GENERATION INTERCONNECT

PGE has significant practical experience managing power interconnections between generators and grids. Our experience, combined with our strong focus on safety, assists power plant managers to effectively address electrical asset operational and optimization issues, while economically meeting regulatory, market and reliability requirements. Equipped with decades of practical experience, our staff provide engineering related services to generator interconnection processes and power plants of all fuel types, while simultaneously offering third-party evaluation for utilities and generation developers.

Our range of services also includes protective relay replacements to entire plant-wide system upgrade programs. PGE offers a variety of planning studies and services to properly evaluate risk, reliability and stability concerns. These include a variety of services to assist utilities in compliance with applicable NERC, Regional Reliability, industry and custom client standards. We provide manufacturer independent analysis of challenges, problems and issues within electrical networks, while also providing solutions and designs that limit the effects of identified disturbances.

GENERATION INTERCONNECT SERVICES

www.powergridengineering.com/generation-interconnect-services

SHORT & LONG TERM POWER SYSTEM STUDIES

- Contingency Analysis
- P-V Analysis
- Reliability Analysis
- Short Circuit Analysis
- Economic Analysis
- Transmission Service Request
- Thermal/Voltage Analysis
- Maintenance Outage Evaluations
- Transient Stability
- Fault-Induced Delayed Voltage Recovery (FIDVR)
- Small Signal Stability

GENERATION INTERCONNECT EVALUATION

- Feasibility Studies
- Renewable Generation Integration
- System Impact Studies

INTERFACE EVALUATION

- Total Transfer Capability (TTC) Analysis

TECHNOLOGY EVALUATION & SYSTEM

- ANALYSIS:
- PSS®/E
- CAPE
- Power World
- ETAP
- PSS®/MUST
- ASPEN

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GENERATION INTERCONNECT

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GENERATION INTERCONNECT PORTFOLIO HIGHLIGHTS

IOU Out-Of-Step Protection For Hydro Units Southeast Region	Study reviewed the transient stability of several hydro units to provide settings for out-of-step protection. The study provided the impedance trajectory expected during an unstable swing as well as a stable swing. Relay settings were provided for a distance relay to trip during unstable swings and not trip for stable swings.
RRO Study Group Representation (SERC) Virginia	Represented the client's interests on the SERC Near Term Study Group (NTSG) and the Eastern Interconnection Reliability Assessment Group (ERAG) by participating in coordinated study efforts for regional and inter-regional reliability assessments. This assessment involved performing voltage, thermal and transfer analysis to assess the amount of power that could be transferred among the SERC participants.
Total Transfer Capability Determination Georgia	Performed daily and monthly analysis of Available Transfer Capability (ATC) levels for several Total Transfer Capability (TTC) Paths. During the evaluation, it was also necessary to consider the simultaneous interaction among several paths. In addition, certain paths were required to be coordinated among entities of adjacent regions.
IOU Transmission Expansion Planning Georgia	Project consisted of performing short and long-term transmission planning studies and economic analysis for effective transmission capital additions while ensuring compliance with applicable NERC Reliability Standards. These studies included periodic coordinating results and facilitating approval of necessary Transmission Capital additions among joint transmission owners within the state of Georgia.
IOU Generation Interconnect Studies Multiple States	Studies included review of steady state (thermal and voltage) stability and short circuit impacts of generating units applying for interconnection agreements through the Large Generator Interconnection Procedures (FERC ORDER 2003 LGIP). Network upgrades were identified to remain in compliance with applicable NERC, Regional Reliability and transmission provider planning standards.
Nuclear Plant Protective Relays Florida	Replacement of unit primary/backup Generator and GSU Protective Relays.
Fault Induced Delayed Voltage Recovery North Georgia	Review of the North Georgia metropolitan area for susceptibility to Fault-Induced Delayed Voltage Recovery (FIDVR) for NERC Category C and D events. Study proposed different mitigation strategies including relay settings changes, addition of redundant relaying, installation of Independent-Pole Operated (IPO) breakers, and Under Voltage Load Shedding (UVLS) schemes to comply with applicable NERC TPL and PRC standards. This study also addressed operational time frames and provided short term mitigation strategies including temporary relay settings requirements and generation dispatch for all feasible system load levels and system configurations.
Generator Switchyard Upgrade Florida	Provided engineering for addition of 4-on-1 Combined Cycle Generator. Switchyard was Modified from a 4 Position Ring Bus to "18 breaker-6 bay-breaker and a 1/2" layout for 3 Generator lines, 2 Auxiliary Transformer lines, and 3 underground 230 kV transmission lines.

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