meet the nutritional needs of the flock or if supplemental feed sources will need to be incorporated (Bullen et al. 2021).	Farmer
Water Access	Ensure a dependable source of water is present at the Project while chickens are present, and that appropriate methods of delivering water are secured.	Apex & Farmer
Site Access Design	Determine site access requirements (farm roads, fence gates, loading zones, corridors between paddocks, etc.) to navigate livestock trailers and move and pen chickens in different pastures for rotational grazing while ensuring O&M personnel have clear and separate access routes that minimize flock disturbance.	Apex & Farmer
Design Safety & Movement	Determine spacing, alignment, and height requirements of infrastructure that minimize interference to flock movement during unloading/loading, grazing, and rotating between paddocks. Install adequate paddock, shelter/housing, and perimeter fencing around the Project footprint to protect chickens when on site. Predator exclusion is imperative; make sure all fencing is predator-proof and that any other means of entry to the project site, such as culverts, are properly blocked with predator-exclusion fencing (AVS 2020).	Apex & Farmer
Communication	Collaborate regularly with the farmer throughout the planning and operation phases of the Project to ensure additional needs for flock movement and maintenance are met.	Apex & Farmer

6.2.2.5 Ongoing Management

Grand Parade Solar and the farmer should work together to develop a farming plan. The farmer may need daily access to the Project footprint to move the chickens to new pasture, move them into shelters at night, do routine health checks and head counts, fill water containers, and provide supplemental chicken feed. Chickens are omnivorous and will eat grass, insects, and other forage in the field. Providing additional chicken feed may be required, especially to ensure chickens receive critical nutrients during periods of low forage growth (Knight 2020). It may be beneficial to co-graze sheep and chickens so that sheep reduce vegetation height to shorter heights preferred by chickens. Co-grazing may also be necessary to ensure adequate management of vegetation heights to prevent shading of the PV arrays. Any chemical use within the Project footprint should be discussed between Grand Parade Solar and the farmer to ensure compatibility with farming activities and other planned uses of the Project footprint, such as pollinator-friendly habitat (VAAFM 2021).

A plan for processing chickens or eggs produced within the Project footprint should be made in discussion with the farmer. Per Program requirements, annual reporting will include the acreage farmed, lbs of chicken or number of eggs harvested, flock size growth, and any potential changes for the following year (IPA 2024).

For more information and support, WEST recommends Grand Parade Solar contact the nearest local USDA NRCS field offices in Illinois and the DeKalb County agricultural extension office:

- USDA NRCS and Farm Service Agency Service Centers for DeKalb County
- DeKalb County Extension Service

6.2.3 Crop Production

WEST proposes crop production as an agrivoltaics activity for the Project based on its compatibility with Project design, landowner interest, and Program requirements. Crop production offers a way to manage land use in the Project footprint while providing a source of income for local farmers using the same acreage of land (Dupraz et al. 2011).

WEST recommends a farmer be contracted prior to finalization of the implementation strategy to play an active role in ensuring site preparation and implementation is compatible with the selected crop(s) and farmer preferences.

6.2.3.1 Site Preparation

Effective site preparation is critical for the successful integration of crop production in solar facilities. It involves preparation of the site, weed management, and selection of appropriate crops. The Project footprint has been used for row crop production (corn and soybean) so site preparation for agrivoltaics crop production is expected to be minimal (Grand Parade Solar 2025). Soil testing is encouraged prior to crop selection for the Project because crops differ in soil requirements such as nutrients and mineral levels, pH, and organic matter. Installation of an irrigation system may be necessary for some crop options. Tilling or plowing may be required for some crop options but are not recommended in areas that will become pollinator-friendly habitat (Section 4). Alternative tillage practices such as strip-tilling or minimum tillage may be sufficient for some crop options and minimize soil disturbance. Weed management in crop production areas may require mulching or a weed barrier. Monitoring and removal of weeds should follow IVM principles (Section 4.1).

Appropriate crops for the Project footprint fall into three life cycle categories that also affect duration of the crop on-site: 1) annual crops that require a full season for growth followed by a single harvest (e.g., corn), 2) annual crops that require less than a full season for growth and can be grown as an overlapping relay of multiple crops within a year (e.g., cool-season crops relayed with squashes); and 3) perennial crops (multiple year growth cycle) harvested multiple times. Crop options for the Project footprint are presented in Table 2.

Table 2. Crop options for the proposed Grand Parade Solar Project.

Location	Crop Type	Plant Height	Life Cycle	Benefits & Examples	Considerations
Under panels	Cool season crops[1]	0.5–3.0 feet (depending on variety)	Annual – relay crop (grow different crops through the growing season)	• For example, kale, bok choy, chard, lettuce, radishes, broccoli, arugula, onions • Photovoltaic panels may extend growing season of cool season crops due to shading, allowing for continual harvest throughout spring, summer, and fall	• Shallow roots may result in greater weed pressure • Require consistent moisture so irrigation may be required; planting under panels may better regulate moisture
Rows	Strawberries[2]	Up to one foot	Perennial	• Less frequent planting • A few strawberry plants will spread naturally through runners • Healthy plants may produce fruit for two to four years before needing to be replaced	• Require irrigation, especially in drought conditions • Require fertilization • Highest yield in full sun (planted in rows) but being planted in partial shade (under panels) is acceptable
	Squashes[3]	Up to two feet (depending on variety)	Annual	• For example, winter and summer squashes, pumpkins • Fewer plants are needed as they will expand naturally through vines	• Do best in warm temperatures with full sun (rows), but if the growing seasons grow warm enough, they may be planted in partial shade (under panels) • Treatment for harmful pests needs to be done carefully as squashes are pollinated by bees who will also sleep overnight in the blossoms. Avoid insecticide when possible, applying only in the early evening when the bees are not out and avoid spraying the flowers of the plants

Table 2. Crop options for the proposed Grand Parade Solar Project.

Location	Crop Type	Plant Height	Life Cycle	Benefits & Examples	Considerations
Rows (*continued*)	Melons[4]	0.5–1.5 feet (depending on variety)	Annual	• For example, watermelons, cantaloupe, honeydew • Fewer plants are needed as they will expand naturally through vines	• Do best in warm temperatures but will die from stress if conditions get too hot. As future growing seasons continue to warm, plants may need to be moved from full sun (rows) to partial shade (under panels) • May respond poorly to hoeing/tilling; mulching tends to be the recommended method for weed control • Seedless melon varieties are harder to germinate than regular, seeded melons and may need to be cultivated in pots first, then transplanted

1. Hudelson and Leith 2021.
2. Domoto et al. 2008, Klodd 2021, University of Illinois Extension 2024a.
3. University of Illinois Extension 2024c, 2024e.
4. University of Illinois Extension 2024b, 2024d.

6.2.3.2 Planting

Planting BMPs will depend on what crop is selected. Grand Parade Solar should work with the farmer to ensure that planting practices are compatible with crop production and do not interfere with solar energy production.

While planting times vary between species, most crops should be planted following the last frost of the season; otherwise, a cold snap may kill the seedlings. Some crop varieties need additional time and have a better chance of survival when started as seedlings grown in pots indoors and then transplanted into the ground after the threat of frost has passed. These types of constraints must be considered not only for timing purposes, but also when determining whether to invest in crop seeds or crop plugs. While planting can only occur when the farmer and the Project's construction/operating schedule coincide, crops can only succeed if planted during their ideal planting window.

6.2.3.3 Ongoing Management

Weed management will be essential in crop production areas and should follow IVM principles (Section 4.1). Pest management for crop plants must be balanced with the needs of crop production and the requirements of the Planned Pollinator Scorecard. Points are deducted on the scorecard when insecticides are used on-site (IDNR 2024d). Integrated Pest Management principles provide an effective approach to pest management that seeks to reduce or avoid insecticide use (USEPA 2024a).

6.2.3.4 Harvest and Yield Management

Grand Parade Solar should work with the farmer to develop a harvest plan that meets the harvesting requirements for the selected crop but does not interfere with solar energy production. The exact crop yield produced within the Project footprint will depend on the selected crop and may vary annually. Per Program requirements, annual reporting will include the acreage in food crop production, lbs of crop produced per ac, and any potential changes that will be made for the following year (IPA 2024).

After harvesting, crop types and/or crop locations may need to be rotated to avoid depletion of soil nutrients. It is also recommended that temperature and moisture readers be installed in crop rows and under the panels at ground height, to track the microclimates within different planting zones. These data may provide insight on what crops will perform best in different areas of the Project footprint, and act as a guide for future planning and crop layout.

7 DECOMMISSIONING STRATEGY

Project decommissioning must preserve the site agricultural resources and utility during and after the lifetime of the Project. Grand Parade Solar will follow the IDOA's requirements for deconstruction of a commercial solar energy facility as stipulated in the Standard AIMA, which includes provisions for soil disturbing activities, topsoil segregation, rock removal, and repair of damages, among others (IDOA BLWR 2019). Additionally, Grand Parade Solar will restore all soil and vegetation within the Project area in accordance with the Town of Cortland Zoning Regulations Solar Energy Systems Ordinance.

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Appendix A. Grand Parade Solar LLC System Design Drawing

Appendix A. Solar system design for the Grand Parade Solar Project in the Town of Cortland, DeKalb County, Illinois.

Appendix B. Illinois Pollinator-Friendly Solar Site Act Planned Habitat on Solar Sites Scorecard

Illinois Solar Site Pollinator Habitat Planning Form

Use this form as a draft before completing the *Illinois Planned Pollinator Habitat on Solar Sites Scorecard* online

In Between and Under Solar Panels

1. PLANNED PLANT DIVERSITY IN ROWS & UNDER SOLAR ARRAY (choose up to 2)
   - ☐ 4-6 species +5 pts
   - ☐ 7 or More species +8 pts
   - ☐ All Native Species (minimum 4 species) +10 pts

Perimeter and Buffer Area

2. VEGETATIVE BUFFER PLANNED ADJACENT TO THE SOLAR SITE (choose all that apply)
   - ☐ Buffer planned outside of array fencing +5 pts
   - ☐ Buffer is 30-49ft wide measured from array fencing +5 pts
   - ☐ Buffer is at least 50ft wide measured from array fencing +10 pts
   - ☐ Buffer has Native shrubs/trees that provide food for wildlife +5 pts

3. SEEDS USED FOR NATIVE PERIMETER & BUFFER AREAS (choose all that apply)
   - ☐ Mixes are seeded using at least 20 seeds per square foot of Pure Live Seed or 40 Seeds per square foot on slopes > 5% +10 pts
   - ☐ All seeds are from a source within 150 miles of site +5 pts
   - ☐ At least 2% milkweed cover is planned to be established from seeds/plants +5 pts

4. PLANNED # OF NATIVE SPECIES IN SITE PERIMETER & BUFFER AREA (species with more than 1% cover)(choose 1)
   - ☐ 5-10 species +2 pts
   - ☐ 10-15 species +5 pts
   - ☐ 16-20 species +10 pts
   - ☐ >20 species +15 pts

Exclude invasive and non-native plant species from total

5. PLANNED PERCENT OF PERIMETER & BUFFER AREA DOMINATED BY NATIVE PLANT SPECIES (choose 1)
   - ☐ 26- 50 % +2 pts
   - ☐ 51-75 % +10 pts
   - ☐ More than 75% +15 pts

Whole Site

6. PLANNED PERCENT OF SITE VEGETATION COVER TO BE DOMINATED BY DESIRABLE WILDFLOWERS (choose 1)
   - ☐ 26- 50 % +2 pts
   - ☐ 51-75 % +10 pts
   - ☐ More than 75% +15 pts

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

7. PLANNED SEASONS WITH AT LEAST THREE BLOOMING NATIVE SPECIES PRESENT (choose all that apply)
   - ☐ Spring (April-May) +5 pts
   - ☐ Summer (June-August) +5 pts
   - ☐ Fall (September-October) +5 pts

8. HABITAT SITE PREPARATION PRIOR TO IMPLEMENTATION (choose all that apply)
   - ☐ Soil preparation done to promote germination and reduce erosion as appropriate for the site. +10 pts
   - ☐ Measures taken to control weeds prior to seeding +10 pts
   - ☐ None -10 pts

9. AVAILABLE HABITAT COMPONENTS WITHIN 0.25 MILES (choose all that apply)
   - ☐ Native bunch grass for bee nesting +2 pts
   - ☐ Native trees/shrubs for bee nesting +2 pts
   - ☐ Clean, perennial water sources +2 pts
   - ☐ Created habitat nesting features +2 pts

10. SITE PLANNING AND MANAGEMENT(choose all that apply)
    - ☐ Detailed establishment and management plan developed +10 pts
    - ☐ Signage legible at forty or more feet stating "pollinator friendly solar habitat" +3 pts

11. INSECTICIDE RISK (choose all that apply)
    - ☐ Planned on-site use of insecticide or pre-planting seed/plant treatment (excluding buildings/electrical boxes, etc.) -40 pts
    - ☐ Communication/registration with local chemical applicators or on www.fieldwatch.com to prevent drift +5 pts

Total Points: ____________

Meets Preliminary Pollinator Standards - 85
Provides Exceptional Habitat - 110 and higher

Owner:________________________________
Vegetation Consultant: __________________
Project Location: ______________________
Project Size: ______________________**acres**
Final Seeding Date: ____________________

This form is designed (with the help of the Solar Site Pollinator Guidelines found on IDNR's website) to guide owners or managers of solar sites to meet the requirements to be able to claim a site is pollinator friendly according to the "Pollinator Friendly Solar Site Act (525 ILCS 55)". This form is for company records only and does not grant the title of a Pollinator Friendly Solar Site until the "Illinois Planned Pollinator Habitat on Solar Sites Scorecard" is completed with a score of 85 or higher on IDNR's website. This preliminary recognition is good for 3yrs, after which the "Established Pollinator Habitat on Solar Sites Scorecard" will need to be completed every 5 years to maintain recognition as a Pollinator Friendly Solar Site.

12/3/2019

Appendix B. Illinois Noxious Weeds/Invasive Species List

Appendix C. State of Illinois noxious and exotic weed lists.

Common Name	Scientific Name
Illinois Noxious Weed Law	
Canada thistle	*Cirsium arvense*
Columbus grass	*Sorghum almum*
common ragweed*	*Ambrosia artemisiifolia*
giant ragweed*	*Ambrosia trifida*
Johnsongrass	*Sorghum halepense*
kudzu	*Pueraria montana* var. *lobata*
marijuana	*Cannabis sativa*
musk thistle	*Carduus nutans*
perennial sowthistle	*Sonchus arvensis*
Illinois Exotic Weed Act	
Amur honeysuckle	*Lonicera maackii*
autumn olive	*Elaeagnus umbellata*
Bohemian knotweed	*Fallopia* x *bohemica*
Chinese buckthorn	*Rhamnus utilis*
common buckthorn	*Rhamnus cathartica*
Dahurian buckthorn	*Rhamnus davurica*
giant hogweed	*Heracleum mantegazzianum*
giant knotweed	*Fallopia sachalinensis*
glossy buckthorn	*Rhamnus frangula*
Japanese buckthorn	*Rhamnus japonica*
Japanese honeysuckle	*Lonicera japonica*
Japanese knotweed	*Fallopia japonica*, syn. *Polygonum cuspidatum*
kudzu	*Pueraria montana* var. *lobata*
lesser celandine	*Ficaria verna*
Morrow's honeysuckle	*Lonicera morrowii*
multiflora rose	*Rosa multiflora*
Oriental bittersweet	*Celastrus orbiculatus*
poison hemlock	*Conium maculatum*
purple loosestrife	*Lythrum salicaria*
Russian olive	*Elaeagnus angustifolia*
salt cedar	*Tamarix* spp.
saw-toothed buckthorn	*Rhamnus arguta*
sweet breath of spring	*Lonicera fragrantissima*
Tartarian honeysuckle	*Lonicera tatarica*
teasel	*Dipsacus* spp.
thorny olive	*Elaeagnus pungens*

* Only if found within corporate limits of cities, villages, and incorporated towns.

Sources: 505 ILCS 100 and 525 ILCS 10.

Appendix C. Suggested Seed Mixes for the Grand Parade Solar Project

Appendix D1. Suggested[1] temporary cover crop seed mix for the Grand Parade Solar Project in the Town of Cortland, DeKalb County, Illinois.

Common Name	Scientific Name	PLS lbs per acre	% of Mixture	Indicator Status[2]
annual ryegrass	*Lolium multiflorum*	15	33	-
winter wheat	*Triticum aestivum*	15	33	-
brown top millet	*Urochloa ramose*	15	33	-

1. The seed mix provided above is suggested for planting within the array area of the Grand Parade Solar Project. This seed mix was designed based on Project environmental conditions and the *Illinois Planned Pollinator Habitat on Solar Sites Scorecard* criteria. However, many variables (e.g., seasonal climatic conditions) factor into successful reseeding results, thus suitable seed mixes are not a guarantee of revegetation success. Appendix E offers alternative species.

2. - = no indicator.

Wetland Indicator Status for the Midwest. Source: *National Wetland Plant List* (US Army Corps of Engineers [USACE] 2020) from USDA NRCS Plants database (2024c).

PLS = pure live seed, the percentage of the gross seed weight composed of viable seed; lbs per acre = pounds per acre

Appendix D2. Suggested[1] array vegetation seed mix for the Grand Parade Solar Project in the Town of Cortland, DeKalb County, Illinois.

Common Name	Scientific Name	PLS lbs per acre	Seeds per sq ft[2]	% of Mixture	Indicator Status[3]
Graminoids					
blue grama	*Bouteloua gracilis*	0.18	2.93	14.50	-
prairie dropseed	*Sporobolus heterolepis*	0.10	2.75	13.60	FACU
short sedge	*Carex brevior*	0.16	1.70	8.40	FAC
Forbs					
black-eyed Susan	*Rudbeckia hirta*	0.14	4.82	23.80	FACU
blue mistflower	*Conoclinium coelestinum*	0.02	2.57	12.70	FACW
nodding onion	*Allium cernuum*	0.30	1.32	6.50	FACU
slender mountain mint	*Pycnanthemum tenuifolium*	0.03	4.17	20.50	FAC

1. The seed mix provided above is suggested for planting within the array area of the Grand Parade Solar Project. This seed mix was designed based on Project environmental conditions and the *Illinois Planned Pollinator Habitat on Solar Sites Scorecard* criteria. However, many variables (e.g., seasonal climatic conditions) factor into successful reseeding results, thus suitable seed mixes are not a guarantee of revegetation success. Appendix E offers alternative species.

2. On slopes greater than 5%, increase seeding rates to a total of 40 seeds per sq ft.

2. FAC = facultative; FACU = facultative upland; FACW = facultative wetland; - = no indicator.

Wetland Indicator Status for the Midwest. Source: *National Wetland Plant List* (USACE 2020) from USDA NRCS Plants database (2024c).

PLS = pure live seed, the percentage of the gross seed weight composed of viable seed; lbs per acre = pounds per acre; sq ft = square feet

Appendix D3. Suggested[1] buffer vegetation seed mix for the Grand Parade Solar Project in the Town of Cortland, DeKalb County, Illinois.

Common Name	Scientific Name	PLS lbs per acre	Seeds per sq ft	% of Mixture	Indicator Status[2]
Graminoids					
blue grama	*Bouteloua gracilis*	0.07	1.14	5.6	-
prairie dropseed	*Sporobolus heterolepis*	0.04	1.10	5.5	FACU
short sedge	*Carex brevior*	0.11	1.17	5.8	FAC
Virginia wildrye	*Elymus virginicus*	0.12	0.21	1.0	FACW
Forbs					
black-eyed Susan	*Rudbeckia hirta*	0.03	1.03	5.1	FACU
blue mistflower	*Conoclinium coelestinum*	0.01	1.29	6.4	FACW
bottled gentian	*Gentiana andrewsii*	0.01	1.03	5.1	FACW
butterfly milkweed	*Asclepias tuberosa*	0.50	0.79	3.9	-
Canadian milkvetch	*Astragalus canadensis*	0.20	1.15	5.7	FAC
common milkweed	*Asclepias syriaca*	0.50	0.79	3.6	FACU
golden Alexanders	*Zizia aurea*	0.50	2.20	10.9	FAC
hairy beardtongue	*Penstemon hirsutus*	0.01	0.97	4.8	-
nodding onion	*Allium cernuum*	0.20	0.88	4.4	FACU
pale purple coneflower	*Echinacea pallida*	0.22	0.42	2.1	-
prairie blazing star	*Liatris pycnostachya*	0.30	0.83	4.1	FAC
prairie dock	*Siphium terebinthinaceum*	1.00	0.37	1.8	FAC
rattlesnake master	*Eryngium yuccifolium*	0.40	1.03	5.1	FAC
Virginia mountain mint	*Pycnanthemum virginianum*	0.02	1.62	8.0	FACW
whorled milkweed	*Ascelpias verticillata*	0.20	0.81	4.0	FACU
wild columbine	*Aquilegia canadensis*	0.10	1.40	6.9	FACU

1. The seed mix provided above is suggested for planting within the buffer area of the Grand Parade Solar Project. This seed mix was designed based on Project environmental conditions and the *Illinois Planned Pollinator Habitat on Solar Sites Scorecard* criteria. However, many variables (e.g., seasonal climatic conditions) factor into successful reseeding results, thus suitable seed mixes are not a guarantee of revegetation success. Appendix E offers alternative species.

2. FAC = facultative; FACU = facultative upland; FACW = facultative wetland; - = no indicator.

Wetland Indicator Status for the Midwest. Source: *National Wetland Plant List* (USACE 2020) from USDA NRCS PLANTS database (2024c).

PLS = pure live seed, the percentage of the gross seed weight composed of viable seed; lbs per acre = pounds per acre; sq ft = square feet

Appendix D. Plant Species List for Pollinators for the Grand Parade Solar Project

Appendix E. Suitable pollinator species for seed mix design for the Grand Parade Solar Project in the Town of Cortland, DeKalb County, Illinois.

Common Name	Scientific Name	Indicator Status[1]	Typical Height (ft)[2]	Spring[3] Bloom	Summer[4] Bloom	Fall[5] Bloom
Forbs						
black-eyed Susan	*Rudbeckia hirta*	FACU	2		X	X
blue mistflower	*Conoclinium coelestinum*	FACW	2			X
bottled gentian	*Gentiana andrewsii*	FACW	2			X
butterfly milkweed	*Asclepias tuberosa*	-	2		X	
Canada milkvetch	*Astragalus canadensis*	FAC	3		X	
common milkweed	*Asclepias syriaca*	FACU	3		X	
compass plant	*Silphium laciniatum*	-	8		X	X
cream gentian	*Gentiana flavida*	FACU	2		X	X
foxglove beardtongue	*Penstemon digitalis*	FAC	4		X	
frost aster	*Symphyotrichum pilosum*	FACU	3			X
golden alexanders	*Zizia aurea*	FAC	3	X	X	
gray goldenrod	*Solidago nemoralis*	-	2		X	X
grey headed coneflower	*Ratibida pinnata*	-	5		X	X
hairy beardtongue	*Penstemon hirsutus*	-	1.5	X	X	
heartleaf alexanders	*Zizia aptera*	FACU	2	X		
hoary vervain	*Verbena stricta*	-	2		X	X
lanceleaf coreopsis	*Coreopsis lanceolata*	FACU	2	X	X	
monkey flower	*Mimulus ringens*	OBL	2		X	
nodding onion	*Allium cernuum*	FACU	1.5		X	X
Ohio spiderwort	*Tradescantia ohiensis*	FACU	3	X	X	
orange coneflower	*Rudbeckia fulgida*	OBL	3		X	X
pale purple coneflower	*Echinacea pallida*	-	3		X	
partridge pea	*Chamaecrista fasciculata*	FACU	2		X	X
plains coreopsis	*Coreopsis tinctoria*	FACU	3		X	
prairie alumroot	*Heuchera richardsonii*	FACU	2	X	X	
prairie blazing star	*Liatris pycnostachya*	FAC	4		X	X
prairie cinquefoil	*Drymocallis arguta*	FACU	2		X	X
prairie dock	*Silphium terebinthinaceum*	FAC	9		X	X
purple coneflower	*Echinacea purpurea*	-	4		X	X
purple prairie clover	*Dalea purpurea*	-	2		X	X
rattlesnake master	*Eryngium yuccifolium*	FAC	4		X	X
rough blazing star	*Liatris aspera*	-	3		X	X
sky blue aster	*Symphyotrichum oolentangiense*	-	3		X	X
slender mountain mint	*Pycnanthemum tenuifolium*	FAC	2		X	X
smooth aster	*Symphyotrichum laeve*	FACU	4		X	X

Appendix E. Suitable pollinator species for seed mix design for the Grand Parade Solar Project in the Town of Cortland, DeKalb County, Illinois.

Common Name	Scientific Name	Indicator Status[1]	Typical Height (ft)[2]	Spring[3] Bloom	Summer[4] Bloom	Fall[5] Bloom
spotted beebalm	*Monarda punctata*	UPL	2		X	X
stiff tickseed	*Coreopsis palmata*	-	2		X	
Virginia mountain mint	*Pycnanthemum virginianum*	FACW	3		X	X
white prairie clover	*Dalea candida*	-	2		X	X
whorled milkweed	*Asclepias verticillata*	FACU	2		X	X
wild bergamot	*Monarda fistulosa*	FACU	4		X	X
wild columbine	*Aquilegia canadensis*	FACU	2	X	X	
wild quinine	*Parthenium integrifolium*	-	4		X	X
Graminoids						
blue grama	*Bouteloua gracilis*	-	1		X	X
little bluestem	*Schizachyrium scoparium*	FACU	3		X	X
prairie dropseed	*Sporobolus heterolepis*	FACU	2		X	X
sand dropseed	*Sporobolus cryptandrus*	FACU	3		X	X
short sedge	*Carex brevior*	FAC	2		X	
side-oats grama	*Bouteloua curtipendula*	-	2		X	X
slender wheatgrass	*Elymus trachycaulus*	FACU	2		X	
troublesome sedge	*Carex molesta*	FAC	3		X	
Virginia wild rye	*Elymus virginicus*	FACW	4		X	
winter bentgrass	*Agrostis hyemalis*	FAC	2	X	X	X

1. FAC = facultative; FACU = facultative upland; FACW = facultative wetland; OBL = obligate wetland; - = no indicator; UPL = obligate upland. Wetland Indicator Status for the Midwest. Source: *National Wetland Plant List* (USACE 2020) from USDA NRCS Plants database (2024c).
2. Typical heights are rough estimates, so decimals are not included except for 1.5 feet, which is generally accepted to be distinct from one ft and two ft.
3. Spring = April – May.
4. Summer = June – August.
5. Fall = September – October.

Appendix F. Vendors for Seed Mixes for the Grand Parade Solar Project

Appendix F1. Potential seed vendors for the Grand Parade Solar Project in the Town of Cortland, DeKalb County, Illinois.

Name	Address	Phone	Website
Consultation[1]			
DeKalb County Soil and Water Conservation District	1550 E. Main Street. Salem, Illinois 62881	(618) 548-2230 (Ext. 3)	swcdekalbil.org
Vendors			
Agrecol Corporation	10101 North Casey Road Evansville, Wisconsin 53536	(608) 223-3571	agrecol.com
Genesis Nursery, Inc.	23200 Hurd Road Tampico, Illinois 61283	(877) 817-5325	genesisnurseryinc.com
Heartland Restoration Service[2]	14921 Hand Road Fort Wayne, Indiana 46818	(260) 489-8511	earthsourceinc.net
Ion Exchange, Inc[2]	1878 Old Mission Drive Harper's Ferry, Iowa 52146	(563) 419-0837	ionxchange.com
Mason State Tree Nursery[2]	17855 North County Road 2400 E Topeka, Illinois 61567	(309) 535-2185	dnr.illinois.gov/conservation/forestry/tree-nurseries
Prairie Moon[2]	32115 Prairie Lane Winona, Minnesota 55987	(866) 417-8156	prairiemoon.com
Prairie Nursery[2]	PO Box 306 Westfield, Wisconsin 53464	(800) 476-9453	prairienursery.com
Shooting Star Native Seeds[2]	Madison, Wisconsin	(507) 498-3944	shootingstarnativeseed.com
Stantec Native Plants	128 Sunset Drive Walkerton, Indiana 46574	(574) 586-2412	stantec.com/en/services/native-plant-nursery
Taylor Creek Restoration Nurseries[2]	17921 West Smith Road Brodhead, Wisconsin 53520	(608) 897-8641	taylorcreeknurseries.com

1. Contact DeKalb County Soil and Water Conservation District for consultation to approve species selections and substitutions.

2. Nurseries are located more than 150 mi (241 km) from the Project and would not receive points from the Illinois Pollinator-Friendly Solar Site Act Pollinator Scorecard.

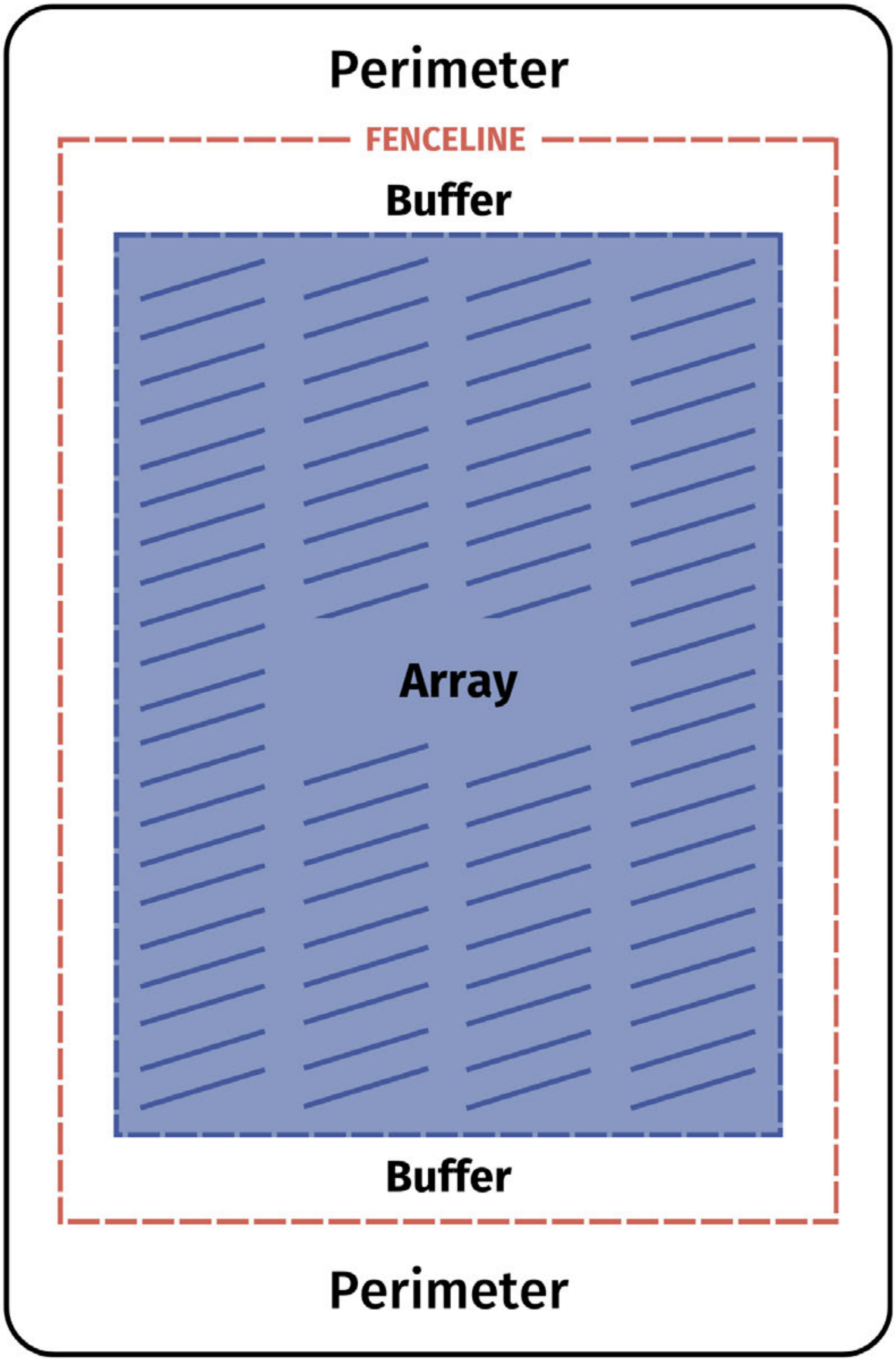
Appendix F2. Potential screening tree and shrub vendors for the Grand Parade Solar Project, DeKalb County, Illinois.

Name	Address	Phone	Website
Consultation[1]			
DeKalb County Soil and Water Conservation District	1550 E. Main Street. Salem, Illinois 62881	(618) 548-2230 (Ext. 3)	swcdekalbil.org
Vendors			
American Native Plants[2]	7500 Marshy Point Road Middle River, Maryland 21220	(410) 529-3883	americannativeplants.com
Auburn Acres	1727 County Road 1300 North Roanoke, Illinoi 61561	(309) 431-1642	auburnacresnursery.com
Johnson's Nursery	W180 N6275 Marcy Road Menomonee Falls, Wisconsin 53051	(262) 252-4980	jniplants.com
Natural Communities	19 Circle Drive Algonquin, Illinois 60102	(331) 248-1016	naturalcommunities.net
Possibility Place Nursery	7548 W Monee-Manhattan Road Monee, Illinois 60449	(708) 534-3988	possibilityplace.com
Mason State Tree Nursery[2]	17855 North County Road 2400 E Topeka, Illinois 61567	(309) 535-2185	dnr.illinois.gov/conservation/forestry/tree-nurseries
Prairie Moon[2]	32115 Prairie Lane Winona, Minnesota 55987	(866) 417-8156	prairiemoon.com
Prairie Nursery[2]	PO Box 306 Westfield, Wisconsin 53464	(800) 476-9453	prairienursery.com
Stantec Native Plants	128 Sunset Drive Walkerton, Indiana 46574	(574) 586-2412	stantec.com/en/services/native-plant-nursery

1. Contact DeKalb County Soil and Water Conservation District for consultation to approve species selections and substitutions.

2. Nurseries are located more than 150 mi (241 km) from the Project and would not receive points from the Illinois Pollinator-Friendly Solar Site Act Pollinator Scorecard.

Appendix G. Vegetation Zones for Seed Mix Installation



Appendix G1. Example diagram of typical vegetation zones at a solar project.

Appendix H. Graziers and Chicken Farmers in Surrounding Region for the Grand Parade Solar Project

Appendix H1. Solar graziers in the surrounding region of the Grand Parade Solar Project in the Town of Cortland, DeKalb County, Illinois.

Company Name	Location	Phone	E-mail	Website	Total Acreage Capacity	Description
Butter Creek Ranch	7175 Butter Creek Road Evansville, Illinois	(618) 340-2711	Jlong@butter-creek-ranch.com	www.butter-creek-ranch.com	1,500	"Solar grazing in south western Illinois. 20+ years of rotational grazing sheep"
Curt and Rach	8090 King Road Kinmundy, Illinois 62854	(618) 292-7946	curtandrach@gmail.com	–	100	"My first year of solar grazing was a success for myself and the solar company. I am seeking more sites to serve in southern Illinois."
Watson Farms	15299 S. 1st St. DeKalb, IL 60115	(815) 751-3424	cbw4watsonhay@gmail.com	https://www.facebook.com/WatsonFarmsDeKalb/	-	"6th generation family farm specializing in lamb, beef, poultry, hay and straw"
B's Hillside Grazing & Farm	17153 Liberty Ridge Road Grafton, Illinois 62037	(618) 530-3000	bshillsidefarm2022@gmail.com	https://www.goatsonthego.com/find-a-flock	–	"Sheep On The Go™. Solar grazing or Agrivoltaics for the purpose of managing the vegetation around solar projects."
Locust Creek Flower Farm	1911 East 700 North Road Pana, Illinois 62557	(217) 825-3584	locustcreekflowerfarm@gmail.com	–	–	"Looking for solar grazing sites in Central Illinois. Sheep farm in Central Illinois."
Chris & Erin Crider-Crider Farms	35794 East 100 North Road Farmer City, Illinois	(309) 826-5372	cecrider89@gmail.com	–	Can accommodate different size solar farms.	"Solar grazing serving Illinois, with experience in vegetation management and animal husbandry."
Tin Can Farms	Glasford, Illinois	(309) 635-4532	tincanfarms@yahoo.com, blparker189@yahoo.com	–	–	"We are a sheep farm located in central Illinois."
CK Green Grazing, LLC	624 West Streitmatter Road Edelstein, Illinois 61526	(309) 573-7307	kisheets@zoho.com , ksheets@ckgreengrazing.com	–	1,000	"We graze solar sites! We are set up to assist with pollinator friendly sites and the reporting required to maintain that status. We also provide full site maintenance with mowers around the perimeter and set back area of the solar site. We are located in Central IL, near Peoria, IL."

Appendix H1. Solar graziers in the surrounding region of the Grand Parade Solar Project in the Town of Cortland, DeKalb County, Illinois.

Company Name	Location	Phone	E-mail	Website	Total Acreage Capacity	Description
Tri-State Agrivoltaics	Dale, Indiana	(812) 641-6196	jltlivestock1@gmail.com	–	–	We offer total land management of solar arrays, including solar grazing.

Source: American Solar Grazing Association Inc.(ASGA) 2024.

Appendix H2. Pasture chicken farmers in the surrounding region of the Grand Parade Solar Project in the Town of Cortland, DeKalb County, Illinois.

Company Name	Location	Phone	E-mail	Website
Wade and Jaime Sutter	1931 Kropp Road, Millstadt, Illinois	(618) 719-1983	info@freshpasturefarms.com	www.freshpasturefarms.com
Jill Vonder Haar	St. Rose, Illinois	(618) 210-6059	contact@mainstreetpastures.com	https://mainstreetpastures.com
Normal and Karin Ladd	6583 Highway F, Farmington, Missouri	(573) 747-1889	laddkarin3@gmail.com	–
Kate Adams	546 Kentucky 293, Princeton, Kentucky	(513) 470-8171	kate@nurturedlands.com	www.nurturedlands.com
James Mailhot	20340 North 800 East Road, Carlock, Illinois	(309) 532-6602	jamespmailhot@gmail.com	–
Terrence and Kristin Garza	1611 Upper Spring Bay Road, Metamora, Illinois	(309) 300-0999	fibonaccifarms4@gmail.com	www.fibonaccifarms4.com
Luke Groce	English, Indiana	(502) 436-0311	info@grocefamilyfarm.com	www.grocefamilyfarm.com
Justin Allaman	2062 Township Road 1800 East, Kirkwood, Illinois	(309) 299-4415	allamanfamilypoultry@gmail.com	www.hickorygrovepoultry.com
Jeff Lambert	1394 East Armour Road, Bourbonnais, Illinois	(815) 954-0133	songbirdhillfarmllc@gmail.com	www.songbirdhillfarmllc.com

Source: ASGA 2024.

Appendix I. Sheep or Chicken Forage Mixes for the Grand Parade Solar Project

Appendix I1. Examples of regionally appropriate sheep or chicken forage mixes for the Grand Parade Solar Project in the Town of Cortland, DeKalb County, Illinois.

Common Name	Scientific Name	% Composition
Example 1		
chicory	*Cichorium intybus*	5
Kentucky bluegrass	*Poa pratensis*	25
orchardgrass	*Dactylis glomerata*	20
tall fescue (endophyte-free)	*Schedonorus arundinaceus*	30
red clover	*Trifolium pratense*	10
white clover	*Trifolium repens*	10
Example 2		
alfalfa	*Medicago sativa*	10
Alsike white clover	*Trifolium hybridum*	10
foxtail/German millet	*Setaria italica*	5
orchardgrass	*Dactylis glomerata*	15
perennial ryegrass	*Lolium perenne*	15
red clover	*Trifolium pratense*	20
Sand love grass	*Eragrostis trichodes*	10
timothy	*Phleum pratense*	15

Source: USDA NRCS et al. 2000; Granite Seed Company 2024.

Appendix I2. Suitable native forage species for seed mix design for the Grand Parade Solar Project in the Town of Cortland, DeKalb County, Illinois.

Common Name	Scientific Name	Typical Height (feet)[1]
Warm Season Grasses – 60% of stand		
blue grama	*Bouteloua gracilis*	1
little bluestem	*Schizachyrium scoparium*	3
prairie dropseed	*Sporobolus heterolepis*	2
sand dropseed	*Sporobolus cryptandrus*	3
side-oats grama	*Bouteloua curtipendula*	2
Cool Season Grasses – 20% of stand		
Canada wild rye	*Elymus canadensis*	4
river oats	*Chasmanthium latifolium*	4
short sedge	*Carex brevior*	2
slender wheatgrass	*Elymus trachycaulus*	2
troublesome sedge	*Carex molesta*	3
winter bentgrass	*Agrostis hyemalis*	2
Virginia wild rye	*Elymus virginicus*	4
Forbs and Legumes – 20% of stand		
black-eyed Susan	*Rudbeckia hirta*	2
blue mistflower	*Conoclinium coelestinum*	2
bottled gentian	*Gentiana andrewsii*	2
Canada milkvetch	*Astragalus canadensis*	3
compass plant	*Silphium laciniatum*	8
cream gentian	*Gentiana flavida*	2
foxglove beardtongue	*Penstemon digitalis*	4
frost aster	*Symphyotrichum pilosum*	3
golden alexanders	*Zizia aurea*	3
gray goldenrod	*Solidago nemoralis*	2
great blazing star	*Liatris pycnostachya*	4
grey headed coneflower	*Ratibida pinnata*	5
hairy beardtongue	*Penstemon hirsutus*	1.5
heartleaf alexanders	*Zizia aptera*	2

Appendix I2. Suitable native forage species for seed mix design for the Grand Parade Solar Project in the Town of Cortland, DeKalb County, Illinois.

Common Name	Scientific Name	Typical Height (feet)[1]
hoary vervain	*Verbena stricta*	2
lanceleaf coreopsis	*Coreopsis lanceolata*	2
monkey flower	*Mimulus ringens*	2
nodding onion	*Allium cernuum*	1.5
Ohio spiderwort	*Tradescantia ohiensis*	3
orange coneflower	*Rudbeckia fulgida*	3
pale purple coneflower	*Echinacea pallida*	3
partridge pea	*Chamaecrista fasciculata*	2
plains coreopsis	*Coreopsis tinctoria*	3
prairie alumroot	*Heuchera richardsonii*	2
prairie cinquefoil	*Drymocallis arguta*	2
prairie dock	*Silphium terebinthinaceum*	9
purple coneflower	*Echinacea purpurea*	4
purple prairie clover	*Dalea purpurea*	2
rattlesnake master	*Eryngium yuccifolium*	4
rough blazing star	*Liatris aspera*	3
sky blue aster	*Symphyotrichum oolentangiense*	3
slender mountain mint	*Pycnanthemum tenuifolium*	2
smooth aster	*Symphyotrichum laeve*	4
spotted beebalm	*Monarda punctata*	2
stiff tickseed	*Coreopsis palmata*	2
Virginia mountain mint	*Pycnanthemum virginianum*	3
white prairie clover	*Dalea candida*	2
wild bergamot	*Monarda fistulosa*	4
wild columbine	*Aquilegia canadensis*	2
wild quinine	*Parthenium integrifolium*	4

1. Typical heights are rough estimates, so decimals are not included except for 1.5 feet, which is generally accepted to be distinct from one ft and two ft.

Plant height sources: Prairie Moon Nursery 2025; Virginia Botanical Associates 2025.

Exhibit U – Community Benefit Donation

Grand Parade Solar, LLC
[redacted]

Town of Cortland, DeKalb County, Illinois
Attn: Mayor Mark Pietrowski
59 South Somonauk Rd
Cortland, IL 60112

Re: Community Benefit Donation - Letter of Intent

Dear Mayor Pietrowski,

Grand Parade Solar, LLC (the “Project,” or “Grand Parade Solar”) is an approximately 5 MWac ground-mounted solar energy facility located on private land, involving two parcels in DeKalb County, Illinois, and situated within 1.5 miles of the Town of Cortland (“Town”).

Grand Parade Solar is a wholly owned subsidiary of Apex Clean Energy. Apex Clean Energy is a privately held renewable energy company based in Charlottesville, Virginia.

We are pleased to present the opportunity to bring renewable energy to the Town of Cortland, along with the associated economic benefits, tax revenue, and increased local commerce generated throughout the construction and operation of the solar project. To further strengthen the Project’s community impact, and as described in more detail below, please accept this letter of intent as Grand Parade Solar’s commitment to contribute approximately $302,010.00 to the Town over the life of the Project.

This community donation is contingent upon the commencement of commercial operation for electricity production for sale by the Project (and excluding the production of any “test” energy). No later than 30 days after the date on which such commercial operations begin (the “Commercial Operations Date”) and on every anniversary of the Commercial Operations Date thereafter until termination of this Agreement. The Project will pay the Town $1,000 per MWac of installed nameplate capacity (the “Solar Payment”). The Solar Payment will increase by 2% (two percent) from the preceding calendar year. Based on our calculations, this annual Solar Payment will result in $302,010.00 in payments to the Town over the life of the Project.

Nothing contained in this Letter of Intent shall constitute or be construed to be or create a partnership or joint venture between Grand Parade Solar and the Town. The decision to proceed with or terminate the development or operation of the Project remains solely with Grand Parade Solar.

Please consider this letter as confirmation of our commitment to donate should the Town accept as provided below.

Grand Parade Solar, LLC

By: ____

Name: ____

Title: ____

Town of Cortland

By: ____

Name: ____

Title: ____

Exhibit V – Report - “Health and Safety Impacts of Solar Photovoltaics”

WHITE PAPER

MARCH 2026

HEALTH AND SAFETY IMPACTS OF SOLAR PHOTOVOLTAICS

Nicholas Montoni, Ph.D. • Justin Lindemann • Isaac Panzarella • Anna Weitz

NC CLEAN ENERGY TECHNOLOGY CENTER
Carolinas Development Assistance and Siting Hub
NC STATE

Disclaimer & Acknowledgements

The authors—Nicholas Montoni, Ph.D., Justin Lindemann, Isaac Panzarella, and Anna Weitz—wish to acknowledge the work of Tommy Cleveland, formerly of the North Carolina Clean Energy Technology Center, whose May 2017 publication, Health and Safety Impacts of Solar Photovoltaics, served as the starting point for this March 2026 expansion on the topic. Relevant sections of this previous resource are reproduced in this paper.

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U.S. DEPARTMENT of ENERGY

Awardee

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Executive Summary

As the prevalence of solar photovoltaic (PV) systems grows, including in leading states like North Carolina, questions have emerged about potential public health and safety impacts. This white paper examines those concerns by reviewing peer-reviewed literature, engineering and safety standards, operational procedures, and relevant regulations. The findings show that solar PV systems pose minimal risk to public health and safety.

Hazardous Materials and Components

In general, solar panels, construction, and components do not pose significant health or safety risks due to their material composition.

Solar panels are mainly made from glass, polymers, aluminum, copper, and semiconductor materials. Semiconductor materials may contain certain metals of varying toxicity, such as lead, cadmium, and tellurium, while the other materials are non-toxic and non-hazardous.

Panels may be made of silicon, which is non-toxic and non-hazardous, cadmium telluride, which contains cadmium bound to a stable compound and encapsulated in layers of glass and plastic, and copper indium gallium selenide, which are generally non-toxic and are again contained within glass and plastic. Panels use a small amount of lead for solder, but manufacturers are moving towards lead-free designs.

PV cells are encapsulated in ethylene-vinyl acetate (EVA) between tempered glass and polymer layers, preventing corrosion and leakage of panel materials. Protective glass coatings maintain performance, though there is concern as to the presence of per- and polyfluoroalkyl substances (PFAS) in coatings. At present, there is no evidence that solar panels are a significant source of PFAS. Depending on the recycling method used, most of the glass, polymers, and metals in a panel can be recovered at the end of life.

The average solar panel lasts about 25 years, with warranties ensuring at least 80% of original output. Operational lifespans are now typically 25–35 years, and research is exploring panels that could last up to 50 years. Developers generally plan for a minimum lifespan of 30 years. Panels and mounting structures are built to handle local wind speeds, with many rated up to 150 mph. They have proven resilient in hurricanes, including Sandy (2012), Matthew (2016), and Helene (2024). Hail is the most common source of damage, and hail-resistant modules are recommended in high-risk areas.

Property insurance usually covers catastrophic damage, and adequate coverage is a standard business practice and often required by financiers.

Non-panel components are also low risk. Racking systems are typically galvanized steel or aluminum—stable, common, and non-toxic. Inverters are enclosed in weatherproof steel housings, and their cooling systems operate similarly to those found in computers. Some high-voltage equipment, like transformers and circuit breakers, use sulfur hexafluoride (SF_6) for insulation and arc suppression. SF_6 is non-toxic, non-flammable, and stable, and its use is regulated nationwide. Its use is not unique to solar installations. Modern transformers also do not pose the same risks as older units, which contained polychlorinated biphenyls (PCBs) and were banned in 1979.

Safety Factors

Solar PV systems, like most consumer electronics, produce non-ionizing electromagnetic fields (EMF), which are low-energy and cannot damage DNA. EMF levels from solar panels, inverters, and batteries are well below public exposure limits and similar to common household appliances. EMF strength drops quickly with distance, so people outside the facility are not at risk. Even sensitive devices like pacemakers are unaffected.

Electrical components--panels, inverters, transformers, and battery systems--pose shock and arc flash risks. Proper training, protective equipment, and site security can minimize risk, and unauthorized personnel should never access high-voltage areas.

Most panel materials are non-flammable, with only minor polymer components carrying limited risk. Fires are rare and usually caused by wiring faults, hot spots, or external stressors. PV fires are far less frequent than wildfires and can be managed with good design, installation, and maintenance. Rooftop panels can affect firefighter ventilation, but updated building codes, National Electric Code requirements, and training reduce hazards.

Lithium-ion battery energy storage systems are generally safe but require proper recycling and operational fire safety measures. Existing codes, standards, and specialized training help mitigate risk.

End-of-Life Management

By 2050, projected U.S. solar panel waste (7.5–10 million tons) will likely make up less than 3% of total solid waste, smaller than plastics or fossil fuel waste, while recycling rates are improving. While recycling has historically been more expensive than landfilling, costs are declining, and valuable materials can be recovered, adding to potential value streams. Most states in the U.S. require decommissioning plans for large-scale solar facilities, and national programs and services led by the Solar Energy Industries Association (SEIA) and solar recycling companies are expanding recycling networks.

As a comparison, wind energy could generate 2.2–113 million metric tons of solid waste depending on deployment levels, with up to 90% of wind materials being recyclable; and coal produces 70–100 million tons of solid waste every year.

Most modern crystalline silicon and CdTe panels pass the U.S. Environmental Protection Agency's (EPA) Toxic Characteristic Leaching Procedure (TCLP) test and are classified as non-hazardous waste. Studies show very limited leaching risk, even in worst-case scenarios. Responsible end-of-life management is important, but solar panels are safe for landfills, increasingly recyclable, and their environmental benefits outweigh potential disposal concerns.

Conclusion

When installed and operated in accordance with established engineering, safety, and regulatory standards, solar PV systems present limited adverse effects to public health and safety. Evaluating potential hazardous materials, EMF exposure, electrical safety, and fire risk indicate that overall danger is low. Compared to fossil-fuel generation, solar PV systems deliver substantial environmental gains by reducing carbon emissions, solid waste, and heavy metal poisoning, and protecting air quality. Overall, the analysis presented supports the conclusion that solar PV systems are safe and carry minimal public health risks.

Introduction

Solar photovoltaic (PV) systems have become increasingly common in North Carolina over the last several decades. In fact, North Carolina is often ranked among the top 5 solar-producing states in the nation. In spite, or perhaps because, of the relative success of the solar PV industry, public opinion and public understanding of this technology are still susceptible to numerous myths, half-truths, and misconceptions. Additionally, as the solar industry grows and matures, newer systems incorporate new technologies, tools, and approaches (e.g., batteries, new PV chemistries, and new land use) while older systems come offline and are retired and decommissioned. These new circumstances in the solar industry are also due for a public-facing explainer to show solar customers and their neighbors that there is no significant cause for concern.

Solar PV technologies and solar inverters are not known to pose any significant health dangers to their neighbors. The most important dangers posed are increased highway traffic during the relatively short construction period and dangers posed to trespassers of contact with high-voltage equipment. This latter risk is mitigated by signage and the security measures that industry uses to deter trespassing. Additionally, there are predictable occupational hazards to solar installers, which can be easily mitigated through worker protections and standard health and safety practices. As will be discussed in more detail below, risks of site contamination are much less than for most other industrial uses because PV technologies employ few toxic chemicals, and those used are used in minimal quantities.

Due to the reduction in the pollution from fossil-fuel-fired electric generators, the overall impact of solar development on human health is overwhelmingly positive. This pollution reduction results from a partial replacement of fossil-fuel-fired generation by emission-free PV-generated electricity, which reduces harmful sulfur dioxide (SO_2), nitrogen oxides (NO_x), and fine particulate matter ($PM_{2.5}$). Analysis from the National Laboratory of the Rockies (NLR, formerly the National Renewable Energy Laboratory) and Lawrence Berkeley National Laboratory (LBNL), both affiliates of the U.S. Department of Energy (DOE), estimates the health-related air quality benefits to the southeast region from solar PV generators to be worth 8.0¢ per kilowatt-hour of solar generation.[1,2,3] This is in addition to the value of the electricity and suggests that the air quality benefits of solar are worth more than the electricity itself.

Large-scale installation of PV technologies has been ongoing for the last decade, and the technology and its potential impacts have been studied since the 1950s. A combination of this solar-specific research and general scientific research has led to the scientific community having a good understanding of the science behind potential health and safety impacts of solar energy. This paper utilizes the latest scientific literature and knowledge of solar practices in North Carolina and elsewhere to address the health and safety risks associated with solar PV technology. These risks associated with solar PV technology are minimal and substantially lower than those arising from common land-use activities such as road transport or industrial development and are strongly outweighed by the health benefits of generating clean electricity.

[1] Biswas, A., Qiu, M., Braun, D., Dominici, F., Mork, D. "Quantifying Effects of Solar Power Adoption on CO_2 Emissions Reduction." *Science Advances*. July 2025.
[2] Rivera, N. M., Ruiz-Tagle, J. C., Spiller, E. "The Health Benefits of Solar Power: Evidence from Chile." *Journal of Environmental Economics and Management*. July 2024.
[3] Millstein, D., O'Shaughnessy, E., Wiser, R. "Climate and Air Quality Benefits of Wind and Solar Generation in the United States from 2019-2022." *Cell Reports Sustainability*. May 2024.

This paper addresses the potential health and safety impacts of solar PV in North Carolina, with a brief look at integrated battery energy storage systems (BESS), organized into the following four categories:

1. Hazardous Materials
2. Electromagnetic Fields (EMF)
3. Electric Shock and Arc Flash Hazards
4. Fire Safety

1. Hazardous Materials

One of the more common concerns about solar is that the panels (referred to as "modules" in the solar industry) consist of toxic materials that endanger public health. However, as shown in this section, solar energy systems may contain small amounts of toxic materials, but these materials do not endanger public health. To gain an understanding of the low potential for toxic hazards coming from a solar project, one must understand solar module construction, system installation, materials used, the panel end-of-life protocols, and system operation. This section will examine these aspects of a solar project and the potential for toxicity impacts in project installation and construction, system components, and operations and maintenance.

1.1 Project Installation and Construction

The system installation, or construction, process does not require toxic chemicals or processes. The site is mechanically cleared of large vegetation, fences are constructed, and the land is surveyed to lay out exact installation locations. Trenches for underground wiring are dug, and support posts are driven into the ground. The solar panels are bolted to steel and aluminum support structures and wired together. Inverter pads are installed, and an inverter and transformer are installed on each pad. Once everything is connected, the system is tested and activated.

1.2 System Components

1.2.1 Solar Panels: Construction and Durability

Solar PV panels typically consist of glass, polymer, aluminum, copper, and semiconductor materials that can be recovered and recycled at the end of their useful life.[4] Today there are two main PV technologies used in PV panels at utility-scale solar facilities: silicon and thin film. These two technology types make up 97% of the market.[5] As of 2025, all thin film used in North Carolina solar facilities are cadmium telluride (CdTe) panels from the U.S. manufacturer, First Solar. The manufacturer also operates in South Carolina, having announced in late 2025 the development of a 3.7 GW module production facility in Cherokee County.[6]

Crystalline silicon technology consists of silicon wafers, which are made into cells and assembled into panels; thin film technologies consist of thin layers of semiconductor material deposited onto glass, polymer, or metal substrates. While there are differences in the components and manufacturing processes of these two types of solar technologies, many aspects of their PV panel construction are very similar. There are other thin-film PV panels

[4] Abdo, D. M., El-Shazly, A. N., Medici, F. "Recovery of Valuable Materials from End-of-Life Photovoltaic Solar Panels." *Materials (Basel)*. April 2023.

[5] Svetz, M. Solar Panel Components: Safety." *PennState Extension*. January 2024. "https://extension.psu.edu/solar-panel-components-safety#:~:text=The%20average%20amount%20of%20lead%20in%20a,link%20the%20individual%20cells%20within%20the%20panel.

[6] Norman, W. "First Solar to build new 3.7GW module facility in South Carolina." *PV Tech*. October 2025. https://www.pv-tech.org/first-solar-to-open-new-3-7gw-us-manufacturing-plant-in-2026/

available on the market, such as Solar Frontier's copper indium gallium selenide (CIGS) panels. Specifics about each type of PV chemistry as it relates to toxicity are covered in subsections a, b, and c in section 1.2.2: on crystalline silicon, cadmium telluride, and copper indium selenium (CIS)/CIGS respectively. The rest of this section applies equally to both silicon and thin-film panels.

To keep out air and moisture, PV cells are encapsulated between two layers of plastic, providing decades of corrosion-free operation. The encapsulation layers are protected on the top with a layer of tempered glass and on the backside with a polymer sheet. Frameless and bifacial modules include a protective layer of glass on the rear of the panel, which may also be tempered. The plastic ethylene-vinyl acetate (EVA) commonly provides the cell encapsulation. For decades, this same material has been used between layers of tempered glass to give car windshields and hurricane windows their great strength. In the same way that a car windshield cracks but stays intact, the EVA layers in PV panels keep broken panels intact. Thus, a damaged module does not generally create small pieces of debris; instead, it largely remains together as one piece.

Nearly all panels include some kind of glass coating. These coatings are designed to protect the PV material and keep it clean, and depending on the choice of material, they can actually reduce operations and maintenance expenses. The glass coating on solar panels, much like glass on any surface (like the windows on buildings), can cast a glare from reflected sunlight. Because solar panels work by absorbing light, any reflected light is wasted energy; thus, many solar panels use anti-reflective coatings to absorb more light and cast less glare.[7] Modern solar panels cause less glare than some office building windows. Still, glare can be an issue in some urban settings and especially at airports. Glare can be further mitigated by requiring developers to perform glint and glare studies and through orientation and siting of the solar array itself; notably, adjusting the angle of solar panels to mitigate glare, particularly at airports, can be done in such a way as to maintain optimal energy output.[8]

There are growing concerns about the use of per- and polyfluoroalkyl substances (PFAS) in all kinds of construction and consumer goods, including solar panel coatings and components. PFAS are of concern because they are forever chemicals, i.e., once they are introduced into the

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[7] "Solar Panel Glare: Is it an issue?" Penn State Extension. https://extension.psu.edu/solar-panel-glare-is-it-an-issue

[8] Kim, C. *et al*. "Glare-Free Airport-Based Photovoltaic System via Optimization of Its Azimuth Angle." Sustainability, 2022.

environment, they do not break down and can easily increase in concentration as they move up the food chain. They have been linked to certain cancers and other health impacts. However, to date, studies have not found that solar panels are a significant source of PFAS pollution.[9]

It is widely accepted and recognized that PV panels have a roughly 25-year lifetime, after which they must be decommissioned and properly disposed of or recycled.[10] These power warranties guarantee a PV panel will produce at least 80% of its original nameplate production after 25 years of use. A 2020 survey conducted by LBNL of U.S. solar industry professionals indicates that the average operational lifespan of solar panels has steadily increased from about 20 years in 2007 to an estimated 25–35 years by 2025. The survey further notes that project developers typically plan for a minimum project lifespan of 30 years.[11] Meanwhile, NLR is researching ways to manufacture panels that will last 50 years.[12]

Moreover, local building codes require all structures, including ground-mounted solar arrays, to be engineered to withstand anticipated wind speeds, as defined by the local wind speed requirements. Many racking products are available in versions engineered for wind speeds of up to 150 miles per hour, which is significantly higher than the wind speed requirement anywhere in North Carolina. The strength of PV mounting structures was demonstrated during Hurricane Sandy in 2012 and again during Hurricane Matthew in 2016. During Hurricane Sandy, the many large-scale solar facilities in New Jersey and New York at that time suffered only minor damage.[13] In the fall of 2016, the U.S. and Caribbean experienced destructive winds and torrential rains from Hurricane Matthew, yet one leading solar tracker manufacturer reported that their numerous systems in the impacted area received zero damage from wind or flooding.[14] Both ground-mounted and rooftop solar systems also weathered Hurricane Helene in September 2024, delivering power to homes and communities despite outages and damage to the electrical grid across the

[9] Nain, P. and Anctil, A. "Per- and polyfluoroalkyl substances (PFAS) in solar photovoltaic modules." *Renewable and Sustainable Energy Reviews*. June 2025.
[10] Xia S., Yang Y., Poon J. P. H. "How to tackle the looming challenge of solar PV panel recycling." *Proc Natl Acad Sci U S A.* July 2025.
[11] Wiser R., Bolinger M., Seel J. "Benchmarking Utility-Scale PV Operational Expenses and Project Lifetimes: Results from a Survey of U.S. Solar Industry Professionals." *Lawrence Berkeley National Laboratory*. June 2020.
[12] "FY2021 Annual Report." *DuraMAT*. 2022. https://docs.nrel.gov/docs/fy22osti/82148.pdf

[13] David Unger. "Are Renewables Stormproof? Hurricane Sandy Tests Solar, Wind." *Christian Science Monitor.* November 2012. https://www.csmonitor.com/Environment/Energy-Voices/2012/1119/Are-renewables-stormproof-Hurricane-Sandy-tests-solar-wind.
[14] Rogers, M. & Phillips, R. "Tracking Your Solar Investment: Best Practices for Solar Tracker O&M." *NEXTracker.* March 2017.

state.[15] While storm hardening solar installations can be costly, it has been shown to protect them from all but the worst of extreme weather.[16]

The most common weather event that leads to solar panel damage is hail. When installing solar panels, customers should consider hail risk for their area, and if the risk is high, installing hail-resistant modules outright instead of retrofitting later or incurring large repair costs.[17] Even if hail does damage a solar panel or installation, the damage can be repaired, and if left unrepaired, the broken panels and modules pose no additional risks that other broken glass or equipment may also pose.[18]

In the event of a catastrophic event capable of damaging solar equipment, such as a tornado, the system will almost certainly have property insurance that will cover the cost to clean up and repair the project. It is in the best interest of the system owner to protect their investment against such risks. It is also in their interest to get the project repaired and producing full power as soon as possible. Therefore, the investment in adequate insurance is a wise business practice for the system owner. For the same reasons, adequate insurance coverage is also generally a requirement of the bank or firm providing financing for the project.

1.2.2 Photovoltaic (PV) Technologies

a. Crystalline Silicon

This subsection explores the toxicity of silicon-based PV panels and concludes that they do not pose a material risk of toxicity to public health and safety. Modern crystalline silicon PV panels, which account for over 90% of solar PV panels installed today, are, more or less, a commodity product. The overwhelming majority of panels installed in North Carolina are crystalline silicon panels that are informally classified as Tier I panels. Tier I panels are from well-respected manufacturers that have a good chance of being able to honor warranty claims. Tier I panels are understood to be of high quality, with predictable performance, durability, and content. Well over 80% (by weight) of the content of a PV panel is the tempered glass front and the aluminum frame, both of which are common building materials. Most of the remaining portion is common plastics,

[15] Langone, Alix. “Will your solar panels survive the next hurricane?” *EnergySage.* August 2025. https://www.energysage.com/news/solar-panels-withstand-hurricanes/
[16] Elsworth, J. and von Vleet, O. “Solar Photovoltaics in Severe Weather: Cost Considerations for Storm Hardening PV for Resilience.” *NREL*. June 2020. f
[17] “Hail Damage Mitigation for PV Systems,” U.S. Department of Energy. https://www.energy.gov/femp/hail-damage-mitigation-pv-systems
[18] “Why you don’t need to worry about broken solar panels,” Solar Energy Industries Association. https://seia.org/blog/why-you-dont-need-worry-about-broken-solar-panels/

including polyethylene terephthalate in the backsheet, EVA encapsulation of the PV cells, polyphenyl ether in the junction box, and polyethylene insulation on the wire leads. The active, working components of the system are the silicon PV cells, the small electrical leads connecting them together, and the wires coming out of the back of the panel. The electricity-generating and conducting components make up less than 5% of the weight of most panels. The PV cell itself is nearly 100% silicon, and silicon is the second most common element in the Earth's crust. The silicon for PV cells is obtained by high-temperature processing of quartz sand (SiO2) that removes its oxygen molecules. The refined silicon is converted to a PV cell by adding minuscule amounts of boron and phosphorus, both of which are common and of very low toxicity.

The other minor components of the PV cell are also generally benign; however, some contain lead, which is a human toxicant that is particularly harmful to young children. The minor components include an extremely thin anti-reflective coating (silicon nitride or titanium dioxide), a thin layer of aluminum on the rear, and thin strips of silver alloy that are screen-printed on the front and rear of the cell.[19] In order for the front and rear electrodes to make effective electrical contact with the proper layer of the PV cell, other materials (called glass frit) are mixed with the silver alloy and then heated to etch the metals into the cell. This glass frit historically contains a small amount of lead (Pb) in the form of lead oxide. The 60 or 72 PV cells in a PV panel are connected by soldering thin solder-covered copper tabs from the back of one cell to the front of the next cell. Traditionally, a tin-based solder containing some lead (Pb) is used, but some manufacturers have switched to lead-free solder. The glass frit and the solder may contain trace amounts of other metals, potentially including some with human toxicity, such as cadmium. However, testing to simulate the potential for leaching from broken panels, which is discussed in more detail below, did not find a potential toxicity threat from these trace elements. Therefore, the tiny amount of lead in the glass frit and the solder is the only part of silicon PV panels with the potential to create a negative health impact. However, as described below, the very limited amount of lead involved and its strong physical and chemical attachment to other components of the PV panel mean that even in worst-case scenarios the health hazard it poses is insignificant.

As with many electronic industries, the solder in silicon PV panels has historically been a lead-based solder, often 36% lead, due to the superior

[19] Honsberg, C. and Bowden, S. “Overview of Screen Printed Solar Cells.” *PV Education*. https://www.pveducation.org/pvcdrom/manufacturing-si-cells/screen-printed-solar-cells

properties of such solder. However, advances in lead-free solders have spurred a trend among PV panel manufacturers to reduce or remove the lead in their panels. In 2024, the Solar Scorecard, a ranking initiative led by the Solar Scorecard Project (formerly the Silicon Valley Toxics Coalition) in collaboration with the Collaboratory for a Regenerative Economy (CoRE) tracked the environmental responsibility of solar PV manufacturers.[20] The report details that crystalline silicon panel manufacturers Mitsubishi and REC have successfully transitioned to lead-free solders. Even more in particular, Mitsubishi has solder-free cells, and REC has eliminated lead from all of its panel components. While these companies are moving towards lead-free materials, the solar industry at large has not yet determined best practices for materials data and information sharing to reduce hazardous material use.

The report also identifies solar PV manufacturers that have achieved Electronic Product Environmental Assessment Tool (EPEAT) certification, a global ecolabel for electronics and technology products, including solar PV modules. The certification is administered by the Global Electronics Council and ranks eligible products as Bronze, Silver, or Gold based on a set of environmental performance criteria. These criteria focus on four impact areas: climate change mitigation, sustainable use of resources, chemicals of concern (e.g., lead, PFAS, and cadmium), and responsible supply chains.[21]
In the U.S., as of 2025, silicon PV panel manufacturer Qcells is currently the only manufacturer to attain EPEAT certification for silicon PV panels.[22] Qcells was registered in 2024 at the Bronze level, reflecting the company's sustainability leadership through its efforts to address key environmental impacts across the product life cycle. Regarding lead content, the manufacturer's laminate components contain less than 0.1% lead[23], meeting the requirements of the European Restriction of Hazardous Substances (RoHS) Directive, a globally recognized, long-standing standard that is complementary to EPEAT.

[20] "The Solar Scorecard: Measuring and Managing Vulnerabilities in the Solar Energy Industry." *Clean Production Action, CoRE, Solar Scorecard Project.* 2024.

[21] "EPEAT® Criteria." *Global Electronics Council®.* 2026. https://epeat.net/about/epeat-criteria#:~:text=Increase%20knowledge%20&%20publicly%20disclose%20chemical,metals%2C%20chlorinated%20compounds%20and%20phthalates

[22] "Product Finder." *Global Electronics Council®.* 2026. https://epeat.net/product-finder?refinementList%5Bcategory%5D%5B0%5D=Photovoltaic%20Modules%20and%20Inverters&refinementList%5Btype%5D%5B0%5D=Photovoltaic%20modules&refinementList%5Bcountry%5D%5B0%5D=United%20States

[23] "Product Safety Data Sheet." *Qcells*. March 2023.

Meeting the RoHS Directive's standards means that the amount of cadmium and lead in the panels they manufacture falls below the directive's thresholds, which are set by the European Union and serve as an internationally recognized standard for hazardous substances in manufactured goods.[24] The RoHS Directive requires that the maximum concentration found in any homogenous material in a product be less than 0.01% cadmium and less than 0.10% lead; therefore, any solder can be no more than 0.10% lead.[25]

While some manufacturers are producing PV panels that meet the RoHS standard, such as Qcells and JinkoSolar[26], there is no requirement that they do so because the RoHS Directive explicitly states that the directive does not apply to PV panels.[27] The justification for this is provided in item 17 of the current RoHS Directive:

"The development of renewable forms of energy is one of the Union's key objectives, and the contribution made by renewable energy sources to environmental and climate objectives is crucial. Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources (4) recalls that there should be coherence between those objectives and other Union environmental legislation. Consequently, this directive should not prevent the development of renewable energy technologies that have no negative impact on health and the environment and that are sustainable and economically viable."

Estimates for the lead in a single PV panel with lead-based solder range from 1.6 to 24 grams of lead, with 13 g (less than half of an ounce) per panel seen most often in the literature.[28] At 13 g/panel, each panel contains one-half of the lead in a typical 12-gauge shotgun shell.[29] This amount equates to roughly 1/750th of the lead in a single car

[24] "2015 Solar Scorecard." *Silicon Valley Toxics Coalition.* 2015. https://trellis.net/article/sunpower-solarworld-top-2015-solar-scorecard/
[25] "Recast of Reduction of Hazardous Substances (RoHS) Directive." *European Commission*. September 2016. http://ec.europa.eu/environment/waste/rohs_eeRe/index_en.htm
[26] "PV Module FAQs." *JinkoSolar.* 2026. https://jinkosolar.eu/solar-panels/pv-modules/
[27] "DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment." *Official Journal of the European Union.* June 2011. http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011L0065&from=en

[28] Giacchetta, G., Leporini, M., Marchetti, B. "Evaluation of the Environmental Benefits of New High Value Process for the Management of the End of Life of Thin Film Photovoltaic Modules." July 2013. www.researchgate.net/publication/257408804_Evaluation_of_the_environmental_benefits_of_new_high_value_process_for_the_management_of_the_end_of_life_of_thin_film_photovoltaic_modules
[29] "Study on Photovoltaic Panels Supplementing The Impact Assessment for a Recast of the WEEE Directive." *European Commission.* April 2011.

battery. In a panel, it is all durably encapsulated from air or water for the full life of the panel.[30]

As indicated by their 20- to 30-year power warranty, PV modules are designed for a long service life, generally over 25 years. For a panel to comply with its 25-year power warranty, its internal components, including lead, must be sealed from any moisture. Otherwise, they would corrode, and the panel's output would fall below power warranty levels. Thus, the lead in operating PV modules is not at risk of release to the environment during their service lifetime. In extreme experiments, researchers have shown that lead can leach from crushed or pulverized panels.[31, 32] However, more real-world tests designed to represent typical trash compaction that are used to classify waste as hazardous or non-hazardous show no danger from leaching.[33,34] For more information about PV panel end-of-life, see the Panel Disposal section.

As illustrated throughout this section, silicon-based PV panels do not pose a material threat to public health and safety. The only aspect of the panels with potential toxicity concerns is the minimal amount of lead in some panels. However, any lead in a panel is well sealed from environmental exposure for the operating lifetime of the solar panel and thus not at risk of release into the environment.

b. Cadmium Telluride (CdTe) PV Panels

This subsection examines the components of a CdTe PV panel. In the U.S., the share of CdTe PV panels manufactured makes up more than 30% of the utility-scale PV market.[35] Research demonstrates that they pose negligible toxicity risk to public health and safety while potentially reducing the public's exposure to cadmium by reducing coal emissions. As of Q3 2025, North Carolina had roughly 9.7 GW of installed solar capacity.[36] CdTe accounts for 16% of nationwide solar installations, so by that estimate, CdTe may account for roughly 1.55 GW in North Carolina.[37]

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[30] Miller, C. "Lead-Acid Batteries 3034." *Waste 360.* March 2006. http://waste360.com/mag/waste_leadacid_batteries_3
[31] Okkenhaug, G. "Leaching from CdTe PV module material results from batch, column, and availability tests." *Norwegian Geotechnical Institute.* 2010.
[32] Zapf-Gottwickl, R. *et al*. "Leaching Hazardous Substances out of Photovoltaic Modules." *International Journal of Advanced Applied Physics Research.* December 2015.
[33] Ibid.
[34] Sinha, P., *et al*. "Evaluation of Potential Health and Environmental Impacts from End-Of-Life Disposal of Photovoltaics." 2014.
[35] Meagley, R. et al. "Cadmium Telluride Photovoltaics Perspective Paper." *U.S. Department of Energy.* January 2025.
[36] "North Carolina State Solar Overview." *Solar Energy Industries Association*. 2025.
[37] Meagley, R. *et al*. "Cadmium Telluride Photovoltaics Perspective Paper." *U.S. DOE Solar Energy Technologies Office*. January 2025.

Questions about the potential health and environmental impacts from the use of this PV technology are related to the concern that these panels contain cadmium, a toxic heavy metal. However, scientific studies have shown that cadmium telluride differs from cadmium due to its high chemical and thermal stability.[38] Research has indicated that the tiny amount of cadmium in these panels does not pose a health or safety risk.[39]

Cadmium is toxic, but all the approximately 7 grams of cadmium in one CdTe panel is in the form of a chemical compound, cadmium telluride, which has 1/100th the toxicity of free cadmium.[40,41] Cadmium telluride is a very stable compound that is non-volatile and non-soluble in water. Even in the case of a fire, research shows that less than 0.1% of the cadmium is released when a CdTe panel is exposed to fire. The fire melts the glass and encloses over 99.9% of the cadmium in the molten glass.[42]

Further, there are very compelling reasons to welcome its adoption due to reductions in unhealthy pollution associated with burning coal. Every GWh of electricity generated by burning coal produces about 4 grams of cadmium air emissions.[43] Even though North Carolina produces a considerable portion of our electricity from coal, electricity from solar offsets much more natural gas than coal due to natural gas plants being able to adjust their rate of production more easily and quickly. Additionally, though there are toxic metal emissions associated with both PV manufacturing and the burning of fossil fuels, PV panels have considerably lower lifecycle greenhouse gas emissions.

It is important to understand the source of the cadmium used to manufacture CdTe PV panels. The cadmium is a byproduct of zinc and lead refining. The element is collected from emissions and waste streams during the production of these metals and combined with tellurium to create the CdTe used in PV

[38] Bonnet, D. and Meyers, P. "Cadmium-telluride—Material for thin film solar cells." *Journal of Materials Research.* 1998.
[39] Fthenakis, V. and Zweibel, K. "CdTe PV: Real and Perceived EHS Risks." *National Center for Photovoltaics and Solar Program Review Meeting.* March 2003.
[40] Fthenakis, V. "CdTe PV: Facts and Handy Comparisons." January 2003. https://www.semanticscholar.org/paper/CdTe-PV%3A-Facts-and-Handy-Comparisons-Fthenakis/f103bd7488913007a1ae0f1eadf85f6fdf8aa6f3
[41] Kaczmar, S., "Evaluating the Read-Across Approach on CdTe Toxicity for CdTe Photovoltaics." *SETAC North America 32nd Annual Meeting.* November 2011.
[42] V. M. Fthenakis et al. "Emissions and Encapsulation of Cadmium in CdTe PV Modules During Fires." *Progress in Photovoltaics*. May 2005. https://onlinelibrary.wiley.com/doi/10.1002/pip.624
[43] "Life Cycle Inventories and Life Cycle Assessments of Photovoltaic Systems." *International Energy Agency.* March 2015. http://iea-pvps.org/index.php?id=315

panels. If the cadmium were not collected for use in the PV panels or other products, it would otherwise either be stockpiled for future use, cemented and buried, or disposed of.[44] Nearly all the cadmium in old or broken panels can be recycled, which can eventually serve as the primary source of cadmium for new PV panels.[45]

Similar to silicon-based PV panels, CdTe panels are constructed of a tempered glass front, one instead of two clear plastic encapsulation layers, and a rear heat-strengthened glass backing (together >98% by weight). The final product is built to withstand exposure to the elements without significant damage for over 25 years. While not representative of damage that may occur in the field or even at a landfill, laboratory evidence has illustrated that when panels are ground into a fine powder, very acidic water is able to leach portions of the cadmium and tellurium,[46] similar to the process used to recycle CdTe panels. Like many silicon-based panels, CdTe panels are reported (as far back as 1998[47]) to pass the U.S. Environmental Protection Agency's (EPA) Toxic Characteristic Leaching Procedure (TCLP) test, which tests the potential for crushed panels in a landfill to leach hazardous substances into groundwater.[48] Passing this test means that they are classified as non-hazardous waste and can be deposited in landfills.[49,50] For more information about PV panel end-of-life, see the Panel Disposal section.

There is also concern about environmental impact resulting from potential catastrophic events involving CdTe PV panels. An analysis of worst-case scenarios for environmental impact from CdTe PV panels, including earthquakes, fires, and floods, was conducted by the University of Tokyo in 2013.

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[44] Fthenakis, V.M. "Life Cycle Impact Analysis of Cadmium in CdTe Photovoltaic Production," *Renewable and Sustainable Energy Reviews*. 2004.

[45] Weckend, S., Wade, A, and Heath, G. "End of Life Management: Solar Photovoltaic Panels." *International Renewable Energy Agency.* June 2016.

[46] Zapf-Gottwickl, R. *et al*. "Leaching Hazardous Substances out of Photovoltaic Modules." *International Journal of Advanced Applied Physics Research.* January 2015.

[47] Cunningham D. "Discussion about TCLP protocols." *Photovoltaics and the Environment Workshop.* July 1998. https://www.osti.gov/servlets/purl/759023

[48] Sinha, P., *et al*. "Evaluation of Potential Health and Environmental Impacts from End-Of-Life Disposal of Photovoltaics," *Photovoltaics*, 2014.

[49] Fthenakis, Vasilis M. "Chapter VII-2, Practical Handbook of Photovoltaics: Fundamentals and Applications, General editors T. Markvart and L. Castaner, to be published by Elsevier in 2003. ISBN 1-856-17390-9 OVERVIEW OF POTENTIAL HAZARDS." December 2003. https://www.semanticscholar.org/paper/Chapter-VII-2%2C-Practical-Handbook-of-Photovoltaics%3A-Fthenakis/504fcfc128f17c1d99784a8d9da8a06460b4adb3

[50] Okkenhaug, G,. Audun, H., and Hans P. H. Arp. "Environmental risks regarding the use and end-of-life disposal of CdTe PV modules." 2010.

After reviewing the extensive international body of research on CdTe PV technology, their report concluded, "Even in the worst-case scenarios, it is unlikely that the Cd concentrations in air and seawater will exceed the environmental regulation values."[51] In a worst-case scenario of damaged panels abandoned on the ground, insignificant amounts of cadmium will leach from the panels. This is because this scenario is much less conducive (larger module pieces, less acidity) to leaching than the conditions of the EPA's TCLP test used to simulate landfill conditions, which CdTe panels pass.[52]

First Solar, the U.S. and EPEAT-certified manufacturer and the only significant supplier of CdTe panels, has a robust panel take-back and recycling program that has been operating commercially since 2005.[53] The company states that it is "committed to providing a commercially attractive recycling solution for PV power plant and module owners to help them meet their module (end of life) EOL obligation simply, cost-effectively, and responsibly." First Solar provides global recycling services to their customers to collect and recycle panels once they reach the end of their productive life, whether due to age or damage. These recycling service agreements are structured to be financially attractive to both First Solar and the solar panel owner. For First Solar, the contract provides the company with an affordable source of raw materials needed for new panels and, presumably, a diminished risk of undesired release of Cd. The contract also benefits the solar panel owner by allowing them to avoid tipping fees at a waste disposal site. The legal contract helps provide peace of mind by ensuring compliance by both parties when considering the continuing trend of

[51] Matsuno, Y. "Environmental Risk Assessment of CdTe PV Systems to be considered under Catastrophic Events in Japan." December 2013.
[52] Sinha, P. and Wade, A. "Assessment of Leaching Tests for Evaluating Potential Environmental Impacts of PV Module Field Breakage." *IEEE*. 2015.

[53] "Responsible Solar: First Solar Leads Industry with Validated Environmental and Social Performance and Transparent Reporting." *Business Wire*. September 2024. https://www.businesswire.com/news/home/20240909937420/en/Responsible-Solar-First-Solar-Leads-Industry-with-Validated-Environmental-and-Social-Performance-and-Transparent-Reporting

rising disposal costs and increasing regulatory requirements.

c. CIS/CIGS and other PV technologies

Copper indium gallium selenide PV technology, often referred to as CIGS, is the second most common type of thin-film PV panel but a distant second behind CdTe. CIGS cells are composed of a thin layer of copper, indium, gallium, and selenium on a glass or plastic backing. None of these elements are very toxic, although selenium is a regulated metal under the Federal Resource Conservation and Recovery Act (RCRA).[54] The cells typically also have an extremely thin layer of cadmium sulfide that contains a tiny amount of cadmium, which is toxic. The promise of high-efficiency CIGS panels drove heavy investment in this technology in the past. However, researchers have struggled to transfer high efficiency success in the lab to low-cost, full-scale panels in the field.[55] In 2015, a CIGS manufacturer based in Japan, Solar Frontier, achieved some market success with a rigid, glass-faced CIGS module that competes with silicon panels. Solar Frontier produces the majority of CIS panels on the market today. Notably, these panels are RoHS compliant, thus meeting the rigorous toxicity standard adopted by the European Union even though this directive exempts PV panels. The authors are unaware of any completed or proposed utility-scale systems in North Carolina using CIS/CIGS panels, though several projects do exist across various parts of the country, including from Solar Frontier in California and Indiana.[56,57]

1.2.3 Panel End-of-Life Management

Concerns about the volume, disposal, toxicity, and recycling of PV panels are addressed in this subsection. As of 2025, modern utility-scale solar installations are expected, on average, to have useful lifetimes of 30 years or more.[58] Improvements in the durability and longevity of solar panels extend their useful life, easing near-term

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[54] "40 CFR §261.24. Toxicity Characteristic." *Code of Federal Regulations.* May 2017. https://www.ecfr.gov/cgi-bin/text-idx?node=se40.26.261_124&rgn=div8

[55] "Copper Indium Gallium Diselenide." *Office of Energy Efficiency & Renewable Energy.* https://www.energy.gov/eere/sunshot/copper-indium-gallium-diselenide

[56] "Solar Frontier Americas Development Announces Ribbon Cutting Event for 20 MW Solar Power Generation Plant in Southern California." *Idemitsu Renewables.* January 2016. https://idemitsurenewables.com/solar-frontier-americas-development-announces-ribbon-cutting-event-for-20-mw-solar-power-generation-plant-in-southern-california/

[57] Pickerel, K. "Case Study: Solar Frontier CIS modules installed on two Indiana utility-scale projects." *Solar Power World.* August 2016. https://www.solarpowerworldonline.com/2016/08/case-study-solar-frontier-cis-modules-installed-two-indiana-utility-scale-projects/

[58] Wiser, R., Bolinger, M., and Seel, J. "Benchmarking Utility-Scale PV Operational Expenses and Project Lifetimes: Results from a Survey of U.S. Solar Industry Professionals." *Lawrence Berkeley National Laboratory.* June 2020.

end-of-life pressures while still underscoring the need for long-term management strategies.

To put the volume of PV waste into perspective, consider that by 2030, the U.S. is expected to produce between .17 and 1 million tons of solar panel waste,[59] or, according to NLR, around 3,000 football fields worth of solar panel waste.[60] By 2050, the range will balloon to 7.5 to 10 million tons.[61] As of 2018, the EPA estimates that the U.S. produces about 300 million tons of solid waste each year, meaning that retired solar panels will account for less than 3% of total U.S. solid waste by 2050.[62] For comparison, wind components are projected to contribute 2.2 million metric tons of solid waste by 2050 under historical deployment projections and as much as 113 million metric tons of waste by 2050 under very high deployment scenarios.[63] However, up to 90% of wind materials can be recycled, so this figure can be mitigated. This number is minimal compared to coal, which produces (in addition to greenhouse gases) 70-100 million tons annually of ash, slag, and other solid waste.[64] Comparatively, the relative size of the solar waste that will accumulate by 2030, 2040, and 2050 is still predicted to be smaller than other waste streams, including plastic waste and coal ash.[65] In the U.S., end-of-life disposal, including recycling, of solar products is governed by the Federal Resource Conservation and Recovery Act (RCRA), as well as state policies in some situations.

Instead of sending modern panels to the landfill, they can be recycled to recover valuable and critical materials. As of November 1, 2025, the State of North Carolina requires that all solar facilities of 2 MW or greater have a decommissioning plan that incorporates

[59] Weckend, S. *et al*. "End-of-Life Management: Solar Photovoltaic Panels." International Renewable Energy Agency. June 2016.
[60] Hurdle, J. "As Millions of Solar Panels Age Out, Recyclers Hope to Cash In." *Yale Environment 360*. February 2023. https://e360.yale.edu/features/solar-energy-panels-recycling#:~:text=The%20area%20covered%20by%20solar,regulatory%20analyst%20at%20the%20lab
[61] Weckend, S. *et al*. "End-of-Life Management: Solar Photovoltaic Panels." International Renewable Energy Agency. June 2016.
[62] "National Overview: Facts and Figures on Materials, Wastes, and Recycling." *Environmental Protection Agency.* December 2025. https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/national-overview-facts-and-figures-materials

[63] Christofell, T. *et al*. "Recycling Wind Energy Systems in the United States." National Laboratory of the Rockies, January 2025.
[64] "Solid Waste/Byproducts of Gasification: Background." National Energy Technology Laboratory. https://www.netl.doe.gov/research/Coal/energy-systems/gasification/gasifipedia/solid-waste-bg
[65] Mirletz, H., Hieslmair, H., Ovaitt, S., Curtis, T. L., & Barnes, T. M. "Unfounded concerns about photovoltaic module toxicity and waste are slowing decarbonization." *Nature*. October 2023. https://www.nature.com/articles/s41567-023-02230-0

recycling.[66] Following this development, a solar recycling facility in North Carolina operated by SPR announced plans to expand its capacity to handle 1.5 million panels annually.[67] Additionally, in January 2025, SPR[68] and the Solar Energy Industries Association established a 6-month pilot in Mecklenburg County to test and refine residential solar panel recycling drop-off sites and processes. The results of that pilot have not yet been shared publicly.

The average solar panel is, by weight, 76-89% glass, 4-10% plastic, 6-8% aluminum, 0-5% silicon, and 1% other metals.[69] The recycling process seeks to recover and make useful as many of these materials as possible. In 2022, it cost $15-$45 per panel to recycle vs. $1-$5 per panel to landfill,[70] though the price of recycling specifically has declined by about 43% since 2024.[71] Process-wise, panel recycling generally requires mechanical removal and separation of frames, electronics, adhesives, and glass, followed by using electricity, heat, or chemicals to separate out the silicon, plastics, and metals from the remaining layered panel materials.[72]

Depending on the exact method used, recycling techniques can recover at most 100% of the glass, 90% of the metals, whole silicon wafers, and most of the plastics and polymers.[73] Each method uses various techniques and chemistries and may vary in cost and energy intensity as well, so recyclers must choose the method that works best to optimize materials recovery.

A look at historical global PV recycling trends hints at the future possibilities of the practice in our country and sheds light on the current economy for recycling. Europe installed MW-scale volumes of PV years before the U.S. In 2007, a public-private partnership between the European Union (EU) and the solar industry set up a voluntary collection and recycling system called

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[66] "Utility-Scale Solar Project Decommissioning Program." *NC Department of Environmental Quality.* 2025. https://www.deq.nc.gov/about/divisions/waste-management/utility-scale-solar-project-decommissioning-program
[67] Pickerel, K. "SPR expands solar panel recycling capacity at North Carolina facility." *Solar Power World*. September 4, 2025. https://www.solarpowerworldonline.com/2025/09/spr-expands-solar-panel-recycling-capacity-at-north-carolina-facility/#:~:text=SPR%20(SolarPanelRecycling.com)%20is%20adding%20a%20new%20processing,capacity%20at%20SPR's%20Texas%20and%20Georgia%20facilities.
[68] "Home." SPR. 2026. https://solarpanelrecycling.com/
[69] Powell, G. "Solar Panel Recycling: Demand, Technology & Supply Chain." *Presentation to SWANA North Carolina Chapter.* July 23, 2025.
[70] "Solar Energy Technologies Office Photovoltaics End-of-Life Action Plan." *U.S. Department of Energy.* March 2022.
[71] Powell, G. "Solar Panel Recycling."
[72] "Solar Panel Recycling." *U.S. Environmental Protection Agency.* https://www.epa.gov/hw/solar-panel-recycling
[73] Preet, S. "A comprehensive review on the recycling technology of silicon-based photovoltaic solar panels: Challenges and future outlook." *Journal of Cleaner Production.* April 2024.

PV CYCLE. This arrangement was later made mandatory under the EU's Waste from Electrical and Electronic Equipment (WEEE) directive, a program for waste electrical and electronic equipment.[74] Its member companies (PV panel producers) fully finance the association. This makes it possible for end-users to return the member companies' defective panels for recycling at any of the over 300 collection points around Europe without added costs. Additionally, PV CYCLE will pick up batches of 40 or more used panels at no cost to the user. This arrangement has been very successful, collecting and recycling over 77,000 tons between 2010 and 2022.[75]

In 2012, the WEEE Directive added the end-of-life collection and recycling of PV panels to its scope.[76] This directive is based on the principle of extended producer responsibility. It has a global impact because producers that want to sell into the EU market are legally responsible for end-of-life management. Starting in 2018, this directive mandated that 85% of PV products "put in the market" in Europe are recovered and 80% are prepared for reuse and recycling.

[74] "Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on Waste Electrical and Electronic Equipment." *Official Journal of the European Union.* July 2012.
[75] "Annual Report 2022." *PV Cycle.* 2015.
[76] "Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on Waste Electrical and Electronic Equipment." *Official Journal of the European Union.* July 2012.

Currently, the global solar panel recycling market is valued at about $365 million, with expected growth to about $450 million by 2026 and $1.5 billion by 2034; in the U.S., that market size is around $33 million and is expected to grow to $90 million by 2030.[77,78]

The success of PV panel collection and recycling programs in Europe offers a promising model for the future of PV recycling in the U.S. In mid-2016, the U.S. Solar Energy Industries Association (SEIA) established the National PV Recycling Program, a network of recycling and refurbishment providers that offer end-of-life management services for solar and storage installers, project and system owners, developers, distributors, and other stakeholders. SPR is a partner in this initiative, and there are four collection sites across North Carolina.[79] The program aggregates services from recycling vendors and PV manufacturers, making it easier for consumers to identify cost-effective and environmentally responsible end-of-life solutions for PV products. In addition, the program provides an online portal with guidance on how to responsibly repair, refurbish, resell, and recycle PV modules, inverters, and other system components.

[77] "Solar Panel Recycling Market Size, Share, and Industry Analysis." *Fortune Business Insights*.
[78] "United States Solar Panel Recycling Industry - Market Trends," Inkwood Research.
[79] "Circular Economy." *SEIA*. 2026. https://seia.org/initiatives/circular-economy/

To further strengthen its recycling efforts, SEIA launched SolarRecycle.org in late 2025 to enhance the long-term sustainability of the solar and storage industries and to connect industry leaders with recycling partners.[80] The platform offers information on recycling best practices and solar industry standards, as well as a curated collection of resources related to solar equipment safety and environmental health. These resources include the North Carolina Clean Energy Technology Center's solar decommissioning policy snapshot publication, which provides annual legislative updates on solar decommissioning and recycling, including a comprehensive review of existing state-by-state decommissioning and financial assurance policies.[81]

If not recycled, solar panels are sent to a landfill, where they may be treated as hazardous waste. RCRA establishes criteria that separate waste into hazardous (not accepted at ordinary landfills) and solid waste (generally accepted at ordinary landfills) based on a series of rules. According to RCRA, the way to determine if a PV panel is classified as hazardous waste is the Toxic Characteristic Leaching Procedure (TCLP) test. This EPA test is designed to simulate landfill disposal and determine the risk of hazardous substances leaching out of the landfill.[82,83,84] Multiple sources report that most modern PV panels, both crystalline silicon and CdTe panels, pass the TCLP test.[85,86] Some studies found that some older (1990s) crystalline silicon panels, and perhaps some newer crystalline silicon panels (specifics are not given about the vintage of panels tested) do not pass the lead (Pb) leachate limits in the TCLP test.[87,88] As of 2022, 20% of solar panels are using lead-free solder; lead and silver each constitute less than 0.1% by

[80] "Solar and Storage Industry Launches New Online Resource to Enhance Solar Recycling, Support Long-Term Sustainability." *SEIA*. October 2025. https://seia.org/news/solar-and-storage-industry-launches-recycling-resource/

[81] "Recent Publications." *DSIRE Insight*. 2026. https://www.dsireinsight.com/publications

[82] "40 C.F.R. §261.10. Identifying the Characteristics of Hazardous Waste and for Listing Hazardous Waste." *Code of Federal Regulations.* November 2016. http://www.ecfr.gov/cgi-bin/text-idx?SID=ce0006d66da40146b490084ca2816143&mc=true&node=pt40.26.261&rgn=div5#sp40.28.261.b

[83] "40 C.F.R. §261.24 Toxicity Characteristic." *Code of Federal Regulations.* November 2016. http://www.ecfr.gov/cgi-bin/text-idx?SID=ce0006d66da40146b490084ca2816143&mc=true&node=pt40.26.261&rgn=div5#se40.28.261_124

[84] Weckend, S. et al. "End-of-Life Management: Solar Photovoltaic Panels." *International Renewable Energy Agency.* June 2016.

[85] TLCP test results from third-party laboratories for REC, Jinko, and Canadian Solar silicon-based panels. Provided by PV panel manufacturers directly or indirectly to authors.

[86] "Introduction to Solar Panel Recycling." *Sinovoltaics*. March 2014. http://sinovoltaics.com/solar-basics/introduction-to-solar-panel-recycling/

[87] Fthenakis, V. "Regulations of Photovoltaic Module Disposal and Recycling." *Brookhaven National Laboratory.* January 2001.

[88] Sinha, P. *et al*. "Evaluation of Potential Health and Environmental Impacts from End-of-Life Disposal of Photovoltaics." *Photovoltaics*. 2014.

weight of the modules, and other toxic metals are generally not detected.[89]

The test begins with the crushing of a panel into centimeter-sized pieces. The pieces are then mixed in an acid bath. After tumbling for 18 hours, the fluid is tested for 40 hazardous substances that all must be below specific threshold levels to pass the test. Research comparing TCLP conditions to conditions of damaged panels in the field found that simulated landfill conditions provide overly conservative estimates of leaching for field-damaged panels.[90] Additionally, research in Japan has found no detectable Cd leaching from cracked CdTe panels when exposed to simulated acid rain.[91]

While a cautious approach toward the potential for negative environmental and health impacts from retired PV panels is fully warranted, this section has shown that the positive health impacts of reduced emissions from fossil fuel combustion from PV systems more than outweigh any potential risk. Testing shows that silicon and CdTe panels are both safe to dispose of in landfills and are also safe in worst-case conditions of abandonment or damage in a disaster. Additionally, analysis by local engineers has found that the current salvage value of the equipment in a utility-scale PV facility generally exceeds general contractor estimates for the cost to remove the entire PV system.[92,93,94]

1.2.4 Non-Panel System Components

While previous toxicity subsections discussed PV panels, this subsection describes the non-panel components of utility-scale PV systems and investigates any potential public health and safety concerns. The most significant non-panel component of a ground-mounted PV system is the mounting structure of the rows of panels, commonly referred to as "racking." The vertical post portion of the racking is galvanized steel, and the remaining above-ground racking components are either galvanized steel or aluminum, which are both extremely common and benign building materials. Both traditional racking systems and innovative materials for racking contain

[89] Li, F. *et al*. "A review of toxicity assessment procedures of solar photovoltaic modules." *Waste Management*. February 2024.
[90] Sinha, P. and Wade, A. "Assessment of Leaching Tests for Evaluating Potential Environmental Impacts of PV Module Field Breakage." *First Solar.* October 2015.
[91] Matsuno, Y. "Environmental Risk Assessment of CdTe PV Systems to be considered under Catastrophic Events in Japan." *First Solar.* December 2013.

[92] "Decommissioning Plan submitted to Catawba County associated with permitting of a 5MW solar project" *RBI Solar.* June 2016.
[93] "Decommissioning Plan submitted to Catawba County associated with permitting of a 5MW solar project." *Birdseye Renewables*. May 2015.
[94] "Decommissioning Plan submitted to Catawba County associated with permitting of a 5MW solar project." *Cypress Creek Renewables.* September 2016.

no harmful chemicals and are extremely environmentally stable.[95]

The inverters that make the solar generated electricity ready to send to the grid have weatherproof steel enclosures that protect the working components from the elements. The only fluids that they might contain are associated with their cooling systems, which are similar to the cooling system in a computer. Many inverters today are also RoHS compliant. The only known health and safety concerns with inverters are voltage and temperature, which can be mitigated with proper installation and maintenance.[96]

The electrical transformers (to boost the inverter output voltage to the voltage of the utility connection point) do contain a liquid cooling oil. However, the fluid used for that function is either a non-toxic mineral oil or a biodegradable non-toxic vegetable oil, such as BIOTEMP from ABB. These vegetable transformer oils have the additional advantage of being much less flammable than traditional mineral oils. Significant health hazards are associated with old transformers containing cooling oil with toxic polychlorinated biphenyls (PCBs).[97] Transformers with PCB-containing oil were common before PCBs were outlawed in the U.S. in 1979. PCBs still exist in older transformers in the field across the country.

Some high voltage transformers, switchgear, and circuit breakers contain sulfur hexafluoride (SF_6) gas to extinguish electrical arcs when a circuit breaker opens or to act as an insulating medium when electrical components are placed close together. SF_6 is widely used in high voltage equipment in the electric power industry, and is not specific to the electrical equipment at a solar installation. In its normal state, SF_6 is non-toxic, non-flammable, and chemically stable. Because it is a potent greenhouse gas with a global warming potential of 23,500 times that of CO_2[98], its use is regulated across the country.[99]

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[95] Carrera, L. A. I. *et al*. “Advances in Mounting Structures for Photovoltaic Systems: Sustainable Materials and Efficient Design.” *Technologies*. 2025.

[96] Erber, A. *et al*. “Assessment of Personal Safety Concerns of Plug and Play Photovoltaic Inverters using a Black Box Approach and Laboratory Measurements.” *Solar RLL*. 2025.

[97] Tiwari, R. *et al*. “Hazardous effects of waste transformer oil and its prevention: a review.” *Next Sustainability*. 2024.

[98] "Sulfur Hexafluoride (SF6) Basics." *US Environmental Protection Agency*. April 1, 2024. https://www.epa.gov/eps-partnership/sulfur-hexafluoride-sf6-basics

[99] "State and Regional Regulations Related to SF6 Emissions from Electric Transmission and Distribution." *US Environmental Protection Agency*. December 12, 2025. https://www.epa.gov/eps-partnership/state-and-regional-regulations-related-sf6-emissions-electric-transmission-and

As of 2026, there are 35 utility-scale battery storage projects in North Carolina, with a total capacity of 290 MW.[100] Lithium-ion batteries currently dominate the North Carolina utility-scale battery market. While they are generally safe to use, at the end of their life, these batteries must be disposed of or recycled properly and in accordance with a recently enacted North Carolina law prohibiting disposal of lithium-ion batteries in landfills[101] and U.S. Occupational Safety and Health Administration (OSHA) standards.[102]

1.3 Operations and Maintenance

Throughout the eastern U.S., the climate provides frequent and heavy enough rain to keep panels adequately clean. This dependable weather pattern eliminates the need to wash the panels regularly. Some system owners may choose to wash panels as often as once a year to increase production, but most in North Carolina do not regularly wash any PV panels. Dirt buildup over time may justify panel washing a few times over the panels' lifetime; however, nothing more than water and a soft cloth or brush are required for this activity.

[100] "Battery Storage Projects in North Carolina." *Cleanview*. January 2026.
[101] North Carolina General Statutes, Chapter 130 Public Health, §130A-309.10.(f).
[102] "Lithium-ion Battery Safety." *Occupational Safety and Health Administration*. 2024.

The maintenance of ground-mounted PV facilities requires that vegetation be kept low, both for aesthetics and to avoid shading of the PV panels. Several approaches are used to manage vegetation at North Carolina solar facilities, including planting low-growing species, applying herbicides, weed-eating, mowing, and grazing sheep. Most sites rely on monthly mowing with sickle mowers that fit under the panels, while others use sheep grazing to reduce maintenance effort and provide high-quality lamb meat.[103]

In addition to mowing and weed eating, solar facilities often use some herbicides. Solar facility owners generally do not spray herbicides over the entire acreage; rather, they apply them only in strategic locations, such as at the base of the perimeter fence, around the exterior vegetative buffer, on interior dirt roads, and near the panel support posts. Also, unlike many row

[103] "Home." *Sun-Raised Farms*. 2020. https://www.sunraisedfarms.com/

crop operations, solar facilities generally use only general use herbicides, which are available over the counter, as opposed to restricted use herbicides commonly used in commercial agriculture that require a special restricted use license. The herbicides used at solar facilities are primarily 2-4-D and glyphosate (Round-up®), which are two of the most common herbicides used in lawns, parks, and agriculture across the country. One maintenance firm that was interviewed sprays the grass with a class of herbicide known as a growth regulator in order to slow the growth of grass so that mowing is only required twice a year. Growth regulators are commonly used on highway roadsides and golf courses for the same purpose. A commercial pesticide applicator license is required for anyone other than the landowner to apply herbicides, which helps ensure that all applicators are adequately educated about proper herbicide use and application. The license must be renewed annually and requires passing of a certification exam appropriate to the area in which the applicator wishes to work. Based on the limited data available, it appears that solar facilities in North Carolina generally use significantly fewer herbicides per acre than most commercial agriculture or lawn maintenance services.

In addition, battery energy storage systems require meticulous operations and maintenance support to ensure they remain functional and safe. Dedicated and expert O&M staff that monitor energy storage sites can respond to issues quickly and keep the site safe for workers and the surrounding community.[104]

2. Electromagnetic Fields (EMF)

PV systems do not emit any material during their operation; however, they do generate electromagnetic fields (EMF), sometimes referred to as radiation. EMF produced by electricity is non-ionizing radiation, meaning the radiation has enough energy to move atoms in a molecule around (experienced as heat), but not enough energy to remove electrons from an atom or molecule (ionize) or to damage DNA. As shown below, modern humans are all exposed to EMF throughout our daily lives without negative health impact. Someone outside the fenced perimeter of a solar facility is not exposed to significant EMF from the solar facility. Therefore, there is no negative health impact from the EMF produced by a solar installation.

[104] Williams, J. "The truth about large-scale battery storage O&M." *Energy Storage News*. June 18, 2025. https://www.energy-storage.news/the-truth-about-large-scale-battery-storage-om/

The following paragraphs provide some additional background and detail to support this conclusion.

Since the 1970s, some have expressed concern over potential health consequences of EMF from electricity, but no studies have ever shown this EMF to cause health problems.[105] These concerns are based on some epidemiological studies that found a slight increase in childhood leukemia associated with average exposure to residential power-frequency magnetic fields above 0.3 to 0.4 μT (microteslas) (equal to 3.0 to 4.0 mG (milligauss)). μT and mG are both units used to measure magnetic field strength. For comparison, the average exposure for people in the U.S. is 1 mG or 0.1 μT, with about 1% of the population with an average exposure exceeding 0.4 μT (or 4 mG).[106] A review of epidemiological studies on the health impacts of electromagnetic fields from 2000 to 2021 shows that while some studies find a correlation between EMF exposure and cancer, others find no such correlation.[107]

These epidemiological studies, which found an association but not a causal relationship, led the World Health Organization's International Agency for Research on Cancer (IARC) to classify extremely low frequency (ELF) magnetic fields—electromagnetic radiation with frequencies ranging from 1 Hz to 300 Hz[108]—as "possibly carcinogenic to humans." Coffee also has this classification. This classification means there is limited evidence, but not enough evidence to designate it as either a "probable carcinogen" or "human carcinogen." Overall, there is very little concern that ELF EMF damages public health. The only concern that does exist is for long-term exposure above 0.4 μT (4 mG) that may have some connection to increased cases of childhood leukemia. In 1997, the National Academies of Science were directed by Congress to examine this concern and concluded:

"Based on a comprehensive evaluation of published studies relating to the effects of power-frequency electric and magnetic fields on cells, tissues, and organisms (including humans), the conclusion of the committee is that the current body of evidence does not show that exposure to these fields presents a human health hazard. Specifically, no conclusive and consistent evidence

[105] "EMF: Electric and Magnetic Fields Associated with Electric Power: Questions and Answers." *National Institute of Environmental Health Sciences.* June 2002.
[106] "Electromagnetic Fields and Public Health: Exposure to Extremely Low Frequency Fields. *"World Health Organization.* June 2007.
[107] Maffei, M. E. "Magnetic Fields and Cancer: Epidemiology, Cellular Biology, and Theranostics." *Int. J. Mol. Sci.* 2022.

[108] "Extremely Low Frequency (ELF) Radiation." *Occupational Safety and Health Administration.* 2026. https://www.osha.gov/elf-radiation#:~:text=Extremely%20low%20frequency%20(ELF)%20fields,electrical%20wiring%2C%20and%20electrical%20equipment.

indicates that exposures to residential electric and magnetic fields produce cancer, adverse neurobehavioral effects, or reproductive and developmental effects."[109]

There are two aspects to electromagnetic fields: an electric field and a magnetic field. The electric field is generated by voltage, and the magnetic field is generated by electric current, i.e., moving electrons. A task group of scientific experts convened by the World Health Organization (WHO) in 2005 concluded that there were no substantive health issues related to electric fields (0 to 100,000 Hz) at levels generally encountered by members of the public.[110] The relatively low voltages in a solar facility and the fact that electric fields are easily shielded (i.e., blocked) by common materials, such as plastic, metal, or soil. This means that there is no concern of negative health impacts from the electric fields generated by a solar facility. Thus, the remainder of this section addresses magnetic fields. Magnetic fields are not shielded by most common materials and thus can easily pass through them. Both types of fields are strongest close to the source of electric generation and weaken quickly with distance from the source.

The direct current (DC) electricity produced by PV panels produces stationary (0 Hz) electric and magnetic fields. Because of minimal concern about potential risks of stationary fields, little scientific research has examined stationary fields' impact on human health.[111] In even the largest PV facilities, the DC voltages and currents are not very high. One can illustrate the weakness of the EMF generated by a PV panel by placing a compass on an operating solar panel and observing that the needle still points north.

While the electricity throughout the majority of a solar site is DC electricity, the inverters convert this DC electricity to alternating current (AC) electricity matching the 60 Hz frequency of the grid. Therefore, the inverters and the wires delivering this power to the grid are producing non-stationary EMF, known as extremely low frequency (ELF) EMF, normally oscillating with a frequency of 60 Hz. This frequency is at the low-energy end of the electromagnetic spectrum. Therefore, it has less energy than other commonly encountered types of non-ionizing radiation like radio waves, infrared radiation, and visible light.

109 "Possible Health Effects of Exposure to Residential Electric and Magnetic Fields." *National Research Council.* 1997. https://www.nationalacademies.org/publications/5155

110 "Electromagnetic Fields and Public Health: Exposure to Extremely Low Frequency Fields." *World Health Organization.* June 2007.

111 "Electromagnetic Fields and Public Health: Static Electric and Magnetic Fields." *World Health Organization.* March 2006.

The wide use of electricity results in background levels of ELF EMFs in nearly all locations where people spend time—homes, workplaces, schools, cars, the supermarket, etc. A person's average exposure depends upon the sources they encounter, how close they are to them, and the amount of time they spend there.[112] As stated above, the average exposure to magnetic fields in the U.S. is estimated to be around 1 mG or 0.1 μT but can vary considerably depending on a person's exposure to EMF from electrical devices and wiring.[113] When comparing exposure to utility-scale solar facilities, including the solar PV panels, inverters, and other electrical components, the EMF exposure from the magnetic fields is extremely low. It can be compared to that of common household appliances, building wiring, and transmission lines. Other commonly used technologies, such as cell phones and microwaves, have higher frequencies.[114]

The strength of these magnetic fields diminishes quickly with distance from the source, but when surrounded by electricity in our homes and other buildings, moving away from one source moves you closer to another. For example, a common vacuum can produce a magnetic field of 300 mG at 6 inches, which drops to 2 mG at 3 feet.[115] Moreover, unless you are inside the fence at a utility-scale solar facility or electrical substation, it is impossible to get very close to the EMF sources. Because of this, EMF levels at the fence of electrical substations containing high voltages and currents can be considered "indistinguishable" from surrounding levels.[116]

The strength of ELF EMF present at the perimeter of a solar facility or near a PV system in a commercial or residential building is significantly lower than the typical American's average EMF exposure.[117,118] Researchers in Massachusetts measured magnetic fields at PV projects and found the magnetic fields dropped to very low levels of 0.5 mG or less, and in many cases to less than background levels (0.2 mG), at distances of no more than 9

[112] Sheppard, A. "Health Issues Related to the Static and Power-Frequency Electric and Magnetic Fields (EMFs) of the Soitec Solar Energy Farms." April 2014.
[113] "Study of Acoustic and EMF Levels from Solar Photovoltaic Projects." *Massachusetts Clean Energy Center.* December 2012.
[114] "Questions & Answers Ground-Mounted Solar Photovoltaic Systems." Massachusetts Department of Energy Resources, Massachusetts Department of Environmental Protection, and *Massachusetts Clean Energy Center,* June 2015.
[115] Ibid.
[116] "Electric and Magnetic Fields Associated with the Use of Electric Power: Questions and Answers." *National Institute of Environmental Health Sciences.* June 2002.
[117] Tell, R. A. *et al*. "Electromagnetic Fields Associated with Commercial Solar Photovoltaic Electric Power Generating Facilities." *Journal of Occupational and Environmental Hygiene*. 2015.
[118] "Questions & Answers: Ground-Mounted Solar Photovoltaic Systems." *Massachusetts Department of Energy Resources, Massachusetts Department of Environmental Protection, & Massachusetts Clean Energy Center.* June 2015.

feet from the residential inverters and 150 feet from the utility-scale inverters.[119] Even when measured within a few feet of the utility-scale inverter, the ELF magnetic fields were well below the International Commission on Non-Ionizing Radiation Protection's recommended magnetic field level exposure limit for the general public of 2,000 mG.[120] It is typical that utility scale designs locate large inverters central to the PV panels that feed them because this minimizes the length of wire required and shields neighbors from the sound of the inverter's cooling fans. Thus, it is rare for a large PV inverter to be within 150 feet of the project's security fence.

Anyone relying on a medical device such as a pacemaker or other implanted device to maintain proper heart rhythm may have concern about the potential for a solar project to interfere with the operation of his or her device. However, there is no reason for concern because the EMF outside the solar facility's fence is less than 1/1,000 of the level at which manufacturers test for ELF EMF interference, which is 1,000 mG.[121] Manufacturers of potentially affected implanted devices often provide advice on electromagnetic interference that includes avoiding letting the implanted device get too close to certain sources of fields such as some household appliances, some walkie-talkies, and similar transmitting devices. Some manufacturers' literature does not mention high-voltage power lines, some say that exposure in public areas should not give interference, and some advise not spending extended periods of time close to power lines.[122]

EMF strength from battery energy storage sites is so small as to be negligible (on the order of hundreds of mG), is a fraction of the Earth's baseline magnetic field, and is well below most exposure limits.[123]

3. Electric Shock and Arc Flash Hazards

There is a real danger of electric shock to anyone entering any of the electrical cabinets, such as combiner boxes, disconnect switches, inverters, or transformers, or otherwise coming in contact with voltages over 50 volts.[124] Another electrical hazard is an arc flash, which is an explosion of energy that can

[119] Ibid.
[120] Ibid.
[121] "EMFs and medical devices." *EMFS.* 2026. www.emfs.info/effects/medical-devices/

[122] Ibid.
[123] "Windham Energy Center Battery Energy Storage System: Report on Electric and Magnetic Fields." *Exponent, Inc.* September 2024.
[124] McCluer, D. "Electrical Construction & Maintenance: NFPA 70E's Approach to Considering DC Hazards." September 2013. http://ecmweb.com/safety/nfpa-70e-s-approach-considering-dc-hazards

occur in a short circuit situation. This explosive release of energy causes a flash of heat and a shockwave, both of which can cause serious injury or death. Properly trained and equipped technicians and electricians know how to safely install, test, and repair PV systems, but there is always some risk of injury when hazardous voltages and currents are present. Untrained individuals should not attempt to inspect, test, or repair any aspect of a PV system due to the potential for injury or death due to electric shock and arc flash. The National Electric Code (NEC) requires appropriate levels of warning signs on all electrical components based on the level of danger determined by the voltages and current potentials. The National Electric Code also requires the site to be secured from unauthorized visitors with either a 6-foot chain-link fence with three strands of barbed wire or an 8-foot fence, both with adequate hazard warning signs.

As with any electrical equipment, there are electric shock and arc flash hazards, as well as chemical burn hazards, associated with the operation of lithium-ion storage batteries that must be carefully protected against.[125,126]

[125] Coache, C. "A Better Understanding of NFPA 70E: Fire is not the Only Battery Safety Issue." *NFPA*. May 2024. https://www.nfpa.org/news-blogs-and-articles/blogs/2024/05/10/fire-is-not-the-only-battery-safety-issue

[126] Rosewater, D. "Reducing Risk When Performing Energized Work on Batteries." *IEEE IAS Electrical Safety Workshop*. 2023.

4. Fire Safety

The possibility of fires resulting from or intensified by PV systems may trigger concern among the public as well as among firefighters. However, concern over solar fire hazards should be limited because only a small portion of materials in the panels are flammable, and those components cannot self-support a significant fire. Flammable components of PV panels include the thin layers of polymer encapsulants surrounding the PV cells, polymer backsheets (framed panels only), plastic junction boxes on the rear of the panel, and insulation on wiring. The rest of the panel is composed of non-flammable components, notably including one or two layers of protective glass that make up over three-quarters of the panel's weight.

Even though solar panels are not particularly flammable and heat from a small flame is inadequate to ignite a PV panel, heat from a more intense fire or energy from an electrical fault can ignite a PV panel.[127] Most incidents are primarily driven by technical failures in the DC wiring, such as electrical arcing caused by faulty connectors, mismatched components, or compromised junction boxes. While

[127] Yang, H. *et al*. "Experimental Studies on the Flammability and Fire Hazards of Photovoltaic Modules," *Materials*. July 2015.

solar modules are functionally stable, external stressors such as shading or micro-cracks can create "hot spots" in modules that significantly increase the temperature of a specific area on the panel, potentially igniting nearby flammable material. When combined with environmental factors such as rodents chewing through cables and wear from weather conditions, these electrical and heat-based stressors represent the source of fire risk rather than the panels themselves.[128]

It is estimated that there are less than 0.0289 fires per MW of installed solar panels, so for North Carolina's 9.7 GW, that's a potential of around 280 fires.[129] While this may seem like a lot, there were over 4,500 wildfires in 2024 in North Carolina, not including thousands of urban fires.[130] This can be mitigated through proper wiring and electrical safety, as with any electrical equipment. While it is possible for electrical faults in PV systems on homes or commercial buildings to start a fire, this is extremely rare.[131] Most of the documented events where PV started a fire resulted in only minor property damage. Improving understanding of the PV-specific risks, safer system designs, and updated fire-related codes and standards will continue to reduce the risk of fire caused by PV systems.

PV systems on buildings can affect firefighters in two primary ways: 1) impact their methods of fighting the fire and 2) pose safety hazards to the firefighters. One of the most important techniques that firefighters use to suppress fire is ventilation of a building's roof. This technique allows superheated toxic gases to quickly exit the building. By doing so, the firefighters gain easier and safer access to the building. Ventilating the roof helps firefighters extinguish the fire more effectively. However, the placement of rooftop PV panels may interfere with ventilating the roof by limiting access to desired venting locations.

The 2018 North Carolina building codes require solar panels to be installed in accordance with regulations that minimize fire risk, minimize obstructions to pathways and rooftops, and define certain setback distances from property lines.[132] Furthermore, the latest National Electric Code has added requirements that make it easier for first responders to safely and effectively turn off a PV system. Concern for firefighting a building with PV can be reduced with

[128] Olasunkanmi, K. G., Adeniyi, A.S., and Adeyinka, A.A, "Summaries of Causes, Effects and Prevention of Solar Electric Fire Incidents." *International Journal of Engineering and Applied Physics.* January 2023.
[129] Ong, N. A. F. M. N. "Fault Tree Analysis of Fires on Rooftops with Photovoltaic Systems." *Journal of Building Engineering*, 46, 2022.
[130] "Wildfires by State, 2024." Insurance Information Institute.
[131] Paiss, M. "Tech Surveillance: PV Safety & Code Developments." *Cooperative Research Network.* October 2014.

[132] 2018 North Carolina State Building Code: Fire Prevention Code. Section 605.11 Solar photovoltaic power systems.

proper firefighter training, system design, and installation. Numerous organizations have studied firefighter safety related to PV and published valuable guides and training programs.

Some notable examples are listed below:

- The International Association of Fire Fighters (IAFF) and International Renewable Energy Council (IREC) partnered to create an online training course that is far beyond the PowerPoint click-and-view model. The self-paced online course, "Solar PV Safety for Firefighters," features rich video content and simulated environments so firefighters can practice the knowledge they've learned: www.iaff.org/pvsafetytraining
- "How to More Safely Integrate Energy Storage Systems (ESS) and Solar Photovoltaic (PV) Systems into Your Facility and Community," National Fire Protection Association[133]
- "A Guide to Fire Safety with Solar Systems," U.S. Department of Energy[134]
- "Solar Farm Safety," National Wildlife Coordinating Group[135]
- "Photovoltaics and Firefighters' Operations—Best Practices in Selected Countries," International Energy Agency[136]

A core priority in operational practices for lithium-ion-based battery energy storage systems is fire safety due to the flammable and potentially reactive properties of lithium. There is extensive research on how to manage and mitigate fire risk and extensive regulations and codes to ensure operational safety.[137]

[133] "How to More Safely Integrate Energy Storage Systems (ESS) and Solar Photovoltaic (PV) Systems into Your Facility and Community." *National Fire Protection Association*. 2024. https://www.nfpa.org/videos/safer-integration-of-ess-and-pv-systems

[134] "A Guide to Fire Safety with Solar Systems." *U.S. Department of Energy.* 2026. https://www.energy.gov/eere/solar/guide-fire-safety-solar-systems

[135] "Solar Farm Safety." *National Wildfire Coordinating Group*. July 2025. https://www.nwcg.gov/6mfs/misc-fireline-hazards/solar-farm-safety

[136] "Photovoltaics and Firefighters' Operations: Best Practices in Selected Countries." *International Energy Agency.* April 2017.

[137] "Battery Energy Storage Systems: Main Considerations for Safe Installation and Incident Response. Sustainable Management of Electronics and Batteries." *U.S. Environmental Protection Agency.* August 2025. https://www.epa.gov/electronics-batteries-management/battery-energy-storage-systems-main-considerations-safe

Conclusion

The purpose of this paper is to address and alleviate concerns of public health and safety for utility-scale solar PV projects and battery energy storage systems. Concerns of public health and safety were divided and discussed in the four following sections: (1) Hazardous Materials, (2) Electromagnetic Fields (EMF), (3) Electric Shock and Arc Flash Hazards, and (4) Fire Safety. In each of these sections, the negative health and safety impacts of utility-scale PV development were shown to be negligible, while the public health and safety benefits of installing these facilities are significant and far outweigh any negative impacts.