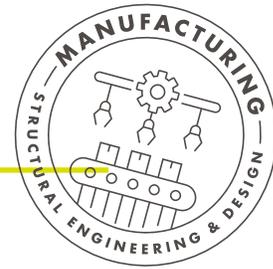


# SOLAR FARM ARRAYS

## VALMONT SOLAR/VALMONT UTILITY ENERGY



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Structural engineering design of all solar array frames, panels, foundations and infrastructure related to the renewable energy demand.



### CHALLENGE

Over 25% of the world's electric power comes from a renewable energy resources such as wind or solar. With increasing numbers annually, the need to have a vast array of solar farms (private) and individual homeowner/business use (public) is increasing. Each phase of the design is critical to the next. In order to gain permitting quickly and avoid other project delays, understanding the various challenges of specific locations due to landscape, soil conditions, weather conditions and different jurisdictional regulations is critical to quick turnaround times. Coordination and communication are also critical to efficiently and effectively working together to have a shared result of completing the project quickly.

### SOLUTION

Our first step was to study renewable energy engineering requirements across North America. Next, we worked with our client to understand their specific product and develop systems and streamline processes and communication while not reinventing the wheel. The permitting requirements across North America often require that the final submitted plans to the authority having jurisdiction so they can be stamped and signed by a licensed structural engineer. Our analysis includes engineering of the frame components that all the multiple solar panels attach to. We are primarily checking for wind loads across the surface of the complete apparatus. The array rotates with the high point of the sun, so we check to make sure the worst cast wind loads on the effective surface area are all accounted for. We also check for the proper soil embedment of the frame columns to ensure that no additional movement within the frames occurs. Some jurisdictions require that the complete manufactured frame and all of its components be verified as well to make sure everything is in compliance with their local jurisdiction requirements. Our experience throughout North America brings the knowledge of what is needed and required in different jurisdictions. Through our development of processes and communications with our clients, we are able to be their structural engineer of choice no matter where they are so they may maintain consistency of quality, production and turnaround times as well as a trusted relationship.

### TEAM MEMBERS

**BRIAN SIELAFF, M.S.C.E., S.E., P.E., P. ENG.**  
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**DEREK PECK, P.E.**  
Project Engineer

**GARRETT DAVIS, E.I.**  
Project Engineer

### SERVICES

**STRUCTURAL SYSTEM EVALUATION**

**STRUCTURAL DESIGN & ANALYSIS**

**VALUE ENGINEERING**

**CONSTRUCTION ADMINISTRATION**



Of the total U.S. electricity generation, Solar energy accounts for 1.6%.



America's largest solar farm, Solar Star, is 4 times the size of Central Park and produces about 579MW.



Since 2013, Solar has ranked in the top two in capacity added to the electric total in the U.S.



Solar power in America offsets over 70 million metric tons of carbon dioxide yearly — nearly equal to planting 1.2 billion trees.



Over 1.47 million solar panels are in use across the contiguous 48 states.

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