

PAUL J. HIBBARD

Principal

Phone: (617) 425-8171
Fax: (617) 425-8001
paul.hibbard@analysisgroup.com

111 Huntington Ave.
Tenth Floor
Boston, MA 02199

Paul Hibbard is an expert on economics, strategy, regulation, and policy in the electric and natural gas industries. Throughout his career, he has administered and promoted an agenda of advanced ratemaking and policy initiatives for energy companies. Mr. Hibbard has also provided technical and strategic advice to government, industry, business, public interest groups, and trade organizations on energy market structure, electric and natural gas infrastructure planning and siting, utility resource solicitation and procurement, emission allocation and environmental policy, renewable resource program design and administration, transmission pricing, climate change policy, utility ratemaking practices, and the transfer of U.S. federal and state emission control programs to other countries.

Mr. Hibbard has a comprehensive background merging business development, technical analysis, resource planning and development modeling, economics, and public policy in energy and environmental fields. Prior to joining Analysis Group, Mr. Hibbard was Chairman of the Massachusetts Department of Public Utilities. He was appointed to that position by Governor Deval Patrick in April, 2007. As Chairman, Mr. Hibbard carried out a forward-looking ratemaking and policy agenda to advance energy efficiency and renewable resources, coordinate regional efforts in the development of energy resources and associated infrastructure, and promote the administration of fair and efficient transmission pricing models in regional and national contexts. During his term as Chairman, Mr. Hibbard provided testimony on resource planning, competitive electricity markets, and transmission pricing in hearings before Committees of the Massachusetts Legislature and the U.S. House of Representatives, the Federal Energy Regulatory Commission, and state and regional planning councils. Mr. Hibbard served as a member on the Massachusetts Energy Facilities Siting Board, the New England Governors' Conference Power Planning Committee, and the NARUC Electricity Committee and Procurement Work Group. He was also appointed as State Manager for the New England States Committee on Electricity and as Treasurer to the Executive Committee of the 41-state Eastern Interconnect States' Planning Council.

Prior to 2007, Mr. Hibbard held Vice President, Manager, and Senior Consultant positions at Analysis Group and Lexecon, Inc., providing technical and policy analysis and strategic advice to energy sector clients in a wide range of market, policy and infrastructure areas. From 1991-2000, Mr. Hibbard worked for both utility and environmental regulatory agencies in Massachusetts on utility resource planning, industry restructuring, market design, and power plant emission control and allowance allocation mechanisms.

EDUCATION

Ph.D. program (coursework), Nuclear Engineering, University of California, Berkeley

M.S. in Energy and Resources, University of California, Berkeley

Thesis: Safety and Environmental Hazards of Nuclear Reactor Designs

B.S. in Physics, University of Massachusetts, Amherst

PROFESSIONAL EXPERIENCE

- 2010 – Present Analysis Group, Inc., Boston, MA
Principal
Vice President ('10 – '15)
- 2007 – 2010 MA Department of Public Utilities, Boston, MA
Chairman
Member, Energy Facilities Siting Board
Manager, New England States Committee on Electricity
Treasurer, Executive Committee, Eastern Interconnect States' Planning Council
Representative, New England Governors' Conference Power Planning Committee
Member, NARUC Electricity Committee, Procurement Work Group
- 2003 – 2007 Analysis Group, Inc., Boston, MA
Vice President
Manager ('03 – '05)
- 2000 – 2003 Lexecon Inc., Cambridge, MA
Senior Consultant
Consultant ('00 – '02)
- 1998 – 2000 Massachusetts Department of Environmental Protection, Boston, MA
Environmental Analyst
- 1991 – 1998 Massachusetts Department of Public Utilities, Boston, MA
Senior Analyst, Electric Power Division
- 1988 – 1991 University of California, Berkeley, CA
Research Assistant, Safety/Environmental Factors in Nuclear Designs

SELECTED PUBLIC SECTOR EXPERIENCE

- **Chairman, Department of Public Utilities** – Chaired the state's public utilities commission during a period of aggressive change in state policies affecting electricity and natural gas industries, including initial implementation of several new state energy laws and initiatives restructuring the setting of utility rates, promoting the expansion of energy efficiency and demand response, facilitating the retail and wholesale market integration of renewable and low-carbon resources, and revising state policy on the siting of major generation and transmission infrastructure. Oversaw the issuance of initial regulations and policy related to revenue decoupling, net metering, long-term contracting for renewables, and power system emergency planning and outage restoration. Also, led Massachusetts' work with regulators across the Northeast to pursue large-scale renewable resource development through coordinated procurement strategies, to develop coordinated positions related to national transmission development proposals, and to establish a regional presence on transmission-related provisions in federal legislation. As Chairman, served as administrative and policy head of an agency of nearly 150 employees, responsible for agency management and growth, budgeting, legislative matters, press inquiries, and setting of the policy agenda. Responsible for overseeing completion of all dockets jurisdictional to the DPU, including rate cases and associated tariff matters, forecast and supply planning for electric and natural gas industries, and state oversight of natural gas pipeline safety and public transit authorities. Also responsible for all interaction with the Governor's office, Legislature, and Executive Office of Energy and Environmental Affairs, as well as representing the state in regional deliberations related to electric and natural gas utility policy, electricity market design and oversight, and regional power system reliability issues.

- **Member, Energy Facilities Siting Board** – Sitting member of state Board with responsibility to review all proposals for major generation and transmission infrastructure projects within the state, as well as state intervention in federal review of natural gas pipeline infrastructure. Involved technical, environmental, and economic review of jurisdictional power plants, transmission lines, and other energy infrastructure, as well as ruling on proposals for exemption from state and local zoning ordinances.
- **Manager, New England States Committee on Electricity** – State representative on regional group chartered to develop New England regional policy positions on electricity market and transmission planning issues. Included consideration of group development issues, input into regional determinations of installed capacity requirement, consideration of regional approaches to transmission planning and the consideration of non-transmission alternatives, and coordinated development of a regional RFP/RFI for the solicitation of renewable power under long-term contracts for the New England states.
- **Treasurer, Executive Committee, Eastern Interconnect States' Planning Council** – Elected Treasurer of steering committee for state council formed under a U.S. DOE grant, to coordinate with power system operators on developing long-range plans for the transmission system spanning 41 states in the Eastern U.S. Coordinated New England states' approach to policy issues stemming from council efforts.
- **Representative, NEGC Power Planning Committee** – Represented Governor's Office in all discussions related to regional energy/environmental issues, including transmission cost allocation, regional energy policy coordination, and development of mechanisms and approaches for procurement of renewable power through long-term contracts with sources in New England and Eastern Canada. Engaged in collaborative discussions with counterparts representing the Eastern Canadian Premiers.

SELECTED CONSULTING EXPERIENCE

Government, Foundations, Commissions, Cooperatives

- **For Massachusetts Attorney General** – Coauthored a report evaluating electric and natural gas infrastructure in New England from the perspectives of reliability, cost, and emissions of greenhouse gases (2015).
- **For Advanced Energy Economy Institute** – Coauthored a report on the status of the electric industry in the State of Ohio, and developed recommendations on state energy policy in consideration of current market and technological circumstances in the state.
- **For the Energy Foundation and industry groups** – coauthored multiple white papers on the reliability, cost and market efficiency impacts of EPA's proposed regulations to control emissions of carbon dioxide from existing electric generating facilities. Presented results in numerous conference, stakeholder, and regulatory settings.
- **For a foundation** – Led a study of the economic impacts of a state clean energy policy (2013–2014).
- **For the Massachusetts Department of Energy Resources** – Provided testimony on the ratepayer and social benefits of reducing methane leaks from a local natural gas distribution company's system (2013).
- **For the Advanced Energy Economy Institute** – Facilitated a regional symposium for New England Public Utility Commissioners and staff related to advanced energy technology development and commercialization, and the legal and regulatory structures needed to facilitate integration of emerging technologies (2013).
- **For the Regional Greenhouse Gas Initiative** – conducted a bill impact analysis related to changes to retail customer electric bills in New England, New York, and RGGI PJM states associated with various changes considered by RGGI to program cap level and use of allowance revenues (2012).

- **For Advanced Energy Economy Institute** – Participated in an on-going project advising AEE with respect to their national program to support Public Utility Commission consideration of policies and regulations related to the development and integration of advanced energy technologies (2012 – 2013).
- **For the Merck Family Fund** – Developed an interactive tool to compare the impacts of energy, economic, environmental, legislative and regulatory policies and programs across the U.S. states (2012).
- **For Advanced Energy Economy Institute** – Co-authored a Report on the perspectives of CEOs at advanced energy companies doing business in California on California’s energy policies. Conducted over 30 interviews with energy business leaders to get perspectives and recommendations for policy changes (2012).
- **For the Barr Foundation** – Co-authored a Report on the benefits and costs associated with reducing natural gas leaks on natural gas distribution systems through implementation of targeted infrastructure replacement ratemaking mechanisms in Massachusetts, Rhode Island, and Ohio. Developed a cost-benefit model to quantify the impacts of such programs (2012 – 2013).
- **For American Clean Skies Foundation** – developed a dispatch price and emissions model to forecast power system outcomes in the PJM Interconnection, Midwest Independent System Operator, and Southwest Power Pool regions (2012).
- **For a National Environmental Organization** – Conducted a comprehensive national review of energy efficiency monitoring and verification programs, in order to support development of a protocol that could be used to allow EE to be used as a compliance tool in national carbon emission control regime (2012 – 2013).
- **For the Merck Family Fund** – Co-lead a project to carry out an analysis of the economic impacts of the Northeast States’ use of revenues collected from the auctioning of carbon allowances associated with Regional Greenhouse Gas Initiative (2011).
- **For Advanced Energy Economy** – Developed industry background info on electric industry structure, regional planning and market structures and operations, and state energy policy organization and initiatives. Assisted with development of web-based information platform (2011).
- **For the American Clean Skies Foundation** – Authored a paper on the redesign of wholesale electricity market structures to efficiently integrate a higher level of variable resources (2012). Co-authored a white paper examining electric reliability and air emission issues associated with the potential retirement of the Potomac River Generating Station in Alexandria, Virginia (2011).
- **For the Public Service Commission of Colorado** – Co-authored a white paper on design of incentives for the PV Solar energy market (2011).
- **For a National Environmental Organization** – Conducted an economic analysis of key U.S. cities that are or have been in nonattainment under the National Ambient Air Quality Standards, to explore relationships between air quality control requirements and the local economy (2011).
- **For a National Environmental Organization** – Completed a comprehensive report on the full scope of energy efficiency and demand response programs administered by New York electric utilities and the New York Independent System Operator. Assessed the potential for additional innovative programs to improve energy efficiency and demand response in New York City (2010).
- **For the National Commission on Energy Policy** – Authored white papers on (1) the implications for U.S. energy infrastructure of the damage to Gulf Coast energy facilities from Hurricanes Katrina and Rita (2006); (2) the practical and economic implications of various mechanisms for the allocation of carbon dioxide emission allowances to the electric sector under potential federal carbon control regimes (2005), and (3) national energy infrastructure needs for the electricity, natural gas, and petroleum industries, and for addressing the long-term impacts of energy production and use associated with spent nuclear fuel and carbon dioxide (2004).

- ***For the Attorney General, State of North Carolina*** – Managed project in support of expert testimony on the economic and financial feasibility of requiring the installation of controls to reduce emissions of sulfur dioxide, nitrogen oxides, and mercury from coal-fired power plants owned by the Tennessee Valley Authority (TVA). Project is in the context of a public nuisance lawsuit brought by the NC Attorney General against TVA (2006).
- ***For the Energy Foundation*** – Coauthored a Report (with Dr. Susan Tierney) documenting best practices in energy facility siting regulations in the U.S., and analyzing in particular the impact of California’s energy facility siting process on that state’s electricity crisis (2002). Supported a foundation-based program to provide international assistance to China’s efforts to privatize and restructure its electric industry, and to develop regulations to control air emissions from power plants in that country (2000 – 2003).
- ***For the Massachusetts Technology Collaborative*** – Managed projects in support of the MTC’s renewable and premium power programs, including (1) creation of a standard financial pro-forma for wind and landfill gas technologies in New England under various assumptions related to capital and operating costs, financing, discount rates, and the impact of state and federal policies to support renewable development; (2) development of an economic model to determine the financial impact on potential wind and combined heat and power facilities of proposed changes to utility standby service tariffs; and (3) research, strategic, and regulatory support of MTC’s efforts to advance distributed generation in Massachusetts to promote renewable resources and improve power reliability for commercial and industrial customers (2000 – 2002).
- ***For the Massachusetts Health and Educational Facilities Authority (MHEFA) PowerOptions Program*** – Managed several projects providing regulatory, economic, and strategic advice to PowerOptions to assist in their selection and pricing of retail electricity products from competitive electricity suppliers. Over a three-year period projects included analyses of forward prices and wholesale markets for capacity and reserves; analysis of contract price options, terms and conditions; and analysis of congestion pricing implications for retail supply (2002 – 2004).

OTHER ELECTRIC AND NATURAL GAS INDUSTRY EXPERIENCE

- ***For a Consortium of Solar Companies*** – Developed a white paper on the appropriate evaluation and treatment of behind-the-meter solar PV generation from the perspective of net metering policies in Massachusetts (2015).
- ***For a Group of Owners of Electric Generating Facilities*** – Developed a comprehensive quantitative and qualitative critique of a utility proposal to invest in electricity storage capability in the State of Texas. Drafted a report for circulation to legislative, regulatory, and market interests reporting results of the critique and analysis (2015).
- ***For an Energy Resource Developer*** – Conducted a financial and ratepayer analysis of the benefits of a project to develop a power plant and natural gas pipeline in the State of Maine. Submitted testimony to the Maine Public Utilities Commission describing results (2014 – 2015).
- ***For an Energy Storage Company*** – Developed an optimization analysis to evaluate the security, reliability, economic, and environmental benefits and costs of multiple battery storage installations across the Hawaiian Islands in different industry settings (renewable generator, island utility, military base, hotel/resort). Drafted report presenting results considering the state’s unique energy price and fuel security context (2014 – 2015).
- ***For the New York Independent System Operator*** – Developed a model to compare cost, resource, and emission outcomes of alternative designs for a capacity market in New York State. Coauthored a report presenting results of analysis and a comprehensive review of benefits and drawbacks of moving from a spot to a forward capacity market structure. Presented results to NYISO Senior Management and several meetings of New York electricity market participants and stakeholders (2014 – 2015).

- **For Multiple Regional Transmission Organizations** – Provided Board of Director and Senior Management level strategic support for considering the changing structures of retail regulation and wholesale market incentives within their regions (2014 – 2015).
- **For Calpine Corporation** – Provided testimony on the costs and benefits of different proposals for generation capacity in Florida (2014).
- **For a Regional Transmission Operator** – Conducted internal analysis of financial risk associated with the RTO’s position in administering the trading of power system transmission rights (2014).
- **For a Regional Transmission Operator** – Conducted a top-to-bottom review of the content and design of the RTO’s Rate Schedule 1 tariff for collection of operational costs from market participants. Presented results of the analysis to the RTO’s Board of Directors and Senior Management (2014).
- **For a Retail Electricity Supplier** – Provided analytic and strategic support with respect to the supplier’s participation in a state regulatory proceeding related to changing the nature of and rate structure for electric distribution service (2014).
- **For Ambri Inc.** – Led a study of the economic feasibility of using battery storage in conjunction with wind and solar for a micro-grid application (2013 – 2014)
- **For Calpine Corporation** – Provided testimony on the costs and benefits of different proposals for generation capacity in Minnesota (2013)
- **For the New England Independent System Operator** – Assisted on several project related to addressing co-dependence of electric and natural gas systems in New England through a mix of short- and long-term market rule changes and administrative actions. Assistance included review of market structures to improve unit performance, particularly under stressed natural gas system conditions; quantification of the costs of potential natural gas and electric system infrastructure and contractual responses to market rules and administrative actions (e.g., dual-fuel capability, new pipeline investment, liquefied natural gas purchasing, and firm natural gas transportation agreements); and assistance with a series of discussions between ISO-NE and regional electricity and natural gas market participants. Also quantified the potential benefits of improved performance associated with reduced system interruptions (2012 – 2013).
- **For the New England Independent System Operator** – Developed an economic supply/demand model of the Forward Capacity Market to estimate the cost impact of integrating into the FCM auctions and pricing structure a new long-term performance incentive design element (2012 – 2013).
- **For Calpine Corporation** – Filed a Report with the U.S. Environmental Protection Agency on the impact of emergency generation demand response programs on the costs and emissions associated with power system dispatch in the PJM electricity market (2012).
- **For the New England Independent System Operator** – Organized and help lead a strategic planning initiative to address unit retirement, fuel mix, operational performance, and wind resource integration issues. Oversaw comprehensive generating unit performance analysis and electric-gas system risk review. Conducted a thorough internal risk assessment and key-challenge solution development, facilitating meetings, developing organizational and concept documents to explore outcomes and assist in deliberations with states and regional industry stakeholders, and participating in external meetings to gain input and feedback (2010 – 2012).
- **For a Regional Transmission Organization** – Conducted a top-to-bottom review of its external market monitoring function, and a comprehensive best-practices survey of all internal and external market monitoring functions at U.S. Regional Transmission Organizations and Independent System Operators (2012).
- **For a Wind Power Development Company** – Conducted a regional review of wind power development projects and an assessment of potentially valuable projects for acquisition based on power system location and siting viability (2012).

- **For an International Power Company** – Conducted a review of a regional utility’s compliance with FERC requirements for transmission open access; developed strategies for the filing of complaints of anticompetitive conduct before the FERC (2011 – 2012).
- **For a Regional Transmission Organization** – Comprehensively reviewed and suggested changes to the design of regional market structures; oversaw data review and analysis related to key market design features and asset performance (2011).
- **For an Energy Services Company** – Oversaw and conducted an analysis of business, legal and regulatory conditions related to a legal dispute over the legitimacy of a contract for energy and water management services. Co-authored a report to be used in development of legal strategy and legal proceedings (2012).
- **For Direct Energy** – Assisted with development of strategies to increase retail choice in Pennsylvania, including the design of an Opt-In descending-clock auction to increase migration from default service to competitive supply. Prepared comments and analysis on utility contract structures. Provided testimony before the Pennsylvania Public Utilities Commission (2011).
- **For Algonquin Gas** – Submitted affidavits and testified in bankruptcy court on the impact on power plant value of changes in market rules related to the Forward Capacity Market in New England. Also provided testimony on the impact on power system reliability of the availability of firm transportation contracts for natural gas supplied to power plants in New England (2010).
- **For an Independent System Operator** – Conducted a best practices and performance metrics analysis to benchmark the ISO’s performance against industry peers with respect to responsiveness to consumers, stakeholders, and policymakers. Drafted a report with comprehensive benchmarking and performance metric recommendations; participated in stakeholder discussions (2010).
- **For a Power Generators Trade Association** – Developed and facilitated an all-day group discussion concerning key economic, environmental, legal and policy challenges to the economic viability of existing and new power generation capacity in regional wholesale electricity markets (2010).
- **For a Coalition of Electric Companies** – Coauthored a report, “Ensuring a Clean, Modern Electric Generating Fleet while Maintaining Electric System Reliability,” reviewing the impact on power plant operations of proposed Environmental Protection Agency rules to reduce emissions of sulfur dioxide, nitrogen oxides, mercury, and other hazardous air pollutants. Presented findings to numerous regional and national industry and regulatory groups (2010).
- **For an Industry Coalition** – Conducted a study and coauthored a white paper (with Dr. Susan Tierney) for the New England Energy Alliance on New England energy infrastructure needs and policy issues (e.g., facility siting policies, RGGI/climate change) influencing the future addition of energy infrastructure in the region (2006).
- **For an Interstate Pipeline Company and Offshore LNG Developer** – Authored a Report related to recent developments in the supply and demand for natural gas in New England, and surveyed the development, regulatory and commercial status of proposed LNG projects across the U.S. (2006); coauthored a Report (with Dr. Susan Tierney) providing an overview of Northeastern natural gas markets and conditions, and an assessment of natural gas supply and demand conditions (2005).
- **For Independent System Operators** – Managed several projects and coauthored reports or analyses for the Northeast region’s ISOs/RTOs, related to ISO/RTO annual strategic plans; market monitoring and mitigation best practices; and the links between wholesale electricity markets and local distribution company retail prices (2002 – 2006).
- **For Electric Utilities** – Managed or participated in numerous engagements with wires-only as well as vertically-integrated electric utilities within New England and across the country related to rate case strategy and regulatory support; strategic planning; power supply resource planning and procurement (including the role of independent monitor of utility procurements); price and environmental analyses

related to the siting of new high-voltage transmission lines; and evaluation of the allocation of SO₂ and NO_x emission allowances under the EPA CAIR program (2001 – 2006).

- ***For a Developer of a Land-Based LNG Facility*** – Assisted in the preparation of confidential reports on U.S. natural gas supply/demand conditions, market pricing indices, U.S. LNG facilities' status, Northeast interstate and intrastate pipeline infrastructure conditions and prospects, and LNG supply contract prices, terms and conditions (2006).
- ***For Retail Energy Providers*** – Managed projects and authored or coauthored confidential reports on the experience with retail competition in the U.S., a benefit/cost analysis of wholesale electricity competition, and comparative analyses of retail electricity prices for utility and competitive retail suppliers in select states (2004 – 2006).
- ***For Merchant Generating Companies/Coalitions*** – Managed production cost dispatching analyses for strategic planning related to the construction of new generating capacity in New England; assisted in the development of regulatory proposals for new wholesale market organizations and policies in New England (2001 – 2002).
- ***For a Renewable Power Developer Association*** – Provided testimony on the potential negative effects – and remedial policy options – related to the impact of locational marginal pricing on the development and operation of renewable generating resources in New England (2001).
- ***For a Major Interstate Pipeline Owner/Operator*** – Modeled the electrical load characteristics of pipeline operations and utility rate structures to quantify the extent to which the company was being overcharged for electricity services. Supported company intervention in public utility commission proceedings and with analytical support in settlement negotiations (2002).

OTHER PROFESSIONAL ACTIVITIES

Advisory Board, Advanced Energy Economy (2011).

SELECTED REPORTS, TESTIMONY AND PRESENTATIONS

Paul J. Hibbard and Craig P. Aubuchon, *Power System Reliability in New England: Meeting Electric Resource Needs in an Era of Growing Dependence on Natural Gas*, Report for the Massachusetts Office of the Attorney General, November 2015.

Susan Tierney, Paul Hibbard, and Craig Aubuchon, *Electric System Reliability and EPA's Clean Power Plan: The Case of MISO*, Report for the Energy Foundation, June 8, 2015.

Paul J. Hibbard, *Net Metering in the Commonwealth of Massachusetts: A Framework for Evaluation*, May 2015.

Paul Hibbard, Todd Schatzki, Craig Aubuchon, and Charles Wu, *NYISO Capacity Market: Evaluation of Options*, Report for the New York Independent System Operator, May 2015.

Paul J. Hibbard and Andrea M. Okie, *Ohio's Electricity Future: Assessment of Context and Options*, Report of Advanced Energy Economy, April 2015.

“Markets, Infrastructure, and Policy: New England at a Crossroads,” Presentation to US/Canada Cross-Border Power Summit, April 2014.

“Siting Infrastructure: Economic and Siting Hurdles,” Presentation to US/Canada Cross-Border Power Summit, April 2014.

Susan Tierney, Paul Hibbard, and Craig Aubuchon, *Electric System Reliability and EPA's Clean Power Plan: The Case of PJM*, Report for the Energy Foundation, March 16, 2015.

Susan Tierney, Paul Hibbard, and Craig Aubuchon, *Electric System Reliability and EPA's Clean Power Plan: Tools and Practices*, Report for the Energy Foundation, February, 2015.

Andrea M. Okie, Paul J. Hibbard, and Susan F. Tierney, *Tools States Can Utilize for Managing Compliance Costs and the Distribution of Economic Benefits to Consumers Under EPA's Clean Power Plan*, Electricity Forum, February 2015.

Paul J. Hibbard, Katherine A. Franklin, and Andrea M. Okie, *The Economic Potential of Energy Efficiency*, Report for the Environmental Defense Fund, December 2014.

Paul J. Hibbard, Andrea M. Okie, and Katherine A. Franklin, *Assessment of EPA's Clean Power Plan: Evaluation of Energy Efficiency Program Ramp Rates and Savings Levels*, Report for the Environmental Defense Fund and National Resources Defense Council, December 2014.

EPA's Proposed Clean Power Plan and States' Planning for Implementation," Presentation to Power-Gen International Annual Conference, December 2014.

"Storage/Renewables Valuation: A Case Study Hitting Multiple Perspectives," Presentation to the Caribbean Renewable Energy Forum 2014, October 2014.

"Electric Industry Transformation: A New World, or a Step Through the Looking Glass?" Presentation to New England Independent System Operator Quarterly Meeting, September 2014.

"Consumers, Markets, and Infrastructure: New England at a Crossroads," Presentation to the New England Consumer Liaison Group, September 2014.

"Columbia River Treaty Hydropower: Perspectives on Power Benefits," Presentation to LSI Conference on the Columbia River Treaty, September 2014.

Before the Florida Public Service Commission, Docket No. 140110-E1, Direct Testimony of Paul J. Hibbard on Behalf of Calpine Construction Finance Company, L.P., July 2014.

"States in Control: EPA's Clean Power Plan and State Implementation," Presentation at National Association of Regulatory Utility Commissioners Summer Meetings, July 2014.

"Project Vigilance: Value of Ambri Batteries at Joint Base Cape Cod," Presentation to Raab Restructuring Roundtable, Boston MA, June 2014.

Hibbard, Paul and Todd Schatzki, *Further Explanation on Rate Calculations*, Memo to ISO New England Markets Committee on setting the compensation rate for the ISO Winter Program, May 28, 2014.

Hibbard, Paul J., Susan F. Tierney, and Pavel G. Darling, *Economic Impact of the Green Communities Act in the Commonwealth of Massachusetts: Review of the Impacts of the First Six Years*," March 4 2014.

Paul J. Hibbard and Andrea Okie, *Crediting Greenhouse Gas Emission Reductions from Energy Efficiency Investments: Recommended Framework for Proposed Guidance on Quantifying Energy Savings and Emission Reductions in Section 111(d) State Plans Implementing the Carbon Pollution Standards for Existing Power Plants*, Report for Environmental Defense Fund, March 2014.

"Climate Policy and the Economy," Presentation to 2014 JISEA Annual Meeting, NREL, Golden CO, March 2014.

Federal Energy Regulatory Commission, Docket Nos. ER14-1050-000 and ER14-1050-001, Testimony of Paul Hibbard and Todd Schatzki on Behalf of ISO New England Inc., February 12, 2014.

Hibbard, Paul, Steve Carpenter, Pavel Darling, Margaret Reilly, and Susan Tierney, *Project Vigilance: Functional Feasibility Study for the Installation of Ambri Energy Storage Batteries at Joint Base Cape Cod*, Report for demonstration project under the MassInnovate Program of the Massachusetts Clean Energy Center, February 2014.

State of Minnesota, Minnesota Public Utilities Commission, MPUC Docket No. E-002/CN-12-1240, Rebuttal Testimony of Paul Hibbard, October 18, 2013.

State of Minnesota, Minnesota Public Utilities Commission, MPUC Docket No. E-002/CN-12-1240, Direct Testimony of Paul Hibbard, September 27, 2013.

“Market Monitoring at US RTOs,” Presentation to 12th Annual Gas and Power Institute, Houston, TX, August 2013.

Testimony of Paul J. Hibbard before the House Committee on Energy and Commerce, Subcommittee on Energy and Power, *The Role of Regulators and Grid Operators in Meeting Natural Gas and Electric Coordination Challenges*, March 19, 2013.

Hibbard, Paul, Andrea Okie and Susan Tierney, *California’s Advanced Energy Economy – Advanced Energy Business Leaders’ Perspectives and Recommendations on California’s Energy Policies*, Prepared for the Advanced Energy Economy Institute, February 2013.

Paul Hibbard, *Information from the Literature on the Potential Value of Measures that Improve System Reliability*, Memo to ISO New England, January 24, 2013.

Paul Hibbard, *Information on the Range of Costs Associated with Potential Market Responses to Address the Risks Associated with New England’s Reliance on Natural Gas*, Memo to ISO New England, January 24, 2013.

Craig Aubuchon and Paul Hibbard, *Summary of Quantifiable Benefits and Costs Related to Select Targeted Infrastructure Replacement Programs*, Report for the Barr Foundation, January 2013.

Hibbard, Paul J., Andrea M. Okie, and Pavel G. Darling, *Demand Response in Capacity Markets: Reliability, Dispatch and Emission Outcomes*, The Electricity Journal, November 2012.

“The Electric Generation Landscape – A Marathon of Challenges,” Presentation to SNL Generation Landscape, Chicago IL, October 2012.

“Economics, EPA, and Old Capacity...Bring Out Your Dead,” Presentation to LSI Energy in the Northeast, Boston MA, September 2012.

Hibbard, Paul J., *Reliability and Emission Impacts of Stationary Engine-Backed Demand Response in Regional Power Markets*, Report to the U.S. Environmental Protection Agency on behalf of Calpine Corporation, August 2012.

“Uncertainty in Electricity Infrastructure Development – Key Drivers, International Context,” Presentation to NCEA Annual Conference, Brainerd, MN, June 2012.

Hibbard, Paul J. and Todd Schatzki, *The Interdependence of Electricity and Natural Gas: Current Factors and Future Prospects*, The Electricity Journal, May 2012.

“Economic Impacts of RGGI,” presentation to the New Hampshire Environmental Business Council, April 2012.

Testimony of Paul J. Hibbard before the California Legislature, *The Economic Impacts of RGGI's First Three Years*, California Select Committee on the Environment, the Economy, and Climate Change, March 27, 2012.

Testimony of Paul J. Hibbard before the New Hampshire Legislature, *RGGI and the Economy – Following the Dollars*,” NH House Committee on Science, Technology, and Energy, February 14, 2012.

Testimony of Paul J. Hibbard before the Massachusetts Legislature, *RGGI and the Economy – Following the Dollars*,” Massachusetts Senate Committee on Global Warming and Climate Change, February 13, 2012.

“Economic Impacts of RGGI: Following the Dollars,” presentation (with Sue Tierney) to the California Business Climate Network, February 2012.

Hibbard, Paul J. and Susan F. Tierney, *Carbon Control and the Economy: Economic Impacts of RGGI's First Three Years*, *The Electricity Journal*, December 2011.

“Public Policy Transmission: Competition and Cooperation,” presentation to the Energy Bar Association Renewables Subcommittee, Washington DC, November 2011.

“Competitive Markets and Wind Power: Challenge and Opportunity,” presented to the Governors’ Wind Energy Coalition, Washington DC, November 2011.

Hibbard, Paul J., Susan F. Tierney, Andrea M. Okie and Pavel G. Darling, *The Economic Impacts of the Regional Greenhouse Gas Initiative on Ten Northeast and Mid-Atlantic States; Review of the Use of RGGI Auction Proceeds from the First Three-Year Compliance Period*, November 15, 2011.

Testimony before the Pennsylvania Public Utilities Commission on Retail Opt-In Auctions, November 10, 2011.

“Interdependence and Opportunity: The Growing Link Between Electricity and Natural Gas,” presentation to the COGA Energy Epicenter Conference, Denver CO, August 2011.

“Potomac River Generating Station: Update on Reliability and Environmental Considerations,” with Pavel Darling and Susan Tierney, July 19, 2011.

Hibbard, Paul J., *Retirement is Coming; Preparing for New England's Capacity Transition*, Public Utilities Fortnightly, June, 2011

Schatzki, Todd, Paul Hibbard, Pavel Darling and Bentley Clinton, *Generation Fleet Turnover in New England: Modeling Energy Market Impacts*, June, 2011.

“Solar Development Incentives: *Status of Colorado's Solar PV Program, Practices in Other States, and Suggestions for Next Steps*,” with Susan Tierney and Andrea Okie, June 30, 2011.

“The Balancing Act: Challenges in Traversing the Modernization of New England's Infrastructure,” presentation to NECA Annual Conference, Mystic CT, May 2011.

“Renewables v. Gas: The Future of New England Infrastructure,” presentation to the EBC Energy Seminar, Waltham, MA, April, 2011.

“Upcoming Power Sector Environmental Regulations: Framing the Issues About Potential Reliability/Cost Impacts,” presentation to Raab Restructuring Roundtable, Boston MA, October 2010.

“Carbon Regulation: Action and Convergence Spanning the Pond,” presentation to Energy Smart Conference, Boston MA, October 2010.

“Renewables Development – A Tricky Time to be Placing Bets,” presentation to NECA Renewables Committee, Boston MA, October 2010.

“Energy Infrastructure Challenges in the Current Policy Environment, A Wide Angle Point of View,” presentation to NARUC, Providence RI, September 2010.

“Ensuring a Clean, Modern Electric Generating Fleet while Maintaining Electric System Reliability,” with Susan F. Tierney, Michael J. Bradley, Christopher Van Atten, Amlan Saha, and Carrie Jenks. August 2010.

“Renewables Development – National Policies, New England Progress,” presentation to National Association of State Energy Officials Annual Meeting, Boston MA, September 2010.

“Northeast US and Eastern Canada – Competitive Markets and Renewable Resource Development,” presentation to LSI Conference on US/Canada Energy Transactions, Vancouver BC, August 2010.

“Renewables in the Northeast – Local Opportunities, National Context,” presentation to Council of State Governments, Portland ME, August 2010.

“Deregulation and Sustainable Energy,” class lecture, MIT (Jonathan Raab Energy Course), Cambridge MA, March 2010.

“Transmission for Renewables,” presentation to Raab Restructuring Roundtable, Boston MA, March 2010.

“Federal Transmission Legislation,” comments to Capitol Hill Briefing of the Coalition for Fair Transmission Policy, Washington DC, April 2010.

“Transmission Planning & Cost Allocation Alternatives under Order 890,” comments to the Energy Bar Association’s 64th Meeting, Washington DC, April 2010.

“US Electric Power Transmission: The Battle of the Jurisdictions,” comments to CERAWEEK 2010, March, 2010.

“New England Blueprint and the Federal Context,” presentation to ISO-NE Consumer Liaison Group Meeting, Westborough MA, February 2010.

“Interconnection-Wide Planning and Renewable Energy,” comments to the National Wind Coordinating Collaborative, Transmission Update Briefing, December 2009.

“Infrastructure Planning,” comments to Northeast Energy and Commerce Association Power Markets Conference, Westborough MA, November 2009.

“Transmission for Renewables - Risks and Opportunities for the Northeast,” Presentation to Governor’s Clean Energy Innovation Forum, New Brunswick, NJ, October 2009.

“Renewable Energy Development – The Role of Markets and Planning,” presentation to Northeast Power Planning Council General Meeting, Cambridge MA, September, 2009.

“Transmission Planning,” comments to FERC Technical Conference on Transmission Planning Processes Under Order No. 890, Docket No. AD09-8-000, Philadelphia, PA, September, 2009.

“New England Governors’ Blueprint – Purpose and Context,” presentation to the Raab Restructuring Roundtable, Boston MA, September 2009.

“Wind, Transmission, and Federal Legislation,” comments to MIT Wind Group, Cambridge MA, Fall, 2009.

“National Transmission Policy,” comments to The Energy Daily's Transmission Siting Policy Summit, Washington DC, September 2009.

Testimony to the Massachusetts’ Joint Committee on Telecommunications, Utilities and Energy Hearing to Review Implementation of the Green Communities Act, Boston MA, July 8, 2009.

“Federal Transmission Legislation,” comments to the National Association of State Utility Consumer Advocates, Boston MA, July 2009.

“Renewable Energy Development - The Role of Markets and Planning,” presentation to Governor’s Wind Energy Coalition, Washington DC, July 2009.

“Transmission and Renewables: ISO and Regulator Perspectives” comments to the Raab Restructuring Roundtable, Boston MA, June 2009.

“Renewable Development In and For New England; Massachusetts' Perspective,” presentation to Law Seminars International, Boston MA, June 2009.

“Roadmap to New Renewable Resources in New England,” comments on New England Governors’ Blueprint to NECPUC Annual Symposium, Newport, RI, May 2009.

“Comments of Chairman Paul Hibbard,” presented to EBC Energy Seminar: New Transmission – The Key to Renewable Resource Integration in New England, Boston MA, April, 2009.

“Coordinating Wind and Transmission Development – Who Pays?” Comments to 2009 Platts Wind Power Development Conference, Chicago, IL, March, 2009.

“Integrating Energy and Environmental Regulations in Massachusetts,” presentation to Northeast Sustainable Energy Association Building Energy Conference’09, Boston, MA, March, 2009.

“One Reason for the GCA: Energy Pricing in Massachusetts,” presentation to the South Shore Coalition, Hingham MA, January 2009.

“Non-Reliability Transmission: State Choice and Control,” presentation to the New England Conference of Public Utility Commissioners Transmission Group, Chelmsford MA, January 2009.

“Regulation and Renewable Energy Policy,” panel moderator, Center for Resource Solutions National Renewable Energy Marketing Conference, Denver, CO, October, 2008.

“Energy Pricing in Massachusetts (...And What We Should Do About it),” presentation to Berkshire Gas Large Commercial and Industrial Customer Annual Meeting, Lenox MA, October, 2008.

“Conversation With Chairman Hibbard,” presentation to New England Energy Alliance, Boston MA, September, 2008.

“Creating the Path: Delivering Clean Energy through Transmission Improvements,” presentation to ISO-NE Lights, Power, Action Conference, Boston MA, September, 2008.

“Distributed Resources, the Decoupling Model, and the Green Communities Act,” presentation to Raab Restructuring Roundtable, Boston MA, September, 2008.

“Resource Planning: The Contribution of Efficiency and Renewables in Massachusetts,” presentation to Law Seminars International Renewable Energy in New England Conference, Boston MA, September 2008.

“Remarks to Economic Studies Working Group,” ESWG Committee Meeting, Westborough MA, July 2008.

“Power Trade: Market Context and Opportunities,” presentation to New England Governors’ Council/Eastern Canadian Premiers’ Energy Dialogue, Montreal Canada, May 2008.

“New England Transmission Investment,” presentation to Municipal Electric Association of Massachusetts Annual Business Meeting, North Falmouth MA, April 2008.

“Bringing Power from the North,” presentation to the Raab Restructuring Roundtable, Boston MA, February 2008.

“Natural Gas: Drivers of Supply, Demand, and Prices,” comments to Guild of Gas Managers, November 2007.

“Generation and Demand Outlook for New England,” presentation to NECA Dinner Meeting, Cambridge MA, September, 2007.

“Comments on ISO’s Draft Regional System Plan,” presentation to ISO Planning Advisory Committee, Boston MA, September 2007.

“Regulatory Pressures, Policy Opinions,” presentation to Environmental Business Council, Boston MA, July 2007.

“Is New England Ensuring the Adequacy and Cost Effectiveness of the Region’s Transmission Grid?” Panel moderator, New England Conference of Public Utility Commissioners Annual Symposium, Mystic CT, June 2007.

“Energy Regulation in Massachusetts – Concerns and Options,” presentation to the Raab Restructuring Roundtable, Boston MA, June, 2007.

“View From the Regulatory Bench,” comments to the New England Energy Conference and Exposition, Groton CT, May 2007.

“Energy for New England – The Demand, Supply and Price Context,” presentation to Massachusetts Municipal Wholesale Electric Cooperative Annual Meeting, Boylston MA, May 2007.

“Demand Resources in New England: New Opportunities and Future Directions,” Presentation at ISO-NE Annual Demand Resources Summit, Westborough MA, May 2007.

“Power Supply for the New England Region,” presentation to the Boston Bar Association, Boston MA, March 2007.

“Fuel Supplies and the Need for Fuel Diversity: Forecast for Global Fuel Markets and the Likely Impact on Electric Generation in the Northeast,” presentation to LSI Seminar on Resource Adequacy and Reliability in the Northeast, October 16, 2006.

“Consumers and Politicians Claim They Want Cheap, Reliable and Clean Energy – Do They Have the Will to Make That Happen?” – presentation to NAESCO New England Regional Meeting, September 28, 2006.

“The Need for New LNG Infrastructure in Massachusetts and New England: An Update,” Report prepared for Northeast Gateway Energy Bridge, L.L.C., and Algonquin Gas Transmission, LLC, August, 2006.

“Natural Gas & LNG for New England: What’s Needed & How To Get It,” presentation to the Foundation for American Communications Meeting on *New England’s Energy Needs – Who Pays and Who Suffers?* May 17, 2006.

“Energy Policy Act Section 1813 Comments: Report of the Ute Indian Tribe of the Uintah and Ouray Reservation for Submission to the US Departments of Energy and Interior,” (with Susan F. Tierney, and In Cooperation With The Ute Indian Tribe of the Uintah and Ouray Reservation), May 15, 2006.

“US Energy Infrastructure Vulnerability: Lessons From the Gulf Coast Hurricanes,” Report to the National Commission on Energy Policy, March 2006.

“New England Energy Infrastructure – Adequacy Assessment and Policy Review” (with Susan F. Tierney), prepared for the New England Energy Alliance, November, 2005.

“Federal Legislative Developments in Energy,” presentation to LSI Seminar on Energy in the Northeast, October 2005.

“The Benefits of New LNG Infrastructure in Massachusetts and New England: The Northeast Gateway Project,” (with Susan F. Tierney), prepared for Northeast Gateway Energy Bridge, L.L.C., and Algonquin Gas Transmission, LLC, June, 2005.

“Climate Change Policy – New Business and Regulatory Risks,” presentation to EnviroExpo & Conference, May, 2005.

“Carbon Cap & Trade Allocation Options – Practical Considerations,” “Carbon Trading Program Emission Allowances: Practical Considerations for Allocation,” and “Allocation of Carbon Allowances to Mitigate Electric Sector Costs,” Reports to the National Commission on Energy Policy, May 2005.

“U.S. Energy Infrastructure: Demand, Supply and Facility Siting,” Report to the National Commission on Energy Policy, November 2004.

“Comments of Susan F. Tierney and Paul. J. Hibbard on their own behalf,” before the *Federal Energy Regulatory Commission, in the Matters of Solicitation Processes for Public Utilities (Docket No. PL04-6-000) and Acquisition and Disposition of Merchant Generation Assets by Public Utilities (Docket No. PL04-9-000)*, on the role of independent monitors and independent evaluators in public utility resource solicitations, July 1, 2004.

“Energy and Environmental Policy in the United States: Synergies and Challenges in the Electric Industry” (with Susan F. Tierney), prepared for Le Centre Français sur les Etats-Unis (The French Center on the United States), July, 2003.

“Controlling China’s Power Plant Emissions after Utility Restructuring: The Role of Output-Based Emission Controls” (with B.A. Finamore, N. Seidman, and T. Szymanski), *The Sinosphere Journal*, July 2002.

“Siting Power Plants in the New Electric Industry Structure: Lessons from California and Best Practices for Other States” (with S. Tierney), *The Electricity Journal*, June 2002.

“Siting Power Plants: Recent Experience in California and Best Practices in Other States” (with S. Tierney), prepared for The Hewlett Foundation and The Energy Foundation, February 2002.

“Setting and Administering Output-Based Emission Standards for the Power Sector: A Case Study of the Massachusetts Output-Based Emission Control Programs” (with N. Seidman and B. Finamore), prepared for the China Sustainable Energy Program, October 2001.

Before the Federal Energy Regulatory Commission, New England Power Pool and ISO New England, Inc., Docket No. ER01-2329, Joint Affidavit (with J. Besser) on behalf of the New England Renewable Power Producers Association, July 3, 2001.

“Output-Based Emission Control Programs – U.S. Experience” (with N. Seidman, B. Finamore, and D. Moskovitz), prepared for the China Sustainable Energy Program, May 2000.

“P2 and Power Plants: The Massachusetts Allowance Trading Program,” in *Proceedings of the National Pollution Prevention Roundtable*, March 2000.

“Safety and Environmental Comparisons of Stainless Steel with Alternative Structural Materials for Fusion Reactors” (with A.P. Kinzig and J.P. Holdren), *Fusion Technology*, August 1994.

“Utility Environmental Impacts: Incentives and Opportunities for Policy Coordination in the New England Region,” US EPA CX817494-01-0, RCEE Core Group, June 1994.

“Final Report: Code Development Incorporating Environmental, Safety, and Economic Aspects of Fusion Reactors,” UC-BFE-027, Fusion Environmental and Safety Group, University of California, Berkeley, 1991.