



Solar



Wind



Battery
Storage



Hydroelectric



Biofuel



Hydrogen



Geothermal

RENEWABLE ENERGY



EA Engineering,
Science, and
Technology, Inc., PBC

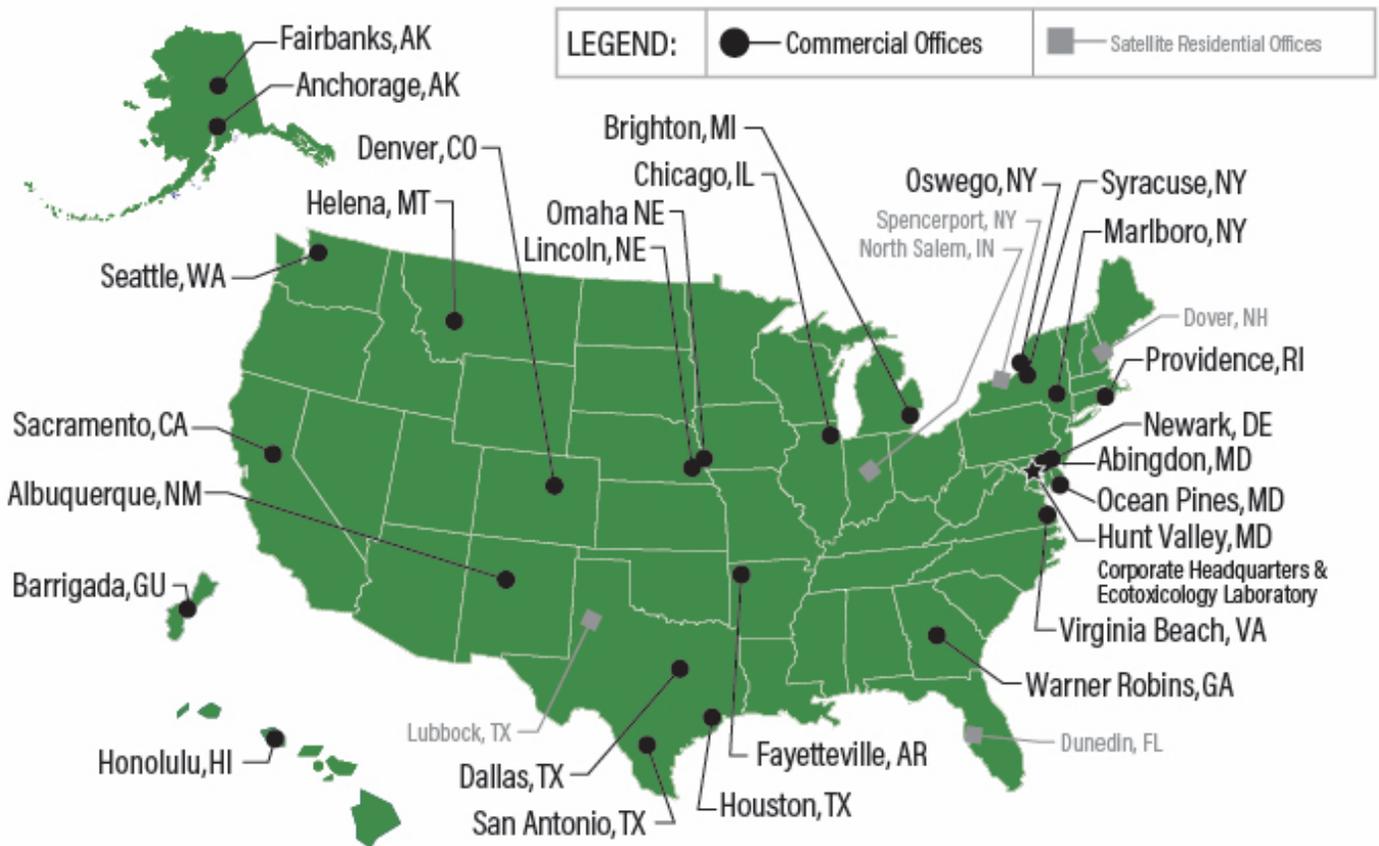
Since our founding, EA has provided environmental consulting and engineering services to the utility and power sector nationwide. We deliver energy-related services to a variety of clients, including Specialty Renewable Energy Providers, Utilities, State and Municipal Agencies, Ports and Port Authorities, and Land Development Groups.

EA Engineering, Science, and Technology, Inc., PBC's (EA) mission is to develop fully integrated, multidisciplinary solutions for our clients. This firm was founded in 1973 to aid utilities comply with federal and state environmental regulations, specifically the Clean Water Act; and, while our service offerings and client base have grown considerably over the years, we continue to remain focused on addressing environmental issues. Having completed thousands of projects and performed more than \$3 billion in services, EA is a leading provider of environmental, engineering, compliance, information technology, natural resources, and infrastructure management solutions for a highly diverse client base that includes the energy industry (electric, oil and gas, renewable, hydropower, hydrogen, etc.) federal government, states and municipalities, private and commercial businesses, Fortune 500 companies, ports and port authorities trade associations, academic institutions, law firms, non-profit organizations, and others. The Engineering News-Record consistently ranks EA among America's top 200 environmental and engineering design firms, a testament to the business we earn as a result of the quality, cost effective, timely, and responsiveness of our service.

Safety Always. The safety of our employees, subcontracted partners, clients, and work environments continues to be our first priority. EA's safety statistics—including an Experience Modification Rate (EMR) that consistently remains below the industry benchmark of 1.0—and multiple National Safety Council awards reflect our commitment to maintaining a safe work environment. We are an active member of numerous third-party supplier management services that require continual improvement in health and safety program performance.



Offices Nationwide. EA is geographically positioned to quickly and efficiently respond to our clients' needs. Headquartered in Hunt Valley, Maryland, we employ approximately 600 professionals through a network of 27 commercial offices and multiple satellite offices nationwide. Our analytical capabilities include state-of-the-art ecotoxicology, treatability, and ecological laboratories.



EA is a 100% employee-owned Public Benefit Corporation (PBC).

MEETING CHALLENGES

Clean Energy. The shift to clean energy is steadily expanding across the United States. Many ports have set, or are in the process of setting, strategies to transition to sustainable renewable energy hubs in the years ahead. EA offers a variety of consulting services aimed at the development of low carbon technologies as well as generators, suppliers, and large industrial consumers of energy to meet the various challenges of solar, wind, water, battery storage, bioenergy, nuclear, and hydrogen projects.

Solving the Problem. Our approach to environmental science and engineering is to solve the problem. That is why so many clients rely on EA to help reduce their operating costs and make them more competitive, and why industrial facilities across America trust us to protect the health of their staff and the quality of the environment. As a matter of fact, our first two clients since being founded in 1973—electric power producers—remain our clients today. EA continues to work with these companies to meet the challenges inherent to a competitive industry striving to succeed in a green energy market.



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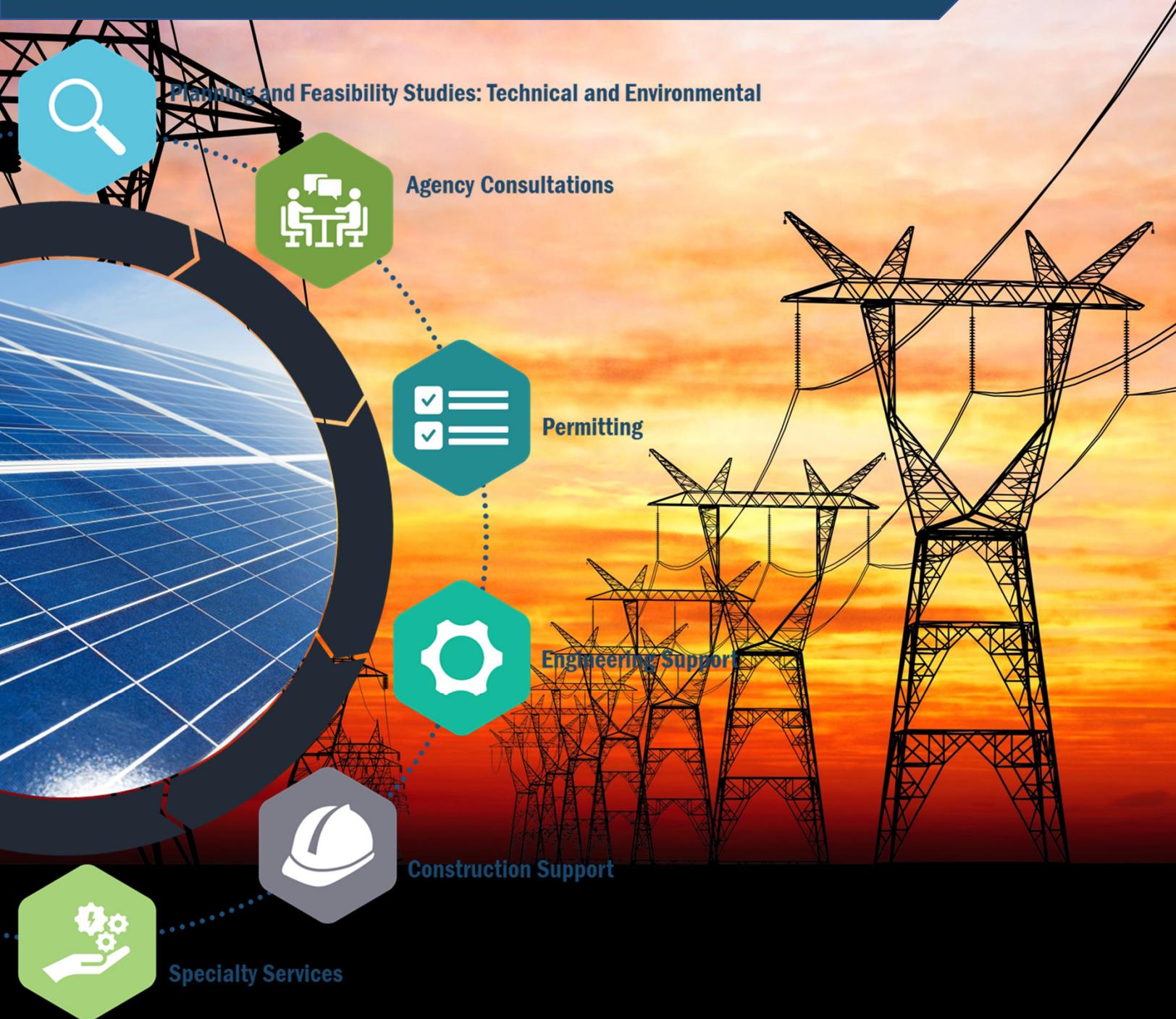


Hydrogen

SUPPORT AT ALL STAGES OF A PROJECT

Supporting Energy Clients Nationwide.

At EA we truly integrate science and engineering to provide responsible solutions for the clients' overall needs, from planning and pre-construction of new renewable energy resources and system expansions, to operations, relicensing, and decommissioning of facilities. EA provides a complete and accurate picture of the best possible options.





PLANNING AND FEASIBILITY STUDIES

Technical and/or Environmental. For EA, providing project services starts with a clear and complete understanding of the project's feasibility and the ability to provide comprehensive environmental solutions that include engineering and permitting services. Our team of professionals have extensive experience completing the full range of siting and environmental studies that may be required by federal, state, and local agencies. Our goal is to increase efficiency and reduce cost by identifying development approaches that avoid or minimize adverse impact to sensitive environmental resources and mitigate risks.

- Identification of Environmental and Engineering Constraints, including "Red Flags"
- Wetland and Waterbody Surveys
- Threatened, Endangered, and Rare Species Surveys
- Cultural Resource Desktop Assessment and Planning
- Visual Impact Analysis
- Slope and Grading Analysis and Plan Development
- Shading/Solar Viability Analyses
- Cost Estimating Support (Budgeting and Bidding)



Wetlands and Waterbodies. EA staff is knowledgeable about all aspects of the Clean Water Act (CWA), including Section 401 (water quality/chemistry), Section 404 (wetlands and waters of the United States [WOUS]), and Section 10 (construction in or over navigable WOUS). We are experienced in conducting wetland, stream, and lake surveys to delineate jurisdictional boundaries, assess water and habitat quality, and develop management strategies to protect, create, or restore these valuable natural resources. Delineations and management plans are developed in compliance with legal mandates and directives, including federal wetland delineation manual and regional supplements, state-specific wetland delineation manuals, and Executive Order 1990, Protection of Wetlands.

EA wetland ecologists have conducted wetland delineations and studies in all 50 states and five U.S. territories. Our experience ranges from the sea grass meadows in the U.S. Virgin Islands, to the depressional marshes in Attu Island, AK, to the hardwood forested swamps of New England, and over to the mangrove forests of Guam. We employ modern technology to facilitate our wetland delineations including flying airborne GPS for detailed aerial photography over large landscapes and pocket PCs with integrated sub-meter accuracy GPS for completion of USACE Data Sheets while gathering flag locations. Our approach couples the modern conveniences with traditional field skills and hard work, often in challenging field conditions such as typhoon season, snow, high humidity, and temperatures exceeding 115 degrees Fahrenheit in desert environments.



Threatened, Endangered, and Rare Species. EA staff have nationwide experience working within a variety of ecosystems and are familiar with numerous species' habitat components, life histories, and agency-approved survey methods. Our staff assess project-related impacts and consult with regulatory agencies to avoid, minimize, and/or mitigate habitat impact. EA's protected species survey services include:

- Compilation and Analysis of Baseline Biological Inventories for Special-Status Species
- Development of Habitat Conservation Plans
- Formal and Informal Consultation with U.S. Fish and Wildlife Service, National Marine Fisheries Service, State, and Local Agencies
- Implementation of Agency-Recommended Protocols for Presence/Absence Determination of Special-Status Plants and Animals
- Preparation of Biological Assessment and Evaluation, Environmental Impact Statement, Categorical Exclusion, and Finding of No Significant Impact documents
- Incidental Take Permitting





AGENCY CONSULTATIONS

Agency consultations and regulatory relationship development are essential to successful permitting strategies for renewable energy projects. Discussions with key agencies early in the planning process will help to identify regulatory concerns and potential permitting obstacles. EA has expertise with applicable federal, state, and local regulations governing energy projects, and we have established positive, working relationships with many key regulatory agencies and technical staff. Our experience includes project introductions and presentations to regulators, evaluating potential permitting requirements, developing technical memoranda, and conducting regulatory negotiations. As part of our agency consultations, EA develops an overall understanding of the project objectives, potential complexity/challenges, and level of continuing communication necessary to attain applicable permits, authorizations, or clearances.

Representative agencies with whom EA has consultation experience include:

- Federal Regulatory Energy Commission (FERC)
- Nuclear Regulatory Commission (NRC)
- US Army Corps of Engineers (USACE)
- Department of Defense (DOD)
- US Environmental Protection Agency (EPA)
- US Fish and Wildlife Service (USFWS)
- National Oceanic and Atmospheric Administration (NOAA)
- National Marine Fisheries Service (NMFS)
- US Forest Service (USFS)
- Bureau of Land Management (BLM)
- Bureau of Ocean Energy Management (BOEM)
- Federal Aviation Administration (FAA)
- National Resource Conservation (NRC) Service

EA's professionals also maintain relationships with state and local regulatory agencies such as:

- State Departments of the Environment, Environmental Protection, and/or and Natural Resources Divisions et al
- State Historic Preservation Offices (SHPO)
- State Departments of Transportation (DOT)
- Port Authorities
- Local Planning and Zoning
- Local Environmental and Engineering Departments
- Local Soil Conservation
- Municipal Departments of Public Works





PERMITTING

Over the years, environmental regulations have become more complex and varied by locality. Countless federal, state, and local laws have been authorized to protect ecological and cultural resources. Regardless of the type of renewable energy project, identification of applicable permits, clearances and approvals, and potential environmental impacts are essential to the planning process. EA has expertise with applicable federal, state, and local regulations governing energy projects. Following are key permits, authorizations, and clearances that may be applicable to renewable projects (solar, wind, battery, hydropower, biofuels, hydrogen), to include supporting powerlines and pipelines.

Federal

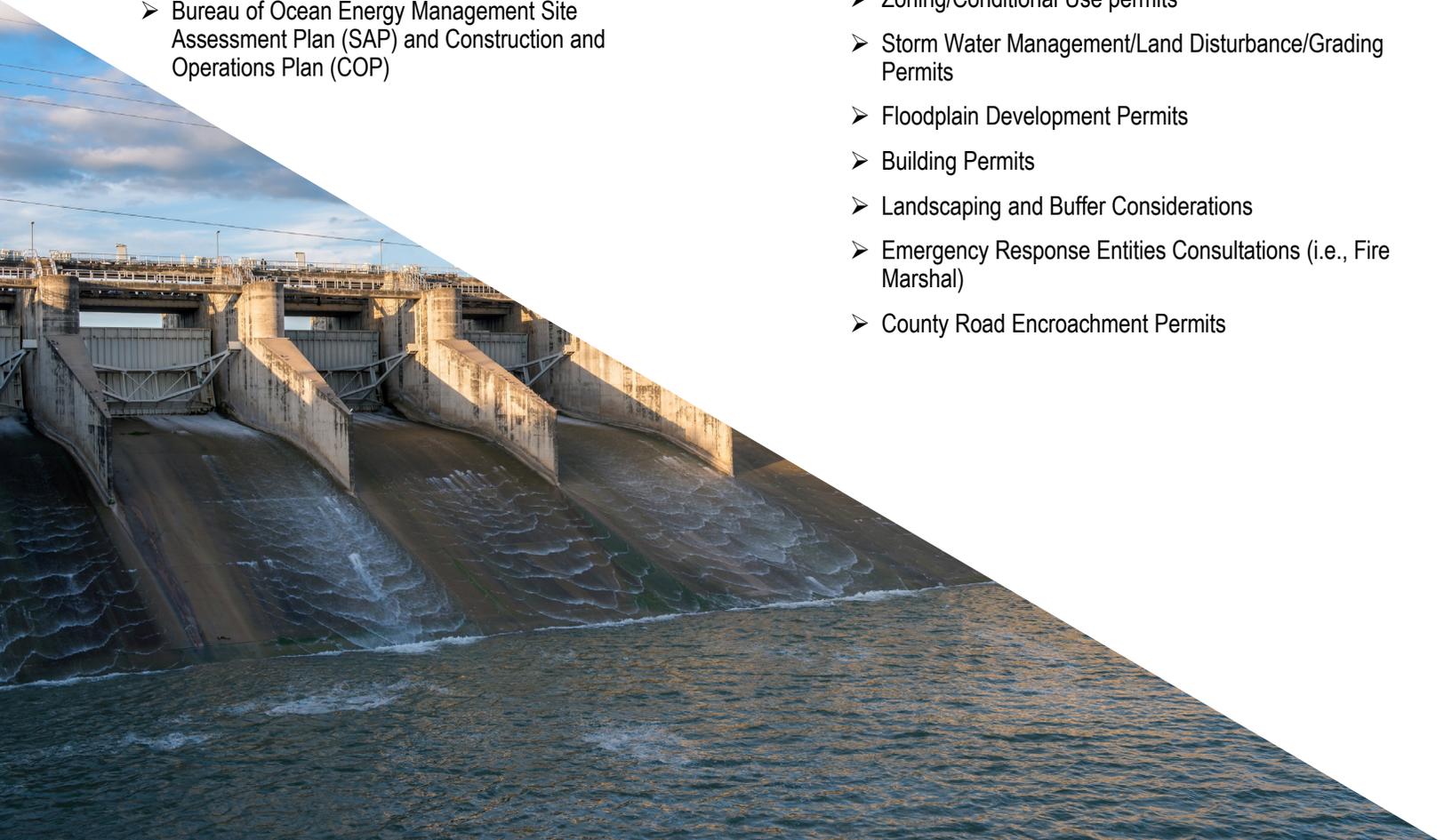
- USACE Section 401, 404, 408, and 10 permits
- EPA NPDES and Water Quality Certifications for partially authorized or unauthorized states
- Bureau of Ocean Energy Management (BOEM) Outer Continental Shelf Renewable Energy Leases
- USFWS Endangered Species Act Section 7 and Section 10 Consultations
- BLM Special Use Permits
- USFS Special Use Permits
- NOAA NFMS Consultations
- FAA Notice of Proposed Construction or Alteration
- NPS Wild and Scenic Rivers Consultations
- Bureau of Ocean Energy Management Site Assessment Plan (SAP) and Construction and Operations Plan (COP)

State

- SHPO Section 106 Compliance Reviews
- NPDES Construction Stormwater Permits
- Section 401 Water Quality Certifications
- State Stream and Wetland Crossing Permits
- Construction Dewatering Permits
- State-protected Species Consultations
- State NRC Service Consultations
- DOT Encroachment Permits

Local

- Zoning/Conditional Use permits
- Storm Water Management/Land Disturbance/Grading Permits
- Floodplain Development Permits
- Building Permits
- Landscaping and Buffer Considerations
- Emergency Response Entities Consultations (i.e., Fire Marshal)
- County Road Encroachment Permits





ENGINEERING SUPPORT

Site Interior Road Design. EA is experienced with designing interior site roads to meet the needs of our clients. We have designed access roads, temporary construction roads, fire access routes, and permanent vehicular site roads for different types of design vehicles ranging from passenger cars to tractor trailers and gantry cranes. The majority of our projects require interior road design to support the site activities both during construction and post-development. During design efforts, EA evaluates where interior roads are needed to support site access as well as balances potential excavation and construction costs. To support the design load and frequency of travel, our team has successfully prepared road sections consisting of gravel, stone, matting/mulch, flexible pavement, and rigid pavement materials. For areas requiring geotechnical investigation to support the basis of design, EA has worked closely with geotechnical engineers to ensure the proposed section will meet the desired level of service.

Documents and Bid Packages. EA capabilities include preparation of specification documents and bid packages. We routinely prepare an engineer's estimate of costs including detail of materials, equipment, and labor based on local conditions, material availability, and specific site conditions. EA's engineers and construction experts will utilize a combination of past local engineering experience, industry standard cost estimation guides (RS Means and State Cost Books), and direct vendor quotes to prepare estimates for the cost estimate classification that aligns with the project stage scope and decision-making processes for the proposed design. Successful estimates of design costs allow our clients to begin budgeting for the construction of the project or to determine elements of the project that may not be affordable or may need to be phased-in over time through incremental funding.

When reviewing proposals, EA evaluates technical competency, comprehensiveness, and optimal practices balanced with cost efficiency. EA provides an analysis that identifies areas where a proposal may differ from the design or offers a potentially better solution for the client to consider. Our team's technical knowledge with a variety of clean energy technology, combined with our routine experience of assisting clients in the bid phase, translates to supporting the client in the selection of a contractor that can successfully complete the project in accordance with proposed terms.



Viewshed and Glare Analysis. EA's planners have prepared numerous viewshed and glare analyses for a variety of projects, including solar arrays. The purpose of a viewshed analysis is to identify what is visible from a designated point. Typically, the evaluation is of the visual impact from modified or new infrastructure. Our team of engineers, scientists, and planners work to select the optimal viewpoints for the simulations. These viewpoints can be officially-designated by a jurisdiction and/or from which the public can view the project (e.g., parks, sidewalks, roadways). The team prepares photo-simulations incorporating massing models of the project. Based on the simulations and analyses, EA prepares a report/writeup of viewshed impacts to address public perception and meet regulatory requirements such as State Environmental Policy Act/National Environmental Policy Act documentation, if applicable.

The objective of glare analysis on solar arrays is to ensure that the placement of new infrastructure will not present potentially harmful instances of glare or glint for FAA purposes. The EA Team utilizes in-house calculations and the industry-recognized Sandia National Laboratories Solar Glare Hazard Analysis Tool (SGAT) to evaluate potential glare issues. A glare analysis typically determines when and where solar glare can occur throughout the year from a photovoltaic (PV) solar array as viewed from specified observation points. The potential ocular impact from the observed glare is also determined, along with a prediction of the annual energy production. Configurations can be quickly modified (e.g., tilt, orientation, shape, location) to identify a design that mitigates glare while maximizing energy production.

Meter, Battery Storage, and Islanding. EA has analyzed the electrical infrastructure of numerous facilities and is familiar with the power and operating requirements for voltage plants and facilities. Our electrical engineers understand the details of the electrical infrastructure and can analyze and design the optimal method to incorporate interconnection, net-metering, self-generation, islanding/anti-islanding, and battery storage. Our engineers have experience in preparing and reviewing specifications required for these components, including:

- **Meter Connection**—Electrical utility provider interconnection requirements, disconnect, net-metering, and circuit protection.
- **Battery Storage**—Critical loads and load leveling, charge control, transition infrastructure, recharging ability, lifespan, time, and cost-benefit analysis.
- **Islanding**—Anti-islanding circuitry or passive/active protection, frequency control, and controls to disconnect from the grid when loss of utility power is detected.

Our team will ensure that industry standards are followed, applicable regulations are met, and the infrastructure specified will provide safe and efficient operations.

EA prepared technical design requirements and construction support for Northeast Maryland Waste Disposal Authority on behalf of Frederick County, supporting the installation of a 1-megawatt PV solar array and battery storage facility.





CONSTRUCTION SUPPORT

Compliance Plans. Every energy project, renewable and non-renewable, encounters multiple project phases and potential compliance obstacles. EA guides clients — from early ideas and plans, through construction oversight and post-construction monitoring. This approach facilitates efforts to stay on schedule, within budget, and inside scope by providing innovative engineering, science, and technological solutions throughout the project life cycle. As part of this effort, EA helps clients anticipate hurdles and potential environmental impacts that may be the result of project execution.

Taking a risk-based integrated approach to environmental compliance, EA excels at combining scientific expertise with strong communication skills to facilitate sound decision-making. We are highly experienced at achieving compliance with complex regulatory requirements, negotiating and obtaining local construction approvals, and developing project-specific training and procedures to avoid non-compliance.

EA helps projects stay on schedule by developing construction compliance documents. EA has extensive experience preparing:

- Health and Safety Plans
- Material Management Plans (soil, water, or other media)
- Spill Prevention Control and Countermeasure (SPCC) Plans
- Stormwater Pollution Prevention Plans (SWPPP)
- Solid and Hazardous Waste Management Plans
- Unanticipated Discovery Plan for Cultural Resources
- Unanticipated Discovery Plans for Contaminated Soil and Groundwater
- Dewatering Plans



EA is experienced in designing and overseeing construction and installation of landfill caps, drainage ponds, and soil waddles for erosion and sediment control.

Environmental Compliance Inspections/Monitoring. EA recognizes that inspections are an important tool for helping projects comply with applicable environmental regulations and permit requirements. Our environmental compliance inspectors will review construction activities for conformance with applicable state and federal regulations. This includes examination of permits, licenses, and records for compliance with local ordinances and owner standards. We utilize advanced technologies (e.g., drones) and processes to conduct construction-based inspections and to generate inspection reports.

To help ensure construction projects stay on schedule and meet regulatory requirements, EA works with stakeholders to support pre- and post-construction monitoring and natural resources restoration. Our scientists can help to mitigate site impacts through onsite wetland construction, stream restoration design, and monitoring. EA also offers documentation and site analysis services for post-construction conditions compared to pre-construction conditions.

Additionally, for project sites where there is a potential risk of exposure to contaminated media (soil, groundwater, structures) or conditions unsafe for human health, EA can provide monitoring of site conditions during construction activities. Real-time results can include volatilized organics, respirable dust, and potentially combustible environments. In support of construction services, EA can prepare confined space entry permits, provide personnel for confined space entry, monitor confined space atmospheric conditions, and provide oversight of confined space entry. We engage with site workers to ensure health and safety procedures are followed, including proper use of personal protection equipment (PPE) and meeting Occupational Safety and Health Administration (OSHA) Confined Space requirements. All EA field personnel are OSHA trained and have experience in health and safety oversight and the use of monitoring equipment. EA has extensive experience with:

- Pre- and post-construction monitoring
- Construction monitoring, sampling, and documentation, including pre- and post-construction analysis
- Natural resources restoration
- Audits and environmental inspections
- Wetland and environmental monitoring



EA has provided services including (pictured left to right) silt fence inspections for erosion and sediment control, stormwater conveyance infrastructure inspections, and natural resources monitoring.



Construction Management. EA is acutely aware of that one size does not fit all models; therefore, we develop programs that meet the needs of individual projects and clients. We give our clients an honest assessment of what is required to complete a project while minimizing business risks, schedule delays, and cost overruns. As a result, EA has been engaged by construction firms and government agencies to provide construction management services for a variety of Engineering, Procurement, and Construction (EPC) contracts nationwide, including land-water interface projects in Maryland and Virginia. We work with our clients to reduce liabilities by identifying environmental risks, achieving compliance obligations, and minimizing adverse impacts.

➤ **Program Management**—EA develops comprehensive life-cycle management systems for large, complex construction programs. To provide reliable data on program status as well as individual project progress, our team breaks the construction life-cycle down into individual steps encompassing planning, design, and construction activities. Accordingly, each step is appropriately linked to budget, schedule, and resource information to provide the required level of accountability. EA standardizes procedures and processes and trains construction site personnel in proper execution of these tasks to ensure consistency in program implementation and project management.

➤ **Project Controls**—Utilizing advanced software and specialized programming techniques, EA develops information systems to manage the construction process. From simple web-based databases that electronically archive project information to integrated systems that perform complex analytical impact evaluations, EA works closely with clients to establish project controls that meet project requirements. These critical management tools facilitate decision-making by providing accurate and timely information.

➤ **Construction Management**—Applying project controls to monitor budget, schedule, and technical quality, EA painstakingly manages every detail of our clients' construction project. From the constructability review through final closeout, our team works diligently on your behalf to minimize change orders and avoid delays by building efficiencies and tackling challenges. EA routinely responds to changing field conditions as well as unforeseen circumstances—keeping your project on schedule and within budget.

➤ **Construction Inspection**—Acting as your onsite representative, EA monitors construction activities to ensure compliance with contract plans and specifications and to promote safety in the workplace. Our specially trained inspectors conduct detailed quality control assurances—including the coordination of sampling and testing—proportionate to the level of work in progress. For improved efficiency and accuracy, we utilize mobile technology to record Daily Reports and maintain photographic records of construction progress.





SPECIALTY SERVICES

Drone Program. EA operates and maintains a drone fleet to capture high resolution aerial imagery and video. We have the knowledge and experience to fully plan and execute flight operations including developing a flight plan, placing and measuring ground control points, completing the drone flight, and processing the data. EA can provide the following deliverables:

- Ortho-Rectified Aerials
- 3-D Imagery
- Mapping Grade Topography
- 4K Video

Our team of drone operators are fully insured and licensed to comply with the FAA Part 107 guidelines. We can safely fly anywhere in the United States and have the knowledge to apply for FAA waivers and authorizations as appropriate for restricted sites.

EA's drone program is currently being used to support a variety of acquisition projects for a national power company, including future solar project location evaluation.



Information Technology and Geographical Information Systems. EA offers the full range of IT and GIS services necessary to meet our clients' project goals while maintaining data integrity and security. The breadth of our experience matches the broad spectrum of our clientele. Specializing in integrating custom web-based and mobile applications with existing systems, EA develops solutions that provide clients with the ability to maintain and analyze combined data sets ensuring consistency across nationwide programs and compliance with federal, state, and municipal regulations with specific reporting requirements.

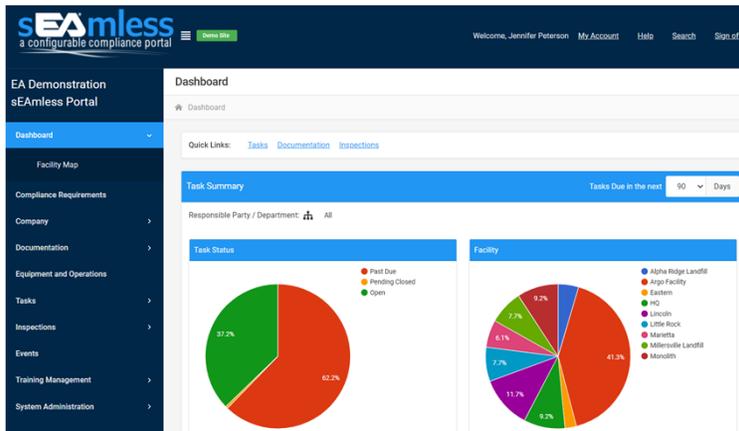
By incorporating custom-built tools with standard geographic information system (GIS) technologies, EA continues to be on the leading edge of data collection, modeling, and spatial analysis. Our information specialists are proficient with all major GIS and CADD software. From producing 3D models with fly-through capabilities to creating web-based tools for data management, we work closely with clients to develop data and databases necessary to support decision making processes.



Database Design and Management. EA's full-range of GIS consulting, development, and implementation services includes enterprise integration; business process/procedure evaluations; database design and development; data development and migration; formal training; and storage, hosting, and documentation.

Our IT specialists, data managers, and analysts excel in enterprise system consulting and custom system design, development, and implementation for a wide range of applications including environmental compliance tracking, capital project planning, asset management, and engineering project management. Our expertise allows our clients to better track data and manage maintenance and compliance requirements.

sEAmless Compliance Portal. sEAmless is a subscription-based cloud solution to efficiently manage and report environmental, health, safety, and sustainability (EHS&S) data. Through the easy-to-use portal, users have the ability to manage and track assets and tasks, configure inspection checklists, schedule and perform inspections, and track findings to closure from a variety of mobile devices. Of the system's many benefits, sEAmless provides clients with an organized software solution that boosts transparency and awareness for their EHS&S programs to identify areas that need improvement and reduce risk.



Facility	Compliance Driver	Functional Area(s)	Requirement Grouping	Requirement Name	Required By	Frequency
Millersville Landfill	[All]	[All]				
Millersville Landfill	Permit	Solid Waste	Refuse Disposal Permit	Millersville Monthly Leachate (Rainfall, Tank Levels, Discharge Totals)	State	Monthly
Millersville Landfill	Permit	Solid Waste	Refuse Disposal Permit	Monthly Leachate Spreadsheet Cell 6	State	Monthly
Millersville Landfill	Permit	Solid Waste	Refuse Disposal Permit	Quarterly Perimeter LFG Monitoring Report (for 1st Qtr)	State	Quarterly
Millersville Landfill	Permit	Solid Waste	Refuse Disposal Permit	Random Load Inspection	State	Monthly
Millersville Landfill	Best Management Practice	Air Quality	Title V - BMP	Monthly LFGMS O&M Report	Business	Monthly
Millersville Landfill	Best Management Practice	Air Quality	Title V - BMP	Monthly Fuel Usage previous month	Business	Monthly

Public Involvement Support. Through our early involvement in the planning process, EA evaluates the project comprehensively and ensures all information relevant to environmentally sensitive areas, permitting requirements, community planning goals, stakeholder acceptance, and cumulative effects of the project are considered. We understand that consultation with a wide variety of stakeholders is essential to the acceptance and timely completion of new projects. Therefore, our public involvement process is designed to enhance mutual understanding of the project and facilitate partnership and collaboration. Through this approach, we have prevented months of delay and saved millions of dollars for our federal, state, local, and private clients.



Community Engagement. EA cares about the environment and the people. Our staff is specially trained to engage the community through extension and outreach efforts. As part of this effort, EA routinely works collaboratively with groups of people impacted by, or in general proximity to, the project, involving them in various project aspects for the welfare of the community.



EA engineers lead a site tour at a project development site with a community group.

Environmental Justice. A growing number of states have adopted laws that require regulators and the regulated community to apply significantly increased attention to potential environmental justice (EJ) exposure and address disproportionate potential impacts on racial minorities, Native American tribes, and disadvantaged communities. EA utilizes a screening-level EJ analysis to (1) identify the extent to which a regulatory action may raise potential EJ concerns, and (2) determine what level of analysis is feasible and appropriate to support the regulatory action. In cases where a potential EJ concerns are identified, early communication with decision makers and stakeholders is key to defining the most appropriate analysis for a particular regulatory action.





www.eaest.com

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410-584-7000
Offices Nationwide

COLLABORATIVE ANALYSIS, THOUGHTFULLY APPLIED

EA looks forward to supporting your next renewable energy project. Contact us for additional information on our environmental and engineering services.

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Director, Power Services**

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*EA's Corporate Social Responsibility Program has been rated Gold by EcoVadis.
2019 Best Performer: North America (Small & Medium Business Enterprise)*