Civil & Environmental Consultants, Inc.

STATEMENT OF QUALIFICATIONS

PROFESSIONAL ENGINEERING & CONSULTING SERVICES FOR RENEWABLE ENERGY

PROFESSIONAL ENGINEERING & CONSULTING SERVICES FOR RENEWABLE ENERGY

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1.0 Introduction

Civil & Environmental Consultants, Inc. (CEC) provides engineering and permitting services to support renewables projects from concept through operation. We've organized this SOQ around four stages of project service: Stage One- Critical Issues Analysis, Stage Two - Field Investigations, Stage Three - Design and Permitting, and Stage Four - Construction-Related. As you will see, CEC has a lot to offer in each of these areas.

Our solar project development services cover all four stages. We have supported projects ranging from commercial rooftop arrays of less than 1 MW to utility-scale projects up to 800 MW. We have worked with developers, owners/operators, investors, regulators, utility companies, and others to support projects in 30 states nationwide (see Figure 1). We estimate that the total capacity of the nearly 200 projects we've supported since 2015 exceeds 10 GW.

Our wind experience has focused on 10 states where we've provided over a decade of technical expertise in the Stage 2 area of avian species impacts. We've also supported Stage 1 environmental and cultural due diligence investigations for large-scale wind projects. Our portfolio of 18 projects, many of which span multiple years, represents nearly 4 GW of installed capacity.

In the BESS area our expertise falls primarily into traditional Stage 3 site development services, especially geotechnical. We've completed or are involved with 8 projects for 5 clients representing an estimated 200 MWh of capacity.

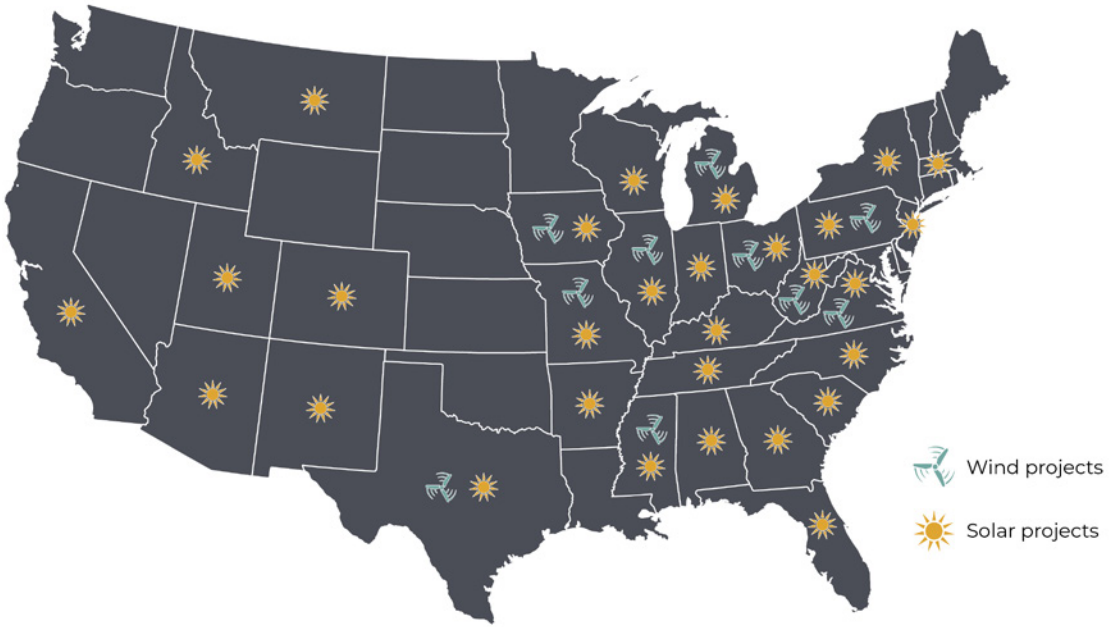
In the following sections we present detailed explanations of the four stages of renewable energy project service we provide. Appendix A includes a summary table of project experience and a collection of relevant project descriptions.

We hold Professional Engineering Licenses in all 50 states and the U.S. Virgin Islands. Structural Engineers are registered in the following states

- Alabama
- Arizona
- Arkansas
- Colorado
- Delaware
- Florida
- Georgia
- Indiana
- Kansas
- Kentucky
- Maryland
- Massachusetts
- Michigan
- Mississippi
- Missouri
- Nebraska
- New Hampshire
- New Jersey
- New York
- North Carolina
- Ohio
- Oregon
- Pennsylvania
- Rhode Island
- South Carolina
- Tennessee
- Texas
- U.S. Virgin Islands
- Virginia
- Washington
- West Virginia
- Wyoming

200
Solar Projects Awarded

10 GW
Solar Project Output



WHO WE ARE.

2.0 Firm Overview

In 1989, three engineers and a scientist came together with a singular vision: to be a people-first company, one that promotes a culture where clients and employees enjoy working together, and that is responsive to client needs with integrated services and high-quality work for projects both complex and routine. More than 30 years later, Civil & Environmental Consultants, Inc. (CEC) has 1,400+ team members in offices nationwide. Headquartered in Pittsburgh, Pennsylvania, we are consistently ranked on Engineering News-Record's annual lists of the Top Design Firms and Top Environmental Firms in the nation.

A culture of accountability. We own it. At CEC, every member of our team has a personal stake in ensuring the success of our clients. Because their success is our success. As employee-owners of the firm, we are all personally accountable for building lasting relationships and delivering outstanding results. Because we don't just work at CEC. We own it.

Being easy to work with. We own it. At other firms, you may find one person you work well with. Here, our clients tell us they work well with all of us. It's because all of us are invested in your success. We're accessible, responsive, and operate with integrity.

Putting people first. We own it. At CEC, people come first. Always. Whether that's our clients, our employees, or our community. It's why we listen more and work harder to understand the unique needs of our clients. And it's why we prioritize the career development of every individual on our team. People are why we do this, and why we love what we do.

Teamwork. We own it. We are at our best when we work together. That means bringing together a diverse team of talented, passionate, multidisciplinary experts to work closely alongside clients to craft comprehensive solutions to complex problems. We believe that by working together, no problem is insurmountable.

Safety excellence. We own it. We believe all accidents are preventable and are committed to creating an accident- and incident-free workplace for employees and subcontractors through training, safe workplace practices, and processes for assessing project hazards. CEC strives for safety excellence throughout our entire organization and holds all individuals accountable for the safe performance of their work.

CEC is an expanding, multi-disciplined company that is home to:

- Civil Engineers
- Geotechnical Engineers
- Transportation Engineers
- Structural Engineers
- Environmental Scientists
- Environmental Engineers
- Chemical Engineers
- Geologists
- Hydrogeologists
- Hydrologists
- Ecologists
- Biologists
- Wetland Scientists
- Threatened & Endangered Species Experts
- Agronomists/Soil Scientists
- Emissions Testing Professionals
- Meteorologists
- Chemists
- Archaeologists
- Construction Managers and Inspectors
- Environmental Technicians
- Treatment Plant Operators
- Land Surveyors
- Landscape Architects
- GIS Analysts and Programmers
- And many more!

2023 ENR TOP 500 DESIGN FIRMS #98 CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

2023 ENR TOP 200 ENVIRONMENTAL FIRMS #104 CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

WHERE WE ARE.

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Cleveland, OH
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Columbus, OH
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Fishers, IN
317.570.8800

Greenville, SC
855.574.4331

Houston, TX
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Indianapolis, IN
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Knoxville, TN
865.977.9997

Martinsburg, WV
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Mission, TX
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Monroeville, PA
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Nashville, TN
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Oklahoma City, OK
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Phoenix, AZ
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Pittsburgh, PA
800.365.2324

Sacramento, CA
760.977.8106

San Diego, CA
619.837.6555

Sevierville, TN
865.774.7771

St. Louis, MO
866.250.3679

Tempe, AZ
877.231.2324

Toledo, OH
855.274.2324

Tucson, AZ
520.321.4625

3.0 Stage One: Critical Issues Analysis

Involving a professional consulting team in the early stages of a project, ideally before negotiating with the landowner, can help you avoid missteps. CEC taps a vast network of knowledge, data, and contacts to provide early-stage site development services to help you qualify and compare prospective sites. CEC reviews publicly available databases to determine potential local, state, and federal regulatory requirements and compile a permit matrix based on the findings. The following information is part of the Critical Issue Analysis process:

Cultural and Ecological Resources Including Rare, Threatened and Endangered Species

- United States Fish and Wildlife Service (USFWS) National Wetland Inventory Mapping
- USFWS Information for Planning and Consultation (IPaC)
- National Hydrography Data Set (NHD)
- Federal Emergency Management Administration National Flood Hazard Layer
- United States Army Corps of Engineers National Levee Database
- State Inventory of Archaeological Sites Online Viewer

Environmental Conditions

- Environmental Data Resources (EDR)
- Historic Aerial Photography
- United States Geological Survey (USGS) topographic maps
- US Army Corps of Engineers, Formerly Used Defense Sites (FUDS) Geographic Information System (GIS).

Land Survey

- Light Detection and Range (LiDAR) Contour Information
- Steep slope analysis

Geohazards

- USGS Online Sources
- Landslide Geological Surveys
- National Mine Maps Repository
- Karst Maps
- United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey

Federal, State, and Local Permitting Matrix

- USACE 404 and 401
- State Historic Preservation Office
- Federal Aviation Administration Notification of Proposed Construction or Alteration
- Oversize and/or Overweight Application for Special Hauling Permit
- Floodplain Development Permit
- Glare Study
- Zoning Ordinance
- Subdivision and Land Development Ordinance
- Stormwater Ordinance
- Watershed Ordinance
- National Pollutant Discharge Elimination System (NPDES requirements)
- Highway Occupancy Permit

4.0 Stage Two: Field Investigation Services

CEC performs several types of field investigations to provide boots-on-the-ground information.

Wetlands and Floodplains

CEC addresses and solves jurisdictional wetland and stream issues. Our ecologists have extensive experience dealing with regulatory agencies on wetland identifications, delineations, state/federal permitting, and in designing successful programs for wetland and stream mitigation.

Wetland assessments include site reconnaissance, historical background studies, and integration of proposed developments on USGS topographic maps, NRCS soil surveys, NHD maps, and National Wetlands Inventory (NWI) maps. Based on a review of site conditions, CEC identifies the preliminary boundaries of jurisdictional wetlands in accordance with the requirements of the applicable regulatory criteria.
Aquatic services include:

- Benthic Macroinvertebrate Surveys and Laboratory Processing
- Watershed Assessments & Planning Studies
- Fisheries Surveys (streams, rivers, lakes)
- Bathymetric/Hydrographic Surveys
- Hydrologic-Hydraulic Assessment of Floodplains including HEC-RAS modeling

Threatened & Endangered Species Services

CEC's ecological services include threatened and endangered (T&E) species surveys and consultation with federal and state agencies under Sections 7 and 10 of the Endangered Species Act. CEC routinely interacts with the federal and state agencies to develop the scope of services necessary to identify

and address potential impacts from development projects. Specifically, CEC offers the following T&E Services:

- Full Service Bat Consultation (habitat assessments, mist netting, harp trapping, acoustic monitoring, telemetry services, and portal surveys)
- Rare Plant Surveys
- Endangered Fish Surveys
- Endangered Mussel Surveys
- Federally T&E Crayfish Surveys
- Habitat Assessments for T&E Species
- Invasive Plant Inventory
- Biological Assessment Preparation
- Biological Evaluation Preparation
- Formal Consultations
- Habitat Conservation Plan/Incidental Take Permit Applications
- Associated National Environmental Policy Act (NEPA) Documentation Development

Avian Assessments

Wind turbines, overhead utilities and towers, and other tall structures throughout the United States face scrutiny regarding their potential impacts on bird populations. Neotropical migrants, raptors, and other local breeding and migratory populations are all receiving more attention and increased debate regarding their impacts on bird populations. Permitting requirements can range from simple observational data to rigorous impact evaluations. To assist our clients, CEC designs surveys based on project needs that meet agency requirements and produce scientifically-defendable data using techniques that are cost-effective and innovative.

CEC ecologists have a wide range of experience with avian assessments. Our professional avian ecologists possess a keen understanding of bird habitat requirements and use, behavior patterns, and population distributions for numerous bird species and guilds. Our scientific knowledge is combined with a clear understanding of the regulatory environment which allows us to collect and use defendable data to provide sound advice and mitigation solutions for a wide range of projects. Our avian ecologists have experience with:

- Breeding Bird Surveys
- Migratory Bird Surveys
- Bald and Golden Eagle Surveys
- Raptor Surveys
- Natural Community and Habitat Assessment
- Geospatial Analysis and Cartography
- Bird Air Strike Hazard Assessments
- Avian Risk Assessments
- Natural Community and Habitat Assessments
- Endangered Species Surveys and Evaluations

CEC ecologists maintain an excellent rapport with the various USFWS regional and state offices, and state resource agencies, which allows our ecologists to more effectively advocate on behalf of our clients. Our ecologists have extensive experience in completing avian assessments and navigating the regulatory process for overhead utilities, wind turbines, and communication towers.

Preliminary Cultural Resources

CEC's Cultural Resource Management Services staff help our clients achieve compliance with Section 106 of the National Historic Preservation Act of 1966 (as amended) (NHPA) which requires federal agencies such as the U.S. Army

Corps of Engineers (USACE), Federal Energy Regulatory Commission, Bureau of Land Management, and Federal Highway Administration to evaluate the potential consequences of an undertaking on historic properties. This process seeks to accommodate historic preservation concerns with the needs of the federal undertaking.

CEC provides a broad range of cultural resources services including:

- Reconnaissance Surveys
- Phase I Cultural Resource Surveys
- Phase II Archaeological Site Assessments
- Phase III Data Recovery/Site Mitigation
- Deep Testing
- Prehistoric/Historic Artifact Analysis
- Processing and Preparation of Artifacts for Curation
- Architectural History (Above-ground) Resource Investigations
- National Register of Historic Places (NRHP) Eligibility Determinations
- Assessment of Effects
- Agency, Tribal, and Consulting Party Coordination
- Memoranda of Agreement/Understanding
- Cultural Resource Management Plans

CEC is committed to developing timely, cost-effective solutions that allow projects to move forward in an effective manner. Our archaeological staff meets the Secretary of Interior's Qualification Standards for their respective fields and are well-versed in the federal, state, and local regulations that govern archaeological and architectural history investigations. Our Principal Investigators have years of direct experience

completing cultural resource investigations ranging from Phase I Surveys for projects such as solar farms, wind farms, pipelines, roads, military facilities, and coal mines to Phase II Site Assessments and Phase III Data Recovery/Site Mitigation for multiple pre-contact and historical archaeological sites throughout the United States, with an emphasis on the Midwest, Mid-Atlantic, Southeast, Great Basin and Great Plains regions.

Environmental Conditions

CEC offers investigative and due-diligence services, including Phase I/II environmental site assessments, to evaluate land development feasibility, identify utility capacity constraints, geologic conditions, regulatory approval processes, and other site parameters and/or constraints which may impact a proposed development.

Geohazard Field Services

Based on the areas of concern identified during a desktop study, reconnaissance may be warranted to confirm the findings of the study. An experienced geotechnical engineer identifies potential ground movement issues and then delineates and photographs the areas of concern. The site reconnaissance will further refine the number, locations, and severity of potential geohazards along the ROW.

Severe geohazards may require further investigation to obtain data to assess the severity and develop measures to reduce the risk of ground movement. Depending on the hazard, investigations can include:

- Test drilling with split-spoon, Shelby tube, or rock sampling
- Excavating test pits with bulk soil sampling
- Hand sampling of soils using bucket augers or other methods
- Installing slope inclinometers
- Laboratory testing

Land Survey

CEC employs multiple full-service survey crews utilizing cutting-edge equipment and technology. CEC maintains a full complement of equipment, including RTK and static GPS, robotic and conventional Total Stations, automatic and digital levels, data collectors, and 3D laser scanners that use terrestrial LiDAR scanning to create spatial imaging. Recent technology additions include rotary and fixed-wing unmanned aerial systems (UASs) piloted by our FAA-certified pilots to complement CEC's survey capabilities.

Broad professional capabilities, specialized experience, and technical competence and capacity have allowed CEC surveyors to complete numerous projects requiring topographic, boundary, hydrographic, bathymetric, geodetic, route, infrared, horizontal/vertical control, and settlement and displacement surveys.

TOPOGRAPHIC SURVEYS

CEC employs various topographic techniques depending on site characteristics and requirements, such as terrain, vegetation, desired accuracy and physical improvements.

BOUNDARY AND LAND TITLE SURVEYS

CEC has completed boundary surveys and mapping for parcels in our service areas, including ALTA surveys, mortgage surveys, annexations, zoning, highway right-of-way plans, subdivision platting, and as-built surveys.

AERIAL MAPPING

With over 20 years of aerial mapping experience, CEC has acquired and processed over 1,000 projects nationwide ranging from one to 50,000 acres. Our teams are equipped with the latest in LiDAR and imaging technologies, giving them the leverage to push your project to the next level. Our use of aerial mapping enables us to conduct survey data acquisitions for projects safely. It also creates economic efficiencies by reducing the number of field personnel and the time required for data acquisition and project completion. Applications of the technology include:

AERIAL PHOTOGRAPHY

- Nadir & Oblique Aerial Imagery
- High-Definition Video
- Color Infrared Imagery
- Digital Photogrammetric Mapping
- Digital Orthophotos
- Aerial Triangulation
- 2D & 3D Planimetrics
- Image Rectification
- Terrain Models & Contours
- Right-of-Way Monitoring
- Aerial Ground Control Survey
- Impervious Surface Studies

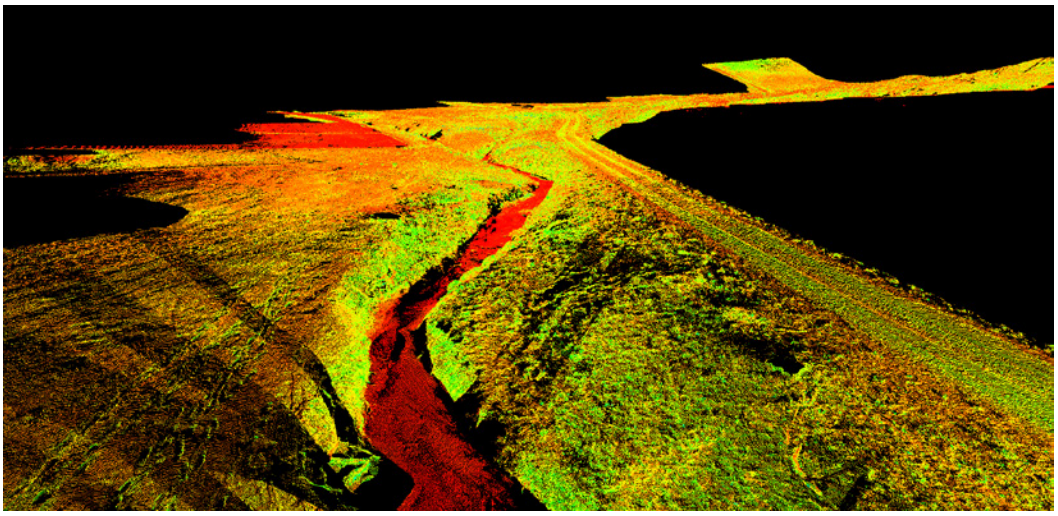
AERIAL TOPOGRAPHY

- Terrain Models & Contours
- Right-of-Way Monitoring
- Landslide Identification
- Tree Canopy Studies

- Tree Breast Height Diameters
- 3D Powerline Assessments & Models
- Change Detection
- Floodplain Analyses

LIDAR TECHNOLOGY

CEC owns and operates a GeoCue Trueview 680 featuring three 20-megapixel cameras and the latest LiDAR sensor technology. The camera sensors are oriented in a way that provides one nadir (top-down) image and two opposite-facing (oblique) images making it ideal for capturing and processing detailed orthomosaics for right-of-way corridors and large project areas. The LiDAR sensor captures 1,500,000 points per second with a maximum operating range of 3,000 feet above ground level. This system provides dense point spacing of over 300 points per square meter allowing CEC to collect reliable topography even in the summer months under heavy vegetation.



5.0 Stage Three: Design and Permitting

Challenges associated with local ordinances, state and federal regulations, community concerns, and design constraints have the potential to impact renewable energy development projects. CEC's team works effectively with stakeholders to help our clients develop efficient permitting strategies. CEC provides the following services to help streamline the design and permitting process.

Civil Engineering

CEC performs civil engineering and site development services for renewable power projects throughout the United States. CEC works with renewable power developers to produce cost-effective designs and implement value-added solutions in areas including:

SITE GRADING ANALYSES

CEC prepares site grading plans with a goal of producing balanced earthwork conditions. We have developed and evaluated grading plans for sites involving as little as a few thousand cubic yards to over several million cubic yards of earthmoving. CEC's site grading services consider other pertinent aspects of site development, such as slope stability, drainage, and stormwater management.

EROSION AND SEDIMENTATION CONTROL

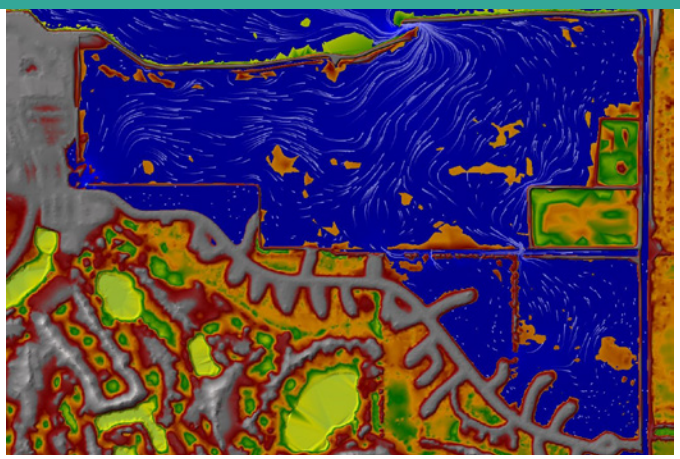
CEC staff members have extensive experience and a proven track record of successfully obtaining local, state, and federal erosion and sedimentation control permits and NPDES permits for discharges of stormwater from construction and industrial activities. The objective is to integrate erosion and sedimentation control with post-development stormwater management facilities to reduce overall site construction costs.

STORMWATER MANAGEMENT

CEC's design teams understand various state and local stormwater management ordinances and design criteria, which includes stormwater detention/retention, and water quality treatment BMPs. Utilization of computer software enables CEC to analyze alternative stormwater detention measures and methodologies to satisfy site-specific regulatory requirements. Noted for solving difficult stormwater management problems using both surface and underground detention measures, CEC has implemented stormwater detention measures for single sites and for watersheds of greater than 8,000 acres. We routinely design sustainable stormwater management measures and can support projects seeking LEED certification.

FLOODPLAIN MANAGEMENT

CEC provides a fully integrated watershed approach to floodplain management, identifying and solving complex stream problems through expertise in stream restoration, water quality



and endangered species management. CEC's team of stream and stormwater professionals includes Hydrologists, Hydraulic Engineers, GIS Specialists, and Certified Floodplain Managers (CFM) who provide the following services:

- Floodplain Regulatory Permitting
- Hydrologic Studies
- Hydraulic 2D and 3D Modeling
- Floodway Encroachment Studies
- Floodway Delineation and Mapping
- FEMA Map Revisions

TRANSPORTATION SERVICES

CEC's transportation department addresses vehicle and truck maneuverability and turning movements, as well as ADA requirements. Depending on the project objectives, we can integrate porous paving systems and other sustainable pavement design measures such as bio-swales and stormwater collection systems. CEC designs public and private access roads, road improvement projects and prepares state Department of Transportation highway occupancy permit applications.

Geotechnical Engineering

CEC offers geotechnical engineering, analysis, and design services. Our staff are educated in the basic geotechnical engineering principles and knowledgeable of current trends. Our staff's extensive experience is complemented by the latest computer hardware and software for data analysis, project management, logging, engineering design, and cost control, which enables us to develop an understanding of current conditions and to simulate proposed conditions.

CEC geotechnical engineers analyze gathered data and develop recommended measures to reduce the risk of future ground

movement. Measures associated with landslides can include surface or subsurface drainage, route modification, slope stabilization, or ground pipeline monitoring. Mining measures can vary depending on whether the mining is active or historic. CEC supports geohazard services with surveying and construction phase services. Surveying is often needed to develop topography or establish ROW limits. CEC utilizes a variety of survey technologies including total station, 3D LiDAR scanning, and unmanned aerial vehicles (UAVs or drones). CEC's quad-copter or fixed-winged UAVs can be deployed to obtain video footage and photography or to gather topographic information where there is unsafe terrain or in high-hazard areas. During construction, CEC's inspectors can monitor for compliance with plans and specifications and also provide construction management services.

Permitting

CEC's regulatory experience includes the full spectrum of local, state, and federal permitting and approvals required for land development and redevelopment.

Encroachments upon wetlands and streams require state and/or federal permits. CEC can recommend a permit application strategy based on the results of a wetland and stream delineation, the land developer's objectives, and regulatory requirements. CEC has expertise preparing all permit applications and required supporting documentation, including identification and assessment of wetland functions and values, alternatives analyses, and public benefits justification.

Permits for stream encroachments/enclosures, landfills, brownfields site clearances, and other actions may require biological and chemical sampling and analysis of rivers, streams, lakes, ponds, and wetlands. CEC has performed a variety of biological assessment studies on water bodies, including sampling, identification, and analysis of phytoplankton, zooplankton, periphyton, aquatic macrophyte, benthic macroinvertebrate, and fish communities. CEC staff

members are proficient in implementing the USEPA's Rapid Bioassessment Protocols for Use in Streams and Rivers (EPA/440/4-89/001) and Macroinvertebrate Field and Laboratory Methods for Evaluating the Biological Integrity of Surface Waters (EPA/600/4-90/030). CEC biologists are also trained and highly experienced in performing aquatic ecological risk assessments for sites requiring hazardous waste characterization and remediation.

CEC routinely obtains permits and/or approvals under the following regulatory programs:

- NPDES Permit for Discharges of Stormwater from Construction Activities
- Post Construction Stormwater Management
- Jurisdictional Wetlands and Waters Impacts
- Floodplain Encroachment
- Act 2 Brownfields Redevelopment
- Threatened & Endangered Species and Cultural Resources Impacts
- NPDES Part 2 Water Quality Management Permits for Sewage Treatment Systems
- Preparation of Section 401/404 Permit Applications
- Clean Water Act Section 316 (a) (b)
- Highway Occupancy Permits
- Local Authority Having Jurisdiction (AHJ) Permits

These regulatory programs involve a variety of local, state, and federal agencies, including the County Soil Conservation Districts, state environmental agencies, U.S. Army Corps of Engineers (Corps), and the U.S. Environmental Protection Agency (EPA). CEC staff have experience and excellent working relationships with personnel responsible for these regulatory programs.

In addition, CEC has experience developing conservation plans under a variety of frameworks to support permit applications to the U.S. EPA, USACE, and state regulatory agencies. For example, CEC routinely develops conservation plans to avoid and mitigate potential impacts to state and federally listed T&E species. Examples include the preparation of Indiana Bat Conservation Plans (IBCP), rare plant relocation and monitoring plans, land management plans, and documentation to support biological assessments and biological opinions.

Landfills, Mine Lands, and Other Disturbed Site Engineering

CEC has extensive experience working on existing landfills, coal combustion residual landfills and impoundments. CEC can design ballasted anchoring systems to not penetrate the existing landfill cap systems. Our designs can address steep slopes, stormwater management, and other existing landfill features. With decades of site development experience across the country, CEC has encountered a wide range of disturbed sites and developed successful strategies for site development of brownfields and other challenging sites.

Landscape Architecture, Visual Screening, and Planting Plans

CEC landscape architects prepare landscape design and planting plans that address local municipal ordinance requirements and construction budget constraints. We prepare large-scale color renderings, photo manipulation services and 3-D modeling for presentation quality drawings and 3-D visualizations that can be valuable aspects of aesthetic evaluations. CEC combines computer accuracy with an artistic hand touch to create realistic renderings and 3-D models. With technology to overlay proposed design solutions on photos of existing site conditions, CEC can communicate a photo-realistic effect of what the final design solution may look like, which is very effective for public meetings.

CEC's experienced botanists and certified pesticide commercial applicators combine their knowledge of native plants within their associated habitats, along with their familiarity of federal and state prohibited noxious weed lists and state listed invasive plant species to develop a successful vegetation management plan

(VMP). To meet specific performance standards and regulatory requirements, CEC developed various solar VMPs that utilized site-specific seed mixes to achieve approved pollinator standards or pasture seed mixes within agricultural sites hosting livestock. A monthly maintenance schedule detailed the appropriate mowing, pasturing and grazing techniques, in combination with a supplemental herbicide application program, ensures a successful establishment of the specified seed mixes to achieve performance standards and comply with regulatory permitting requirements.

Solar Array Decommissioning Plans

CEC staff have experience preparing decommissioning reports for solar projects in accordance with the local AHJ ordinances. The reports will include an outline of the process to remove the components of the proposed solar facility, which include descriptions of the responsible parties and anticipated sequencing involved in decommissioning the facility at the end of the project lifespan. CEC will review other publicly available reports for similar ground-mounted tracker array type-generating facilities and will use our professional experience to summarize decommissioning activities and the sequencing of these activities in the report.

6.0 Stage Four: Construction-Phase Services

CEC understands that the success of a renewable development project hinges on maintaining schedule, efficiency, and cost control during the late stages of a project. From bidding to project closeout, CEC can help you maximize project return on investment with construction-phase services.

Management Support

CEC provides complete construction management services beginning with the bidding process and through to project closeout. CEC develops bid documents, solicits, and evaluates bids, and negotiates contracts for site development, environmental remediation, and other projects. During construction, CEC oversees contractor activities with site supervision and helps meet the specifications and schedule requirements.

Construction Inspection

The trained professionals, technicians, and inspectors at CEC combine extensive experience with state-of-the-art field equipment to complete construction phase services for a wide range of projects.

CEC routinely monitors the construction of large earthmoving projects, mine grouting programs, the installation of erosion control measures, landslide corrective actions, environmental remediation projects, geosynthetic installation, landfill closures, and building construction. Areas relevant to renewable project development include:

- Construction Quality Assurance (CQA) and Special Inspections
  - Density Testing of Soils and Aggregates
  - Concrete Testing
  - Structural Steel Inspections and Testing
  - Masonry Inspections and Testing
  - Fire Proofing Inspections and Testing
  - Asphalt Pavement Testing
  - Fill Placement Monitoring
- Confirmation Sampling
- Certification Report Preparation
- IBS Special Inspections

Construction Staking

CEC surveyors have experience with construction staking solar farm projects, which include pile locations, fence lines, roadways, and easements surveys.

Quantity Surveys

CEC has the expertise and tools to perform quantity takeoffs and track the installation of piles, racking, and panels for solar projects. We provide a GIS database for clients to review and confirm installed equipment for their sites.

Geographic Information Systems (GIS)

To better organize data and track progress, CEC has increasingly been utilizing GIS web applications as an essential project collaboration tool. These applications act as shared repository for all relevant project spatial data between the client and contractor. Construction plans, ecological/environmental data, and custom imagery are some examples of datasets that can be added to these web applications as reference layers for users. Data within these layers can also have custom symbols to differentiate feature types and status and can be especially helpful in tracking project progress. Other basic web application tools include the ability to toggle on and off layers and basemaps, query individual features, export selected feature attributes to a spreadsheet, and print custom maps.

As-Built Survey

Once a solar project is operational, the CEC survey crews can complete an as-built survey of solar arrays, transformers, electrical lines, and overhead power lines.