



As leading experts in power system analysis backed by more than 100 years of experience in switching, control, and protection, S&C's engineers have helped customers around the world to plan, design, implement, and maintain their power systems. The team at S&C consists of specialists in generator interconnection at both transmission and distribution voltage levels. S&C has supported the deployment of more than a gigawatt of wind and solar generation and projects totaling almost 1,000 MVA in energy storage for a range of customer types outlined below.

## FOR TRANSMISSION NETWORK SERVICE PROVIDERS

- Consulting and analytical study support for generator interconnections
- Transmission system model development in Power System Simulation for Engineering (PSS®E) and Power Systems Computer Aided Design (PSCAD)
- Transmission network voltage stability analysis
- Reliability planning/assessment
- Capacitor-switching transient mitigation analysis
- Insulation coordination

## FOR DISTRIBUTION NETWORK SERVICE PROVIDERS

- Distribution network model development in PowerFactory, PSS Sincal, or PSSE
- Short-circuit analysis
- Protective-device coordination and grading
- Arc-flash analysis
- Reliability improvement/distribution automation analysis
- Protection system review and optimization

- Photovoltaic (PV) hosting capacity analysis
- Embedded generator connection analysis
- Optimal capacitor placement



## FOR RENEWABLES PROJECT DEVELOPERS/EPC COMPANIES

- PV inverter/wind turbine generator, energy storage, and plant controller transient and dynamic simulation model development in PSSE or PSCAD
- R1 pre-connection data preparation and R2 post-connection data and model validation support in accordance with National Electricity Rules clauses
- Benchmarking report; PSSE model acceptance test report; PSSE releasable user guide (RUG); PSCAD RUG, PSSE, and PSCAD interconnection studies; and wide area network studies
- Reactive power capability curve creation, voltage control strategy development, power system design setting data sheet development, and development of generator performance standards
- Design review of medium-voltage protection and control
- Energy storage application and specifications
- Dynamic reactive power compensator (STATCOM) application and specifications
- Insulation coordination studies
- Short-circuit analysis
- Protective-device grading
- Arc-flash analysis
- Harmonic analysis
- Harmonic filter design analysis and specification



## FOR MICROGRID PROJECT DEVELOPERS/EPC COMPANIES

- Techno-economic microgrid feasibility studies
- PV inverter/wind turbine generator, microgrid controller, and energy storage system transient and dynamic simulation model development in PSSE or PSCAD
- Microgrid controller specification
- Microgrid switchgear and transformer specification
- Microgrid protection scheme development
- Consulting support on microgrid interconnection with the distribution network service provider
- Insulation coordination studies
- Short-circuit analysis
- Protective-device grading
- Power quality analysis
- Transient stability analysis
- Arc-flash analysis



## FOR COMMERCIAL, INDUSTRIAL, AND MINING COMPANIES

- Model development in PowerFactory and ETAP®
- Short-circuit analysis
- Protective-device grading
- Arc-flash analysis
- Harmonic analysis
- Harmonic filter design analysis and specification
- Motor starting studies
- Transient stability analysis
- Power quality analysis
- Reliability improvement analysis



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