

Emerging Business Models for Non-Incumbent Transmission Projects

18th Annual INFOCAST Transmission Summit 2015
Washington, DC

Presented by

Johannes Pfeifenberger

March 12, 2015



THE **Brattle** GROUP

Agenda

U.S. Transmission Investment Needs

- Growing nation-wide investments
- Size of market for incumbent and non-incumbent transmission

Opportunities and Challenges for Non-Incumbent Transmission

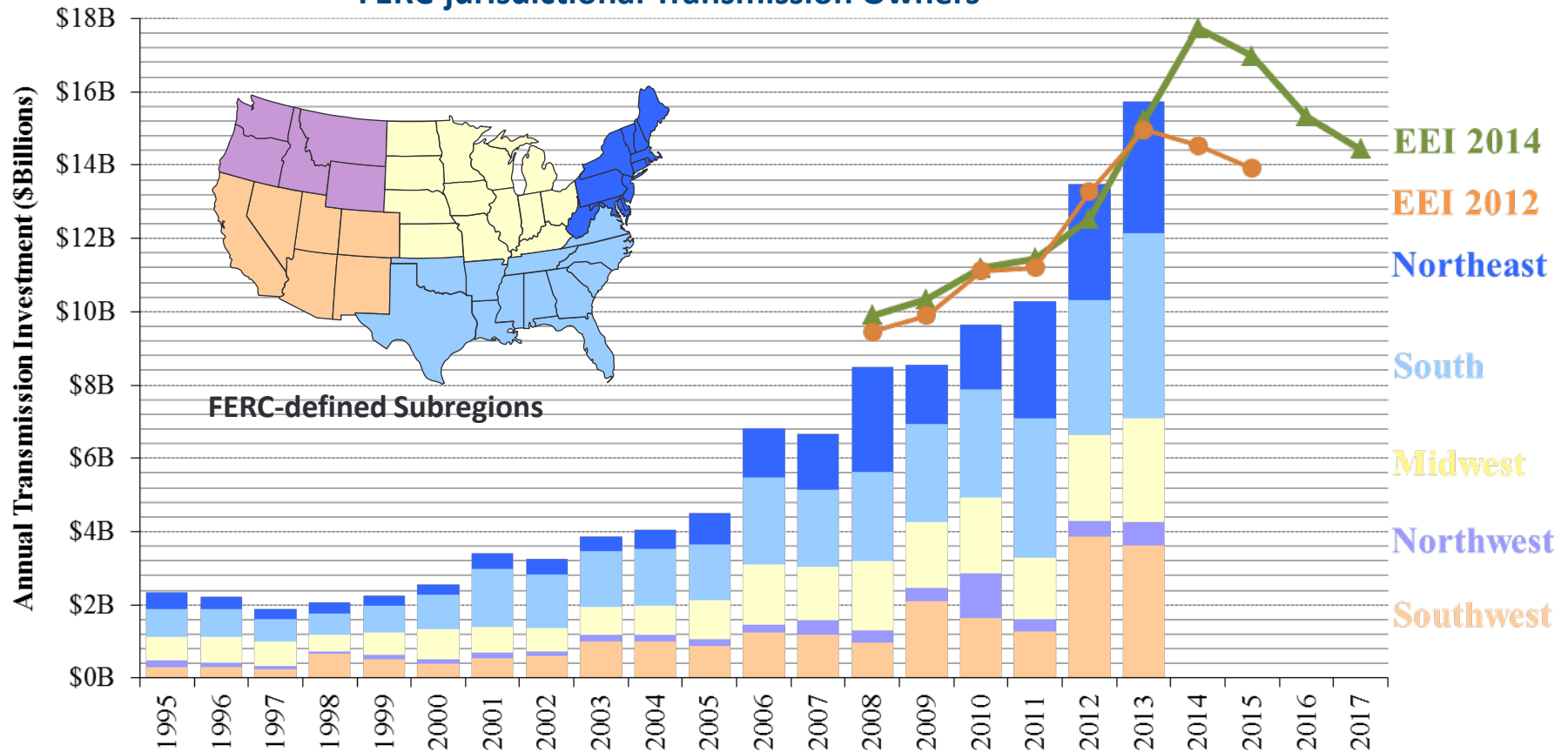
- Types of non-incumbent opportunities
- Experience with and scope for competitively assigned transmission
- Policy challenges

Non-incumbent Business Models

- Models for development and construction of transmission projects outside of incumbent transmission owners footprint
- Transmission cost recovery as main driver of business model

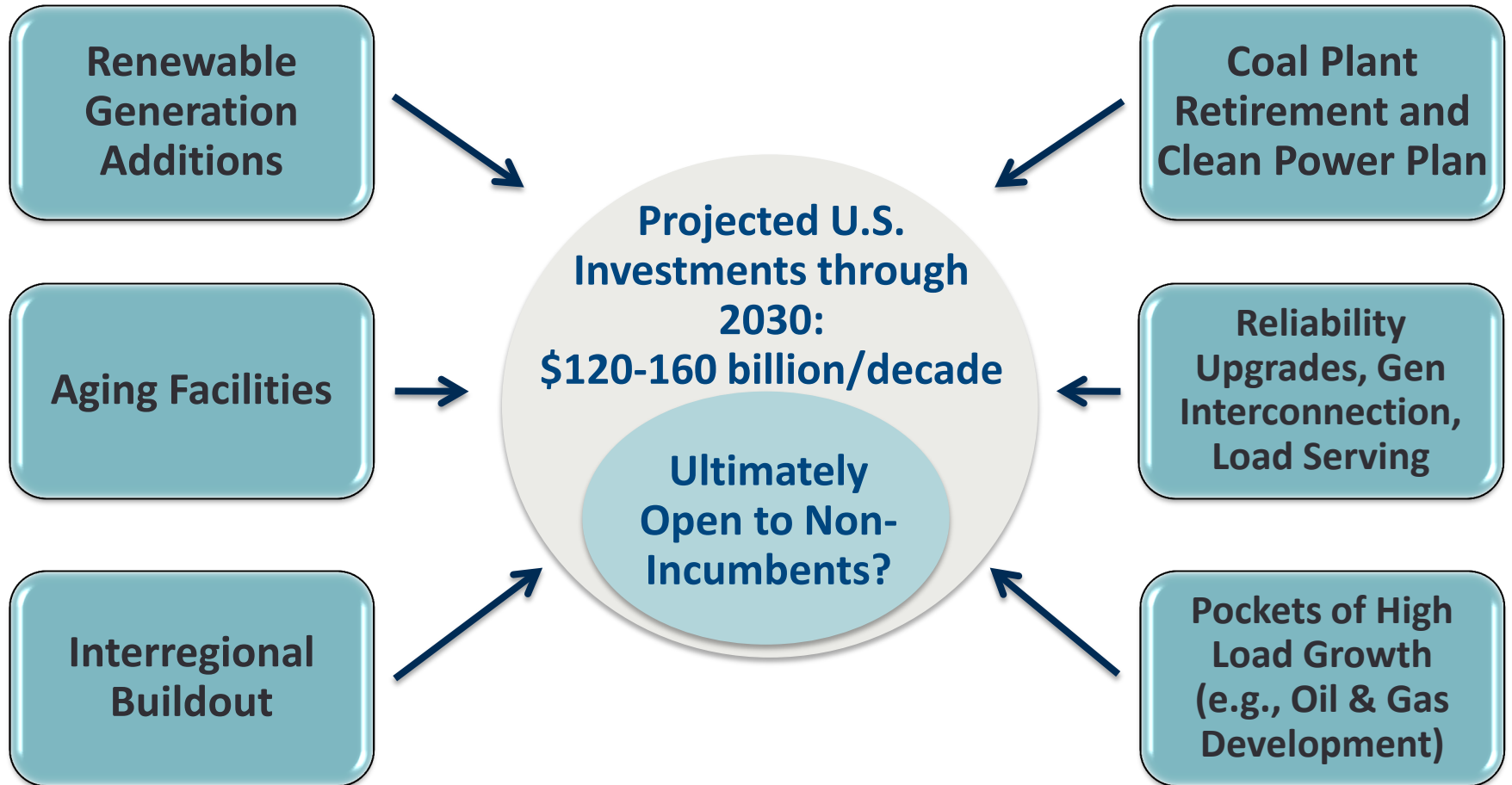
Growing Transmission Investments

1995–2017 Annual Transmission Investment by
FERC-jurisdictional Transmission Owners



Sources and Notes: The Brattle Group's analysis of FERC Form 1 data compiled in Ventyx's Velocity Suite. Based on EIA data available through 2003, FERC-jurisdictional transmission owners estimated to account for 80% of transmission assets in the Eastern Interconnection, and 60% in WECC and ERCOT. Facilities >300kV estimated to account for 60-80% of shown investments. EEI annual transmission expenditures updated May 2014 shown (2008-2017) based on prior year's actual investment through 2012 and planned investment thereafter.

Projected Transmission Investment Opportunities



Sources and Notes:

The \$120-160 billion projection per decade was originally developed in conjunction with WIRES for “Employment and Economic Benefits of Transmission Investment in the US and Canada,” May 2011. This projection has since been refined and regionalized in several client-confidential analyses.

Competition Mostly for “Regulated” Transmission

Transmission investment remain largely regulated, based on state or regional planning with cost recovery at regulated rates

- Transmission is a public good:
 - Benefits broad in scope, wide-spread geographically, diverse in impacts on market participants, and occurring over many decades
 - Owners generally unable to capture sufficient portion of benefits
 - Will tend to lead to under-investment and over-use without regulated cost recovery

Competition discussed in industry today is mostly for the construction of regulated transmission projects

- Out-of-footprint investments by established transmission owners and independent developers
- Elimination of “Right of First Refusal” (ROFR) of incumbent transmission owners for new builds approved in regional transmission plans as required by Order 1000

Some unregulated “merchant” transmission projects

- Mostly HVDC lines between regions with sustained price differentials, resource needs, and ineffective interregional planning of regulated transmission

Jurisdictions with Competitive Processes

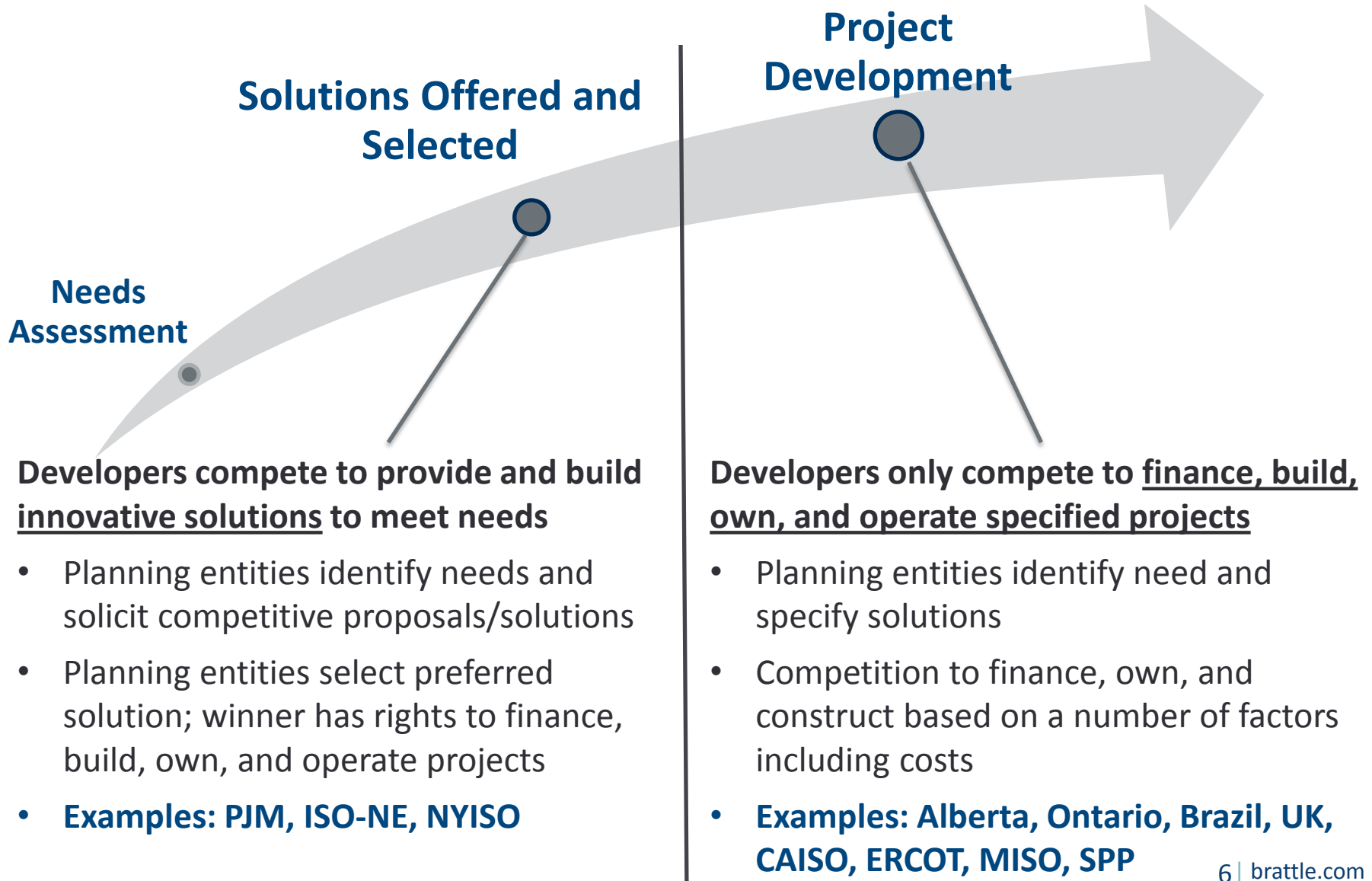
U.S. regulated transmission opportunities for non-incumbents

- FERC-jurisdictional regions
 - U.S. RTOs at different stages of implementing various frameworks for competitive processes, largely as a result of FERC Order 1000
- ERCOTs' competitive renewable energy zones (CREZ)

Important international experience

- Alberta: Developed a competitive process for major new projects; assigned first \$1.4 billion project (significantly below AESO estimates)
- Ontario: One competitive solicitation for transmission to date
- Brazil: Since 1999 all transmission projects have been auctioned off (similar processes in other Latin American countries, such as Chile)
- UK: Tenders for offshore grid projects

Scope of Competition in Regulated Transmission



Policy Challenge of Non-Incumbent Ownership

How to put incumbents and competing non-incumbents on a level playing field without losing value while managing risks?

- Competition from non-incumbent transmission developers offers important advantages
 - Find more innovative solutions to identified need that provide higher value or lower costs
 - Bring valuable experience and best practices to region
 - Build identified solutions at lower cost
- Incumbent transmission providers also offer real advantages
 - Local expertise and accountability
 - Local O&M infrastructure
 - Existing facilities and rights-of-way
- Joint ventures as a logical way to capture combined advantages

Emerging Non-Incumbent Business Models

Non-incumbent transmission developers have become increasingly active through a number of distinct business models:

Business Model	Examples
1 Project-specific transmission partnerships with incumbents	AEP and ITC “Novation” JVs in SPP, JVs to bid transmission in Alberta, Ontario, and CAISO
2 Public-private partnerships	MATL, Transbay Cable, Path15
3 Independent transmission project developers	Cleanline, Anbaric/PowerBridge, TDI, TransElect, AWC, Anschutz, ...
5 Transmission (initially) bundled with renewables/generation	NextEra, LS Power, RES Americas, First Wind
6 Incumbent-owned transmission development subsidiaries and JVs	Transource, Duke-ATC; BHE and Ameren Transmission Cos.
7 Independent and semi-independent transmission companies	ITC, ATC, Hunt

Cost Recovery Drives Corporate Structure

Separate corporate entities and business models are often set up (by both incumbents and non-incumbents) to own portfolios of assets with similar regulatory treatment, cost recovery, and financing

- Regulated cost recovery of projects assigned to incumbents
 - Local cost recovery / bundled regulated rates
 - Shared cost recovery / unbundled transmission rates
- Regulated cost recovery of competitively-assigned projects
- Merchant cost recovery

Optimal corporate structure may shift as projects move from development to operations stages

Speaker Bio and Contact Information



Johannes P. Pfeifenberger

Principal, Cambridge

Hannes.Pfeifenberger@brattle.com

617.864.7900 office

617.234.5624 direct

Note:

The views expressed in this presentation are strictly those of the presenter and do not necessarily state or reflect the views of *The Brattle Group, Inc.*

Johannes (Hannes) Pfeifenberger is an economist with a background in power engineering and over 20 years of experience in the areas of public utility economics and finance. He has published widely, assisted clients and stakeholder groups in the formulation of business and regulatory strategy, and submitted expert testimony to the U.S. Congress, courts, state and federal regulatory agencies, and in arbitration proceedings.

Hannes has extensive experience in the economic analyses of wholesale power markets and transmission systems. His recent experience includes reviews of RTO capacity market and resource adequacy designs, testimony in contract disputes, and the analysis of transmission benefits, cost allocation, and rate design. He has performed market assessments, market design reviews, asset valuations, and cost-benefit studies for investor-owned utilities, independent system operators, transmission companies, regulatory agencies, public power companies, and generators across North America.

Hannes received an M.A. in Economics and Finance from Brandeis University and an M.S. in Power Engineering and Energy Economics from the University of Technology in Vienna, Austria.

Additional Reading

Pfeifenberger, Chang, Tsoukalis, “Dynamics and Opportunities in Transmission Development,” Transforum East, Washington, DC, December 2, 2014.

Pfeifenberger, Chang, Davis and Geronimo, “Contrasting Competitively-Bid Transmission Investments in the U.S. and Abroad,” UBS Conference Call, May 13, 2014.

Chang, Pfeifenberger, Hagerty, "The Benefits of Electric Transmission: Identifying and Analyzing the Value of Investments," prepared for WIRES, July 2013.

Pfeifenberger, Chang, Hou "Bridging the Seams: Interregional planning under FERC Order 1000," Public Utilities Fortnightly, November 2012.

Pfeifenberger, "Transmission Investment Trends and Planning Challenges," EEI Transmission and Wholesale Markets School, August 8, 2012

Pfeifenberger and Hou, Transmission’s True Value: Adding up the Benefits of Infrastructure Investments, Public Utilities Fortnightly, February 2012.

Pfeifenberger and Hou, Employment and Economic Benefits of Transmission Infrastructure Investment in the U.S. and Canada, on behalf of WIRES, May 2011.

Pfeifenberger and Newell, Direct testimony on behalf of The AWC Companies re: the Public Policy, Reliability, Congestion Relief, and Economic Benefits of the Atlantic Wind Connection Project, filed December 20, 2010 in FERC Docket No. EL11-13.

Pfeifenberger, Chang, Hou, Madjarov, “Job and Economic Benefits of Transmission and Wind Generation Investments in the SPP Region,” The Brattle Group, Inc., March 2010.

Pfeifenberger, Direct Testimony on behalf of American Transmission Company re: Transmission Cost-Benefit Analysis Before the Public Service Commission of Wisconsin, Docket 137-CE-149, January 17, 2008.

Pfeifenberger, Testimony on behalf of Southern California Edison Company re: economic impacts of the proposed Devers-Palo Verde No. 2 transmission line, before the Arizona Power Plant and Transmission Line Siting Committee, Docket No. L-00000A-06-0295-00130, Case No. 130, September and October, 2006.

About The Brattle Group

The Brattle Group provides consulting and expert testimony in economics, finance, and regulation to corporations, law firms, and governmental agencies around the world.

We combine in-depth industry experience, rigorous analyses, and principled techniques to help clients answer complex economic and financial questions in litigation and regulation, develop strategies for changing markets, and make critical business decisions.

Our services to the electric power industry include:

- Climate Change Policy and Planning
- Cost of Capital & Regulatory Finance
- Demand Forecasting & Weather Normalization
- Demand Response & Energy Efficiency
- Electricity Market Modeling
- Energy Asset Valuation & Risk Management
- Energy Contract Litigation
- Environmental Compliance
- Fuel & Power Procurement
- Incentive Regulation
- Market Design & Competitive Analysis
- Mergers & Acquisitions
- Rate Design, Cost Allocation, & Rate Structure
- Regulatory Compliance & Enforcement
- Regulatory Strategy & Litigation Support
- Renewables
- Resource Planning
- Retail Access & Restructuring
- Strategic Planning
- Transmission

Offices

NORTH AMERICA



Cambridge



New York



San Francisco



Washington, DC

EUROPE



London



Madrid



Rome