

Steven T. Naumann
Biographical Summary

Mr. Naumann received a Bachelor of Science degree in Electric Power Engineering in 1971 and a Master of Engineering degree in Electric Power Engineering in 1972, both from Rensselaer Polytechnic Institute in Troy, New York. He received a J.D. degree from Chicago-Kent College of Law in 1988. Mr. Naumann is a Registered Professional Engineer in the State of Illinois and is licensed to practice law in the State of Illinois.

After Mr. Naumann received his Master's degree in 1972, he served as an engineering officer in the United States Air Force, and was assigned as the Base Electrical Engineer at Reese Air Force Base, Texas. Upon leaving active military duty in 1975, Mr. Naumann joined Commonwealth Edison Company ("ComEd") and has been continuously employed by ComEd until his transfer to his present position at Exelon Corporation, ComEd's ultimate parent.

Mr. Naumann's initial assignment with ComEd was as an Engineer. He was assigned to a six-month "Graduate Development Program" during which he rotated among five engineering assignments. In December 1975, Mr. Naumann was assigned to the Technical Studies Section of the System Planning Department, where his duties involved the performance of stability, dynamic, transient switching, and other detailed studies of the ComEd transmission system. In 1978, he was assigned to the office of the Vice President of Engineering.

Later in 1978, Mr. Naumann was temporarily assigned to the Mid-America Interconnected Network ("MAIN"), first as Assistant Systems Power Coordinator and later as Systems Power Coordinator. In those positions, he was responsible for interconnection and extreme disturbance studies performed by MAIN, as well as monitoring of interconnected operations. As Systems Power Coordinator, he supervised the MAIN Coordination Center, including all engineering and operations functions.

In 1980, Mr. Naumann returned to ComEd as assistant head of the Technical Studies Section. The section was then responsible for dynamic and transient analyses of the ComEd system and surrounding systems as well as reactive or voltage planning of the ComEd transmission system.

In late 1988, Mr. Naumann was assigned as Research Engineer on the staff of the Vice President of Engineering. In 1990, he returned to the System Planning Department, and was placed in charge of the Technical Studies Section. In 1991, he was promoted to Section Engineer, and the duties of the Technical Studies Section were expanded to encompass interconnection planning studies, including ComEd's participation in MAIN studies. In 1993, an Interconnection Planning Section was formed in the System Planning Department, and Mr. Naumann was named Director of that section.

As Interconnection Planning Director, Mr. Naumann supervised the activities of the Interconnection Planning Section that included all interconnection studies, including the ComEd portion of MAIN studies, analysis of the transmission system in response to requests for bulk power sales, purchases and wheeling, and analysis of impacts of parallel flows on ComEd's transmission system.

As Interconnection Planning Director, and previously as Section Engineer, Mr. Naumann was assigned as the representative of the Northern Illinois subregion of MAIN to the MAIN Transmission Task Force Steering Committee. This Committee was responsible for directing MAIN regional and interregional studies, reviewing such studies, and recommending approval of such studies to the MAIN Engineering Committee. At various times, he has been Chairman of the MAIN Transmission Assessment Studies Group, responsible for conducting seasonal transmission assessment studies, Chairman of the MAIN Future Systems Studies Group,

responsible for conducting future interchange and extreme disturbance studies, and a member of the MAIN-ECAR-TVA (“MET”) Coordination and Data Exchange Committee, responsible for devising procedures for exchanging information on transfers and identifying actions to take during transmission system emergencies.

In 1995, Mr. Naumann was transferred to the Wholesale Marketing Department as Director of Market Analysis in charge of market analyses in support of ComEd’s wholesale sales. While in that position, he also served as a representative on the Real-Time Information Networks “What” Group, which was a group of diverse industry participants that commented to the Federal Energy Regulatory Commission (“FERC” or “Commission”) on what information should be posted on the electronic information-sharing system that became known as the OASIS. He also testified at a FERC Technical Conference on Ancillary Services in 1995.

In January 1996, Mr. Naumann was named Director of T&D Regulatory Services. In that position, he directed the work of the T&D Regulatory Services Department. The Department’s responsibilities included the preparation and filing of tariffs and service agreements with FERC, administering those tariffs, and providing cost justifications where required. As part of administering ComEd’s Open Access Transmission Tariff (“OATT”), Mr. Naumann was responsible for determining the propriety of rate discounts for transmission services and interpreting the tariff. Mr. Naumann testified before FERC on independent system operator (“ISO”) issues in April 1998 and June 1998. He also served as a member of the NERC Interconnected Operations Services Working Group that issued a report in March 1997 providing additional technical information on ancillary services and other services needed for reliability of the interconnected system. In addition, he was a member of the Commercial Practices Working Group (“CPWG”) that provided an industry forum to discuss and resolve business practice issues

related to the operation of bulk power electric systems in North America. Mr. Naumann later was the MAIN representative on the Interim Market Interface Committee, the CPWG's successor and the IOU representative on the Market Interface Committee.

In October 1999, Mr. Naumann was promoted to Vice President, Transmission Services. In that position, he had executive responsibility for transmission service provided by ComEd to third parties, including the interconnection of new generation to the ComEd transmission system, and had executive responsibilities for ISO and later regional transmission organization ("RTO") development.

In February 2003, Mr. Naumann transfers to Exelon Corporation as Vice President, Wholesale Market Development. He had executive responsibilities for development of markets nationwide, senior interface with NERC and was one of a team of Exelon executives involved in development of RTO policy, including the integration of ComEd into the PJM Interconnection, L.L.C. ("PJM"), completed in May 2004. Mr. Naumann directed the development of Exelon policy on numerous market issues related to PJM, Midwest Independent Transmission System Operator, Inc. ("MISO"), and the Southwest Power Pool, and in other areas of the country. These issues included questions of capacity requirements, generation retirements, station power, ancillary services markets, reliability must run rules, reactive power compensation, transmission cost allocation and general market structure and development.

In March 2012, Mr. Naumann became Vice President, Transmission and NERC Policy. In this position, Mr. Naumann is responsible for developing policy for Exelon on transmission pricing, cost allocation, and high level transmission planning policy nationwide. Mr. Naumann also directs the development of policy issues involving NERC. Mr. Naumann previously served as Vice Chairman of the MAIN Board of Directors and was on the Interim Board of Directors of

ReliabilityFirst Corporation. He served for a number of years on the NERC Stakeholders Committee, was one of the representatives for the Investor-owned Utility Sector on the NERC Member Representatives Committee (MRC). During 2008 he was Vice Chairman of the MRC and served as Chairman through February 2010. Starting February 2013, Mr. Naumann once again serves on the MRC as a representative of the Investor-owned Utility Sector.

Testimony

Before Congress

Senate Committee on Homeland Security & Governmental Affairs, “Protecting Cyberspace as a National Asset: Comprehensive Legislation for the 21st Century,” June 15, 2010

House Subcommittee on Emerging Threats, Cybersecurity, and Science and Technology, Committee on Homeland Security, “Securing the Modern Electric Grid from Physical and Cyber Attacks,” July 21, 2009

House Subcommittee on Energy and Air Quality, Committee on Energy and Commerce, “Protecting the Electric Grid from Cyber-Security Threats,” Sept. 11, 2008

Before the Federal Energy Regulatory Commission

Commonwealth Edison Company, Docket Nos. ER93-777-000, ER95-1545-000, ER95-1539-000, and ER95-371-000.

Promoting Wholesale Competition Through Open Access, Non-discriminatory Transmission Services by Public Utilities, Ancillary Services Technical Conference (Oct. 26, 1995)

IES Utilities, Inc., Docket Nos. EC96-13-000, ER96-1236-000, and ER96-2560-000 (Answering and Rebuttal Testimony)

Midwest Independent Transmission System Operator, Inc., Docket Nos. ER98-1438-000, EC98-24-000 (Direct and Rebuttal Testimony)

Inquiry Concerning the Commission’s Policy on Independent System Operators, Docket Nos. PL98-5-000 (Apr. 16, 1998), PL98-5-004 (June 4, 1998)

American Electric Power Co. and Central and South West Corp., Docket Nos. EC98-40-000, ER98-2770-000 and ER98-2786-000 (withdrawn)

Commonwealth Edison Company, Docket No. ER01-2992-000 (Direct Testimony)

Commonwealth Edison Co. and PECO Energy Company, Docket No. EC00-26-000 (Direct Testimony)

Electricity Market Design and Structure, Docket No. RM01-12-000, *RTO Markets and Design: Optional RTO Markets* (Oct. 15, 2001), *Transmission Rights and Financial Rights* (Feb. 5, 2002)

Midwest Generation EME, LLC, Docket Nos. ER04-190-000, EL04-22-000 (Affidavit)

The New PJM Companies, Docket No. ER03-262-009 (Direct and Rebuttal Testimony)

Joint Boards on Security Constrained Economic Dispatch, Docket No. AD05-13-000 (PJM/MISO, Nov. 21, 2005)

PJM Interconnection L.L.C., Docket No. EL05-121-000 (Direct and Cross-Answering Testimony)

Midwest Independent Transmission System Operator, Inc., Docket Nos. ER05-6, EL04-135, EL02-111, EL03-212 (Answering Testimony)

PJM Interconnection, L.L.C., Docket Nos. ER05-1410-000, EL05-148-000 (Technical Conference on RPM, June 8, 2006)

OATT Reform Technical Conference, Docket Nos. RM05-17-000, RM05-25-000 (Oct. 12, 2006)

PJM Interconnection, L.L.C., Docket Nos. ER06-456-006, ER06-954-002, ER06-1271-001, ER07-424-000, EL07-57-000 (Cross Answering Testimony)

Midwest Independent Transmission System Operator, Inc., Docket No. ER08-637-000, ER08-637-001, ER08-637-004, ER08-637-005 (Technical Conference on Market Coordination Service)

PJM Interconnection L.L.C., Docket No. EL05-121-006 (Direct and Reply Affidavits)

Reliability Monitoring, Enforcement and Compliance Issues, Docket No. AD11-1 (Technical Conference, Nov. 18, 2010)

Staff Technical Conference on Geomagnetic Disturbances to the Bulk-Power System, Docket No. AD12-13 (Technical Conference, April 30, 2012)

Before the U.S. Department of Energy

Pre-Congestion Study Regional Workshops for the 2009 National Electric Congestion Study (Sept. 17, 2008), transcript at http://www.congestion09.anl.gov/documents/docs/Transcript_Pre_2009_Congestion_Study_Chicago.pdf

Before the Illinois Commerce Commission

Docket No. 95-0314/0338

Rulemaking proceeding to implement Section 16-119A(a) of the Public Utilities Act regarding standards of conduct and Rulemaking proceeding to implement Section 16-119A(b) of the Public Utilities Act regarding functional separation between generation services and delivery services of Illinois electric utilities, Docket Nos. 98-0147/0148

Docket No. 98-0649 (ARES Certification)

Investigation concerning certain tariff provisions proposed under Section 16-108 of the Public Utilities Act and related issues, Docket No. 98-0680 (Rebuttal Testimony)

Commonwealth Edison Company, Application of Commonwealth Edison Company, for a Certificate of Public Convenience and Necessity, under Section 8-406 of the Illinois Public Utilities Act to construct, operate and maintain a new electric transmission line in Will County, Illinois Docket No. 98-0745 (Rebuttal Testimony)

Central Illinois Light Company, Central Illinois Public Service Company, Commonwealth Edison Company, Illinois Power Company, and Union Electric Company, Docket No. 98-0818 (Prepared Testimony)

Commonwealth Edison Company, Petition for Order Concerning Delineation of Transmission and Local Distribution Facilities, Docket No. 98-0894 (Direct and Rebuttal Testimony)

Commonwealth Edison Company, Petition for approval of delivery services tariffs and delivery services implementation plan, and for approval of certain other amendments and additions to its rates, terms, and conditions, Docket No. 99-0117 (Direct, Rebuttal and Surrebuttal Testimony)

South Beloit Water, Gas & Electric Company, Delivery Services Implementation Plan submitted pursuant to Section 16-105 of the Illinois Public Utilities Act, Docket Nos. 99-0124, 99-0125, 99-0132, 99-0133 (Direct Testimony)

Commonwealth Edison Company, Petition for expedited approval of implementation of a market-based alternative tariff, to become effective on or before May 1, 2000, pursuant to Article IX and Section 16-112 of the Public Utilities Act, Docket No. 00-0259 (Rebuttal Testimony)

Commonwealth Edison Company, Petition for approval of delivery services tariffs and tariff revisions and residential delivery services implementation plan, and for approval of certain other amendments and additions to its rates, terms, and conditions, Docket No. 01-0423 (Rebuttal and Surrebuttal Testimony)

Commonwealth Edison Company, Proposed tariffs filed pursuant to Article IX of the Public Utilities Act defining a competitive supply procurement process and, pursuant to Section 16-112(a) of the Act, establishing a market value methodology to be effective post-2006; providing for Power Purchase Options and for recovery of transmission charges post-2006; and enabling subsequent restructuring of rates and unbundling of prices for bundled service pursuant to Sections 16-109A and 16-111(a) of the Act, Docket No. 05-0159 (Direct, Rebuttal and Surrebuttal Testimony)

Investigation of Rider CPP of Commonwealth Edison Company, and Rider MV of Central Illinois Light Company d/b/a AmerenCILCO, of Central Illinois Public Service Company d/b/a AmerenCIPS, and of Illinois Power Company d/b/a AmerenIP, pursuant to Commission Orders regarding the Illinois Auction, Docket No. 06-0800 (Rebuttal Testimony)

Commonwealth Edison Company, Petition for Approval of Initial Procurement Plan, Docket No. 07-0528 (Affidavit)

Illinois Power Agency, Petition for Approval of the 220 ILCS 5/16-111.5(d) Procurement Plan, Docket No. 11-0660 (Affidavit)

Commonwealth Edison Company, Application for an amendment to a Certificate of Public Convenience and Necessity granted in ICC Docket Nos. 89-0215 and 92-0185, authorizing and directing the Petitioner to construct, operate and maintain two 345,000-volt underground electric transmission lines in Cook County, Illinois (Docket No. 11-0692)(Surrebuttal Testimony)

Electric Policy Meeting, *FERC's Standard Market Design Hearing* (Oct. 15, 2002)

Before the Public Service Commission of Wisconsin

Docket Nos. 6630-UM-100, 4420-UM-101 (Primerger Merger)

Other

Zoning Board of Appeals of McHenry Co. (Special Use Permit re: Reliant IPP)

Publications and Presentations

Naumann, S.T., *Electric Transmission Development and Cost Allocation*, Presented at Energy Bar Association, Midwest Energy Conference (March 5, 2013)

Naumann, S.T., *How Much Electricity Infrastructure and Reliability Should We Be Investing In?*, Presented at the Harvard Electricity Policy Group (December 7, 2012). Available at http://www.hks.harvard.edu/hepg/Papers/2012/Naumann%20HEPG%2012072012_1.pdf.

Naumann, S.T., *Order No. 1000, View from Western PJM*, Presented at the Organization of PJM States Annual Meeting (Oct. 5, 2011). Available at <http://www.opsi.us/meetings/2011/oct5oct6/Oct5-800am-Naumann.pdf>.

Naumann, S.T., *NERC, Reliability Enforcement*, Presented at the Skadden Sixth Annual Enforcement and Compliance Conference (Feb. 2, 2011)

Naumann, S.T., *Reliability Moving Forward, Perspective View on Where We Go From Here*, Presented at the Energy Bar Association, Reliability Primer for Lawyers and Energy Professionals (April 28, 2010)

Naumann, S.T., *NERC, Thoughts on the Previous Year*, Presented at the Skadden 5th Annual Enforcement and Compliance Conference (Feb. 2, 2010)

Naumann, S.T., *Enforcement of Reliability Standards*, Presented at the AGA/EEI Chief Audit Executives' Conference (June 22, 2009). Available at <http://www.aga.org/NR/rdonlyres/B9BE1BBD-0787-4802-946C-4D491E886546/0/0907NAUMANN.PPT>

Naumann, S.T., *Formulating and Enforcing Reliability Standards*, Presented at the Harvard Electricity Policy Group (February 12, 2009). Available at http://www.hks.harvard.edu/hepg/Papers/2009/Steve_Naumann_Marh09.pdf

Naumann, S.T., *Enforcement of Reliability Standards*, Presented at the Skadden Fourth Annual Enforcement and Compliance Conference (Feb. 3, 2010)

Naumann, S.T., *Mandatory Reliability Standards, Is the Grid More Reliable?*, Presented at Energy Bar Association, Midwest Energy Conference (March 6, 2008)

Naumann, S.T., *New Mandatory Reliability Standards*, Presented at the Skadden 3rd Annual Enforcement and Compliance Conference (Jan. 22, 2010)

Naumann, S.T., *Electric Reliability Standards (Enforcement and Compliance)*, Presented at the Energy Bar Association, Sixty-First Annual Meeting (April 25, 2007).

Naumann, S.T., *Transmission Expansion, Boom or Bust*, Presented at Energy Bar Association, Midwest Energy Conference (March 7, 2007).

Naumann, S.T., *Planning and Siting Under Various Transmission Business Models*, Presented at the National Commission on Energy Policy (July 18, 2006). Available at http://www.energycommission.org/files/contentFiles/21_Naumann_-_Business_Models_Exelon_44c1254e9b090.ppt

Naumann, S.T., *Pricing for Reactive Power*, Presented at IEEE/PES Transmission and Distribution Conference (May 23, 2006).

Naumann, S.T., *Active Markets and Reactive Policies: Requirements Rules, Incentives and Business Models for Reactive Power*, Presented at the Harvard Electricity Policy Group (December 2, 2004). Available at <http://www.ksg.harvard.edu/hepg/Papers/Naumann.act.mkts.1204.pdf>

Naumann, S.T., *Commercial Incentives and Reliability Rules*, Presented at the Harvard Electricity Policy Group (June 3, 2004). Available at <http://www.ksg.harvard.edu/hepg/Papers/Naumann.Commercial.Incentives.060304.pdf>

Naumann, S.T., *Too Little Money*, Presented at the Harvard Electricity Policy Group (May 21, 2003). Available at http://www.ksg.harvard.edu/hepg/Papers/Naumann_too.little.money_5-21-03.pdf

Naumann, S.T., *Wholesale Market Platform*, Presented at IEEE T&D Conference (Sept. 8, 2003), Available at http://www.ieee.org/portal/cms_docs_pes/pes/subpages/meetings-folder/td_dallas2003/naumannpresentation.ppt

Naumann, S.T., *Restoring Transmission Investment*, Presented at IEEE/PES Transmission and Distribution Conference (Oct. 31, 2001)

Naumann, S.T., *Supporting Markets Through Regional Institutions: The Midwest ISO*, Presented at the Harvard Electricity Policy Group (November 20, 1998)

Wang, C., White, R.L., Illian, H.F., and Naumann, S.T., *Emergency Redispatch to Relieve Other Control Area Constraints*, 60 Proceedings of the American Power Conference (1998).

Naumann, S.T., *The Impact of FERC Order 888 and 889 on Transmission Providers*, Presented at the 1997 American Power Conference.

Paserba, Larsen, Lauby, Leonard, Naumann, Miller and Sener, *Feasibility Study for A Distribution-Level STATCON*, IEEE FACTS Applications 96-TP-116 8-22 (1996).

McCoy, P.D., Naumann, S.T., Terhune, H.L., *Curtailments and Priorities Under Open Access*, Presented at EPRI Conference The Future of Power Delivery: The 4Rs: Research, Reliability, Reputation and Regional Transmission Groups (April 10, 1996).

Shanahan, P.J., and Naumann, S.T., *Evaluation of Simultaneous Transfer Capabilities*, 57 Proceedings of the American Power Conference 1463 (1995).

Naumann, S.T., *Assessment of Transfer Capability*, 56 Proceedings of the American Power Conference 289 (1994).

Paserba, Leonard, Miller, Naumann, Lauby and Sener, *Coordination Of A Distribution Level Continuously Controlled Compensation Device With Existing Substation Equipment For Long Term Var Management*, 9 IEEE Transactions On Power Delivery 1034 (April 1994).

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Pinnello, Naumann and Rehor, *An Analysis of Spontaneous Oscillations On A Large Power System*, 46 Proceedings of the American Power Conference 422 (1984).

Pinnello and Naumann, *Review of an Underfrequency Protection Scheme Using a Large Transient Stability Program*, 45 Proceedings of the American Power Conference 599 (1983).

Van Ness, Brasch, Landgren and Naumann, *Analytical Investigation of Dynamic Instability at Powerton Station*, 99 IEEE Transactions on Power Apparatus & Systems 1386 (July/August 1980).

Naumann, Landgren, Jovanovich, Larson and Swann, *Underexcited Operation and Stability Tests at the Powerton Station*, 41 Proceedings of the American Power Conference (1979).