

Public Service Commission of Wisconsin
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David Hunger
Vice President

PhD, Economics
University of Oregon

MS, Economics
University of Oregon

BA, Mathematics
University of Massachusetts, Boston

David Hunger is Vice President with the Energy Practice of CRA. Formerly a senior economist at the Federal Energy Regulatory Commission, Dr. Hunger is an expert in energy market merger analysis and market rate matters, as well as energy and capacity market rules in the FERC-regulated Regional Transmission Organizations. For 14 years at the Commission, he led analyses involving mergers and other corporate transactions, market power in market-based rates cases, affiliate transactions, investigations of market manipulation in electricity and natural gas markets, demand response compensation, compliance cases for capacity and energy market rules in Regional Transmission Organizations (RTOs), merchant transmission, and competition issues in electricity markets. Since leaving the Commission and joining CRA in June 2013, he has testified in multiple Commission proceedings involving organized capacity markets administered by independent system operators ("ISOs") and RTOs;

Since 2001, Dr. Hunger has been an affiliated professor at the Georgetown Public Policy Institute where he teaches microeconomic theory, energy policy, and advises on energy-related thesis projects. His research interests include energy and capacity market design, market power in energy markets, and energy policy.

Experience

2013 - Present	<i>Vice President</i> , Charles River Associates
1999–2013	Federal Energy Regulatory Commission <i>Senior Economist</i> , Office of Energy Policy and Innovation (OEPI) (2010–2013) <i>Deputy Director</i> , Division of Electric Power Regulation – West (2008–2010) <i>Supervisory Energy Industry Analyst</i> (2006–2008) <i>Senior Economist</i> (2003–2006) <i>Economist</i> (1999–2003) – Office of Economic Policy; Office of Market Oversight and Investigations; Office of Markets Tariffs and Rates During his time at FERC, Dr. Hunger led analyses involving: the effect on competition in mergers and other corporate transactions; market power in market-based rates cases; rules regarding affiliate transactions; market manipulation in electricity and natural gas markets, demand response compensation, compliance cases for Regional Transmission Organizations

(OEPI lead for energy market compliance cases in California ISO, Midwest ISO, ISO-New England, New York ISO, SPP and PJM; worked on capacity market compliance cases for ISO-NE and PJM); and competition issues in electricity markets. Dr. Hunger was the technical lead on FERC Order No. 707 (Affiliate Transactions, 2007); Supplemental Merger Policy Statement (2007); and Order No. 745 (Demand Response Compensation, 2012).

Dr. Hunger has worked on market design issues in each of the FERC-regulated RTO's, for example:

- ISO-NE - rules for compensating behind-the-meter generators in energy, capacity, and ancillary services markets; capacity market design regarding resource retirements; demand curve design; Peak Energy Rent Adjustment; and exemption for renewable resources;
- PJM – capacity market tariff revisions related to demand response, imports, incremental auctions, Capacity Performance product, and incremental auction design;
- CAISO – Tariff amendments related to pricing of spinning and non-spinning reserves; virtual bidding at the CAISO/WECC interties;
- NYISO – design of Net Benefits Test for demand response compensation;
- MISO – product definition for energy resources to include demand response resources; design of Net Benefits Test for demand response compensation; cost allocation for Multi-Value Projects;
- SPP – cost allocation for demand response compensation in the SPP energy imbalance market; transmission cost allocation

2001–Present	<i>Affiliated Professor, Georgetown University, Graduate Public Policy Institute</i> Classes taught: Microeconomic Theory, Energy Policy, and Master's Thesis advising.
2012 –2014	<i>Adjunct Professor, Penn State University</i> Energy Business and Finance – Energy and Environmental Economics
2000–2001	<i>Adjunct Assistant Professor of Economics, American University.</i> Classes taught: Principles of Microeconomics and Principles of Macroeconomics
1998–1999	<i>Assistant Professor of Economics, Oglethorpe University</i> Classes taught: Managerial Economics and International Economics (MBA); Principles of Economics, Intermediate Microeconomics, Macroeconomics, International Economics and Industrial Organization (undergraduate)

1994–1998 *Graduate Teaching Fellow*, Department of Economics, University of Oregon
Classes taught: Econometrics, Industrial Organization, and Principles of Microeconomics

Filed Testimony

Affidavit In Support of the PJM Utilities Coalition Answer to the Indicated Market Participants Motion for Clarification; or in the Alternative, Complaint. Docket No. ER15-623-000. Affidavit in Support of Answer by American Electric Power, First Energy Service Company, The Dayton Power & Light Company, Buckeye Power, Inc. and East Kentucky Electric Cooperative, related to proposed alternative auction clearing mechanism in the Transition Incremental Auctions for the Capacity Performance Product, before the Federal Energy Regulatory Commission. August 17, 2015.

Supplemental Affidavit In Support of the PJM Utilities Coalition Answer to the PJM Deficiency Response. Docket No. ER15-623-001. Affidavit in Support of Comments by American Electric Power, First Energy Service Company, The Dayton Power & Light Company, Buckeye Power, Inc. and East Kentucky Electric Cooperative, related to the PJM Capacity Performance Proposal before the Federal Energy Regulatory Commission. April 24, 2015.

Initial Comments of Indicated PJM Transmission Owners on Remand, Midwest Independent Transmission System Operator, Inc. Docket No. ER10-1791-003. Affidavit in Support of Comments by American Electric Power Service Corporation; The Dayton Power and Light Company; Exelon Corporation; FirstEnergy Service Company; Old Dominion Electric Cooperative; Pepco Holdings, Inc.; PPL Electric Utilities Corporation; Public Service Electric and Gas Company; and Rockland Electric Company, related to export pricing to PJM Interconnection, L.L.C. for Multi-Value Projects by the Midcontinent Independent System Operator, Inc., before the Federal Energy Regulatory Commission. April 22, 2015

Comments and Protest of the PJM Utilities Coalition, PJM Interconnection, L.L.C, Docket No. ER15-852-000. Affidavit in Support of Comments and Protest by American Electric Power, First Energy Service Company, The Dayton Power & Light Company, Buckeye Power, Inc. and East Kentucky Electric Cooperative, related to the PJM RPM Wholesale Load Reduction Proposal before the Federal Energy Regulatory Commission. February, 2015.

Reply Comments of the PJM Utilities Coalition, PJM Interconnection, L.L.C, Docket No. ER15-623-000. Supplemental Affidavit in Support of Reply Comments American Electric Power, First Energy Service Company, The Dayton Power & Light Company, Buckeye Power, Inc. and East Kentucky Electric Cooperative, related to the PJM capacity Performance Proposal before the Federal Energy Regulatory Commission. February, 2015.

Application of Wisconsin Energy Corporation for Approval of a Transaction by which Wisconsin Energy Corporation Would Acquire All of the Outstanding Common Stock of Integrys Energy Group, Inc. Docket No. 9400-YO-100 Affidavit in Support of Reply Comments by Wisconsin Energy Corporation, before the Public Service Commission of Wisconsin. January, 2015.

Comments and Limited Protest of the PJM Utilities Coalition, PJM Interconnection, L.L.C, Docket No. ER15-623-000. Affidavit in Support of Comments and Limited Protest by American Electric Power, First Energy Service Company, The Dayton Power & Light Company, Buckeye Power, Inc. and East Kentucky Electric Cooperative, related to the PJM Capacity Performance Proposal before the Federal Energy Regulatory Commission. January, 2015.

Answer of the New England Power Generators Association, Inc. in FERC Docket No. EL15-25-000. Affidavit in Support of Answer to Comments and Protests in the Complaint by New England Power Generators Association regarding Peak Energy Rent Adjustment rules in the ISO-NE Forward Capacity Market, before the Federal Energy Regulatory Commission, January, 2015.

Application for Authorization under Section 203 of the Federal Power Act for the merger of Wisconsin Energy Corporation and Integrys Energy Group, Inc. Docket No. EC14-126-000. Response to Staff Data Request on behalf of Wisconsin Energy Corporation and Integrys Energy Group, Inc. before the Federal Energy Regulatory Commission. December, 2014. Authorized by the Commission (151 FERC ¶ 61,015) on April 7, 2015.

Complaint of the New England Power Generators Association, Inc. in FERC Docket No. EL15-25-000. Affidavit in Support of Complaint by New England Power Generators Association regarding Peak Energy Rent Adjustment rules in the ISO-NE Forward Capacity Market, before the Federal Energy Regulatory Commission, December, 2014.

Application for Authorization under Section 203 of the Federal Power Act for the merger of Wisconsin Energy Corporation and Integrys Energy Group, Inc. Docket No. EC14-126-000. Testimony of the competitive effects of the merger on behalf of Wisconsin Energy Corporation and Integrys Energy Group, Inc. before the Federal Energy Regulatory Commission. August, 2014. Authorized by the Commission (151 FERC ¶ 61,015) on April 7, 2015.

Petition for Determination Of Cost Effective Generation Alternative To Meet Need Prior to 2018, by Duke Energy Florida, Inc. Docket No. 140111-El A Testimony on behalf of Calpine Construction Finance Company, L.P.; before the Florida Public Service Commission. July, 2014

ISO-New England Inc. and New England Power Pool Participants Committee. Docket No. ER14-1639-000. Affidavit in Support of Brookfield Energy Marketing LP's Answer to the ISO-NE Answer, related to MOPR exemption for renewables in the ISO-NE Forward Capacity Market, before the Federal Energy Regulatory Commission. May, 2014.

Protest of the New England Power Generators Association, Inc. and the Electric Power Supply Association. Docket No. ER14-1639-000. Affidavit in Support of Protest by NEPGA and EPSA regarding Minimum Offer Price Rules exemptions in the ISO-NE Forward Capacity Market, before the Federal Energy Regulatory Commission. April, 2014.

Revisions to the PJM Open Access Transmission Tariff and Reliability Assurance Agreement Among Load Serving Entities in the PJM Region to Limit and Protect Against Speculative Offers Submitted in RPM Auctions. Docket No. ER14-1461-000. Affidavit in Support of Comments by American Electric Power, Duke Energy Ohio, First Energy Corp, Dayton Power & Light, and East Kentucky Electric Cooperative, before the Federal Energy Regulatory Commission. March, 2014.

Southwest Power Pool, Inc. Docket Nos. ER14-1174-000 and EL14-21-000. Affidavit in Support of Comments of the Southwest Power Pool Transmission Owners, before the Federal Energy Regulatory Commission, February, 2014.

Complaint by New England Power Generators Association, Inc. v. ISO-NE, Inc. Respondent. Docket No. EL14-17-000. Affidavit in Support of Complaint by New England Power Generators Association regarding non-price retirement rules in the ISO-NE Forward Capacity Market, before the Federal Energy Regulatory Commission, January, 2014.

Limited and Sub-Annual DR Resources filing submitted by PJM Interconnection, L.L.C. Docket No. ER14-504-000. Affidavit in support of Reply Comments by American Electric Power, Duke Energy Ohio, First Energy Corp, Dayton Power & Light, East Kentucky Electric Cooperative, and PPL Companies before the Federal Energy Regulatory Commission, January, 2014.

Capacity Imports Filing submitted by PJM Interconnection, L.L.C. Docket No. ER14-503-000. Affidavit in support of Reply Comments by American Electric Power, Duke Energy Ohio, First Energy Corp., Dayton Power & Light, East Kentucky Electric Cooperative, and PPL Companies before the Federal Energy Regulatory Commission, January, 2014.

Limited and Sub-Annual DR Resources filing submitted by PJM Interconnection, L.L.C. Docket No. ER14-504-000. Affidavit in support of filing by American Electric Power, Duke Energy Ohio, First Energy Corp, Dayton Power & Light, East Kentucky Electric Cooperative, and PPL Companies before the Federal Energy Regulatory Commission, December, 2013.

Capacity Imports Filing submitted by PJM Interconnection, L.L.C. Docket No. ER14-503-000. Affidavit in support of filing by American Electric Power, Duke Energy Ohio, First Energy Corp., Dayton Power & Light, East Kentucky Electric Cooperative, and PPL Companies before the Federal Energy Regulatory Commission, December, 2013.

Demand Response Sell Offer Plan Filing submitted by PJM Interconnection, L.L.C. Docket No. ER13-2108-000. Affidavit in support of filing by American Electric Power, Duke Energy Ohio, First Energy Corp., and Dayton Power & Light before the Federal Energy Regulatory Commission, December, 2013.

In the Matter of PJM Up-to Congestion Transactions, Federal Energy Regulatory Commission Docket Nos. IN10-5-000 and IN15-3-000, Affidavit on Behalf of Powhatan Energy Fund regarding claims of market manipulation, October 2013.

Client Companies

American Electric Power, Duke Energy, Calpine, Dayton Power & Light, FirstEnergy, East Kentucky Electric Cooperative, PPL Companies, Buckeye Power, Inc., Tampa Electric Company, New England Power Generators Association, Electric Power Supply Association, Powhatan Energy Fund, Wisconsin Energy, PJM Transmission Owners, SPP Transmission Owners, NextEra, Dominion, Nevada Energy, LS Power, Detroit Edison, Electricity Supply Board of Ireland, China Light & Power (Hong Kong).

Reports and Publications

"Analyzing Gas and Electric Convergence Mergers: A Supply Curve is Worth a Thousand Words." *Journal of Regulatory Economics*, vol. 24, no. 2, 2003, pp. 161-173

"Final Report on Price Manipulation in Western Markets: Fact-Finding Investigation of Potential Manipulation of Electric and Natural Gas Prices." Federal Energy Regulatory Commission Staff Report to the US Congress, March 2003.

"Initial Report on Company –Specific Separate Proceedings; Published Natural Gas Price Data; and Enron Trading Strategies: Fact-Finding Investigation of Potential Manipulation of Electric and Natural Gas Prices." Federal Energy Regulatory Commission Staff Report to the US Congress, August 2002.

"Determining the Competitiveness of Wholesale Electricity Markets: It Starts with Defining the Markets." In *Markets, Pricing and Deregulation of Utilities*. Michael Crew and Joseph Schuh, eds. Kluwer Academic Publishers, 2002.

"Demand Response in Electricity Markets." Federal Energy Regulatory Commission Staff Paper, January 2002.

Presentations

Outlook on Capacity Markets: The Road to Clarity and Transparency. Platts Northeast Power and Gas Markets Conference, May 2014.

"Demand Response Compensation." Advanced Workshop in Regulation and Competition, Rutgers University Center for Research in Regulated Industries, 21st Annual Western Conference, Monterey, CA, June 2010.

"The Role of Sector-Specific Regulators in Merger Review." American Bar Association 2009 Fall Forum, November 2009.

"Developing a Sustainable Energy Policy." Georgetown Public Policy Institute Policy Conference Washington, DC, February 2007.

"Fixing the Natural Gas Price Indices." US Department of Energy, Electricity Working Group, Washington, DC, March 2005.

"Re-bundling in the Electric Power Industry." Advanced Workshop in Regulation and Competition, Rutgers University Center for Research in Regulated Industries, 23rd Annual Conference, Skytop, PA, May 2004.

"Manipulation of Natural Gas Price Indexes: Causes, Effects and Solutions." Advanced Workshop in Regulation and Competition, Rutgers University Center for Research in Regulated Industries, 22nd Annual Conference, Skytop, PA, May 2003.

"The Role of Economics and Economists at the FERC." Federal Energy Regulatory Commission, Briefing for Indiana University of Pennsylvania, Economics Department, Washington, DC, September 2002.

“Defining Wholesale Electricity Markets.” Advanced Workshop in Regulation and Competition, Rutgers University Center for Research in Regulated Industries, 21st Annual Conference, Newport, RI, May 2002.

“Markets, Pricing and Deregulation of Utilities.” Rutgers University Research Seminar, Newark, NJ, May 2002.

“How FERC Analyzes Markets.” Federal Energy Regulatory Commission, Briefing for Indiana University of Pennsylvania, Economics Department, Washington, DC, October 2001.

“Briefing on Competitive Analysis for the State Development Planning Commission of the People's Republic of China.” Federal Energy Regulatory Commission, Washington, DC, May 2001.

“Electric Utility Mergers Involving Generation and Transmission: It Takes Ability and Incentive.” Advanced Workshop in Regulation and Competition, Rutgers University Center for Research in Regulated Industries, 20th Annual Conference, Tamiment, PA, May 2001.

“Natural Gas and Electricity Mergers: Vertical Restraints or Vertical Market Power.” US Department of Energy, Electricity Working Group, Washington, DC, October 2000.

“Vertical Merger Review at the Federal Energy Regulatory Commission.” International Association for Energy Economics, 21st Annual Conference, Philadelphia, PA, September 2000.

“Gas and Electric Convergence Mergers: A Supply Curve is Worth a Thousand Words.” Advanced Workshop in Regulation and Competition, Rutgers University Center for Research in Regulated Industries, 19th Annual Conference, Lake George, NY, May 2000.

“Pollution Regulation in a Model of International Trade.” Northwest Conference for Environmental Economics, Eugene, OR, May 1999.

“The Adoption of Energy-Saving Technologies in the Electricity Industry.” Advanced Workshop in Regulation and Competition, Rutgers University Center for Research in Regulated Industries, 17th Annual Conference, Vergennes, VT, May 1998.

“Entry Decisions and Regulatory Distortions in the Electric Power Industry.” Advanced Workshop in Regulation and Competition, Rutgers University Center for Research in Regulated Industries, 16th Annual Conference, Lake George, NY, May 1997.

“Entry of Non-Utility Generators in the Northwest.” Pacific Northwest Regional Economic Conference, Spokane, WA, April 1997.

Awards and Associations

Federal Energy Regulatory Commission, Multiple Awards for Quality Service in the Public Interest, 1999 - 2013.

University of Oregon - Outstanding Graduate Teaching Award, 1998

Official Scorekeeper – Oglethorpe University Women's Basketball 1998-1999

Member, American Economic Association

Member, International Association for Energy Economics

Law360 Energy Editorial Advisory Board, 2014

Journal of Regulatory Economics – reviewer

Energy Economics - reviewer

Georgetown University Graduate Public Policy Institute, Master's Thesis Advising

The Effect of State-Level Funding on Energy Efficiency Outcomes, Annie Downs, 2013.

Diversity of Fuel Sources for Electricity Generation in an Evolving U.S. Power Sector, Janelle G. DiLuccia, 2013.

The Effects of Revenue Decoupling on State-Level Gains in Demand-Side Energy Efficiency, Robert Anders, 2011.

"What Drives Innovation in Renewable Energy Technology? Evidence Based on Patent Count," Jesse McCormick, 2011.

"Renewable Portfolio Standards and the Growth of Wind Power Capacity in the United States," Andrew MacBride, 2008.

"The Effect of State-level Demand-side Management Spending on Aggregate State-level Energy Efficiency," Stephen Caldwell, 2008.

"Assessing the Real World Air Quality Improvements and Resulting Human Health Benefits Of the US Acid Rain Program: A Feasibility Study," David Risley, 2008.

"Public Opinion about Climate Change: the Roles of Risk Perception and Scientific Knowledge in Preventing Passivity," Courtney Brown, 2008.

"Statistical Examination of the Relationship between Return on Equity and Plant Investment for Natural Gas Pipelines," Adam Pollack, 2007.

"Fuel Excise Taxes and Consumer Gasoline Demand: Comparing Average Retail Price Effects and Gasoline Tax Effects," William Sauer, 2007.

"GDP Growth, Electricity and Renewable Energy in the Pacific Rim: Can Renewable Energy help developing nations achieve and sustain higher long term growth rates?" Bryan J. Di Pietro, 2007.

"Rate Regulation and Carbon Emissions from US Electric Plants," Michael Pomorski, 2007.

"An Analysis of the Efficacy of US Greenhouse Gas Emissions Reduction Policy," Russell Meyer, 2006.

"Wind Energy Cost Reductions: A Learning Curve Analysis with Evidence from the United States, Germany, Denmark, Spain, and the United Kingdom," Charles Goff, 2006.

"Electricity for the Rural Poor: Limit of Traditional Grid-electricity Services and Implications for Renewable Energy in China," Hayato Kobayashi, 2004.

"How Does Oil Influence Conflict?" Megan Ellinger, 2004.

Charles River Associates

“Electricity Generation and Fuel Sources: Does Greater Diversity Reduce Price Volatility?” Timothy Herzog, 2004.