

Balancing the needs of people, power, and planet

# **SOLAR ENGINEERING SOLUTIONS**



ClarkDietz

Engineering Quality of Life®

# ABOUT US

## GOOD FOR PEOPLE. GOOD FOR THE PLANET.

We are a U.S. based multi-disciplined engineering firm providing professional consulting and design services for energy projects throughout the Midwest.

Our firm was founded nearly 60 years ago with a primary focus on civil engineering services. In response to our growing client base, we have expanded our expertise to include specializations in power and energy. We have quickly grown in our solar engineering expertise, and continue to evolve our services to meet the changing needs of the solar industry.

## WORK DRIVEN BY PURPOSE.

Our goal is to have a positive impact on people, the natural environment, and the well-being of the communities in which we live, work, and play. Our employees are registered in the following states:

Georgia  
Illinois  
Indiana  
Iowa  
Kentucky  
Michigan  
Minnesota  
Missouri  
Tennessee  
Texas  
Wisconsin



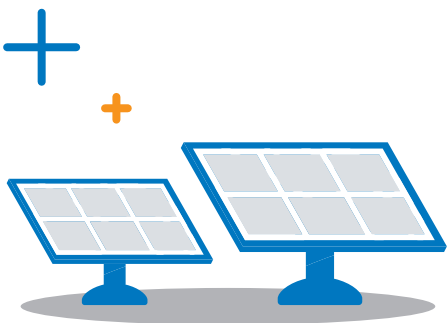
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# OUR PEOPLE

## COMMITTED TO OUR CLIENTS & COMMUNITY.

As a highly engaged and collaborative partner, we know that time and budget-sensitive projects are the norm. We're always up to the challenge. Working in sync with your staff, whether on-site or off, we strive to support your unique goals and exceed your expectations.

Our team brings expertise in all major engineering disciplines. We offer flexible, transparent and responsive support tailored to each project's needs, with a singular commitment to improving the quality of life for our clients and communities.



**11** # of States we're Licensed in

**130** # of Professional Engineers and Support Staff



# OUR SERVICES

## CIVIL ENGINEERING

Surveying  
Conceptual Design & Feasibility  
Civil Due Diligence  
Site Civil Engineering  
SWPPP Insepections  
Grading, Drainage, & Storm Water Management  
Construction Documents  
Construction Administration  
Project Management  
Permitting & Approvals

## ELECTRICAL ENGINEERING

Arc Flash Hazard Analysis  
Power Study  
Utility Interconnections  
Underground Cable Design  
Grounding  
One Line Diagram Development  
Construction Documents  
Construction Administration

## STRUCTURAL ENGINEERING

Analysis for New Equipment  
Roof Structural Analysis  
Foundation Design  
Retaining Walls

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# BY THE NUMBERS



**430,000+**

Solar Panels Supported



**140 MW**

Installed and In-progress

## TYPES OF SYSTEMS

- Ground Mount and Roof Mount Systems
- Fixed and Tracking Type PV Arrays
- Interconnect to Electric Utility Grid
- Interconnect to Client Electrical Distribution System

## TYPES OF SITES

- Community Solar Gardens
- Brownfield Redevelopment
- Urban Solar Farms
- Industrial
- Commercial and Municipal Facilities



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# EXPERIENCE SUMMARY

## CIVIL ENGINEERING SERVICES

- Civil due diligence including but not limited to: Phase 1 Environmental Site Assessment; Phase 1 archeological survey; Threatened and Endangered Species review; Decommissioning Plan; ALTA/NSPS Land Title Survey; Wetland Delineation; Geotech report; Drain tile investigation
- Construction sequencing
- Design for access road and perimeter fencing
- Planting and seeding plans
- Overall civil site plan detailing layout of solar array equipment, including enlarged plans and details
- Grading, erosion control and landscaping plans
- Details for civil installation
- Design for storm water management
- Survey work for construction layout and asbuilt survey
- Inspections for Storm Water Pollution Prevention Plan

## ELECTRICAL ENGINEERING SERVICES

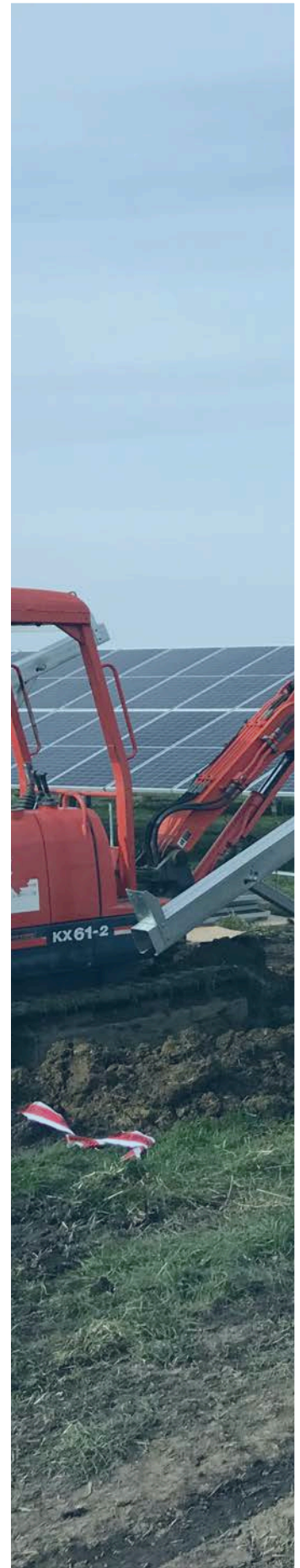
- Specifying of electrical equipment including but not limited to the following: Pad mounted transformers; switchboards; panelboards; medium voltage reclosers and GOAB switches; medium voltage reclosers; cables
- Overall electrical site plan and enlarged plans
- AC, DC, grounding, and communications one-line diagrams
- DC stringing plans
- Details for mounting of the following: inverters, DC combiners, electric poles and MV equipment
- Power studies including fault analysis, load flow, demand load analysis and DC system analysis
- Arc flash hazard analysis including coordination study
- Design for cable management system and underground raceway system

## STRUCTURAL ENGINEERING SERVICES

- Structural analysis for roof systems including the following: review of existing building plans; analysis of wind and snow loads; roof staging plans; prepare report with our recommendations and findings
- Design for racking system for electrical equipment
- Structural calculations

## CONSULTING SERVICES

- Project management
- Permitting and agency coordination
- Utility coordination
- Coordinating with equipment suppliers for PV modules, inverters, DC combiners, racking system, tracking system, and Data Acquisition Systems
- Preparation of bidding documents
- Construction administration



# EXPERIENCE SUMMARY

## SOLAR ENGINEERING PROJECTS

- Demille and Turrill Road Sites | Lapeer, MI \\ **45 MW 200,000** Panels
- Largest Carport Solar Array in Michigan | East Lansing, MI \\ **10 MW 40,000** Panels
- Brownfield Redevelopment | Kokomo, IN \\ **5.4 MW 21,000** Panels
- O'Shea Urban Solar Farm | Detroit MI \\ **2.04 MW 7,400** Panels
- Regional Electric Co-op | New Castle, IN \\ **1.08 MW 4,320** Panels
- Regional Electric Co-op | Greene County, IN \\ **1.08 MW 4,320** Panels
- Lutz Community Solar Garden | Gardner, IL \\ **2.9 MW 7,500** Panels
- Regional Electric Co-Op | Harrison County, IN \\ **1.08 MW 4,320** Panels
- Expansion: Largest MI Rooftop Solar Array | Canton, MI \\ **200 kW**
- New Large-Scale Solar Plant | Rincon, GA \\ **18.36 MW 67,300** Panels
- Two New Solar Plants: Electrical | Argos & Bainbridge, IN \\ **1.08 MW 4,000** Panels
- New Solar Plant | Brownstown, MI \\ **500 kW 1,800** Panels
- Deer Creek - New Solar Park Electrical Design | Marion, IN \\ **2.5 MW 10,000** Panels
- Deer Creek - SCADA | Marion, IN \\ **2.5 MW 10,000** Panels
- Deer Creek - Control Building Plans | Marion, IN \\ **2.5 MW 10,000** Panels
- Harley Davidson Powertrain Operations Facility | Menomonee Falls, WI \\ **2.9 MW 8,400** Panels
- University of Wisconsin - Parkside Solar Array Installation | Kenosha, WI \\ **2.8 MW 8,300** Panels
- Lily Lake Community Solar Garden | Maple park, IL \\ **2.9 MW 7,500** Panels
- Jones Dairy Solar Array Installation | Fort Atkinson, WI \\ **2.8 MW 7,100** Panels
- NG IL CSG Glenwood Solar Array Installation | Chicago Heights, IL \\ **2.6 MW 5,500** Panels
- NG IL CSG Mazon Solar Array Installation | Morris, IL \\ **2.6 MW 5,500** Panels
- Great Northern Instore Solar | Belvidere, IL \\ **315 kW**
- Baileyville 1 and 2 Solar | Baileyville, IL \\ **5.8 MW 11,650** Panels
- Talty 1, 2, and 3 Solar | Lasalle, IL \\ **8.7 MW 16,764** Panels
- Discovery World Solar | Milwaukee, WI \\ **275 kW**
- Incobrasa Solar | Gilman, IL \\ **5 MW 11,600** Panels
- Korte Construction Company Solar | Highland, IL \\ **130 kW**



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# EXPERIENCE

## DEMILLE AND TURRILL ROAD SITES > LAPEER, MI

 **45 MW**     **200,000 Solar Panels**

This two-site solar development includes one of the largest utility-owned PV solar array sites east of the Mississippi River. 200,000 solar panels will generate 45 MW of solar power, serving 9,000 homes. Clark Dietz is overseeing the site development for both sites providing project management, civil engineering, and electrical engineering design services: Plan Commission submittal drawings; site utility plan; site, tree clearing, grading, restoration, and erosion control plans; access road and fencing details; as well as grounding modeling, underground cable sizing, and utility interconnect coordination.

## LARGEST CARPORT SOLAR ARRAY IN MICHIGAN > EAST LANSING MI

 **10 MW**     **40,000 Solar Panels**

As part of Michigan State University's long-term strategic solution to provide cost-effective, reliable power to over 545 campus buildings, five parking lots will be equipped with solar panel parking bays; generating up to 10 MW of power. Clark Dietz is providing project management and civil and electrical engineering services. Civil: review of solar array layout, submittal drawings, SESC requirements, review for City and University standards conformance, and fencing details. Electrical: design compliance review, grounding design and study, and communications system consultation.

## BROWNFIELD REDEVELOPMENT > KOKOMO, IN

 **5.4 MW**     **21,000 Solar Panels**

The redevelopment of a former scrap steel plant site in Kokomo, IN cleared the way for the construction of a new 26-acre solar farm. Clark Dietz provided electrical, site civil, and structural engineering for the 5.4 MW ground-mounted PV Array on a brownfield site in Kokomo, IN which had not been used in over a decade. Services included project management, brownfield site redevelopment, site layout, access roadway design, site grading and drainage, permitting, grounding design, utility interconnect coordination, specifications, construction services, and record drawings.



# EXPERIENCE

## O'SHEA URBAN SOLAR FARM > DETROIT MI

 **2.04 MW**    **7,400 Solar Panels**

What was previously an abandoned park in Detroit, is being transformed into an urban solar farm. One of the largest of its kind in the US, this 2.04 MW, 7,400 panel, ground-mount solar farm will serve 450 homes and include recreational and educational community spaces. Clark Dietz is providing electrical, civil, and structural engineering services. Electrical: design compliance review, fault current study, grounding design, and final construction documents. Civil: review of solar array layout, site review, grading plans, SESC requirements, perimeter fencing, and ordinance compliance; culminating in final site plan design. Structural: inverter pad/foundation design and construction documentation.

## REGIONAL ELECTRIC CO-OP > NEW CASTLE, IN

 **1.08 MW**    **4,320 Solar Panels**

Electrical design, engineering, and consulting services, resulting in final design documents for the construction of a new 1.08 MW solar park in New Castle, IN. Services included: site plans detailing layout of solar array equipment, grounding, and underground conduits; solar system power and communication one-line diagrams; panel board schedule; details for electrical equipment installation; and preparation of final bidding documents.

## REGIONAL ELECTRIC CO-OP > GREENE COUNTY, IN

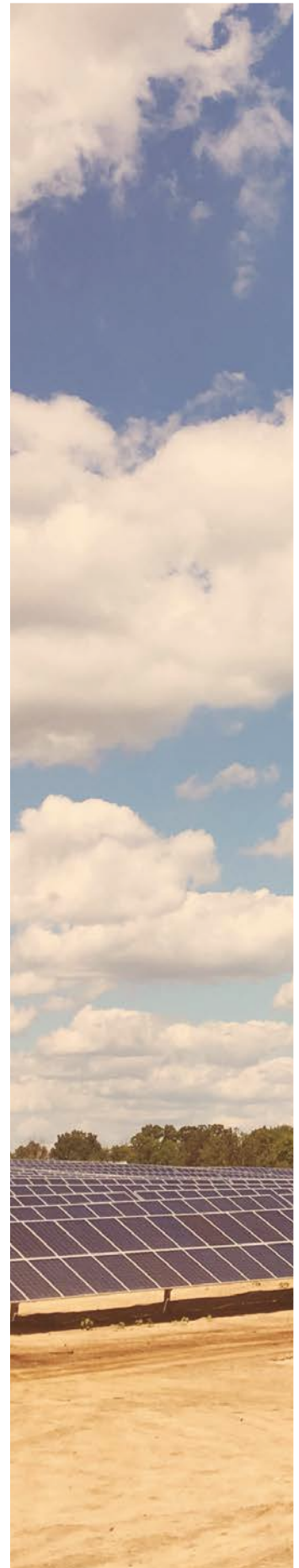
 **1.08 MW**    **4,320 Solar Panels**

Electrical design, engineering, and consulting services, resulting in final design documents for the construction of two new 1.08 MW solar parks in Crane and New Castle, IN. Services included: site plans detailing layout of solar array equipment, grounding, and underground conduits; solar system power and communication one-line diagrams; panel board schedule; details for electrical equipment installation; and preparation of final bidding documents.

## LUTZ COMMUNITY SOLAR GARDEN > GARDNER, IL

 **2.9 MW**    **7,500 Solar Panels**

Electrical, civil, and structural design, engineering, consulting services and construction phase services for the construction of a new 2.9 MW DC ground mount, tracking type PV system. The project is a design/build with a leading solar contractor in southern Wisconsin. Services included: civil plans with topography, new access road, and fencing; site plans detailing layout of solar array equipment, grounding, and conduit routing; power, grounding, and communication one-line diagrams; details for civil and electrical equipment installations; survey for construction layout; SWPPP inspections; and preparation of IFC documents.



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# EXPERIENCE

## REGIONAL ELECTRIC CO-OP > HARRISON COUNTY, IN

 **1.08 MW**    **4,320 Solar Panels**

Electrical and civil design, engineering, and consulting services, resulting in final design documents for the construction of a new 1.08 MW solar park in Georgetown, IN. Services included: site plans detailing layout of solar array equipment, grounding, and underground conduits; solar system power and communication one-line diagrams; panel board schedule; details for electrical equipment installation; and preparation of final bidding documents.

## EXPANSION: LARGEST MI ROOFTOP SOLAR ARRAY > CANTON, MI

 **200 kW**

Electrical design, engineering, and consulting services, resulting in final design documents for the construction of a 200kW rooftop solar array for a major retailer store in Canton, MI. Services included: site plans detailing layout of solar array equipment, grounding, conduit routing; solar system power and communication one-line diagrams; panel board schedule; details for electrical equipment installation; and preparation of final bidding documents.

## NEW LARGE-SCALE SOLAR PLANT > RINCON, GA

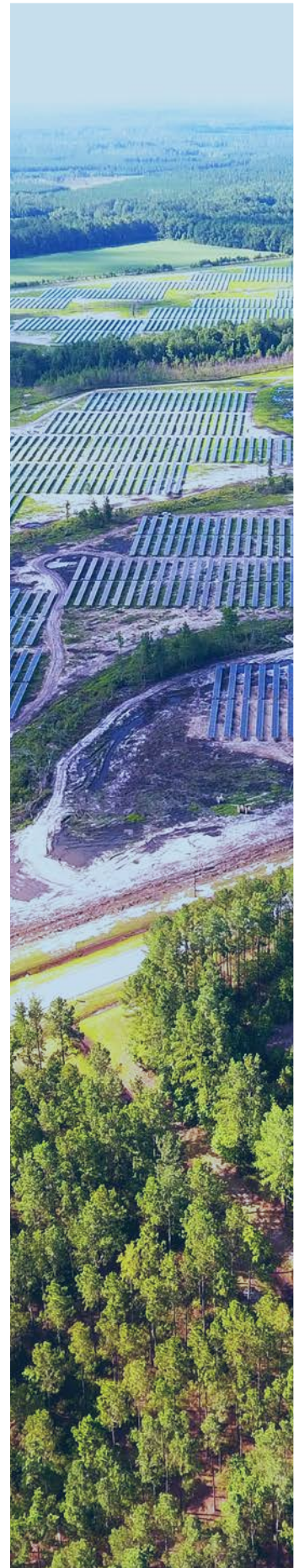
 **18.36 MW**    **67,300 Solar Panels**

Electrical design, engineering, and consulting services, resulting in final design documents for the construction of a new large-scale 18.36 MW solar park in Rincon, GA. Project elements included review of plans and design manual for code compliance, including site plans, one-line diagrams, details and calculations.

## 2 NEW SOLAR PLANTS: ELECTRICAL > ARGOS & BAINBRIDGE, IN

 **1.08 MW**    **4,000 Solar Panels**

Electrical design, engineering, and consulting services, resulting in final design documents for the construction of two new Indiana solar parks (720kW in Argos and 360kW in Bainbridge). Services included site plans detailing layout of solar array equipment, grounding, and underground conduits; solar system power and communication one-line diagrams; panel board schedule; details for electrical equipment installation; and preparation of final bidding documents.



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# EXPERIENCE

## NEW SOLAR PLANT > BROWNSTOWN, MI

 **500 kW**    **1,800 Solar Panels**

Electrical and civil design, engineering, and consulting services, resulting in final design documents for the construction of a new 500kW solar park in Taylor, MI. Services included: site plans detailing layout of solar array equipment, grounding, and underground conduits; solar system power and communication one-line diagrams; panel board schedule; details for electrical equipment installation; and preparation of final bidding documents.

## DEER CREEK - NEW SOLAR PARK ELECTRICAL DESIGN > MARION, IN

 **2.5 MW**    **10,000 Solar Panels**

Clark Dietz supplied network and SCADA design and relay settings for the Deer Creek solar field. Work involved functional design and control narrative of the system, updates to transformers, combining switchgear, and installation of ION meters. Data collection is accomplished through PLC's deployed at major data collection points, providing real-time and historical reporting. The system is equipped with redundant SCADA control services, HMI workstations, field instrumentation, meteorological stations, and communications devices. It also interfaces with owner's data communications system, transmitting communications via a fiber optic infrastructure.

## DEER CREEK - SCADA > MARION, IN

 **2.5 MW**    **10,000 Solar Panels**

Clark Dietz supplied network and SCADA design and relay settings for the Deer Creek solar field. Work involved functional design and control narrative of the system, updates to transformers, combining switchgear, and installation of ION meters. Data collection is accomplished through PLC's deployed at major data collection points, providing real-time and historical reporting. The system is equipped with redundant SCADA control services, HMI workstations, field instrumentation, meteorological stations, and communications devices. The system interfaces with owner's data communications system, transmitting communications via a fiber optic infrastructure.

## DEER CREEK - CONTROL BUILDING PLANS > MARION, IN

 **2.5 MW**    **10,000 Solar Panels**

Drafted an overall plan view and four elevation views of the solar plant's control building and associated equipment based on owner dimensions.



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# EXPERIENCE

## HARLEY DAVIDSON POWERTRAIN OPERATIONS FACILITY

### > MENOMONEE FALLS, WI

 **2.9 MW**     **8,400 Solar Panels**

Electrical and structural design, engineering, consulting services and construction phase services for the construction of a new 2.9 MW DC rooftop, fixed mounted PV system for an existing manufacturing facility. The project is a design/build with a leading solar contractor in southern Wisconsin. Services included: site plans detailing layout of solar array equipment, grounding, and conduit routing; power, grounding, and communication one-line diagrams; details for electrical equipment installations; and preparation of IFC documents.

## UNIVERSITY OF WISCONSIN - PARKSIDE SOLAR ARRAY INSTALLATION

### > KENOSHA, WI

 **2.8 MW**     **8,300 Solar Panels**

Electrical, civil, and structural design, engineering, consulting services and construction phase services for the construction of a new 2.8 MW DC ground mount, fixed mounted PV system. The project is a design/build with a leading solar contractor in southern Wisconsin. Services included: civil plans with topography, new access road, and fencing; site plans detailing layout of solar array equipment, grounding, and conduit routing; power, grounding, and communication one-line diagrams; details for civil and electrical equipment installations; survey for construction layout; and preparation of IFC documents.

## LILY LAKE COMMUNITY SOLAR GARDEN > MAPLE PARK, IL

 **2.9 MW**     **7,500 Solar Panels**

Electrical, civil, and structural design, engineering, consulting services and construction phase services for the construction of a new 2.9 MW DC ground mount, tracking type PV system. The project is a design/build with a leading solar contractor in southern Wisconsin. Services included: civil plans with topography, new access road, and fencing; site plans detailing layout of solar array equipment, grounding, and conduit routing; power, grounding, and communication one-line diagrams; details for civil and electrical equipment installations; survey for construction layout; SWPPP inspections; and preparation of IFC documents.



# EXPERIENCE

## JONES DAIRY SOLAR ARRAY INSTALLATION > FORT ATKINSON, WI

 **2.8 MW**    **7,100 Solar Panels**

Electrical, site civil, and structural design and construction phase services for construction of a new 2.8 MW DC ground mounted, fixed PV system. Site civil work included survey, plans with topography, drainage, design of a new access road, and perimeter fencing. Electrical work included site electrical plans with detailed layout of solar array equipment, grounding, conduit routing, power distribution, and communication systems design. Coordination study, fault current and arc flash studies were provided. Structural work included design of supports and pads for electrical equipment. Permitting assistance was also provided.

## NG IL CSG GLENWOOD SOLAR ARRAY INSTALLATION > CHICAGO HEIGHTS, IL

 **2.6 MW**    **5,500 Solar Panels**

Electrical, site civil, and structural design and construction phase services for construction of a new 2.6 MW DC ground mounted, tracking type PV system for a community solar garden. Site civil work included survey, plans with topography, drainage, design of a new access road, and perimeter fencing. Electrical work included site electrical plans with detailed layout of solar array equipment, grounding, conduit routing, power distribution, and communication systems design. Coordination study, fault current and arc flash studies were provided. Structural work included design of supports and pads for electrical equipment. Permitting assistance was also provided.

## NG IL CSG MAZON SOLAR ARRAY INSTALLATION > MORRIS, IL

 **2.6 MW**    **5,500 Solar Panels**

Electrical, site civil, and structural design and construction phase services for construction of a new 2.6 MW DC ground mounted, tracking type PV system for a community solar garden. Site civil work included survey, plans with topography, drainage, design of a new access road, and perimeter fencing. Electrical work included site electrical plans with detailed layout of solar array equipment, grounding, conduit routing, power distribution, and communication systems design. Coordination study, fault current and arc flash studies were provided. Structural work included design of supports and pads for electrical equipment. Assistance with permitting and stormwater inspections during construction was also included. The Mazon site also included 2 miles of MV Feed line to service the site.



# EXPERIENCE

## GREAT NORTHERN INSTORE SOLAR > BELVIDERE, IL

 **315 kW**

Structural analysis for addition of a 315 kW roof mounted, fixed type PV system. EcoX racking system with PV modules will be added on the existing standing seam metal roof. Racking system will be flush mounted, non-ballasted.

## BAILEYVILLE 1 AND 2 SOLAR > BAILEYVILLE, IL

 **7.8 MW**  **11,650 Solar Panels**

Electrical, civil, and structural design, engineering, consulting services and construction phase services for the construction of two sites each having 3.9 mW ground mount, tracking type PV systems. The project is design/build with a leading solar contractor in southern Wisconsin. Services included: civil plans with topography, new access road, and fencing; site plans detailing layout of solar array equipment, grounding, DC stringing, and conduit routing; power, grounding, and communications one-line diagrams; details for civil and electrical equipment installations; survey for construction layout; SWPPP inspections; and preparation of IFC documents.

## TALTY 1, 2 AND 3 SOLAR > STREATOR, IL

 **8.7 MW**  **16,764 Solar Panels**

Electrical, civil, and structural design, engineering, consulting services and construction phase services for the construction of three sites each having 3.9 mW ground mount, PV systems. Two sites have tracking type systems and one site is a fixed tilt system. The project is design/build with a leading solar contractor in southern Wisconsin. Services included: civil plans with topography, new access road, and fencing; site plans detailing layout of solar array equipment, grounding, DC stringing, and conduit routing; power, grounding, and communications one-line diagrams; details for civil and electrical equipment installations; survey for construction layout; SWPPP inspections; and preparation of IFC documents.



# EXPERIENCE

## DISCOVERY WORLD SOLAR > MILWAUKEE, WI

 **275 kW**

Structural analysis for addition of a 275 kW roof mounted, fixed type PV system. Unirac Metal X racking system with PV modules will be added on two existing flat roofs that are comprised of prestressed concrete structural system. Racking system will be flush mounted and ballasted.

## INCOBRASA SOLAR > GILMAN, IL

 **7.5 MW**  **11,600 Solar Panels**

Electrical, civil, and structural design, engineering, consulting services and construction phase services for the construction of a 7.5 mW ground mount, tracking type PV system. The PV system will interface with the existing 12.47 kV switchgear at an existing industrial facility. The project is design/build with a leading solar contractor in southern Wisconsin. Services included: civil due diligence; civil plans with topography, new access road, and fencing; site plans detailing layout of solar array equipment, grounding, DC stringing, and conduit routing; power, grounding, and communications one-line diagrams; details for civil and electrical equipment installations; survey for construction layout; SWPPP inspections; and preparation of IFC documents.

## KORTE CONSTRUCTION COMPANY SOLAR > HIGHLAND, IL

 **130 kW**

Structural analysis for addition of a 130 kW roof mounted, fixed type PV system. Unirac Metal X racking system with PV modules will be added on the existing standing seam metal roof. Racking system will be flush mounted, non-ballasted.





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