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## Summary of Qualifications

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- 26 years of electric utility experience, with work on restructuring and ancillary services since 1994 and spot retail power markets since 1985
- Expertise in electric industry restructuring, ancillary services, distributed resources, demand side response, energy storage, renewable resources, and advanced analysis techniques
- Conducted research projects concerning restructuring for NRC, DOE, EEI, numerous utilities, state regulators, and EPRI

## Work History and Accomplishments

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- 1994 to present**     **Oak Ridge National Laboratory, Oak Ridge, Tenn.**  
**Engineering Science and Technology Division, Cooling, Heating and Power Group**
- Research interests include electric industry restructuring, unbundling of ancillary services, distributed resources, demand side response, energy storage, renewable resources, advanced analysis techniques, superconductive cables, transformers and devices, advanced overhead and underground transmission design, and power system security.
  - Activities have included the IEEE SCC 21 Distributed Generation Interconnection Standard working group, DOE National Transmission Grid Study, staff to the DOE Task Force on Electric System Reliability, and NERC IOS Working Group. Appeared as an expert witness in FERC hearings.
  - Conducted research projects concerning restructuring for the NRC, DOE, EEI, numerous utilities, state regulators, and EPRI.

### Private Consulting

- Consulting privately with utilities, power marketers, EPRI, EEI, regulators, and others on electric utility restructuring and other issues. Testified as an expert witness in FERC and state litigation.

**1977 to 1994**     **Lockheed Martin Energy Systems, Inc.**

- 1991-1994**     **Power Analysis Department Head**  
**Technical Analysis and Operations Division**
- Primary responsibility was to support the Department of Energy in the management of 5000 MW of uranium enrichment capacity. The most significant feature of this load was that 2000 MW were procured on the spot energy market from multiple suppliers requiring rapid response to changing market conditions.
  - Support included technical support for power contract negotiations, development of the real-time energy management strategy, managing the development of a computer-based operator assistant to aid in making real-time power purchase decisions.
  - Conducted computer-based simulations of the loads and the interconnected network which supplies them. Simulations included large-scale load flows, short circuit studies, and transient stability studies. They also included extensive specialized modeling for analysis of electrical, mechanical, and thermal performance under balanced and unbalanced conditions.
  - Responsible for maintaining close ties with technical personnel from the various utilities which supply power to the diffusion complex to exchange data and perform joint studies.
  - Provided consultation services on a large range of power system concerns including: cogeneration opportunities, power supply for the Lawrence Livermore National Laboratory M.F.T.F. facility, capacity at EURODIF, power supply for the Strategic Petroleum Reserve, power supply for large pulsed fusion loads, and wheeling.

- 1985 to 1991      **Electric Power Planning Section Head  
Enrichment Technical Operations Division**  
Substantially the same responsibilities as stated above.
- 1977 to 1985      **Technical Computing Specialist  
Electrical Engineering and Small Computing Section, Computing and  
Telecommunications Division**  
Time was evenly divided between power system studies as described above and minicomputer work. The minicomputer work supported laboratory data collection and experiment control.
- 1975 to 1976      **Long Island Lighting Company, Hicksville, New York  
Electrical Engineering Department**  
Responsible for electrostatic and magnetic field strength modeling as well as sound level testing and analysis.

### **Education and Training**

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- M.S.E.E., Power Option, 1977, Carnegie-Mellon University, Pittsburgh  
Worked under a Department of Transportation contract studying more efficient means of energy use in rail systems.
- B.S.E.E., 1975, Lehigh University, Bethlehem, Pa., cum laude. Elected member of Eta Kappa Nu, the electrical engineering honor society, and Phi Eta Sigma, the freshman honor society.
- Licensed Professional Engineer

### **Representative Publications**

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- B. Kirby and J. Kueck 2002. Re Electricity Costs: How Savvy Building Owners Can Save. *Strategic Planning for Energy and the Environment*, 21, No. 3.
- W. P. Poore, T. K. Stovall, B. J. Kirby, D. T. Rizey, J. D. Kueck, and J. P. Stovall. *Connecting Distributed Energy Resources to the Grid: Their Benefits to the DER Owner/customer, the Utility, and Society*. ORNL/TM-2001/290, Oak Ridge National Laboratory, Oak Ridge, Tenn., February.
- J. Eto, C. Goldman, G. Heffner, B. Kirby, J. Kueck, Member, M. Kintner-Meyer, J. Dagle, T. Mount, W. Schultze, R. Thomas, and R. Zimmerman 2002. Innovative Developments in Load as a Reliability Resource. IEEE Power Engineering Society, February.
- R. Staunton, J. Kueck, B. Kirby, and J. Eto 2001. Demand Response: An Overview of Enabling Technologies. *Public Utilities Fortnightly*, November.
- B. Kirby 2001. Restructured Electricity Markets Offer Increased Complexities and Opportunities for Cogeneration. *Cogeneration and Competitive Power Journal*, Fall.
- E. Hirst and B. Kirby 2001. Key Transmission Planning Issues. *Electricity Journal*, October.
- C. R. Hudson, B. J. Kirby, J. D. Kueck, and R. H. Staunton 2001. *Industrial Use of Distributed Generation in Real-Time Energy and Ancillary Service Markets*. ORNL/TM-2001/136, Oak Ridge National Laboratory, Oak Ridge, Tenn., September.
- E. Hirst and B. Kirby 2001. Transmission Planning: Weighing Effects on Congestion Costs. *Public Utility Fortnightly*, July.
- J. D. Kueck, B. J. Kirby, J. Eto, R. H. Staunton, C. Marnay, C. A. Martinez, and C. Goldman 2001. *Load as a Reliability Resource in Restructured Electricity Markets*. ORNL/TM-2001/97. Oak Ridge National Laboratory, Oak Ridge, Tenn., June.
- E. Hirst and B. Kirby 2001. *Transmission Planning for a Restructuring U.S. Electricity Industry*, Edison Electric Institute, Washington, D.C., June.
- B. Kirby and E. Hirst 2001. Real-Time Performance Metrics for Generators Providing the Regulation Ancillary Service. *Electricity Journal*, April.
- B. Kirby and E. Hirst 2001. *Using Five-Minute Data to Allocate Load-Following and Regulation Requirements Among Individual Customers*. ORNL/TM-2001-13. Oak Ridge National Laboratory, Oak Ridge, Tenn., January.
- E. Hirst and B. Kirby 2001. *Measuring Generator Performance in Providing Regulation and Load-Following Ancillary Services*. ORNL/TM-2000-383. Oak Ridge National Laboratory, Oak Ridge, Tenn., January.

- E. Hirst and B. Kirby 2000. *Retail-Load Participation in Competitive Wholesale Electricity Markets*. Edison Electric Institute, Washington, D.C., and Project for Sustainable FERC Energy Policy, Alexandria, Va., December.
- J. Cadogan, M. Milligan, Y. Wan, and B. Kirby 2000. *Short Term Output Variations in Wind Farms — Implications for Ancillary Services in the United States*, October.
- B. Kirby and J. Kueck 2000. How Buildings Can Prosper by Interacting with Restructured Electricity Markets. *ACEEE*, August.
- B. Kirby and E. Hirst 2000. Pricing Ancillary Services So Customers Pay for What They Use. *EPRI Journal*, July.
- E. Hirst and B. Kirby 2000. Time-Averaging Period For the Regulation Ancillary Service. *IEEE Power Engineering Review*, July.
- B. Kirby 2000. Restructured Electricity Markets Offer Increased Complexity and Increased Opportunities. Association of Energy Engineers, Globalcon 2000, April.
- B. Kirby and E. Hirst 2000. Bulk-Power Reliability and Commercial Implications of Distributed Resources. NARUC, April.
- B. Kirby and J. Kueck 2000. *Review of the Structure of Bulk Power Markets*. ORNL/TM-2000/41. Oak Ridge National Laboratory, Oak Ridge, Tenn., January.
- E. Hirst and B. Kirby 2000. *Bulk-Power Basics: Reliability and Commerce*. The Regulatory Assistance Project, Gerdiner, Maine, March.
- B. Kirby and E. Hirst 2000. *Customer-Specific Metrics for the Regulation and Load-Following Ancillary Services*. ORNL/CON-474. Oak Ridge National Laboratory, Oak Ridge, Tenn., January.
- E. Hirst and B. Kirby 2000. Ancillary Services: A Call for Fair Prices. *Public Utilities Fortnightly*, January.

#### **Certification of Accuracy**

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This resumé has been certified for accuracy by Brendan J. Kirby on February 21, 2002, and by Jeffrey E. Christian, Center Director, ORNL Buildings Technology Center, on February 21, 2002.