

POWER DELIVERY

Power System Studies

PLANNING

- > Transmission
- > Distribution
- > Contingency analysis
- > Feasibility studies
- > Long-range plans
- > Electrical master plans
- > Distributed energy resources and microgrid studies
- > Interconnection studies
- > NERC reliability analysis

SYSTEM PERFORMANCE

- > Power flow
- > Reactive power flow
- > Short circuit
- > Dynamic stability
- > Switching surges and insulation coordination
- > Lightning

FIELD EFFECTS AND GROUNDING

- > EMF field level calculations
- > EMF and EMI measurements
- > Noise calculations
- > Pipeline and railroad interference
- > Soil resistivity analysis
- > Grounding design
- > 5 mA studies
- > Communication interference



Gain practical answers

Today's competitive electric power market puts a premium on reliability, efficiency and low cost. POWER Engineers provides essential analysis and planning services that help you meet those goals.

Our analysts bring a real-world perspective to planning and engineering. They work closely with our design teams and understand the practical realities behind theoretical solutions. You benefit by being able to carry out workable plans for your power system.

Planning studies provide a roadmap for your power system investments. Our short-term and long-term plans present you practical choices that balance cost, capacity, performance and reliability. We also can assess the effect of traditional and renewable generation plants on your grid.

Your ability to predict electrical system performance under normal and unusual conditions is a vital part in planning, permitting, designing, operating and protecting your system. We have the tools and expertise to model power system performance from power flow and stability of the grid down to the transient analysis needed to specify insulation and equipment.

Expertise for your system

Our experts have the in-depth knowledge to provide you with grounding system analysis and design, EMF calculations and interference calculations for parallel facilities such as railroads and pipelines.

We'll help you understand your system, expand it and explain how to make the most of its performance.

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TRANSMISSION SYSTEM STUDIES

- > PSLF
- > PSS/E
- > POM
- > PowerWorld

DISTRIBUTION SYSTEM STUDIES

- > Synergi Electric
- > Windmil
- > Power*Tools for Windows
- > EasyPower
- > CYME

TIME DOMAN ANALYSIS

- > ATP
- > PSCAD
- > RSCAD
- > CDEGS (MultiGround)
- > CadnaA acoustic analysis
- > CAFEP

Project Highlights

Oncor Electric Delivery

Performed a comprehensive N-1-1 multiple contingency analysis of Oncor's transmission system, including 69 kV, 138 kV and 345 kV facilities. The studies examined 5 million multiple contingency scenarios for near-term and long-term planning cases. Identified 65 capital transmission projects to mitigate voltage and flow criteria issues.

Intermountain Rural Electric Association

Oversaw the development of a four-year construction work plan and 20-year, long-range plan to help improve reliability for about 145,000 members over 5,000 square miles. Performed load flow analyses in order to develop mitigation for overloaded substations and improve voltage conditions. Also developed system modifications and additions, cost estimates, circuit diagrams and maps identifying proposed system improvements required to meet the load forecast and system configuration scenarios.

Afghanistan Engineering Support Program

Conducted a strategically focused study of the Afghanistan electrical transmission system that identified needed projects and provided overall transmission system planning and analysis. The study included an analysis of the Afghanistan High Voltage Transmission System and Medium Voltage Distribution System capacity. Performed an analysis of the forecasted electrical growth for

the next 20 years to create possible scenarios for the future grid.

Public Service Company of New Mexico

Performed the system studies needed to determine the static var compensator (SVC) ratings at the Rio Puerco 345 kV switching station, and to support PNM as owner's engineer from contractor selection through energization. Services included power flow and transient stability studies to determine the appropriate SVC ratings, AC system harmonic impedance analysis and system harmonic measurements and analysis. Also conducted a study to determine the range of fault MVA for strong and weak system conditions.

Ameren

Developed a protocol for contact and coordination with owners of pipelines and railroads that could be affected by AC interference from the Illinois Rivers 345 kV transmission line project. Performed AC interference studies which typically involved a baseline investigation to determine if there are non-compliance electrical issues and a mitigation investigation to produce a design to resolve issues. Provided mitigation construction support.