

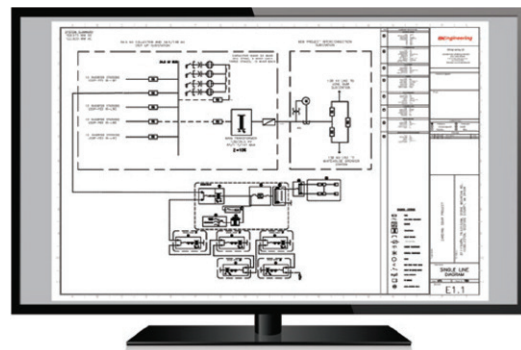
# ENGINEERING SERVICES FOR GENERATION INTERCONNECTION APPLICATIONS

EN Consulting offers comprehensive engineering services to support interconnection applications for power generation projects. Our highly-qualified team of engineers has decades of experience, many dating back to the early days of deregulation, and tremendous knowledge of the technical aspects of Open Access Transmission Tariffs (OATT) throughout the country. EN Consulting has supported preliminary screening analysis and interconnection applications through interconnection agreements for projects ranging from less than 20 MW to 1,600 MW.

## **SERVICES:**

### **Review site interconnection options and capabilities:**

- Research transmission facilities
- Conduct preliminary assessments of connectivity
- Estimate capability for solar projects

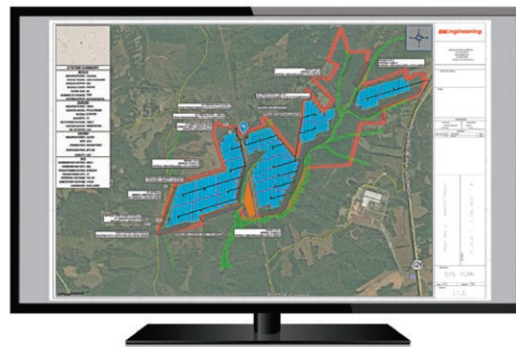


### **Perform power-flow screening analyses:**

- Identify and model generator interconnection queue projects
- Acquire power-flow case and supplemental data needed from Transmission Service Provider (TSP) or Transmission Owner (TO)
- Perform power-flow studies to assess all-lines-in (N-0), N-1 and N-1-1 contingency conditions
- Confirm interconnection capacity at POI is sufficient
- Estimate direct-connect and network upgrade costs

### Prepare interconnection request applications:

- Collect electrical/physical characteristics of proposed equipment
  - » Generators and related equipment inverters
  - » PV panels
  - » Transformers (step-up and collector substation)
  - » Collector system
  - » Interconnection substation
- Produce calculations/models
  - » Power-factor calculations
  - » Impedance calculations
  - » PVsyst model
  - » Power flow, short circuit, and stability/dynamics models
- Produce drawings
  - » One-line diagram
  - » Site layout
- File applications
  - » Prepare and submit data forms and agreements
  - » Calculate study deposit
  - » Coordinate interconnection request



### Feasibility Studies (FES):

- Provide technical support for scoping meeting
- Assemble working and verified modeling data
- Analyze draft study report results
- Represent client at results meeting

### System Impact Studies (SIS):

- Review technical aspects of agreement
- Initiate/support materiality reviews
- Provide updated project data
- Obtain additional/updated data from equipment manufacturers
- Assemble working and verified dynamics model data
- Respond to TSP questions
- Review and analyze draft study report
- Participate in results meeting

### Facilities Studies (FS):

- Review/assist with technical aspects of agreement
- Participate in the FS kickoff meeting
- Provide technical information
- Perform the FS to facilitate progress
- Review draft study and interpret results

### Interconnection Service Agreements (ISA):

- Help negotiate ISA
- Prepare technical exhibits and narratives for ISA and Construction Service Agreement
- Review cost estimates, work scopes, and deposit security requirements
- Identify jurisdictional legal counsel
- Provide technical support