



# Substation Design

## Substation Design Overview

Ulteig's substation team has engineered and designed more than 1,000 high-voltage substations, switching stations and interconnect stations—from 12.5 kV to 500 kV—for investor-owned utilities, cooperatives, municipalities, contractors and developers.

We'll put our vast knowledge and experience to work for you, assisting you through the full engineering and design process—from the development of conceptual design, through detailed design, construction support and the energization stage.

Our project experience includes system studies, EHV and HV air-insulated and gas-insulated switchyards, static and dynamic VAR compensation, renewables interconnections, 3-D modeling, NERC and FERC requirements, relay settings, site development, testing and commissioning, client-specific standards and a full EPC/design build service. On every project, our top priorities are safety, quality, constructability, efficiency, budget and schedule.

### SERVICE OFFERINGS

- Project scoping
- Preliminary arrangement
- Site selection
- Environmental analysis
- Right-of-way
- Survey
- Facility studies
- Access road design
- Construction estimating and support
- Grading design
- Control equipment enclosure design and specification
- Siting and permitting support, including photo renderings
- Auxiliary power system design
- Station battery system sizing
- Fault coordination studies
- Electrical control
- Electrical design
- Physical design
- Structural steel design
- Material ordering, tracking, and expediting
- Programmable Logic Controller (PLC) and Human-Machine Interface (HMI) programming
- System control and data acquisition (SCADA) and communication design
- Spill prevention, control, and countermeasure (SPCC) plan
- Stormwater pollution prevention plan (SWPPP)
- Event analysis and evaluation
- Lightning protection
- Grounding
- 3D design
- Protective relay settings developments
- Equipment specifications