

JAMES D. MCCALLEY
IOWA STATE UNIVERSITY
Electrical and Computer Engineering Department
Vita
Revised 11-28-2011

1.0 PERSONAL DATA

Name: James D. McCalley
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Home: 2014 Douglas Ave, Ames Iowa 50010, 515-233-0280
Birthdate/Place: July 23, 1959, Atlanta, GA USA
Orig. Date of Employment: July 15, 1992
Professional Registration: California, July 1988
Citizenship: USA

2.0 EDUCATION

Ph.D., EE, Georgia Institute of Technology, 1992
M.S., EE, Georgia Institute of Technology, 1986
B.S., EE Georgia Institute of Technology, 1982

3.0 EXPERIENCE

Academic experience:

2008- Harpole Professorship
2003- Professor of Electrical and Computer Engineering, ISU
1998-2003 Associate Professor, Electrical Engineering and Computer Engineering, ISU
1992-1998 Assistant Professor, Electrical Engineering and Computer Engineering, ISU

Non-academic experience:

1985-1990 Transmission Planning Engineer, Pacific Gas & Electric Company, San Francisco, CA
1982-1984 High School Teacher, United States Peace Corps, Sierra Leone, West Africa
1978-1981 Construction Inspector, Atlanta Gas-Light Company, Atlanta, GA

4.0 HONORS AND AWARDS

2008 Harpole Professor of Electrical and Computer Engineering
2008 Regents Award
2007 ISU ECpE Mervin S. Coover Distinguished Service Award
2007 ISU ECpE Warren B. Boast Undergraduate Teaching Award
2003 Fellow of IEEE
2000 Iowa State University Young Engineering Faculty Outstanding Research Award
1995 National Science Foundation (NSF) Faculty Early Career Development Award

5.0 ACADEMIC AREAS OF SPECIALIZATION

Teaching-Courses Developed and Taught

- o EE 251 *Introduction to Modern Power Analysis* (1995F, 1996F, 1997F, 1998F, 1999S, 2000S, 2001F). This course was developed by **J. McCalley**, V. Vittal, G. Sheble, and V. Ajjarapu. Dr. McCalley was responsible for development of 50% of this course, including 5 weeks on probability and statistics. Included in the course development were design and development of interactive, graphical software as a computer aid to the instruction. The courseware used in EE 251 exists in a modular fashion as

prescribed by PowerLearn, a courseware development approach developed by Dr. McCalley and colleagues.

- o EE 303 *Energy Systems and Power Electronics* (2001F, 2002S, 2003S, 2004S, 2008S, 2009S, 2010S). This course has 2/3 of the content from EE 251 with an additional 1/3 new content. Of this additional 1/3 new content, Dr. McCalley was responsible for directly developing about half of it and responsible for coordinating with other faculty the development of the remainder. The courseware used in EE 303 exists in a modular fashion as prescribed by PowerLearn, a courseware development approach developed by Dr. McCalley and colleagues. Dr. McCalley includes in his instruction of this course a plant tour to either the Ames power plant or the ISU power plant.
- o EE 458, *Economic Systems for Electric Power Planning* (2004 F, 2005F, 2006F, 2008S, 2010S). This course was developed with Professor Ratnesh Kumar of ISU Department of Electrical and Computer Engineering and Professor Oscar Volij of ISU Department of Economics. The course was taught to 38 on-campus students and 5 off-campus students via videostreaming during fall 2004, 35 on-campus students fall 2005, and 30 on-campus plus 5 off-campus students during fall 2006.
- o EE 653A *Evaluation of Transmission Service in a Less Regulated Environment* (1994S, 1994F). This course was developed by **J. McCalley** and G. Sheble and taught Spring 1994 to 15 on campus students. It was also videotaped and taught to 5 off-campus students for Fall 1994. Dr. McCalley was responsible for development of 70% of this course.
- o EE 653G *Power System Security Assessment Under Uncertainty* (1999F). This course was developed entirely by **J. McCalley** and taught to 15 students. Dr. McCalley included in his instruction of this course a plant tour to the Mid-American Energy Control Center in Des Moines.
- o EE 653D *Power System Reliability Analysis* (2002F, 2005S). This course was developed entirely by **J. McCalley** and taught to 8 on-campus students and 5 off-campus students via videostreaming. Dr. McCalley developed 22 course modules in teaching this course, all of which were subsequently made available on the PowerLearn web site.
- o EE 55x: *Power system planning* (2008F). This course was developed entirely by J. McCalley and taught to 15 on-campus students and 10 off-campus students via videostreaming. Dr. McCalley integrated 9 lectures from industry personnel into this course.
- o EE 551: *Electromechanical wind energy conversion and grid integration* (2009S). This course was jointly developed with Professors Ajarapu and Aliprantis. Approximately 1/3 of this course was developed by Dr. McCalley. It was delivered to 13 on-campus and 11 off-campus students via videostreaming.

Teaching-Other Courses Taught

- Supervision of a Freshman Honors Student (1997F)
- EE 166 Professional Programs Orientation (1994F, 1995S, 1996F, 1997S, 1997F, 1998S, 1998F, 1999S, 1999F, 2000S, 2001S, 2001F, 2001S, 2002F, 2009S), provided class lecture on Energy/Power Careers each semester.
- EE 235 Electrical Instrumentation & Experimentation (1995S)
- EE 351 Electromagnetic Devices (1992F)
- ENGR 340X: Introduction to Wind Energy: System Design and Delivery (2011F)
- EE 374 Linear Systems (1993S, 1994S, 1995S)
- EE 4019 Control System Design, at Georgia Tech (1992S)
- EE 455 Distribution system engineering (2000F, 2005S)
- EE 456 Power Systems Analysis I (1995F, 1996F, 1997F, 2005F, 2006F)
- EE 457 Power System Analysis II (1996S, 1997S, 2006S)
- EE 491/492 Senior Design Projects (1997F-1998S, 1998F-1999S, 2003F-2004S (2 of them), 2004S-2004F, 2005S-2005F, 2006S-2006F, 2009S-2010F)
- EE 491 Give class lecture on "Professional Ethics" 2008F, 2009S, 2009F, 2010S
- EE 490 Independent Study; 1994S, Brian Brownlow; 1999F, Chee-wooi Ten, 2008F, Ryan Norland, 2009F Matt Martin.
- EE 552 Power system planning (2008F, 2010F)
- EE 553 Steady-State Analysis (1993F, 1994F, 2009F, 2011S)
- EE 554 Dynamic Analysis (2001S, 2002S, 2003S, 2009S). Students in the 2002 offering of this course included 8 industry engineers taking the course off-campus using videostreaming.

Research

Between 1992 and 1998, Dr. McCalley's research in electric power spanned three areas: security assessment, control and analysis of interarea oscillations, and educational modules for power engineering. From 1998 to 2004, Dr. McCalley continued the work on security assessment and educational modules, and also became engaged in four additional areas related to power and energy systems: dynamic-data driven decision systems, integrated analysis of multiple energy systems, defense systems for preventing catastrophic consequences following disturbances, and control system planning. From 2004-2007, Dr. McCalley focused his research on these latter four areas winning large interdisciplinary NSF awards for the first two (dynamic-data driven decision systems and integrated energy systems). Since 2007, Dr. McCalley has continued this work in security assessment, defense systems, integrated energy systems, dynamic data-driven decision systems. In addition, he has extended the work on integrated energy systems to include 40-year energy/transportation investment planning, and he has opened a highly active research area in wind energy.

6.0 GRANTS AND CONTRACTS

Awarded

1. **J. McCalley (PI)**, P. Sarkar, J. Jackman, L. Brasche, E. Takle, "Interdisciplinary Graduate Education, Research, and Training: Wind Energy Science, Engineering, and Policy," National Science Foundation, \$3.1M, September 2011-August 2016.
2. V. Vittal (PI), **J. McCalley**, and V. Ajjarapu, "Analysis of the Effects of High Renewable Penetration on the Southern California Power System," Southern California Edison Company, \$400k, November 2010-July 2012.
3. **J. McCalley (PI)**, W. Jewell, M. Illic, C. Demarco, J. Momoh, "Broader Analysis of Smart Grid Issues," Department of Energy, \$170k, March 2011-December 2011.
4. G. Takle (PI), **J. McCalley** (Co-PI), et al, "Research Experience for Undergraduates: Wind Energy Science, Engineering, and Policy," National Science Foundation, \$398k, June 2011-August 2013.
5. **J. McCalley** (PI), D. Aliprantis, "Design of a national transmission overlay," US Department of Energy, \$190k, March 2010-March 2012.
6. S. Ryan (PI), **J. McCalley**, and D. Woodruff, "Long Term Resource Planning for Electric Power Systems Under Uncertainty," Department of Energy, \$12k, June 2010- April, 2011.
7. V. Vittal (PI), G. Heydt, et al, **J. McCalley**, V. Ajjarapu, and D. Aliprantis, "Power System Operation and Planning For Enhanced Wind Generation Penetration – Collaborative Work Force Development," US Department of Energy, \$500k, 12/15/10-12/15/12.
8. **J. McCalley (PI)**, "Analysis of Very Low Frequency Oscillations," ISU Electric Power Research Center (EPRC), \$50k, 8/1/09-7/31/10.
9. **J. McCalley (PI)**, "Development of an undergraduate minor in wind energy," \$65k, 8/10/10-8/10/11, Department of Energy.
10. D. Aliprantis, R. Dai, V. Ajjarapu, and **J. McCalley**, "Advanced Dispatch for Hybrid Wind Systems," US Department of Energy, \$87k, 1/20/09-2/1/10
11. **J. McCalley** (PI), D. Aliprantis, R. Brown, N. Gkritza, A. Somani, L. Wang, National Science Foundation, "21st Century National Energy and Transportation Infrastructures for Balancing Environmental Impacts, Costs, and Resiliency," \$2 million, 9/15/08-9/14/12.
12. S. Ryan, J. Min, and **J. McCalley**, "Generation Expansion Planning: Portfolio Optimization," ISU Electric Power Research Center, \$100k, 9/1/08-8/31/10.
13. **J. McCalley (PI)**, C. Singh, "Special Protection Schemes: Limitations, Risks, and Management," Power System Engineering Research Center, \$94,925, 6/1/08-9/1/10.
14. **J. McCalley (PI)**, "Risk-based security assessment and decision," Department of Energy, through CERTS/NSF, \$240,000, 9/1/07-9/1/09.
15. **J. McCalley (PI)**, "Efficient processing of system scenarios in statistical studies for operational and investment planning studies," ISU Electric Power Research Center, \$52,033, 8/1/07-8/1/09.
16. **J. McCalley (PI)**, W. Meeker, "Power Transformer Health Assessment," MidAmerican Energy Company, \$113,000, 3/1/2007-6/30/2008.

17. I. Dobson, S. Talukdar, C. Liu, **J. McCalley**, “Fast simulation, monitoring, and mitigation of cascading failure,” Power Systems Engineering Research Center, 6/1/07-6/1/09, \$196k.
18. V. Vittal, V. Ajjarapu, **J. McCalley**, I. Hiskens, U. Shanbhag, “Impact of Increased DFIG Wind Penetration on Power System Reliability and Consequent Market Adjustments,” Power Systems Engineering Research Center, 6/1/07-6/1/09, \$190k.
19. **J. McCalley (PI)**, “Data collection following Katrina: Interdependencies across time, space, and subsystems characterizing bulk energy transportation,” National Science Foundation, 8/15/05-12/31/05, \$21,756.
20. **J. McCalley (PI)**, S. Ryan, W. Meeker, D. Qiao, V. Honavar, R. Roberts, “Auto-Steered Information-Decision Processes for Electric System Asset Management,” National Science Foundation, 1/1/2006-12/31/2009, \$700k.
21. **J. McCalley (PI)**, S. Ryan, L. Tesfatsion, and S. Sapp, “Decision models for bulk energy transportation networks,” National Science Foundation, \$608k, 9/1/05-9/1/09.
22. S. Talukdar (PI), I. Dobson, and **J. McCalley**, “Risk of Cascading Outages,” Power Systems Engineering Research Center (PSerc), \$180,000, 6/05-6/07.
23. S. Meliopoulos, I. Hiskens, V. Vittal, V. Ajjarapu, **J. McCalley**, “Optimal Allocation of Static and Dynamic VAR Resources,” \$230k, 6/1/05-6/1/07.
24. **J. McCalley (PI)**, “On-line Risk-Based Security Assessment for Operational Decision-Making,” Electric Reliability Council of Texas (ERCOT), \$41,000, 7/04-8/05.
25. R. Thomas, P. Sauer, V. Vittal, **J. McCalley**, B. Lesieutre, J. Thorpe, T. Overbye, A. Bose, and M. Venkatasubramanian, US Department of Energy, “Data analysis of August 14, 2003 Blackout in the North American Eastern Interconnection,” 10/1/03-3/1/04, \$90,000 (\$10,000 to each PI).
26. **J. McCalley (PI)**, “Power Engineering Educational Resources in North America,” IEEE Power Engineering Society Power Engineering Education Committee, \$5000, 1/04-8/04.
27. W. Jewell (PI) and **J. McCalley**, “Risk-based Resource Allocation for Distribution Systems,” Power Systems Engineering Research Center (PSerc), \$50k, 6/1/04-12/31/05.
28. **J. McCalley (PI)**, V. Ajjarapu, N. Elia, R. Kumar, V. Vittal, O. Volij, National Science Foundation, “Planning Reconfigurable Power System Control for Transmission Enhancement with Cost-Recovery Systems,” \$350k, 9/1/03-9/1/06.
29. **J. McCalley (PI)**, V. Honavar, M. Kuzunovic, C. Singh, “Automated Integration of Condition Monitoring with an Optimized Maintenance Scheduler for Circuit Breakers and power Transformers,” Power Systems Engineering Research Center (PSerc), \$300,000, 6/02-6/05.
30. **J. McCalley (PI)**, V. Vittal, G. Sheble, V. Ajjarapu, S. Venkata, “Expansion Of A Module Based Multimedia Courseware For Curriculum Enhancement In Power System Education,” \$250,000, a subcontracted award from Virginia Tech on a \$500,000 Combined Research and Curriculum Development (CRCD) award from National Science Foundation, August, 2001-August, 2004.
31. **J. McCalley (PI)** and V. Vittal, National Science Foundation, “Integrating US-Portuguese Education, Research, and Extension Activities for Electric Power Engineering,” \$51,800, August, 2001-August, 2004.
32. **J. McCalley (PI)**, T. Van Voorhis, and S. Meliopoulos, Power System Engineering Research Center (PSerc), “Risk-based Maintenance Allocation and Scheduling for Bulk Transmission System Equipment,” \$150,000, June, 2001-June, 2003. PSerc is an NSF supported engineering research center consortium with membership comprised of about 40 companies together with researchers from 12 different universities.
33. **J. McCalley (PI)** and V. Honavar, National Science Foundation (NSF) Small Grants for Exploratory Research (SGER) “Development of Distributed Knowledge Networks to Provide Decision-Support for Security-Economy Decisions in Operating Stressed Power Systems,” \$100,000, September, 2000-September, 2001.
34. **J. McCalley (PI)** and V. Vittal, National Science Foundation, “Development of an On-Line System for Posting, Expanding, and Reviewing Engineering Educational Material,” \$45,000 subcontract to Virginia Tech (S. Rahman, PI) for the National Science Foundation (NSF) proposal titled, “A Digital Library Network for Engineering and Technology (DLNET),” September, 2000-January, 2002.
35. **J. McCalley (PI)** and T. Van Voorhis, Electricite de France, “Risk-based Simulation for Economic/Security Decision-Making in System Operations,” \$111,000, September, 2000-January, 2001.

36. **J. McCalley** (PI), V. Vittal, The Electric Power Research Institute (EPRI), \$790,000 “Security Mapping and Reliability Index Evaluation,” April, 1999 – March 31, 2001. ISU is the main contractor, and Dr. McCalley is the project manager. Subcontractors are the Laurits R. Christian Associates Company (\$400,000) and Virginia Tech (\$80,000).
37. V. Vittal (PI), S. Venkata, **J. McCalley**, G. Sheble, V. Ajarapu, V. Honavar, L. Tesfatsion, W. Klieman, U.S. Department of Defense (DOD) and Electric Power Research Institute (EPRI), \$1,000,000, “Defense against Catastrophic Events,” March, 1999 – December, 2001. Dr. McCalley was responsible for about 15%.
38. **J. McCalley** (PI), The Electric Power Research Institute (EPRI), \$40,000, “Decision Making using Risk-Based Security Assessment,” January 1, 1998 – December 31, 1999, tailored collaboration with Mid American Energy Company.
39. **J. McCalley** (PI), V. Ajarapu, G. Sheble, V. Vittal, and S. Venkata, National Science Foundation, \$115,000, “Module Based Multimedia Courseware Development for Power System Education,” May 1, 1997-May 1, 2000. This proposal was submitted jointly with faculty at Virginia Tech.
40. **J. McCalley** (PI), V. Ajarapu, G. Sheble, V. Vittal, and S. Venkata, The Electric Power Research Institute (EPRI), \$30,000, “Module Based Multimedia Courseware Development for Power System Education,” May 1, 1997-May 1, 2000.
41. **J. McCalley** (PI), The National Science Foundation Faculty Early Career Development Award, \$280,000, “Development of Probabilistic Approaches for Security Assessment in Operating Electric Power Systems,” August 21, 1995 – August 20, 1999.
42. **J. McCalley** (PI), The Electric Power Research Institute (EPRI), \$120,000, “Power System Security Assessment Using Risk,” September 1, 1997 – September 1, 1999.
43. **J. McCalley** (PI), The Electric Power Research Institute (EPRI), \$140,313, “Risk Management for Dynamic Security Assessment: Development of a Risk-Based Security Assessment Framework,” September 1, 1995 – September 1, 1997.
44. **J. McCalley** (PI), The National Science Foundation Research Experience for Undergraduates, \$10,000, “Quantifying Impact of Security Violations in Electric Power Systems,” December 1, 1995 – December 1, 1996.
45. **J. McCalley** (PI), V. Ajarapu, G. Sheble, and V. Vittal, ISU Instructional Development Grant, \$1,500, “Developing Interactive Computer Programs for Teaching Fundamental Electric Power Systems Concepts at the Sophomore Level,” September 1, 1995 – December 1, 1996.
46. **J. McCalley** (PI), The National Science Foundation Research Initiation Award, \$89,288, “An Energy Approach to Analysis of Sustained Interarea Oscillations in Electric Power Systems,” July 1, 1993 to December 31, 1997.
47. **J. McCalley** (PI), Pacific Gas and Electric Company, \$128,000, “Rapid Determination of Available Transmission Capacity,” October 10, 1994 to December 31, 1996.
48. **J. McCalley** (PI), The Iowa State University Electric Power Research Center, \$23,966, “Probabilistic Dynamic Security Assessment,” June 1, 1994 to June 1, 1995.
49. **J. McCalley** (PI), The ISU Electric Power Research Center, \$22,466, “Security Costs for Optimal Transaction Selection in Less Regulated Bulk Electric Power System Operations,” June 1, 1993 to June 1, 1994.
50. **J. McCalley** (PI), Iowa State University Engineering Research Institute Grant, \$3,800, “Including Dynamic Security Constraints in Deregulated Electric Power System Operations,” October 2, 1992 to June 30, 1993.

Proposals Under Review:

1. J. McCalley (PI), G. Takle, V. Krishnan, and T. Das, “Assessing Storage and Alternatives for Ancillary Service Provision under High Penetration of Variable Generation,” US Department of Energy office of Electricity Delivery and Reliability, \$500k, 2.5 years.

Proposals in Preparation:

- 1.

7.0 PUBLICATIONS

As of February, 2010, GoogleScholar indicates 1283 citations of articles where Dr. McCalley was author or co-author.

Editor

1. **J. McCalley** (Editor-in-chief), IEEE Power Engineering Society Letters, January 2006-2011.
2. S. Ross (editor), **J. McCalley** (Guest Editor), Probability in the Engineering and Informational Sciences, Vol. 19, Issue 4, October, 2005.
3. S. Ross (editor), **J. McCalley** (Guest Editor), Probability in the Engineering and Informational Sciences, Vol. 20, Issue 1, January, 2006.
4. **J. McCalley** (Guest Editor), Electric Power and Energy Systems, Special Issue on Probabilistic Methods Applied to Power Systems, Vol. 27, Issues 9-10, Pages 613-690 (November-December 2005)
5. **J. McCalley** (Editor), Proceedings of the 8th International Conference on Probabilistic Methods Applied to Power Systems, September 2004, Ames Iowa.

Textbooks

1. **J. McCalley** and *M. Ni, "Operational Security-Related Decision-Making in Electric Power Systems," in preparation.

Book chapters

1. *E. Ibáñez, K. Gkritza, **J. McCalley**, D. Aliprantis, R. Brown, A. Somani, and L. Wang "Interdependencies between Energy and Transportation Systems for National Long Term Planning," in Sustainable Infrastructure Systems: Simulation, Imaging, and Intelligent Engineering, K. Gopalakrishnan, S. Peeta (Eds.), Springer-Verlag, Berlin, 2010, pp. 53-76.
2. **J. McCalley**, R. Kumar, O. Volij, V. Ajjarapu, *H. Liu, L. Jin, W. Zhang, "Models for Transmission Expansion Planning Based on Reconfigurable Capacitor Switching," Chapter 3 in "Electric Power Networks, Efficiency, and Security," John Wiley and Sons, 2009.
3. **J. McCalley**, *Z. Zhong, *V. Vishwanathan, and V. Honavar, "Multiagent negotiation models for power system applications," in "Autonomous systems and intelligent agents in power system control and operation," C. Rehtanz, editor, Springer-Verlag, Berlin, 2003, pp. 49-74.

Final Reports

1. **J. McCalley**, C. Singh, V. Krishnan, and O. Olatujoye, "System Protection Schemes: Limitations, Risks, and Management," Final Report to the Power Systems Engineering Research Center (PSERC), November 2010.
2. I. Dobson, **J. McCalley**, and C. Liu, "Fast Simulation, Monitoring and Mitigation of Cascading Failure," Final Report to the Power System Engineering Research Center (PSERC), October 2010.
3. *R. Dai, D. Aliprantis, **J. McCalley**, V. Ajjarapu, "Hybrid Wind Systems: Design, Operation and Control," Final Project Report to the Department of Energy, February, 2010.
4. V. Vittal, **J. McCalley**, V. Ajjarapu, U. Shanbhag, "Impact of Increased DFIG Wind Penetration on Power Systems and Markets, Final Project report to the Power Systems Engineering Research Center (PSerc), December, 2009.
5. **J. McCalley** and S. Khaitan, "Cascading defense against high consequence outages," Final Project report to the Power Systems Engineering Research Center (PSerc), January 2008.
6. **J. McCalley**, V. Honavar, M. Kezunovic, C. Singh, *Y. Jiang, J. Pathak, S. Natti, J. Panida, "Automated Integration of Condition Monitoring with an Optimized Maintenance Scheduler for Circuit Breakers and Power Transformers," Final project report to the Power Systems Engineering Research Center (PSerc), December, 2005.
7. **J. McCalley**, Tim Van Voorhis, S. Meliopoulos, *Y. Jiang, "Risk-based maintenance scheduling and allocation for bulk transmission equipment," Final project report to the Power Systems Engineering Research Center (PSerc), September, 2003.

8. **J. McCalley**, *F. Xiao, “On-Line Risk-Based Security Assessment for Operational Decision-Making” Final project report to the Electric Reliability Council of Texas, September, 2005.
9. **J. McCalley**, *M. Ni, Tim Van Voorhis, “Risk-based Simulation for Economic/Security Decision-Making Problems in System Operations: Operating Rules, Unit Commitment, and Maintenance,” Final project report to Electricite de France, March, 2002.
10. **J. McCalley**, *M. Ni, and V. Vittal, “Security Mapping and Reliability Index Evaluation,” Final project report for EPRI Project WO663101, Report number 1001979, Electric Power Research Institute, September, 2001.
11. **J. McCalley**, *M. Ni, and V. Vittal, “Analysis of high-order contingencies,” Final Report for part III of EPRI Project WO663101, Report number 1000411, Electric Power Research Institute, June, 2001.
12. **J. McCalley** and *M. Ni, “Decision-Making Techniques for Security Constrained Power Systems,” Final Report of an ERPI/MidAmerican Tailored Collaboration project, Report number 1001308, January, 2001.
13. **J. McCalley**, *M. Ni, and V. Vittal, “On-Line Risk-Based Security Assessment,” Final Report for part II of EPRI Project WO663101, Report number 1000411, Electric Power Research Institute, November, 2000.
14. **J. McCalley** and V. Vittal, “Risk Based Security Assessment,” Final Report for EPRI Project WO8604-01, Electric Power Research Institute, January, 1999.
15. **J. McCalley**, “On-Line Visualization of Transmission System Operating Constraints Using Intelligent Information Processing,” Pacific Gas and Electric Company, May, 1997.

Chapters in Special Publications

1. D. Niebur, S. Rovnyak, **J. McCalley**, “Chapter 4: State-of-the-Art in Intelligent Controls,” in “Advanced Angle Stability Controls,” by Task Force 38.02.17, chaired by Carson Taylor, a technical brochure for International Conference on Large High Voltage Electric Systems (CIGRE), September, 1999.
2. **J. McCalley**, *W. Fu, “Chapter 6: Reliability of Special Protection Schemes,” in “System Protection Schemes in Power Networks,” by Task Force 38.02.19, chaired by Daniel Karlsson and Xavier Waymel, A technical brochure for International Conference on Large High Voltage Electric Systems (CIGRE), January, 2001.

Refereed Journal Publications

1. *R. Dai, *H. Pham, *Y. Wang, and **J. McCalley**, “Long term benefits of online risk-based optimal power flow,” to appear in Journal of Risk and Reliability (Part O of the Proceedings of the Institution of Mechanical Engineers): Special Issue on "Risk and reliability modeling of energy systems.”
2. *C. Fu, **J. McCalley**, and J. Tong, “A Numerical Solver Design for Extended-Term Time-Domain Simulation,” to appear in IEEE Transactions on Power Systems.
3. *E. Ibanez, and **J. McCalley**, “Multiobjective evolutionary algorithm for long-term planning of the national energy and transportation systems,” Energy Systems Journal, Vol. 2, Is. 2 (2011), pp 151-169.
4. **J. McCalley**, W. Jewell, T. Mount, D. Osborn, and J. Fleeman, “A Wider Horizon: Technologies, Tools, and Procedures for Energy Systems Planning at the National Level,” IEEE Power and Energy Magazine, May/June 2011.
5. Ying Zhou, Lizhi Wang, **J. McCalley**, “Designing effective and efficient incentive policies for renewable energy in generation expansion planning,” Applied Energy 88, 2011, pp. 2201–2209.
6. *V. Krishnan, **J. McCalley**, S. Henry, and S. Issad, “Efficient Database Generation for Decision Tree based Power System Security Assessment,” to appear, IEEE Transactions on Power Systems, 2011.
7. *E. Gil and **J. McCalley**, “A US Energy System Model for Disruption Analysis: Evaluating the Effects of 2005 Hurricanes,” Volume: 26 , Issue: 3, 2011, pp. 1040 – 1049.
8. *S. Khaitan and **J. McCalley**, “A Class of New Preconditioners for Linear Solvers used in Power System Time domain Simulation,” IEEE Trans on Power Systems, Vol. 25 , I. 4, 2010, pp. 1835-1844.
9. Y. Hong, W. Meeker, and **J. McCalley**, “Prediction Of Remaining Life Of Power Transformers Based On Left Truncated And Right Censored Lifetime Data,” The Annals of Applied Statistics, 2009, Vol. 0, No. 00, 1–25, DOI: 10.1214/00-AOAS231.

10. *H. Liu, L. Jin, **J. McCalley**, R. Kumar, V. Ajjarapu, N. Elia, "Planning Reconfigurable Reactive Control for Voltage Stability Limited Power Systems," IEEE Transactions on Power Systems, Vol 24, Is 2, May 2009, pp. 1029-1038.
11. *S. Kannan, S. Baskar, and **J. McCalley**, P. Murugan, "Application of NSGA-II Algorithm to Generation Expansion Planning," IEEE Transactions on Power Systems, Vol. 24, No. 1, Feb. 2009, pp 454-461.
12. *F. Xiao and **J. McCalley**, "Power System Risk Assessment and Control in a Multi-objective Framework," IEEE Transactions on Power Systems, Vol. 24, No. 1, Feb. 2009, pp 78-87.
13. *Y. Li and **J. McCalley**, "Decomposed SCOPF for Improving Efficiency," IEEE Transactions on Power Systems, Vol. 24, No. 1, Feb. 2009, pp 494-495.
14. *S. Khaitan, **J. McCalley**, and Q. Chen, "Multifrontal Solver for Online Power System Time Domain Simulation," IEEE Transactions on Power Systems, Vol. 23, No. 4, Nov. 2008, pp. 1727-1739.
15. *S. Yeddnapudi, *Y. Li, **J. McCalley**, A. Chowdhury, W. Jewell, "Risk-Based Allocation of Distribution System Maintenance Resource," IEEE Transactions on Power Systems, Volume 23, Issue 2, May 2008, pp. 287 – 295.
16. **J. McCalley**, L. Bohmann, K. Miu, and N. Schulz, "Electric Power Engineering Education Resources 2005-06 IEEE Power Engineering Society Committee Report," IEEE Transactions on Power Systems, Volume 23, Issue 1, Feb. 2008, pp. 1 - 24.
17. *F. Xiao and **J. McCalley**, "Risk Based Security and Economy Tradeoff Analysis for Real Time Operation," IEEE Transactions on Power Systems, Volume 22, Issue 4, Nov. 2007, pp. 2287 – 2288.
18. *A. Quelhas, *E. Gil, **J. McCalley**, and S. Ryan, "A Multiperiod Generalized Network Flow Model of the U.S. Integrated Energy System: Part I – *Model Description*," IEEE Transactions on Power Systems, Volume 22, Issue 2, May 2007, pp 829 – 836.
19. *A. Quelhas and **J. McCalley**, "A Multiperiod Generalized Network Flow Model of the U.S. Integrated Energy System: Part II – *Simulation Results*," IEEE Transactions on Power Systems Volume 22, Issue 2, May 2007, pp. 837 – 844.
20. Q. Chen, C. Jiang, W. Chu, and **J. McCalley**, "Probability Models for Estimating the Probabilities of Cascading Outages in High Voltage Transmission Network," IEEE Transactions on Power Systems, Volume 21, Issue 3, Aug. 2006, pp. 1423 – 1431.
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Refereed Journal Publications Under Review

1. S. Khaitan and **J. McCalley**, "Identification and Probability Estimation of High Risk N-K Inadvertent Contingencies for Online Security Assessment," under review by the Annals of Applied Probability.
2. E. Ibanez, V. Krishnan, S. Lavrenz, D. Mejia, K. Gkritza, **J. McCalley**, and A. Somani, "Resilience and robustness in long-term planning of the national energy and transportation system," under review in International Journal of Critical Infrastructures.
3. V. Krishnan, E. Ibanez, T. Das, Y. Gu, and **J. McCalley**, "Modeling Operational Effects of Variable Generation within National Long-term Infrastructure Planning Software," under review by IEEE Transactions on Sustainability, Special Issue on Wind Energy.
4. Y. Gu, **J. McCalley**, and M. Ni, "Coordinating large-scale wind integration and transmission planning," under review by IEEE Transactions on Sustainability, Special Issue on Wind Energy.
5. *C. Wang and **J. McCalley**, "Impact of Wind Power Variability on Control Performance Standards," under review by IEEE Transactions on Power Systems.
6. Y. Wang, R. Dai, **J. McCalley**, T. Zheng, and E. Litvinov, "Risk-based OPF," under review by IEEE Transactions on Power Systems.
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Refereed Conference Publications Under Review

1. *Y. Gu and **J. McCalley**, "Market-based transmission expansion planning," submitted to IEEE PES Power Systems Conference & Exhibition (PSCE), Phoenix, Arizona, March 2011
2. *S. Vasireddy and **J. McCalley**, "Decision Paths for US Energy Investment," to be submitted to ...
3. *S. Khaitan and **J. McCalley**, "Advances in Numerical Methods for On-line Power System Time Domain Simulation," submitted to....
4. *Y. Gu, **J. McCalley**, and M. Ni, "Transmission Expansion Planning with both Reliability and Economic Evaluations," in preparation.
5. *Y. Gu, and **J. McCalley**, "Economic Assessment of Compressed-air Energy Storage," in preparation
6. *Y. Gu, and **J. McCalley**, "Transmission expansion planning considering wind power," in preparation

Invited Tutorial Papers

1. **J. McCalley**, "Estimating component reliability indices for electric transmission decision problems," a tutorial paper published in "Probabilistic value-based T&D system planning and asset management," IEEE Power Engineering Society Special Publication, April 2007.
2. **J. McCalley** and G. Sheble, "Competitive Electric Energy Systems: Engineering Issues in the Great Experiment," Proceedings of the Fourth International Conference of Probabilistic Methods Applied to

Power Systems, Brazil, 1994. This paper and the next one were given by Dr. McCalley in Rio de Janeiro, Brazil as a four-hour tutorial class to approximately 150 attendees.

3. **J. McCalley** and G. Sheble, "Competitive Electric Energy Systems: Reliability of Bulk Transmission and Supply," Proceedings of The Fourth International Conference of Probabilistic Methods Applied to Power Systems, Brazil, 1994.

Invited Panel or Workshop Papers

1. S. Ryan, **J. McCalley**, and D. Woodruff, "Long Term Resource Planning for Electric Power Systems Under Uncertainty," Department of Energy Workshop on Computational Needs in Power Systems, April, 2011.
2. E. Ibanez, V. Krishnan, S. Lavrenz, D. Mejia, **J. McCalley**, and A. Somani, "Resiliency and robustness in long-term planning of the national energy and transportation system," 2nd RESIN Workshop, Tucson, AZ, Jan. 2011.
3. **J. McCalley**, E. Ibanez, Y. Gu, K. Gritza, D. Aliprantis, L. Wang, A. Somani, R. Brown, "National Long-Term Investment Planning for Energy and Transportation Systems," Proc. of the 2010 Power and Energy Society General Meeting, July 25-29, 2010, Minneapolis, MN.
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3. *Y. Gu and **J. McCalley**, “Market-based Transmission Expansion Planning Under Uncertainty,” Proceedings of 42nd North American Power Symposium, Arlington, Texas, September 2010.
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56. **J. McCalley**, "Undergraduate Power Courses and Competitive Education: Course Development Community Style," Proc. of the 2001 IEEE PES Winter Meeting, Feb. 1, 2001, Columbus, OH.
57. *V. Vishwanathan, *V. Ganugula, **J. McCalley**, and V. Honavar, "A Multiagent Systems Approach for Managing Dynamic Information and Decisions in Competitive Electric Power Systems," Proc. of the 2000 North American Power Symposium," Oct. 2000, Waterloo, Ontario.
58. J. Pecas-Lopes, M. Mitchell, and **J. McCalley**, "Optimum Determination of Under-Frequency Load Shedding Strategies Using a Genetic Algorithm Approach," Proc. of the 2000 North American Power Symposium," Oct. 2000, Waterloo, Ontario.
59. *M. Ni and **J. McCalley**, "Risk-based Preventive/Corrective Action Selection--Multi-Criteria Decision Making by the Method of Evidential Theory," Proceedings of the VI International Conference on Probabilistic Methods Applied to Power Systems, September, 2000, Madeira Island, Portugal.
60. *J. Chen and **J. McCalley**, "Comparison Between Deterministic and Probabilistic Study Methods in Security Assessment for Operations," Proceedings of the VI International Conference on Probabilistic Methods Applied to Power Systems , September, 2000, Madeira Island, Portugal.

61. *W. Fu and **J. McCalley**, "Optimal Transaction Selection," Proceedings of the VI International Conference on Probabilistic Methods Applied to Power Systems , September, 2000, Madeira Island, Portugal.
62. *V. Van Acker, **J. McCalley**, and M. Matos, "Multiple Criteria Decision Making Using Risk in Power System Operation," Proceedings of the VI International Conference on Probabilistic Methods Applied to Power Systems , September, 2000, Madeira Island, Portugal.
63. *Y. Dai, **J. McCalley**, V. Vittal, and M. Bhuiyan, "Annual Risk Assessment for Voltage Stability and Generation Adequacy," Proceedings of the VI International Conference on Probabilistic Methods Applied to Power Systems , September, 2000, Madeira Island, Portugal.
64. M. Mitchell, J. Pecas-Lopes, J. Fidalgo, and **J. McCalley**, "Using a Neural Network to Predict the Dynamic Frequency Response of a Power System to an Under-Frequency Load Shedding Scenario," Proc. of the *2000 IEEE PES Summer Meeting*, July 16-20, 2000, Seattle, Washington, pp. 346-351.
65. *V. Van Acker, **J. McCalley**, V. Vittal, J. Pecas-Lopes, "Risk-Based Transient Stability Assessment," Proceedings of the Budapest Powertech Conference, Budapest, Hungary, Sept. 1999.
66. *H. Wan, **J. McCalley**, V. Vittal, "Decision Making under Risk," Proceedings of the 1998 North American Power Conference, pp. 428-433, Cleveland, Ohio, Oct., 1998.
67. *Y. Dai, **J. McCalley**, V. Vittal, "A Heuristic Method to Arrange Unit Commitment for One Year Considering Hydro-Thermal Coordination," Proceedings of the 1998 North American Power Conference , pp. 382-387, Cleveland, Ohio, Oct., 1998.
68. *V. Van Acker, **J. McCalley**, V. Vittal, "Risk Based Transient Stability Assessment using Neural Networks," Proceedings of the 1998 North American Power Conference, pp. 328-335, Cleveland, Ohio, Oct., 1998.
69. *M. Bhave, **J. McCalley**, V. Ajarapu, G. Sheble, S. Venkata, V. Vittal, M. Mallini, A. Phadke, J. De La Ree, "Project Powerlearn - Development of a Complete Module," Proceedings of the 1998 North American Power Conference, pp. 228-233, Cleveland, Ohio, Oct., 1998.
70. *W. Fu, **J. McCalley**, V. Vittal, "Risk Based Assessment of Transformer Loading Capability," Proceedings of the 1998 North American Power Conference, pp. 118-123, Cleveland, Ohio, Oct., 1998.
71. S. Kothapalli, V. Ajarapu, and **J. McCalley**, "On-Line Voltage Instability: A Critical Review," Proceedings of the 1998 North American Power Conference, pp. 55-62, Cleveland, Ohio, Oct., 1998.
72. **J. McCalley**, *G. Zhou, *V. Van Acker, *M. Mitchell, V. Vittal, *S. Wang, and J. Pecas-Lopes, "Power System Security Boundary Visualizations Using Neural Networks," Proc. of the *Bulk Power Systems Dynamics and Control IV Restructuring*, Santorini, Greece, Aug. 23-28, 1998, pp. 139-156.
73. *Y. Dai, **J. McCalley**, and V. Vittal, "Annual Risk Assessment for Thermal Overload," Proceedings of the 1998 American Power Conference , Chicago, Illinois, April, 1998.
74. *V. Van Acker, *S. Wang, **J. McCalley**, *G. Zhou, *M. Mitchell, "Data Generation using Automatic Security Assessment for Neural Network Training," Proceedings of the 1997 North American Power Symposium , Laramie, Wyoming, Oct., 1997.
75. *Y. Dai, **J. McCalley**, V. Vittal, "Stochastic Load Model Identification and its Possible Applications," Proceedings of the 1997 North American Power Symposium , Laramie, Wyoming, Oct., 1997.
76. V. Vittal, **J. McCalley**, V. Ajarapu, G. Sheble, S. Venkata, M. Bisat, P. Luu, Alonso, A. Phadke, J. De La Ree, "Collaborative Effort in Developing Multimedia Based Power System Engineering Modules," Proceedings of the 1997 North American Power Symposium, Laramie, Wyoming, Oct., 1997.
77. *N. Yang, **J. McCalley**, "Small Signal Stability and Ω Analysis for the Unvertanties in Static Load Modeling," Proceedings of the 1997 North American Power Symposium , Laramie, Wyoming, Oct., 1997.
78. *G. Zhou, **J. McCalley**, V. Honavar, "Power System Security Margin Prediction Using Radial Basis Function Networks," Proceedings of the 1997 North American Power Symposium , Laramie, Wyoming, Oct., 1997.
79. *A. Irizarry-Rivera, **J. McCalley**, and V. Vittal, "Limiting Operating Point Functions and their Influence on Probability of Stability," Proceedings of The Fifth International Conference of Probabilistic Methods Applied to Power Systems, Vancouver, Sept. 1997.
80. V. Vittal, **J. McCalley**, V. Ajarapu, G. Sheble, S. Venkata, M. Bisat, P. Luu, Alonso, A. Phadke, J. De La Ree, "Module Based Multimedia Courseware Development for Power System Engineering Education," Proceedings of the 59th Annual ASEE North Midwest Section Meeting, Iowa City, Iowa, Oct. 9-11, 1997.

81. *Z. Zhu, *S. Zhao, **J. McCalley**, V. Vittal, and *A. Irizarry-Rivera, "Risk-Based Security Security Assessment Influenced by Generator Rejection," Proceedings of The Fifth International Conference of Probabilistic Methods Applied to Power Systems, Vancouver, Sept. 1997.
82. **J. McCalley**, V. Ajarapu, G. Sheble, and V. Vittal, "Sophomore Course Development in Power System Analysis with Interactive Matlab Modules," Midwest Symposium on Circuits and Systems, Ames, IA, August 1996.
83. *G. Zhou, **J. McCalley**, *S. Wang, and *Q. Zhao, "An Algorithm to Determine the Composite Security Boundary for Power System Operations," Proceedings of the Fifth Annual Midwest Electro-Technology Conference, Iowa State University, Ames, IA, April 24, 1996.
84. *F. Fatehi and **J. McCalley**, "Robust Controller Design for Power System Damping," Proceedings of the Fifth Annual Midwest Electro-Technology Conference, Iowa State University, Ames, IA, April 24, 1996.
85. *Q. Liu and **J. McCalley**, "Modal Sensitivity to Line Susceptance and TCSC Effectiveness," Proceedings of the Fifth Annual Midwest Electro-Technology Conference, Iowa State University, Ames, IA, April 24, 1996.
86. *A. Nguyen, A. Irizarry-Rivera, **J. McCalley**, and V. Vittal, "Survey Development for Assessing Impact of Power System Disturbances," Proceedings of the Fifth Annual Midwest Electro-Technology Conference, Iowa State University, Ames IA, April 24, 1996.
87. *A. Irizarry-Rivera and **J. McCalley**, "A Cartesian Product Approach to Determine the Probability of Instability of a Stability Limited Power System," Proceedings of the 1995 North American Power Symposium, Bozeman, MT, October 2-3, 1995.
88. *A. Irizarry-Rivera, **J. McCalley**, V. Vittal, and A. Fouad, "A Risk-Based Electric Power Systems Security Index: Moving From Frequency to Probability of Instability," Proceedings of the Fourth Midwest Conf. On Electro -Technology, Ames, IA, March 31, 1995.
89. *M. Aboul-Ela, A. Sallam, **J. McCalley**, and A. Fouad, "Two-Level Control Design for Damping Power System Oscillations," Proceedings of the International Power Engineering Conference (IPEC), Singapore, February 27 - March 1, 1995.
90. *M. Aboul-Ela, A. Sallam, **J. McCalley**, and A. Fouad, "Multi-Level Control of Power System Oscillations," Proceedings of the International Association of Science and Technology for Development (IASTED) Conference, Cairo, Egypt, December 26-29, 1994.
91. G. Sheble and **J. McCalley**, "Discrete Auction Systems for Power System Management," NSF Symposium on Electric Power System Infrastructure, Pullman, WA, October 27-29, 1994.
92. *M. Kommareddy, **J. McCalley**, and *C. Jing, "Analysis of Low Frequency Electromechanical Oscillations in Power Systems Using the Method of Prony," Proceedings of the Third Annual Midwest Electro-Technology Conference, Iowa State University, Ames, IA, April 8-9, 1994.
93. *B. Krause and **J. McCalley**, "Bulk Power Transaction Selection in a Competitive Electric Energy System with Provision of Security Incentives," Proceedings of The North American Power Symposium, Kansas State University, Manhattan, KS, September 1994.
94. M. Obessis, **J. McCalley**, and J. Lamont, "On Cost Based Transmission Pricing," Proceedings of The North American Power Symposium, Kansas State University, Manhattan, KS, September 1994.
95. S. Saha and **J. McCalley**, "Security Impacts for New Resource Bidding Evaluation," Proceedings of The North American Power Symposium, Kansas State University, Manhattan, KS, September 1994.
96. **J. McCalley** and *B. Krause, "Determination of Available Transmission Capacity for Stability-Limited Transmission Using Artificial Neural Networks," 1994 Proceedings of the American Power Conference.
97. *M. Aboul-Ela, **J. McCalley**, and A. Fouad, "Hierarchical Control of Power System Oscillations," Proceedings of the 1993 North American Power Symposium, pp. 345-354, Howard University, Washington, D.C., 1993.
98. **J. McCalley**, J. Dorsey, and J. Luini, "Representation of Nonutility Generation in Bulk Transmission Security Assessment Studies," Proceedings of the 1993 North American Power Symposium, pp. 235-244, Howard University, Washington, D.C., 1993.
99. **J. McCalley** and *B. Krause, "Security Costs for Optimal Transaction Selection in Less Regulated Bulk Electric Power System Operation," Proceedings of the 26th Annual Frontiers of Power Conference, Stillwater, OK, 1993.

100. **J. McCalley**, J. Dorsey, and J. Luini, "Investigation of Nonutility Generation Exciter Effects on Sustained Interarea Oscillations in Electric Power Systems," Proceedings of the Second Annual Midwest Electro-Technology Conference, Ames, ISU, Ames, IA, 1993.
101. Z. Qu, J. Dorsey, J. Bond, and **J. McCalley**, "Design of a Continuous Control for Synchronous Machines," Proceedings of American Control Conference, June 1992.
102. Z. Qu, J. Dorsey, and **J. McCalley**, "Toward a Linear Control Design for Power Systems," Proceedings of American Control Conference, June 1991.

8.0 INVITED PRESENTATIONS

1. **J. McCalley**, "MW-Hz Issues in Wind-Grid Integration," Power Systems Engineering Research Center Monthly Seminar, Feb 9, 2010, Iowa State University, Broadcast to 100 academics and industry engineers around the US and world.
2. **J. McCalley**, "Wind and energy," Ames Lion's Club, December 17, 2009, Ames, Iowa.
3. **J. McCalley**, 21st Century National Energy and Transportation Infrastructures: Balancing Sustainability, Costs, & Resiliency (NETSCORE-21)," NSF-Virginia Tech RESIN Workshop, December 7, 2009.
4. **J. McCalley**, "21st Century National Energy and Transportation Infrastructures: Balancing Sustainability, Costs, & Resiliency," Iowa State University EPLI Symposium - National Energy and Transportation: Investment Strategies through 2050, November 30, 2009.
5. **J. McCalley**, 21st Century National Energy and Transportation Infrastructures: Balancing Sustainability, Costs, & Resiliency (NETSCORE-21)," Annual Report to NSF via Webinar, Tuesday, November 17, 2009.
6. **J. McCalley**, "Energy Systems: Infrastructure Planning for the 21st Century," The Road to the New Energy Economy Rayburn House Office Building, October 15, 2009, sponsored by IEEE, NSF, and Discover Magazine, to aid congressional staff in understanding new technologies, videotaped and available on the internet at <http://discovermagazine.com/interactive/new-energy-economy/biofuel/flash/main.html#/transitional-technologies>.
7. **J. McCalley**, "Wind energy: the industry, the transmission grid, and educational activities in Iowa," Business Retention and Expansion International Conference (BREI), May 15, 2009, Des Moines, IA.
8. **J. McCalley**, "US Wind Energy Growth: Issues for 20% by 2030," Osborn Research Group, January 12, 2009, Iowa State University.
9. **J. McCalley**, "Introduction to Iowa State University Electric Power & Energy Systems Group, Interesting US Electric System Issues, and Overview of McCalley Research," Presentation at RTE-France, Paris, November 24, 2008.
10. **J. McCalley**, "Risk-based security assessment and decision," OE Visualization and Controls Peer Review, 21/22 October 2008, Washington, DC.
11. **J. McCalley**, "Estimating and using component reliability indices for electric transmission," Tutorial on Probabilistic value-based T&D system planning and asset management, IEEE PES General Meeting, Pittsburgh, Pennsylvania, Wednesday July 23, 2008.
12. **J. McCalley**, W. Meeker, Y. Hong, & Z. Gai, "Power Transformer Health Assessment & Life Prediction," presentation to MidAmerican Energy Engineers, Davenport, Iowa, June 5, 2008.
13. **J. McCalley**, "Risk-Based Security Assessment and Decision," presentation to CERTS/DOE Transmission Reliability Program, Richland, WA, May 21, 2008.
14. **J. McCalley**, "Operational Defense of Power System Cascading Outages," Panel on Cascading Failures & Blackouts, April 23, 2008, IEEE PES T&D Conference and Exposition.
15. **J. McCalley**, "Grid Management: New Methods and Tools," invited presentation to the California ISO, Folsom California, August 21, 2007.
16. **J. McCalley**, "Estimating component reliability indices for electric transmission decision problems," presented as a tutorial at the IEEE Power Engineering Society General Meeting, Tampa, June 2007.
17. **J. McCalley**, "Impact of Increased DFIG Wind Penetration on Power System Reliability and Consequent Market Adjustments ...and other studies," PSERC IAB Meeting, May 16-19, 2007.
18. **J. McCalley**, "Auto-Steered Information-Decision Processes for Electric System Asset Management," departmental seminar, Iowa State University, January 17, 2007.
19. **J. McCalley**, "Decision models for Bulk Energy Transportation Networks," departmental seminar, Iowa State University, November 10, 2006.

20. **J. McCalley**, “Decision models for Bulk Energy Transportation Networks,” invited lecture, Arizona State University, October 6, 2006.
21. W. Jewell and **J. McCalley**, “Risk-Based Resource Allocation for Distribution System Maintenance,” a tele-seminar given to the Power Systems Engineering Research Center, September 7, 2006.
22. **J. McCalley**, “Operational Defense of Power System Cascading Outages,” Panel Session on “Cascading Failures and Blackouts,” held at the 2006 IEEE PES T&D Conference and Exhibition, May 23, 2006.
23. **J. McCalley**, “Auto-Steered Information-Decision Processes for Electric System Asset Management,” Presentation at the NSF Workshop on Dynamic Data Driven Application Systems, January 24, 2006, Washington D.C.
24. **J. McCalley**, “Energy System Risk Assessment,” **Workshop on Overarching Issues in Risk Analysis**, sponsored by the National Institute of Statistical Sciences (NISS) and the Department of Statistics at ISU Iowa State University, Oct. 28, 2005.
25. **J. McCalley**, “On-Line Risk-Based Security Assessment,” Presentation to 25 Engineers at the Electric Reliability Council of Texas (ERCOT), November 1, 2005, Austin, Texas.
26. **J. McCalley**, “Automated Integration of Condition Monitoring with an Optimized Maintenance Scheduler for Circuit Breakers and Power Transformers,” Presentation to the PSerc Industry Advisory Board, May, 2005, Wichita Kansas.
27. **J. McCalley**, “On-Line Risk-Based Security Assessment,” Presentation to 7 Engineers at the Electric Reliability Council of Texas (ERCOT), December 4, 2003, Austin, Texas.
28. **J. McCalley**, “Operational Defense of Power System Cascading Sequences: Probability, Prediction, and Mitigation,” presented to over 100 engineers via the Internet-broadcast PSerc Seminar Series, October 7, 2003.
29. **J. McCalley**, “On-Line Risk-Based Security Assessment,” Presentation to 40 Engineers at the National Electric Reliability Council (NERC) Operational Reliability Subcommittee Meeting, June 1, 2003, Montreal, Canada.
30. **J. McCalley**, “Maintenance Scheduling Optimization for Transmission Equipment,” invited workshop talk at the EPRI Workshop on Asset Management, April 10, 2003, New York.
31. **J. McCalley**, “Risk Management Methods for Operational Decision-Making,” invited tutorial at the Power Systems Engineering Research Center (PSerc) Industrial Advisory Board (IAB) Meeting, Atlanta, May 10, 2003.
32. **J. McCalley**, “Thrusts for addressing system vulnerability,” invited presentation to the NSF/DOE/EPRI/Entergy-sponsored workshop on “Modernizing the National Electric Power Grid,” New Orleans, LA, November 18, 2002.
33. **J. McCalley**, “Competition in the Universities and Hiring Pools for Engineers: Info-, Nano-, Bio-tech, and and the Power/Energy Engineering Position,” Invited talk to the Mid-American Energy Conference, October 2, 2002, Davenport, Iowa.
34. **J. McCalley** and *A. Gunawan, “PowerLearn: Harnessing Worldwide Expertise in A Powerful Web-based Alternative to Curriculum Development & Maintenance,” ISU Electric Power Seminar, Nov. 9, 2001.
35. **J. McCalley**, “Thrusts for addressing system vulnerability,” invited presentation to the NSF/EPRI/-sponsored workshop on “Urgent opportunities for transmission system enhancement,” Palo Alto, CA, October 12, 2001.
36. **J. McCalley**, “Module Based Courseware Development for Engineering Education,” IEEE Web Education Workshop, April 21-22, 2001, Washington DC.
37. **J. McCalley**, “Decision Support for System Operators,” a PSerc-sponsored seminar delivered via internet to multiple universities and companies, October 3, 2000.
38. **J. McCalley**, “Security Assessment: Decision Support Tools for Power System Operators,” an invited tutorial given at the VI Probabilistic Methods Applied to Power Systems (PMAPS), Funchal, Madeira, September 5, 2000.
39. **J. McCalley**, “Probabilistic Risk Assessment in Operations,” ISU Electric Power Seminar, March 2, 2000.
40. **J. McCalley**, “Panel Session on Complex Interactive Networks, IEEE PES Summer Meeting, July 19, 2000, Seattle, Washington.

41. **J. McCalley**, "RBSA Results on the Southern System," presented to 20 engineers at the Southern Company, Birmingham, Alabama, January 20, 2000.
42. **J. McCalley**, "PowerLearn: Where to go from here?," ISU Electric Power Seminar, Sept. 2, 1999.
43. **J. McCalley**, "Security Assessment and Future Research," EPRI Grid Operations and Planning Business Area Council Focus Group, June 7, 1999.
44. **J. McCalley** and J. de La Ree, "PowerLearn: Module Based Multimedia Courseware Development for Power System Engineering Education," NSF Second Workshop on Innovations in Power Engineering Education, April 13, 1999, National Science Foundation, Washington, DC.
45. **J. McCalley**, "Developments in Reliability Assessment for Electric Power Systems," ISU Electric Power Seminar, October 13, 1998.
46. **J. McCalley**, "A New Approach to Reliability Assessment," Presentation to the TRELSS User's Group, Boise, Idaho, September 28, 1998.
47. **J. McCalley**, "Integrating Research and Education via PowerLearn," Panel session presentation sponsored by IEEE PES Education Subcommittee, IEEE PES Summer Meeting, San Diego, July 7, 1998.
48. **J. McCalley**, "Research Program Overview," The Electric Power Research Center (EPRI) Spring Meeting, April, 1998.
49. **J. McCalley**, "A Composite Reliability Index," presentation to engineers at Southern Company Services, April 28, 1998, Birmingham, Alabama.
50. **J. McCalley**, "Risk-Based Security Assessment," presented to the Electric Power Research Institute (EPRI) Grid Operations and Planning Business Area Council Meeting, Pasadena, CA., Feb. 24, 1998.
51. **J. McCalley**, "Integrating Research and Education via PowerLearn," Panel session presentation sponsored by IEEE PES Education Subcommittee, IEEE PES Winter Meeting, Tampa, February 3, 1998.
52. **J. McCalley**, "Reliability Assessment of Special Protection Systems," Panel session presentation sponsored by IEEE PES Stability and Controls Subcommittee, IEEE PES Winter Meeting, Tampa, February 2, 1998.
53. **J. McCalley**, "PowerLearn: Module Based Multimedia Courseware Development for Power System Engineering Education," ISU Electric Power Seminar, December 2, 1997.
54. **J. McCalley** and J. de La Ree, "PowerLearn: Module Based Multimedia Courseware Development for Power System Engineering Education," NSF Workshop on Innovations in Power Engineering Education, Oct. 30-Nov. 1, 1997, National Science Foundation, Washington, DC.
55. **J. McCalley**, "Electric Power System Security for Systems Operations: Research and Development Needs Related to the Influence of Uncertainty," Fifth International Conference on Probabilistic Methods Applied to Power Systems, September 23, 1997.
56. **J. McCalley**, "Risk-Based Security Assessment for Electric Power Systems," ISU Electric Power Seminar, September 2, 1997.
57. **J. McCalley**, "Risk Calculations in Security Assessment," Panel session presentation sponsored by IEEE PES Risk, Reliability, and Probability Subcommittee, IEEE PES Summer Meeting, Berlin, July 21, 1997.
58. **J. McCalley**, "A Modular-Based Instructional Development Approach for Power System Engineering Education," presentation to the faculty of the Department of Electrical Engineering at the University of Porto, Porto, Portugal, July 17, 1997.
59. **J. McCalley**, "Risk-Based Security Assessment," Presentation to the Portuguese Regulatory Authority, Lisbon, Portugal, July 16, 1997.
60. **J. McCalley**, "A Modular-Based Instructional Development Approach for Power System Engineering Education," ISU Electric Power Seminar, April 29, 1997.
61. **J. McCalley**, "Multimedia Techniques in Electric Power Research," IEEE Summer Meeting, Denver, CO., July, 1996.
62. **J. McCalley**, "Risk-Based Security Assessment", Western Systems Coordinating Council Reliability Subcommittee, Denver, CO., May 31, 1996.
63. **J. McCalley**, "Risk Based Security Assessment," Electric Power Research Center/Power Affiliates Annual Meeting, Ames, Iowa, May 1, 1996.
64. **J. McCalley**, "Reliability Needs for the Deregulated Electric Power Industry," IEEE Winter Meeting, New York, February, 1996.

65. **J. McCalley**, "Security Assessment Economics and Risk," ISU Electric Power Research Center, Board of Directors Meeting, October 20, 1995.
66. **J. McCalley**, "Competitive Electric Energy Systems: An Overview of Critical Engineering Issues," IEEE Nebraska Section, Lincoln, NE, March 15, 1995.
67. **J. McCalley**, "Reliability and Competitive Electric Energy Systems," University of Nebraska, Department of Electrical Engineering, Lincoln, NE, March 16, 1995.
68. **J. McCalley**, "Competitive Electric Energy Systems: Reliability of Bulk Transmission and Supply," ISU Electric Power Seminar, December 6, 1994.
69. **J. McCalley**, "Engineering Issues for Competitive Electric Energy Systems," Pacific Gas and Electric Company, Computer Services Department, San Francisco, CA, July 28, 1994.
70. **J. McCalley** and *M. Aboul-Ela, "A Two-Level Control Design for Damping of Oscillations in Electric Power Systems," ISU Electric Power Seminar, March 1, 1994.
71. **J. McCalley**, "Security Assessment Needs: Looking Ahead," ISU Electric Power Research Center, Board of Directors Meeting, October 20, 1993.
72. **J. McCalley**, "Rapid Transmission Capacity Margin Determination for Security Assessment Using Artificial Neural Networks," Pacific Gas and Electric Company, Transmission Planning Department, San Francisco, CA, July 27, 1993.
73. **J. McCalley**, "The Effects of Nonutility Generation on Bulk Transmission Security," IEEE Power Engineering Society Subcommittee on Special Stability Controls, IEEE PES Summer Meeting, Vancouver, BC, July 19, 1993.
74. **J. McCalley**, "Security Assessment for Open Transmission Systems," ISU Electric Power Seminar, March 23, 1993.
75. **J. McCalley**, "An Energy Approach to the Analysis of Interarea Oscillations," ISU Electric Power Seminar, September 8, 1992.

9.0 GRADUATE STUDENT SUPERVISION

Master's Degrees Awarded

1. Muhammad Riaz (EE), "Compressed air storage modeling for wind farms," 2010.
2. Umer Raja Imtiaz (EE), "Battery Storage in Power Systems," 2010.
3. Seshendra Vasireddy (EE), 2009, "Decision Paths for US Energy Investment."
4. Shuyang Zhang (EE), 2009 "Power balancing issues with for systems with high wind penetration levels."
5. Zhi Gao (EE), 2009, "Life prediction of power transformers."
6. Eknath Vittal (EE), 2008, "Steady-state and dynamic analysis of power systems with high wind penetration." (Co-supervised with V. Ajjarapu)
7. Venkat Krishnan (EE), 2007, "Planning Controllers in HV Electric Power Systems."
8. Abdul Kadar Adarte (EE), 2006, "Online Computation of System Operating Limits with respect to Thermal Constraints"
9. Greg Woodward, 2005, "Planning Electric High Voltage Transmission in MISO"
10. Sreerama Yeddenapudi (EE), 2005, "Reliability Evaluation of Distribution Systems for Maintenance Resource Allocation"
11. Yuan Li (EE), 2005, "Risk-based distribution maintenance and optimization."
12. Ana Quelhas (EE), 2001, "Risk-based Unit Commitment."
13. Chee-Wooi Ten (EE), 2001, "Visualization in Risk-Based Security Assessment."
14. Xuehua Chen (EE), 2001, "Preventive/Corrective actions as formal decision making paradigms."
15. Vijayanand Vishwanathan (EE), 2001, "Multiagent Negotiations for Electric Power Systems" **student received University Research Excellence Award.**
16. Vijaya Sudhakar (EE), 2000, "A Parallel Processing Approach to Security Assessment."
17. Wei Qin (EE), 2000, Risk-based security and maintenance scheduling for transmission companies."
18. Venkat Thekammadom (EE), 2000, "Marginal Value of Transmission Services Based on Risk Assessment of System Security."
19. Jinhui Chen (EE), 2000, "Comparison of Deterministic and Probabilistic Security Assessment."
20. Jun Zhang (EE), 1999, "A Bayesian Approach to Transmission Line Thermal Overload Assessment."
21. Madura Bhave (EE), 1999, "Module Development for Engineering Education using Multimedia, Simulation, and Cooperative Learning."

22. Sanyi Zhao (Statistics), 1998, Reliability Assessment of Special Protection Schemes,
23. Ning Yang (EE), 1998, "Robust Control Design for TCSC."
24. Qinghua Liu (EE), 1997, "Modal Analysis of TCSC Effectiveness."
25. Q. Zhou (Computer Science), 1996, "Feature Selection for Electrical Power System Security Assessment Using Genetic Algorithm and Neural Networks."
26. Blaine Krause (EE), 1995, "Rapid Assessment of Stability Limited Available Transmission Capacity for Transaction Selection."
27. Manjula Kommareddy (EE), 1994, "Prony Analysis: A Tool for Modal Identification in Power Systems."

Ph.D. Degrees Awarded

1. E. Ibanez (EE), 2011, "National Energy and Transportation Modeling."
2. V. Krishnan (EE), 2010, "Efficient sampling for power system operational studies."
3. Yuan Li (EE), 2008, "Benders decomposition for integrated decisions in operations & planning," Employed by California ISO, Folsom, California.
4. Siddhartha Khaitan (EE), 2008, "Defense against cascading blackouts." **student received University Research Excellence Award**, Employed as Post-doctoral researcher at Iowa State University, Ames, Iowa.
5. Fei Xiao (EE), 2008, On-line Risk Based Security Assessment for Operational Decision-Making." Employed at New York ISO, Schenectady, New York.
6. Haifeng Liu (EE), 2007, "Reactive Power Planning for Reconfigurable Power Systems." Employed at California ISO, Folsom, California.
7. Esteban Gil (EE), 2007, "Reliability of Integrated Energy Systems." Employed at McLennan Magasanik Associates, Melbourne, Australia.
8. Ana Quelhas (EE), 2006, "Economic efficiencies of the energy flows from the primary resource suppliers to the electric load centers," **student received University Research Excellence Award**, employed at Energy Planning Department of Electricite de Portugal, Lisbon Portugal.
9. Yong Jiang (EE), 2006, "Condition-Based Failure Rate Estimation and Optimal Maintenance Scheduling for Electrical Transmission System," Employed at Midwest ISO, Carmel, Indiana.
10. Qiming Chen (EE), 2004, "The probability, identification, and prevention of rare events in power systems," **student received University Research Excellence Award**, originally employed at PJM, Philadelphia, PA, now at Macquarie Cook Power Inc., Huston TX.
11. Zhong, Zhang (EE), 2003, "Distributed Decision-Making in Electric Power System Maintenance Scheduling using Multi-Agent Systems," Employed at Midwest ISO, Carmel, Indiana.
12. Kun Zhu (EE), 2003, "Emergency response system for electric power systems," Employed at Midwest ISO, Carmel, Indiana.
13. Vincent Van Acker (EE), 2001, "High Dimensional Risk Assessment for Security in Competitive Electric Power Systems," Employed at AREVA T&D, Seattle, WA.
14. W. Fu (EE), 2000, "Risk Assessment and Optimization for Electric Power Systems," Originally employed at AREVA T&D, now an independent contractor to ERCOT, Austin TX.
15. Y. Dai (EE), 1999, "Annual Risk Assessment for Overload and Voltage Insecurity," Employed at ABB-Bailey, Huston, TX.
16. H. Wan (EE), 1999, "Security Assessment in Electric Power Systems using Probabilistic Risk,"(co-supervised with V. Vittal), **student received University Research Excellence Award**. Employed by AREVA T&D, Seattle, Bank of America, Chicago, and now World Bank.
17. G. Zhou (EE), 1998, "Application of Intelligent Tools to Boundary Visualization for Electric Power Systems Security Assessment," Employed by EPRI Solutions, Pacific Gas & Electric Co., San Francisco, CA., and now PTI-Siemens.
18. A. Irizarry-Rivera (EE), 1996, "Risk-Based Operating Limits for Dynamic Security Constrained Electric Power Systems," **student received University Research Excellence Award**. Employed as Professor of Electrical and Computer Engineering, University of Puerto Rico, Mayaguez.
19. M. Aboul-Ela (EE), 1995, "Design of a Hierarchical Controller for Sustained Interarea Oscillations" (degree awarded from Port Said University, Egypt, co-advised with Aziz Fouad). Deceased.

Masters Students in Progress

1. 2008-present: Lizbeth Gonzalez Marciaga, "Hydrogen as a storage mechanism for spilled wind energy."
2. 2009-present: Jose Villarreal, "Use of Markal-Times in Analysis of Large-Scale Energy Systems."
3. 2009-present: Hugo Villegas, "Electromechanical Oscillations in Hydro-Dominant Power Systems: Application to Columbia."
4. 2010-present: Qi Qihui, "Use of the National Energy Modeling System in Analysis of Large-Scale Energy Systems."
5. James Slegers, "Wind energy – resource to backbone transmission."
6. Joseph Slegers, "NETSCORE – Data development."
7. 2011-present, Y. Li, "National transmission overlay."
8. 2009-present: Pat Quinn, "Economic planning for power systems."

Ph.D. Students in Progress

1. 2007-present: Yang Gu, "Generation expansion."
2. 2007-present: Hieu Pham, "Service-oriented architecture for power system decision."
3. 2007-present: Chuan Fu, "Numerical integration methods for fast simulation."
4. 2008-present: Diego A. Mejia, "Infrastructure planning optimization algorithms."
5. 2008-present: Oluwaseyi Olatujoye, "Special Protection Systems: Process and System Risk."
6. 2009-present: Mei Li, "MW-Hz Issues with High Wind Penetration."
7. 2009-present: Qin Wang, "Risk-based decisions within dynamic-data-driven application systems."
8. 2009-present: Lei Tang, "Next generation on-line dynamic security assessment in power systems."
9. 2009-present: Trishna Das, "Storage and wind energy."

10.0 OTHER SUPERVISION

Post-doctoral researchers and or visiting students or faculty

1. September 2009-present: Caixia Wang, "MW-Hz Issues Caused by High Wind Penetration Levels."
2. October 2009-present: Yang Wang, "Risk-based Corrective Security Constrained Unit Commitment."
3. June 2008-present, Siddhartha Khaitan, "Computational algorithms for on-line cascading assessment."
4. July 2008-present, Renchang Dai, "Hybrid wind systems," "Risk-based security assessment," and "Special Protection Schemes."
5. August 2007-June 2008, Viet Nguyen, visiting faculty, "Power system course development."
6. October 2006-present, Kannan Subramanian, "Generation Planning Algorithms."
7. June 1999-April 2002: Ming Ni, "Operational Decision-Making using Risk-Based Assessment"
8. February 1999-May 2000: Mashiur Bhuiyan, "Reliability and Risk for Electric Power System Security Assessment."
9. August 1995 to August 1996: Fereshteh Fatehi, "Controller Design Methods Using Thyristor Controlled Series Capacitors."
10. October 1994 to November 1996: Shimo Wang, "Rapid Determination of Available Transmission Capacity for Stability Limited Systems."
11. December 1993 to May 1994: Chaoyang Jing, Post-Doctoral Researcher, "An Energy Approach to Analysis of Interarea Oscillations."

Undergraduate students

1. 2007-present: Keith Johnson, "Carbon Sequestration Methods."
2. 2006-2006: Eduardo Ibanez, "Construction/Visualization of a US Fuel Transportation Model "
3. 2005-2006: Jeremy Hamilton, "Coal transportation along US Waterways."
4. 2005-2006: Zhi Gao, "Visualization of risk-based security assessment."
5. 2004-2005: Aung Oo, "Condition data for power transformers,"
6. 2003-2005: Parik Advani, "PowerLearn Web Site Maintenance."
7. 2002-2004: Jeremy Angga, "PowerLearn Web Site Expansion."
8. 2002-2003: Joe Lang, "PowerLearn content updates."
9. 2001-2003: Aris Gunawan, "PowerLearn Web Site Expansion."
10. 2000-2000: Tzun Wei, "Visualization of Security Assessment Results."
11. 2000-2000: Ding Mi: "Java Applets for Educational Modules."
12. 2000-2001: Matt Englebart, "PowerLearn Web Site Maintenance."

13. 1999-1999: Chee-wooi Ten, "PowerLearn Web Site Maintenance."
14. 1997-1999: Lukasz Darowski, "Visualization in Educational Modules," Freshman Honors Student
15. 1998-1999: Dede Subakti, "PowerLearn Web Site Design and Maintenance."
16. 1997-1998: Alberto Alonso, "PowerLearn Web Site Design."
17. 1996-1998: Matt Mitchell, "Feature Selection using Neural Networks and Genetic Algorithms."
18. 1996-1997: Brad Nickell, "Accuracy Testing of Security Boundaries."
19. 1996-1996: Darin Massner, "Comparison of Voltage Instability Tools."
20. 1995-1996: Anh Nguyen: "Survey Development for Quantifying Security Impact."
21. 1995-1996: Tom Risse: "Stability Study for IEEE RTS System."

11.0 PROGRAM OF STUDY (POS) COMMITTEE MEMBER (NON-MAJOR PROFESSOR)

2008	??	PhD., Economics
	Ashtosh Tiwari	PhD, EE
	Harold Salazar	PhD, EE
2007	Jyotish Patahak	Ph.D., Computer Science
	Haifeng Liu	M.S., Economics
	Jie Bao	Ph.D., Computer Science
2006	Esteban Gil	M.S., Statistics
	Junjie Sun	Ph.D., Economics
	Wenzhuo Shang	Ph.D., Economics
	Dan Yang	Ph.D., EE
2005	Wei Shao	Ph.D., EE
	Shu Liu	Ph.D., EE
	Ramon Leon	M.S., EE
	Ana Quelhas	M.S., Economics
	Ajay Venugopalan	M.S., Industrial Engineering
2004	Zheng Zhou	Ph.D., EE
	Aarthi Parthasarathy	M.S., IMSE
	Qian Liu	Ph.D., EE
2003	Jiang Huang	Ph.D., EE
2001	Pradeep Ramuhalli	Ph.D., EE
	Feng Chen	Ph.D., EE
	Nagaraj Balijpealli	Ph.D., EE
	Qin Wang	Ph.D., EE
	Haibo You	Ph.D., EE
	Weiguo Yang	Ph.D., EE
	Yuan Zhou	Ph.D., EE
2000	John Barud	M.S., EE
	Chuanjiang Zhu	Ph.D., EE
	Yuan Zhou	Ph.D., EE
	Xuechan Yu	Ph.D., EE
	Rong Qi	Ph.D., EE
	Kah-Hoe Ng	Ph.D., EE
1999	Somgiat Dekrajangpetch	Ph.D., EE
	Songzhe Zhu	Ph.D., EE
1998	Fu Jian	Ph.D., EE
	Jihoon Yang	Ph.D., Computer Science
	Weiguo Wang	MS, EE
1997	K.H. Ng	M.S., EE
	Somgiat Dekrajangpetch	M.S., EE
	Gilsoo Jiang	Ph.D., EE
	Sundar Rajan	Ph.D., EE
	Chin Khor	M.S., ME
1996	Swapn Saha	Ph.D., EE

	Kumar Jayant	Ph.D., EE
	Amin Ibsais	M.S., EE
1995	Ching Min Lin	Ph.D., EE
	Lun Huang	M.S., IE
	Tim Maifeld	Ph.D., EE
1994	Byongjun Lee	Ph.D., EE
	Sundar Rajan	M.S., EE
	Ravi Jeloka	M.S., EE
1993	Roger Treinen	Ph.D., EE

12.0 EXTENSION AND OUTREACH ACTIVITIES

1. Provided 4 hours of instruction on power system dynamic analysis at a conference in Medellin, Colombia in July 2010 for the company XM. Approximately 150 attendees from all over South America.
2. Served as instructor in giving a one-hour lectures in the “Wind Generation Technology Short Course,” October, 2010, Iowa State University, titled “MW-Hz Issues for Wind Energy.”
3. Gave 45 minute lecture at the Iowa Association of Municipal Utilities, April 2010, Ankeny IA, on “Long-term national planning for energy and transportation infrastructure.”
4. Served as instructor in giving three one-hour lectures in the “Wind Generation Technology Short Course,” October 20, 2009, Iowa State University:
 - a. “National Wind Generation Picture”
 - b. “Frequency control (MW-Hz) with wind”
 - c. “Wind energy basics”
5. Organized the 2008 May Industry-Advisory Board Meeting for the Power System Engineering Research Center (PSERC), May, 2008, Iowa State University, attended by over 80 faculty, students, and industry engineers from 13 universities and 35 companies.
6. Member, Board of Directors of the Iowa Wind Energy Association, 2008-present.
7. Member, Annual Meeting Organizing Committee of the Iowa Wind Energy Association, 2008-present
8. Organized the Iowa Energy Workforce Workshop, November 26, 2007, Iowa State University.
9. Member of the “Metric Advisory Group,” a national-level group advising the North American Electric Reliability Council on metrics associated with electric grid reliability in the United States, 2007.
10. Presented 2 hour tutorial at Midwest ISO Short Course for Power System Operators, “Transmission Security: Rules, Risks, and Blackouts,” April 25, 2006, Minneapolis, Minnesota.
11. Presented 2 hour tutorial to ISU College for Seniors, “Energy Systems; A Critical National Infrastructure,” 11/2/04.
12. Presented 1.5 hour invited tutorial to Power Systems Engineering Research Center (PSerc) Industry Advisory Board (IAB) meeting, “Operational decision-making and risk-based security assessment,” 12/13/02, Atlanta, Georgia.
13. Presented to Power Systems Engineering Research Center (PSerc) Industry Advisory Board (IAB) meeting, “PowerLearn: A Powerful Web-based Alternative to Maintaining Intellectual Resources for Industry and Academia,” 12/12/02, Atlanta, Georgia.
14. Serving as organizer and general chair of the 2004 8th International Conference on Probabilistic Methods Applied to Power Systems (PMAPS-2004).
15. Distance-education mode of instruction in EE 653 (Fall 1993), EE 457 (Spring 1995), EE 251 (Spring 1997, 1998, 2000), EE 303 (Spring 2002) and EE 554 (Spring 2002).
16. Instructor for ISU Power System Operators Short Course, “Reliability for Operators,” Ames, April, 2001.
17. Instructor and co-organizer for short course, “Reliability and Risk Assessment for Electric Power Systems,” April 25-28, 2001, Iowa State University.

18. Instructor for Short Course, "Reliability Issues in the US," in "'Electricity Markets – Models and Tools for Utilities and Other Players," May 5-9, 2000 Porto, Portugal, sponsored by the Power Systems Unit of INESC, Portugal.
19. Instructor for Short Course, "New Thinking in Reliability-Related Monitoring and Decisions," in "'Electricity Markets – Models and Tools for Utilities and Other Players," May 5-9, 2000, Porto, Portugal, sponsored by the Power Systems Unit of INESC, Portugal.
20. Instructor for ISU Power System Operators Short Course, "Reliability for Operators," Ames, April 1999.
21. Presentation on ISU Power Program to Alliant Energy Company, Debuque, IA, November, 1998.
22. Presentation on ISU Power Program to Midwest Energy Co., Des Moines, IA, December, 1998.
23. Presentation on ISU Power Program to Omaha Public Power District., Omaha, NE, February, 1998.
24. Instructor, Professional Engineering Review Course, October 1996. Presented for Iowa Utilities via Iowa Communication Network (ICN).
25. Instructor for ISU Power System Operators Short Course, "Risk-Based Security Assessment," Ames, IA, April 1996.
26. Instructor for ISU Power System Operators Short Course, "Power Systems Security for Competitive Electric Energy Systems," Ames, IA, April 25, 1995.
27. Instructor for ISU Power System Operators Short Course, "System Security With Open Access," Ames, IA, April 26, 1993.

13.0 PROFESSIONAL ACTIVITIES

- 1) 1988-present: Registered professional engineering license in the state of California.
- 2) Editor of Special Issue on Probabilistic Methods Applied to Power Systems, European Transactions on Electrical Power John Wiley & Sons, 2005.
- 3) Editor of Special Issue on Probabilistic Methods Applied to Power Systems, European Transactions on Electrical Power John Wiley & Sons, 2005.
- 4) Editor of Special Issue on Probabilistic Methods Applied to Power Systems, Electric Power and Energy Systems, Elsevier, 2005.
- 5) Editor of Special Issue on Probabilistic Methods Applied to Power Systems, Probability in the Engineering and Informational Sciences, Vol. 19, Issue 4, October, 2005, pp. 489-505.
- 6) Institute of Electrical and Electronic Engineers (IEEE) Power Engineering Society
 - a) Society Membership:
 - i) 2003 Fellow
 - ii) 1997 Senior Member
 - iii) 1984 Member
 - iv) 1979 Student Member
 - a) Committee involvement:
 - i) 2002-date, Member, IEEE Power Engineering Educational Committee
 - ii) 1995-date, Member, IEEE PES Subcommittee on Risk, Reliability and Probability
 - iii) 1998-date, Member, IEEE PES Committee on Power System Dynamics
 - iv) 1993-1997, Member, IEEE PES Subcommittee on Transmission Access Issues
 - v) 1994-1995, Member, IEEE PES Bibliography Task Force on Transmission Access Issues
 - vi) 1992-1997, Member, IEEE PES Subcommittee on Stability Controls
 - b) Offices held
 - i) 2005-date Editor-in-Chief, IEEE Power Engineering Society *Letters*
 - ii) 2004-2006 Chair, IEEE PES Subcommittee on Risk, Reliability, & Probability Applications
 - iii) 2002-2010 Chair, IEEE PES Educational Resources Task Force
 - iv) 2002-2003 Vice chair, IEEE PES Subcommittee on Risk, Reliability, and Probability
 - v) 1997-2003 Chair, IEEE PES Task Force on Probabilistic Aspects of Reliability Criteria
 - vi) 1995-1996 Chair, IEEE PES Bibliography Task Force on Transmission Access Issues
 - c) Organized panel session on Reliability Criteria at 1999 IEEE PES Summer Meeting, Edmonton.
 - d) Organized panel session on "Cascading Failures and Blackouts," at the IEEE PES T&D Conference and Exhibition, Dallas, Texas, May 23, 2006.
 - e) Semiannual coordinator for ISU student attendance at IEEE PES Winter and Summer meetings.
 - f) Journal paper reviewer

- i) 1992-date, Reviewer for IEEE PES Transactions Papers, average 15-20 papers/year
 - ii) 1992-date, Reviewer for variety of conferences, average 10 papers/year
- 3) Developed and submitted proposal to host 2004 North American Power Symposium at ISU.
- 4) International Conference on Large High Voltage Electric Systems (CIGRE)
 - a) Member from 1998-date
 - b) Committee involvement
 - i) 1998-date Member of Task Force 38.02.21 on Probabilistic Security Assessment
 - ii) 1999-date Member of Task Force 38.02.19 on Special Protection Schemes
- 5) Instrument Society of America (ISA), member 1996-1998.
- 6) National Science Foundation (NSF)
 - a) 2010, Review Panel for NSF Proposals, 1/22/10
 - b) 2009, Review Panel for NSF Proposals, 10/30/09
 - c) 2009, Review Panel for NSF Proposals, 6/30/09
 - d) 2008, Review Panel for NSF Proposals, 6/30/08.
 - e) 2008, Review Panel for NSF Proposals, 6/2/08.
 - f) 2005, Review Panel for NSF Proposals on Power Engineering, Washington D.C.
 - g) 2001, Review Panel for NSF Proposals on Power Engineering, Washington D.C.
 - h) 1995, Invited participant in NSF Round Table Discussion on "Power Engineering Education in a Changing Utility Environment," Washington, D.C., June 10-11, 1995.
 - i) 1995, Review Panel for NSF Initiative on Sensors and Sensor Systems, Washington
 - j) 1994-date, Reviewer for NSF Proposals, average 1/year
- 7) Member of technical organizing committee for PMAPS VI, Madeira Island, Portugal, Sept., 2000.
- 8) Member of technical organizing committee for PMAPS VII, Naples, Italy, Sept. 2002.
- 9) Organized special session on Power System Decision-Making Techniques for PMAPS VII, Naples, Italy, Sept. 2002.
- 10) Conference General Chairman for the 8th International Conference on Probabilistic Methods Applied to Power Systems (PMAPS VIII), Iowa State University, Ames, Iowa, September 11-16, 2004. 174 papers with 205 attendees, Served as coordinator of paper reviews, organizer of conference including all paper 12 special sessions, 25 regular sessions, 3 tutorials, 2 workshops, and all social activities (dinners, socials, etc).
- 11) Member of technical organizing committee for PMAPS IX, Stockholm, Sweden, June 2006.
- 12) Member of PMAPS International Society, overseeing body of PMAPS, 2004-2006.
- 13) Member of technical organizing committee for PMAPS X, Mayaguez, Puerto Rico, June 2008.
- 14) Member of technical organizing committee for PMAPS XI, Singapore, June 2010
- 15) Chair of Conference Selection Committee for PMAPS X.
- 16) Conference session chair:
 - a) 1999 IEEE PES Summer Meeting
 - b) 1997 Probabilistic Methods Applied to Power Systems Conference
 - c) 1996 IEEE Power Engineering Society Winter Meeting
 - d) 1995 IEEE PES Winter Meeting
 - e) 1995 ISU Midwest Electro-Technology Conference
 - f) 1994 Conference on Rough Sets and Soft Computing
 - g) 1994 American Power Conference
 - h) 1994 ISU Midwest Electro-Technology Conference

14.0 UNIVERSITY ACTIVITIES

University Service

1. 1998-2001, Member, Graduate College Membership Committee
2. 2009, Member, ISU Strategic Planning Committee, Task Force on "ISU as a Treasure."
3. 2008-present: Member of ISU Wind Energy Group
4. 2009-present: Member Board of Directors, Iowa State University Research Foundation (ISURF)
5. 2010: Served on the InTrans Review Team.

College Service

1. 2009-present Member, College Honors and Awards Committee
2. 2004-2009 Member, College of Engineering Promotion and Tenure Committee
3. 2008-present College of Engineering Leader for Young Faculty Mentoring
4. 2008 Member of College Organizing Committee for 2008 ISU Wind Symposium
5. 2003-2006 Member, College Engineering Fee Task Force (EFTF)
6. 2004-2006 Member, College Student Learning Task Force (SLTF)

Departmental Service

1. 2011-present Member, Strategic Planning Committee
2. 2011-present Member, Research Committee
3. 2010-present Member, Honors and Awards Committee
4. 2009-2010 Member, Search Committee for Department Chair
5. 2008-2011 Chair of Departmental Search Committee
6. 2008 Member, Search Committee for Department Chair
7. 2009-present Mentor for Ayman Fayed
8. 2007-present Mentor for Dionysios Aliprantis
9. 2004-2009 Mentor for Sang Kim
10. 2004 Member of Promotion and Tenure Committee
11. 2003-2006 Chair of ABET Preparation Team
12. 2003-2006 Associate Chair of Electrical and Computer Engineering
13. 2003-2006 Chair of Computer Usage Committee
14. 2003 Member, Department Chair Search Committee
15. 2002-2005 Chair, Electric Power and Energy Systems Area Committee
16. 2001-2003 Chair, Department Curriculum Committee
17. 2000 Member of Departmental ABET Task Force
18. 2000 Chair of Curriculum Committee EE Course Catalog Task Force
19. 1999-2006 Member of Graduate Committee
20. 1999-2000 Member of Promotion and Tenure Committee
21. 1998-2000 Chair, Election and Oversight Committee
22. 1996-2000 Member of Election and Oversight Committee
23. 1996 Member of Power Systems Simulation Laboratory Upgrade Committee
24. 1996 Member of Organizing Committee for ISU Midwest Electro-Technology Conf.
25. 1995-2003 Member of Curriculum Committee
26. 1995 Computer Systems Administrator Search Committee
27. 1994 DEO Evaluation Committee
28. 1993 Ad Hoc Subcommittee on Curriculum Development
29. 1993-1998 Circuits, Systems and Controls Area Committee
30. 1992-Present Electric Power and Energy Systems Area Committee