Thomas Conner | Transmission Engineer, CES

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With a background in power transmission from Real-time operations to transmission planning to generation siting and asset optimization, Mr. Conner brings 12 years of experience and technical expertise in addressing a wide-range of transmission-related challenges from both the regulated-industry space as well as RTO markets. Under Thomas's technical leadership, over $200M of transmission projects were approved by the Alabama, Mississippi, and Florida public service commissions, over $300M of renewable generation was sited for development or acquired across the RTO markets of ERCOT, SPP, MISO, and CAISO, and over $30M/year of market asset optimization was realized through leveraging day-ahead and monthly congestion (FTR) products. While at Southern Company, Thomas became an industry leader in the design, application, and implementation of complex transmission modeling across planning, operational, and protection models, providing technical leadership and keynote presentations for NERC, NATF, SERC, RF, and NERC SAMS organizations and committees. His expertise in the areas of node-breaker modeling, transmission system modeling architecture, and database design was relied on by both the leading industry vendors and industry policy committees for implementation direction and strategy. Additionally, he became a technical leader across multiple industry tools in implementing nodal transmission production cost modeling for both the regulated planning activities of Southern Company Services as well as market site evaluation and asset optimization activities of Southern Power. Now at CES, Thomas continues to build on his knowledge and expertise in the modeling and analysis of RTO markets while leading efforts in the highly-competitive CAISO and ERCOT regions.

Experience

Local-area, strategic, and operational transmission studies (PSSE, MUST)
Generation siting and retirement studies with transmission economic and reliability assessment
Fault-induced-delayed-voltage-recovery (FIDVR) and other select dynamic reactive power studies
Generation resource acquisition due-diligence lead
Power-Purchase Agreement (PPA) drafting, evaluation, and implementation
RTO market DART and FTR asset optimization
Production cost modeling with nodal implementation for congestion, basis, and deliverability studies
Production cost model vendor consulting on model improvement and optimization (Dayzer)
Advanced production cost model fundamental development (Dayzer)
Advanced energy market modeling tool development
Renewable transmission siting consulting
Transmission model tool/database design/development for bus-branch and node-breaker models
Real-time system operations, automatic generation control (AGC) systems (EMS)
Real-time dynamic and complex calculations, schedule and contract implementation, ICCP (EMS)

Industry Specialization

Transmission Studies	Market Asset Optimization	Software Design and Development
Transmission Modeling	Renewable Generation Siting	Database Design and Development
Nodal Production Cost Modeling	Generation Project Evaluation	Real-time System Operations

Education

B.S. Electrical Engineering, The University of Alabama

Transmission Planning

Southern Company Services:
Mr. Conner has led local-area and system-wide strategic studies for the Southern Company transmission system. These studies resulted in the approval and construction of over $200M of transmission projects as well as the effective retirement of generation resources and siting of new generating resources. Additionally, Thomas was the project lead for several technically demanding operational study challenges witnessed in real-time that he was able to apply and evaluate in a planning model to prepare system operators for future conditions. These studies led to guiding operational principles that ensured operational reliability during extreme outage and weather conditions.

Production Cost Modeling

Cambridge Energy Solutions: Lead for the fundamental development of real-time market-tracking production cost models in both ERCOT and CAISO. These efforts included developing advanced tools, processes, and schemas to proactively map ISO market data feeds and tune the production cost model to the ever-changing market dynamics. Responsibilities required the culmination of transmission modeling expertise with coding/database expertise and intimate knowledge of market functions and dynamics to produce a production cost model that accurately tracks the real-time performance of a market.

Southern Company Services: Project lead for the evaluation, acquisition, development, and testing of nodal transmission production cost models for transmission planning. Discovering a severe deficiency in the vendor-sourced data quality for the Southeast regions in production cost modeling, Thomas developed and tested a custom-built nodal data-model from scratch for use in the Aurora production cost model tool. Additional experience was gained in the evaluation, development, and testing of the Promod production cost model tool.

Southern Power Company: Project lead for the use of production cost modeling across generation site identification, generation acquisition evaluation, congestion studies, and asset optimization. Thomas deployed, maintained, and optimized the Dayzer production cost model and PSSE models to support all transmission related market activities for Southern Power in the ERCOT, SPP, MISO, PJM, WECC, and CAISO regions. He designed the transmission study processes and procedures as well as the report templates and concepts used in over $300M of sited or acquired renewable generation. He also designed ancillary automation tools, processes, and visualizations (Power BI) for both market aggregation tools (YES Energy) and production cost model results (Dayzer) to support siting, acquisition, and asset optimization activities.

Software/Database Design & Development

Southern Company Services – Transmission Planning: Project lead for the development and maintenance of the temporal transmission planning modeling tool (TREND) for use in all transmission studies. Industry leader in the development of high-resolution node-breaker transmission models and their vendor tool and industry policy implementations. Industry leader in the design and implementation of cross-company and cross-functional operational, planning, and P&C transmission models with database/tool design/development for workflow integration.

Southern Company Services – Energy Management Systems: Assisted in the forklift replacement of an EMS XA/21 GE-Harris EMS system to a Siemens Spectrum system. Led effort to port over entire complex and dynamic calculation engine including SCADA and ICCP telemetry that led to the development of a fully automated, self-compiling PASCAL-to-C code conversion and telemetry engine to reduce maintenance during the multi-year system transition project. Additional key contributions were made in the fields of real-time transmission model conversion and AGC evaluation, testing, and conversion.