



Civil & Environmental Consultants, Inc.

# Solar Project Development

**CEC has a firm understanding of the solar project development process and excels at providing turnkey design and permitting solutions to support regulated and deregulated wholesale power markets.**

We have experience with canopy, rooftop, ground-mount, and ballasted systems, and single- and dual-axis tracker systems. Our solar development team supports solar energy developers, energy investment groups, state and local regulators, power utilities, and public stakeholder groups.

CEC's services include site intelligence and selection, conceptual design and permitting, and engineering construction design and project completion for community-scale and utility-scale solar projects up to 150 MW.

## SITE INTELLIGENCE AND SELECTION

The key to successful projects is the involvement of an engineering and design team in the early stages, ideally before a project site is purchased. CEC can tap a vast network of contacts, including key decision-makers for commercial logistical center developers, large retail chains, manufacturers and equipment suppliers, power and utilities facilities, and landfill facilities. With a wealth of intelligence along with publicly available data sources, CEC can provide the following early-stage solar project development services.

- Conceptual Design
- Preliminary Environmental Impact Assessment and Permit Identification
- Transmission Service Preliminary Demand Load and Interconnection
- Land Use Limitation Evaluation (Wetlands, Streams, Easements, Zoning)
- Unmanned Aerial Vehicle (UAV) LiDAR Scans, Aerial Photography, and 3D Laser Scanning
- System Output Modeling and Design Constraints
- Evaluation of State and Local Land Development Ordinances
- Rooftop Condition Inspection and Warranty Evaluation





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## CONCEPTUAL DESIGN AND PERMITTING

There are many challenges related to local laws and regulations, community opposition, and design constraints that have the potential to impact solar development projects. Developing simple and innovative solutions maximizes return on investment for the solar developer and/or capital investment group. CEC's team prides themselves on working effectively with local and state jurisdictions. Services related to conceptual design and permitting are summarized below.

- Land Use Permitting and Variances
- Regulatory Agency Consultation
- System and Facility Conceptual Design
- Landscaping and Visual Screening Design
- Single-Line and Three-Line Electrical Diagrams
- Utility Interconnection Application and Coordination
- Environmental Impact Statements and Due Diligence
- Geotechnical Investigation and Foundation Design
- Wetland and Stream and Forest Stand Delineation and Permitting
- Threatened and Endangered Species and Cultural Resource Assessment and Permitting
- ALTA and Topographic Survey
- Drainage Analysis and Erosion and Sediment Control Plans
- Stormwater Design, Management Plans, and Associated Permitting
- Decommissioning Plans
- Canopy and Rooftop Structural Design
- Public/Community Outreach
- Additional Services Provided Through a Strategic Engineering Partnership
  - Shade Evaluation and Glint and Glare Studies
  - Low-Voltage Design and System Control
  - Energy Storage System Design
  - Grid-connected and Island Microgrid Design

## ENGINEERING CONSTRUCTION DESIGN AND PROJECT COMPLETION

CEC understands that the success of a solar development project hinges on maintaining schedule, efficiency, and cost control during the late stages of a project. From final design to construction, CEC's engineering construction design and project completion services can help you maximize project return on investment.

- Construction Management Support
- Three-Line Diagrams and Electrical System Schematics
- Construction Details and Bid Specifications
- Project Management
- Construction Inspection and Oversight
- Construction Materials Testing and Oversight
- 3D Renderings and UAV Fly-Overs
- As-built Documents
- Project Close-out Documents