nFRONT CONSULTING LLC
Power Industry Planners • Analysts • Advisors

SEAN CROUP

OVERVIEW

Mr. Croup has over 25 years of experience in the energy industry with a background in transmission delivery and market issues to assist utilities, developers, and equity investors understand the impact of transmission-related issues on their assets. His expertise includes the following areas:

- Transmission and Market Risk Assessment
- Transmission Expansion and Planning Strategies
- Financing Due Diligence
- Transmission Service and Delivery Strategies
- Security Constrained Economic Dispatch Analyses
- Open Access Transmission Tariff Interconnection Services
- Nodal Market Cost/Benefit, Congestion and Losses Assessments
- Wind Curtailment Mitigation Strategies
- Generator Siting
- Power Supply RFP Evaluations

Mr. Croup has managed and performed transmission planning and security constrained economic dispatch analyses supporting the changing needs of clients in the power industry. He understands the complexities of the evolving transmission grid and the convergence of power markets, physical and contractual transmission limitations, and regulatory issues. He has extensive experience with General Electric's Positive Sequence Load Flow (GE PSLF™) power flow program in performing transmission system simulation studies and utilizes PSS®E MUST and Ventyx Energy PROMOD® software to evaluate impacts of transmission curtailments on an 8,760 hour per year basis.

PROJECT EXPERIENCE

Project Integration, Curtailment and Delivery

Mr. Croup has been responsible for providing consulting services for utilities, generation owners, developers, and equity investors that required an understanding of transmission upgrade costs, loss of energy/revenues due to curtailment, transmission service options and market costs associated with scheduling energy delivery. For the purpose of project financing, asset acquisition, assessment of risk under power purchase agreements, or evaluation of resource options, Mr. Croup has been responsible for integration, transmission curtailment, delivery risk and market cost assessments for over one hundred renewable projects. The assessments considered local interconnection and upgrade requirements, transaction impacts, transmission service arrangements, power purchase arrangements, market deliveries, operational issues associated intermittent resources, and impact of future generation and transmission additions. The technical, quantitative and qualitative findings are used to reduce risk uncertainty in the form of financial inputs, understanding relative of potential impacts of future events such as new generation, transmission expansion, and variations in the market structure.

LMP/Security Constrained Economic Dispatch

Mr. Croup was responsible performing and supervising numerous assessments involving Security Constrained Economic Dispatch ("SCED") analyses. SCED analyses have become a critical planning tool for evaluation of transmission impacts associated with the benefits of new transmission facilities, congestion differentials between load and resources, reliability curtailment risk, transmission service delivery risks, and other market factors such as energy imbalance costs. The SCED assessments have supported intermittent resource curtailment estimates for project financing, development of transmission upgrade strategies to mitigate reliability curtailment, calculation of losses factors, and cost allocation for transmission upgrades.

Transmission Due Diligence for Financing

Transmission delivery, rates and market impacts are an integral part of financing generating and transmission assets. Mr. Croup has led transmission assessments for numerous generation and transmission asset financings to assess risks to the projects due to transmission interconnection, delivery under power purchase arrangements, market structure, and transmission service arrangements. Due diligence has included interconnection agreements, system impact and facilities studies, costs of transmission system upgrades, curtailment estimates (e.g., potential impact of transmission constraints on the dispatch of the resource), potential impact of regulatory changes in the market, and consideration of Renewable Portfolio Standards.

Interconnection Services

Mr. Croup has directed and performed transmission analyses for over one hundred generation interconnection and transmission service requests for host for utilities and generation asset owners involving every NERC region of the United States, including island utilities Hawaii, Guam and the Caribbean. The analyses included system impact/facilities studies that evaluated power flow, short circuit, and stability system impacts to determine required upgrades to provide the requested service. The studies included overseeing the development and validation of system models, evaluating system configuration and dispatch scenarios, sizing of reactive compensation, and determining additional equipment/upgrades necessary to maintain reliability. He has successfully guided clients through the tariff interconnection process from start to finish for gas, coal, wind, biomass, and solar generators.

Generator and Transmission Siting/Integration Analyses

Mr. Croup has conducted numerous technical transmission studies in systems across the United States and Canada related to new generation and transmission expansion. The projects have included generator site selection, plant sizing considering transmission impacts, deliverability analyses, contingency impact analyses, curtailment analyses including transmission priority, and economic cost/benefit analyses.

RFP Evaluation

Mr. Croup has conducted and assisted in request for proposals (RFP) processes for supply-side and demand-side resources in connection with over 2,000 MW of resources. He participated in writing of RFPs, pre-bid meetings, and evaluating resulting proposals. He wrote evaluation process manuals for a three-stage process that considered technical and non-technical issues of each proposal. The

evaluations included busbar screening and production simulation modeling of proposals for unit sales, system purchases, and joint ownership offers.

PROFESSIONAL HISTORY

Mr. Croup began his career with R. W. Beck, Inc. as an entry level engineer. In 2009, R. W. Beck was purchased by SAIC and, in 2013, was renamed as Leidos. Over a period of 23 years, he advanced to a position of senior consultant and project manager and supervising staff in a transmission planning and analysis group.

EDUCATIONAL AND PERSONAL

Mr. Croup has a B.S. degree in Electrical Engineering from the Florida State University with a Minor in Computer Science.