

**JAMES D. MCCALLEY**  
**IOWA STATE UNIVERSITY**  
**Electrical and Computer Engineering Department**  
**Vita**  
**Revised 05-20-2012**

**1.0 PERSONAL DATA**

Name: James D. McCalley  
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Phone: 515-294-4844 (voice), 515-294-4263 (fax)  
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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, 30 on-campus plus 5 off-campus students during fall 2006. Also taught spring 2008 and Fall 2010.
- 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 552: *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. This course was later changed to EE 559. Dr. McCalley taught all of this course in Spring 2012.

### 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 Gave 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, and 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), I. Dobson, and V. Ajjarapu, "Transmission planning and defense plans," ISU Electric Power Research Center, \$60k, August 2012-August 2014.
2. **J. McCalley** (PI), 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, \$110k, May 2012-May 2013.
3. **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.
4. **J. McCalley** (PI), "Wind farm to backbone transmission," ISU Electric Power Research Center, \$60k, August 2011-August 2013.
5. 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.
6. **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.
7. 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.
8. **J. McCalley** (PI), D. Aliprantis, "Design of a national transmission overlay," US Department of Energy, \$190k, March 2010-March 2012.
9. 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.
10. 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.
11. **J. McCalley** (PI), "Analysis of Very Low Frequency Oscillations," ISU Electric Power Research Center (EPRC), \$50k, 8/1/09-7/31/10.
12. **J. McCalley** (PI), "Development of an undergraduate minor in wind energy," \$65k, 8/10/10-8/10/11, Department of Energy.
13. 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
14. **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.
15. S. Ryan, J. Min, and **J. McCalley**, "Generation Expansion Planning: Portfolio Optimization," ISU Electric Power Research Center, \$100k, 9/1/08-8/31/10.

16. **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.
17. **J. McCalley (PI)**, "Risk-based security assessment and decision," Department of Energy, through CERTS/NSF, \$240,000, 9/1/07-9/1/09.
18. **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.
19. **J. McCalley (PI)**, W. Meeker, "Power Transformer Health Assessment," MidAmerican Energy Company, \$113,000, 3/1/2007-6/30/2008.
20. 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.
21. 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.
22. **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.
23. **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.
24. **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.
25. S. Talukdar (PI), I. Dobson, and **J. McCalley**, "Risk of Cascading Outages," Power Systems Engineering Research Center (PSerc), \$180,000, 6/05-6/07.
26. 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.
27. **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.
28. 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).
29. **J. McCalley (PI)**, "Power Engineering Educational Resources in North America," IEEE Power Engineering Society Power Engineering Education Committee, \$5000, 1/04-8/04.
30. 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.
31. **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.
32. **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.
33. **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.
34. **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.
35. **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.
36. **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.

37. **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.
38. **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.
39. **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).
40. 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%.
41. **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.
42. **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.
43. **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.
44. **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.
45. **J. McCalley** (PI), The Electric Power Research Institute (EPRI), \$120,000, “Power System Security Assessment Using Risk,” September 1, 1997 – September 1, 1999.
46. **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.
47. **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.
48. **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.
49. **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.
50. **J. McCalley** (PI), Pacific Gas and Electric Company, \$128,000, “Rapid Determination of Available Transmission Capacity,” October 10, 1994 to December 31, 1996.
51. **J. McCalley** (PI), The Iowa State University Electric Power Research Center, \$23,966, “Probabilistic Dynamic Security Assessment,” June 1, 1994 to June 1, 1995.
52. **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.
53. **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. A. Somani, S. Tirthapura, Z. Wang, and J. McCalley, “Distributed computing laboratory, for large-scale system modeling and analysis,” National Science Foundation, \$397k, 3 years.

### **Proposals in Preparation:**

1.

### **7.0 PUBLICATIONS**

As of October, 2012, Publish or Perish (based on GoogleScholar) indicates 2695 citations of articles where Dr. McCalley was author or co-author, with an H-index of 26. The following names need to be excluded when doing this search: "KW McCalley" "LT McCalley" "M McCalley" "DV McCalley" "L Teddy McCalley" "NF McCalley" "T McCalley" "TA McCalley" "CK McCalley" "C McCalley" "L McCalley" "SW McCalley".

### **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 8<sup>th</sup> 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. \*V. Krishnan and **J. McCalley**, "Importance Sampling based Intelligent Test Set Generation for Validating Operating Rules used in Power System Operational Planning," to appear in *IEEE Transactions on Power Systems*.
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," to appear in *International Journal of Critical Infrastructures*.
3. \*Q. Wang, **J. McCalley**, T. Zheng, and E. Litvinov, "A New Approach to Solve Preventive Risk-based Security-Constrained Optimal Power Flow," to appear in *IEEE Transactions on Power Systems*.
4. \*C. Wang and **J. McCalley**, "Impact of Wind Power Variability on Control Performance Standards," to appear in *International Journal of Electrical Power and Energy Systems*.
5. \*V. Krishnan, **J. McCalley**, "Progressive entropy based contingency grouping for deriving decision trees for multiple contingencies," to appear in *Electrical Power and Energy Systems* 45 (2013), pp. 35–41.

6. \*V. Krishnan, \*E. Ibanez, \*T. Das, \*Y. Gu, and **J. McCalley**, “Modeling Operational Effects of Variable Generation within National Long-term Infrastructure Planning Software,” to appear in *IEEE Transactions on Power Systems*.
7. H. Villegas Pico, **J. McCalley**, A. Angel, R. Leon, N. Castrillon, “Analysis of Very Low Frequency Oscillations in Hydro-Dominant Power Systems Using Multi-Unit Modeling,” *IEEE Transactions on Power Systems*, Vol 27, Issue: 4, 2012, pp. 1906 – 1915.
8. \*V. Krishnan and **J. McCalley**, “Contingency assessment under uncertainty for voltage collapse and its application in risk based contingency ranking,” *Journal of electric power and energy systems* 43, 2012, pp. 1025-1033.
9. M. Kezunovic, **J. McCalley**, and T. Overbye, “Smart grids and beyond: achieving the full potential of electricity systems,” *Proceedings of the IEEE*, special 100<sup>th</sup> Anniversary Issue, “Engineering our future: 1912, 2012, 2112,” May 13, 2012, Vol. 100, pp. 1329-1341.
10. \*Y. Gu, **J. McCalley**, and M. Ni, “Coordinating large-scale wind integration and transmission planning,” to appear in *IEEE Transactions on Sustainability, Special Issue on Wind Energy.*, Vol 3, Issue 4, 2012, pp. 652-659.
11. \*R. Dai, \*H. Pham, \*Y. Wang, and **J. McCalley**, “Long term benefits of online risk-based optimal power flow,” *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,"* Vol. 226, Issue 1, Feb, 2012.
12. \*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*.
13. \*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.
14. **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*, Vol. 9, Issue 3, May/June 2011, pp. 42-54.
15. 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.
16. \*V. Krishnan, **J. McCalley**, S. Henry, and S. Issad, “Efficient Database Generation for Decision Tree based Power System Security Assessment,” *IEEE Transactions on Power Systems*, vol. 26, Issue 4, 2011, pp. 2319 – 2327.
17. \*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.
18. S. Khaitan, J. McCalley, M. Raju, “Numerical methods for on-line power system load flow analysis,” *Energy Systems*, 2010, 1: pp. 273–289, DOI 10.1007/s12667-010-0013-6.
19. \*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.
20. 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.
21. \*H. Liu, L. Jin, **J. McCalley**, R. Kumar, V. Ajarapu, 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.
22. \*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.
23. \*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.
24. \*Y. Li and **J. McCalley**, “Decomposed SCOPF for Improving Efficiency,” *IEEE Transactions on Power Systems*, Vol. 24, No. 1, Feb. 2009, pp 494-495.
25. \*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.
26. \*S. Yeddanapudi, \*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.

27. **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.
28. \*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.
29. \*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.
30. \*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.
31. 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.
32. \*Y. Jiang, **J. McCalley**, T. Van Voorhis, "Risk-based Maintenance Optimization for Transmission Equipment," IEEE Transactions on Power Systems, Vol 21, Issue 3, Aug. 2006, pp. 1191 – 1200.
33. \*A. Quelhas, \*E. Gil, and **J. McCalley**, "Nodal Prices in an Integrated Energy System: A Generalized Network Flow Model," International Journal of Critical Infrastructures, Vol. 2, No. 1, 2006, pp. 50-69.
34. \*Q. Chen and **J. McCalley**, "A Cluster Distribution as a Model for Estimating High-Order Event Probabilities in Power Systems," Probability in the Engineering and Informational Sciences, Vol. 19, Issue 4, October, 2005, pp. 489-505.
35. \*Q. Chen and **J. McCalley**, "Identifying High-Risk N-k Contingencies for On-line Security Assessment," IEEE Trans. on Power Systems, Vol. 20, Issue 2, May 2005 pp. 823 – 834.
36. **J. McCalley**, L. Bohmann, K. Miu, and N. Schulz, "[Electric Power Engineering Education Resources 2001-02 IEEE Power Engineering Society Committee Report](#)," IEEE Transactions on Power Systems, Vol. 19, No 4, November 2004, pp 1703-1722.
37. \*M. Ni, **J. McCalley**, V. Vittal, S. Greene, \*C. Ten, \*V. Gangula, and T. Tayyib, "[Software Implementation of on-line risk-based security assessment](#)," IEEE Transactions on Power Systems, Vol. 18, No. 3, August 2003, pp 1165-1172.
38. \*M. Ni, **J. McCalley**, V. Vittal, and T. Tayyib, "[On-line risk-based security assessment](#)," IEEE Transactions on Power Systems, Vol. 18., No. 1, February, 2003, pp 258-265.
39. \*J. Zhang, \*J. Pu, **J. McCalley**, H. Stern, and W. Gallus, "[A Bayesian Approach to Short-Term Transmission Line Thermal Overload Risk Assessment](#)," IEEE Transactions on Power Delivery, Vol. 17, No. 3, July 2002, pp 770-778.
40. \*W. Fu, \*S. Zhao, **J. McCalley**, V. Vittal, N. Abi-Samra, "Risk-Based Assessment for Special Protection Schemes," IEEE Trans. on Power Systems, Vol. 17, No. 1, Feb., 2002, pp 63-72.
41. \*Y. Dai, **J. McCalley**, V. Vittal, "Annual Risk Assessment for Overload Security," IEEE Trans. On Power Systems, Nov. 2001, pp. 616-623.
42. J. Endrenyi, S. Aboresheid, R. Allan, G. Anders, S. Asgarpoor, R. Billinton, N. Chowdhury, E. Dialynas, M. Fipper, R. Fletcher, C. Griggs, **J. McCalley**, S. Meliopoulos, T. Mielnik, P. Nitu, N. Rau, N. Reppen, L. Salvaderi, A. Schneider, and C. Singh, "The present status of maintenance strategies and the impact of maintenance on reliability," IEEE Trans. on Power Sys., Nov. 2001, pp. 638-646.
43. \*W. Fu, **J. McCalley**, V. Vittal, "Transformer Risk Assessment," IEEE Transactions on Power Systems. Vol. 16, No. 3, Aug., 2001, pp 346-353.
44. \*H. Wan, **J. McCalley**, V. Vittal, "Risk-Based Voltage Security Assessment," IEEE Transactions on Power Systems. Vol. 15, No. 4, Nov., 2000, pp 1247-1254.
45. **J. McCalley** , V. Vittal, N. Abi-Samra, "Use of Probabilistic Risk in Security Assessment: A Natural Evolution," International Conference on Large High Voltage Electric Systems (CIGRE) , Selected by the CIGRE U.S. National Committee for presentation at the CIGRE 2000 Conference, August, 2000, Paris, paper 38-104, in Proceedings of the CIGRE 2000 Session.
46. \*Y. Dai, **J. McCalley**, V. Vittal, "Simplification, Expansion, and Enhancement of Direct Interior Point Algorithm for Power System Maximum Loadability," IEEE Transactions on Power Systems, Vol. 15, No. 3, Aug., 2000, pp. 1014-1021.
47. \*N. Yang and **J. McCalley**, "Mu Analysis and Synthesis for the Uncertainties in Static Load Modeling," Electric Power Systems Research 56 (2000) . 17-25.

48. \*H. Wan, **J. McCalley**, V. Vittal, "Increasing Thermal Ratings using Risk Analysis," IEEE Trans. On Pwr Sys., Vol. 14, No. 3, Aug., 1999, pp. 815-828.
49. **J. McCalley**, \*W. Fu, "Reliability of Special Protection Schemes," IEEE Trans. on Power Systems, Vol. 14, No. 4, Nov. 1999, pp.1400-1406.
50. \*G. Zhou, **J. McCalley**, "Composite Security Boundary Visualization," IEEE Transactions on Power Systems, vol. 14, No. 2, pp. 725-731, May 1999.
51. \*N. Yang, \*Q. Liu, **J. McCalley**, "TCSC Design for Damping Interarea Oscillations," IEEE Transactions on Power Systems , vol. 13, No. 4, pp 1304-1310, November, 1998.
52. **J. McCalley**, \*G. Zhou, \*V. Van Acker, "Power System Security Boundary Visualization Using Neural Networks," International Journal of Neurocomputing: A Special Issue on Power System Applications, Volume 23, Issue 1-3, December 7, 1998, pp. 85-96.
53. **J. McCalley**, V. Ajarapu, J. De La Ree, A. Phadke, G. Sheble, S. Venkata, V. Vittal, "Multimedia Courseware Sparks Interest in the Industry," IEEE Computer Applications in Power Systems, October, 1998.
54. **J. McCalley**, S. Asgarpoor, T. Gedra, M. Halpin, N. Saini, and M. Schrameyer, "Second Bibliography on Transmission Access Issues," IEEE Transactions on Power Systems , Vol. 12, No. 4, pp. 1654-1659, Nov., 1997.
55. R. Billinton, L. Salvaderi, **J. McCalley**, H. Chao, T. Seitz, R. Allan, J. Odom, C. Fallon, "Reliability Issues In Today's Electric Power Utility Environment," IEEE Transactions on Power Systems ,Vol. 12, No. 4, Nov., 1997, pp. 1708-1714.
56. \*A. Irizarry-Rivera, **J. McCalley**, and V. Vittal, "Two Methods for Computing Probability of Instability in Electric Power Systems," Electric Power Systems Research , Vol. 42, No. 2, pp. 135-143, Aug. 1997.
57. **J. McCalley**, \*S. Wang, \*Q. Zhao, \*G. Zhou, R. Treinen, and A. Papalexopoulos, "Security Boundary Visualization for Systems Operation," IEEE Transactions on Power Systems, Vol. 12, No. 2, pp. 940-947, May, 1997.
58. **J. McCalley**, A. Fouad, V. Vittal, \*A. Irizarry-Rivera, B. Agrawal, and R. Farmer, "A Risk Based Security Index for Determining Operating Limits in Stability-Limited Electric Power Systems," IEEE Transactions on Power Systems , Vol. 12, No. 3, pp. 1210-1219, Aug. 1997.
59. \*M. Aboul-Ela, A. Sallam, **J. McCalley**, and A. Fouad, "Damping Controller Design for Power System Oscillations Using Global Signals," IEEE Transactions on Power Systems, vol 11, no. 2, pp. 767-773, May, 1996.
60. \*C. Jing, **J. McCalley**, and \*M. Kommareddy, "An Energy Approach to Analysis of Sustained Interarea Oscillations in Power Systems," IEEE Transactions on Power Systems, vol 11, no. 2, pp. 734-740, May, 1996.
61. C. Lankford, **J. McCalley**, and N. Saini, "Bibliography on Transmission Access Issues," IEEE Transactions on Power Systems , vol. 11, no. 1. pp. 30-40, February, 1996.
62. **J. McCalley**, and \*B. Krause, "Rapid Transmission Capacity Margin Determination for Dynamic Security Assessment Using Artificial Neural Networks," Electric Power Systems Research , Vol. 34, pp. 37-45, 1995.
63. H. Jiang, J. Dorsey, Z. Qu, J. Bond, and **J. McCalley**, "Global Robust Adaptive Control of Power Systems," IEE Proceedings on Generation, Transmission, and Distribution , vol. 141, no. 5, pp. 429-437, September 1994.
64. **J. McCalley**, J. Dorsey, J. Luini, P. Mackin, and G. Molina, "A New Method for Creating Power Flow Subtransmission Equivalents for Voltage Instability Analysis," IEEE Transactions on Power Systems , vol. 8, no. 1, pp. 349-356, February 1993.
65. Z. Qu, J. Dorsey, and **J. McCalley**, "Application of Robust Control to Sustained Oscillations in Power Systems," IEEE Transactions on Circuits and Systems , vol. 39, no. 6, pp. 470-476, June 1992.
66. **J. McCalley**, J. Dorsey, Z. Qu, J. Luini, and J. Filippi, "A New Methodology for Determining Transmission Capacity Margin in Electric Power Systems," IEEE Transactions on Power Systems, vol. 6, no. 3, pp. 944-951, 1991.
67. W. Mittelstadt, C. Taylor, M. Klinger, J. Luini, **J. McCalley**, and J. Mechenbier, "Voltage Instability Modeling and Solutions As Applied to the Pacific Intertie," International Conference on Large High Voltage Electric Systems (CIGRE), June 1990.

**Refereed Journal Publications Under Review**

## Refereed Conference Publications Under Review

### 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. **J. McCalley**, "A course in planning future energy systems," invited paper to a panel session on curriculum development: transmission expansion planning for systems with renewable energy resources, Proceedings of the 2012 General Meeting of the IEEE Power and Energy Society, July 23, 2012, San Diego.
2. 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.
3. 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.
4. **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.
5. S. Khaitan, **J. McCalley**, and C. Fu, "Fast Parallelized Algorithms for On-Line Extended-Term Dynamic Cascading Analysis," Proc. of the Power Systems Conference and Exhibition, Seattle, March 15-18, 2009, pp. 1-7.
6. **J. McCalley**, V. Honavar, S. Ryan, W. Meeker, R. Roberts, D. Qiao, Y. Li, J. Pathak, M. Ye, Y. Hong, "Integrated Decision Algorithms for Auto-Steered Electric Transmission System Asset Management," Proc. of the 2007 International Conference on Computational Science, Beijing, China, May 28-30, 2007.
7. J. Pathak, \*Y. Jiang, V. Honavar, and **J. McCalley**, "Condition Data Aggregation with Application to Failure Rate Calculation of Power Transformers," Proc. of the Hawaii International Conference on System Sciences, Jan 4-7, 2006, Poipu Kauai, Hawaii.
8. **J. McCalley**, \*F. Xiao, \*Y. Jiang, \*Q. Chen, "Computing contingency probabilities for electric transmission decision problems," International Conference on Intelligent System Application to Power Systems (ISAP), Arlington, Virginia, November, 2005.
9. **J. McCalley**, R. Kumar, N. Elia, V. Ajjarapu, O. Volij, and V. Vittal, \*H. Liu, L. Jin, "Planning of Reconfigurable Power Systems," NSF Workshop on Electric Power Network Efficiency and Security (EPNES), Mayaguez, Puerto Rico, Aug. 2004.
10. \*Z. Zhong, **J. McCalley**, \*V. Vishwanathan, V. Honavar, "Multiagent System Solutions for Distributed Computing, Communications, and Data Integration Needs in the Power Industry," Proc. of the IEEE Summer Meeting, June, 2004, Denver, CO.
11. **J. McCalley**, R. Kumar, N. Elia, V. Ajjarapu, O. Volij, and V. Vittal, "Planning Reconfigurable Power System Control for Transmission Enhancement with Cost Recovery," NSF Workshop on Electric Power Network Efficiency and Security (EPNES), Orlando, FL, Oct. 2003.

12. **J. McCalley**, \*K. Zhu, and \*Q. Chen, "Dynamic Decision-Event Trees for Rapid Response to Unfolding Events in Bulk Transmission Systems," Proc. of the 2001 IEEE PES Summer Meeting, July 15-19, 2001.
13. **J. McCalley**, V. Vittal, and N. Abi-Samra, "Overview of Risk Based Security Assessment," Proc. of the 1999 IEEE PES Summer Meeting, July 18-22, 1999, pp 173-178.
14. **J. McCalley**, V. Vittal, \*H. Wan, \*Y. Dai, and N. Abi-Samra, "Voltage Risk Assessment," Proc. of the 1999 IEEE PES Summer Meeting, July 18-22, 1999, pp 179-184.
15. V. Vittal, **J. McCalley**, V. Van Acker, and N. Abi-Samra, "Transient Instability Risk Assessment," Proc. of the 1999 IEEE PES Summer Meeting, July 18-22, 1999, pp 185-192.
16. \*C. Jing, and **J. McCalley**, "Analysis of Sustained Interarea Oscillations in Power Systems Using Kinetic Energy Approach," Proceedings of 1994 Conference on Decision and Control, pp. 4067-4073, Orlando, Florida, December 14-16, 1994.
17. **J. McCalley**, A. Fouad, V. Vittal, \*A. Irizarry-Rivera, R. Farmer, and B. Agrawal, "A Probabilistic Problem in Electric Power System Operation: The Economy-Security Tradeoff for Stability-Limited Systems," Proceedings of The Third International Workshop on Rough Sets and Soft Computing, San Jose, CA, November 10-12, 1994.

### Conference Proceeding Articles

1. Q. Qi and J. McCalley, "Using NETPLAN to Analyze Environmental Impacts on Generation Expansion Planning," Proc of the 2012 General Meeting of the IEEE Power and Energy Society, San Diego, 2012.
2. O. Olatujoye, V. Krishnan, and **J. McCalley**, "Including special protection schemes and operational complexity within transmission planning," Proc. of the 2011 IEEE PES General Meeting, 2011, Detroit Michigan.
3. Y. Gu and **J. McCalley**, "Market-based transmission expansion planning," Proc. of the 2011 IEEE PES General Meeting, 2011, Detroit Michigan.
4. T. Das, V. Krishnan, Y. Gu, and **J. McCalley**, "Compressed air energy storage: state space modeling and performance analysis," Proc. of the 2011 IEEE PES General Meeting, 2011, Detroit Michigan.
5. Q. Chen and **J. McCalley**, "Operational defense of power system cascading sequences," Proceedings of the 2011 IEEE PES General Meeting, 2011, Detroit Michigan.
6. H. Villegas and J. McCalley, "Modeling and analysis of speed controls in hydro-turbines for frequency performance," Proc. of the North American Power Symposium, 2011.
7. \*Y. Gu and **J. McCalley**, "Market-based Transmission Planning Considering Large-scale Wind Power," Proc. of the International Workshop on Large-Scale Integration of Wind Power into Power Systems as well as on Transmission Networks for Offshore Wind Power Plants, Québec, Canada, October 2010.
8. \*Y. Gu and **J. McCalley**, "Market-based Transmission Expansion Planning Under Uncertainty," Proceedings of 42nd North American Power Symposium, Arlington, Texas, September 2010.
9. \*Y. Li and **J. McCalley**, "Obtaining the Universal Price Cap through Near-Optimal Solution," to appear in Proc. of the 2010 IEEE PES General Meeting, July 25-20, Minneapolis, MN.
10. \*V. Krishnan, **J. McCalley**, S. Henry, and S. Issad, "High information content database generation for data mining based power system operational planning studies," to appear in 2010 IEEE PES General Meeting, July 25-20, 2010, Minneapolis, MN.
11. Y. Zhou, L. Wang, and **J. McCalley**, "Effective Incentives Design for Renewable Energy Generation Expansion Planning: An Inverse Optimization Approach," Proc. of the 2010 IEEE PES General Meeting, July 26 - July 29, 2010, Minneapolis, Minnesota, USA.
12. \*H. Pham, G. Santhanam, **J. McCalley**, V. Honavar, "BenSOA: A flexible service-oriented architecture for power system asset management," North American Power Symposium (NAPS), 2009, pp. 1-6.
13. \*Y. Li and **J. McCalley**, "Risk-based optimal power flow and system operation state," Proc. of the 2009 IEEE PES General Meeting, July 26-30, 2009, Calgary, pp. 1-6.
14. \*Y. Li and **J. McCalley**, "Risk-based Var Allocation Considering both Voltage Profile and Security Margin," to appear in Proc. of the 2009 IEEE PES General Meeting, July 26-30, Calgary.

15. \*V. Krishnan, \*H. Liu, and **J. McCalley**, "Coordinated Reactive Power Planning against Power System Voltage Instability," 2009 IEEE Proc. of the Power Systems Conference & Exhibition, Seattle, March 15-18, 2009, pp. 1-8.
16. \*Z. Gao, **J. McCalley**, and W. Meeker, "A Transformer Health Assessment Ranking Method - Use of Model Based Scoring Expert System," Proc. of the 2009 North American Power Symposium, Mississippi State University, Oct., 2009.
17. R. Dai, **J. McCalley**, D. Aliprantis, V. Ajjarapu, T. Das, D. Wu, M. Riaz, and R. Umer, "Hierarchical control for hybrid wind systems," North American Power Symposium (NAPS), 2009, pp. 1-6.
18. G. Heydt, M. Kezunovic, P. Sauer, A. Bose, **J. McCalley**, C. Singh, W. Jewell, D. Ray, V. Vittal, "Professional resources to implement the 'smart grid'," North American Power Symposium (NAPS), 2009, pp. 1-8.
19. H. Liu, L. Jin, J. McCalley, R. Kumar, V. Ajjarapu, N. Elia, "Planning reconfigurable reactive control for voltage stability limited power systems," IEEE Power & Energy Society General Meeting, 2009.
20. \*E. Ibáñez, **J. McCalley**, D. Aliprantis, R. Brown, K. Gkritza, A. Somani, and L. Wang, "National Energy and Transportation Systems: Interdependencies within a Long Term Planning Model," Proc. of the IEEE Energy2030 Conference, Atlanta, GA. Nov. 17-18, 2008
21. \*Y. Li and **J. McCalley**, "A General Benders Decomposition Structure for Power System Decision Problems," 2008 IEEE International Conference on Electro/Information Technology, May 18 - 20, 2008, Ames, IA, USA
22. \*Yuan Li and **J. McCalley**, "Risk-based transmission line expansion," the 10th International Conference on Probabilistic Methods Applied to Power Systems, May 25-29, 2008, Rincon, Puerto Rico.
23. \*Yuan Li and **J. McCalley**, "Risk-based VAR resource allocation," Transmission and Distribution Conference and Exposition, 2008. T&D. IEEE/PES 21-24 April 2008 Page(s):1 - 6
24. \*Yuan Li, **J. McCalley** and S.M. Ryan, "Risk-based unit commitment," 2007 IEEE PES General Meeting, Tampa.
25. E. Vittal, **J. McCalley**, V. Ajjarapu, "Wind Penetration Limited by Thermal Constraints and Frequency Stability," Proc. of the North American Power Symposium, University of New Mexico, October 1, 2007.
26. M. Yan, S. Ryan, and **J. McCalley**, "Transmission Expansion Planning with Transformer Replacement," Proceedings of the 2007 Industrial Engineering Research Conference, May 19-23, 2007.
27. \*Q. Chen, Y. Lin, **J. McCalley**, "The Risk of High-Order Transmission Contingencies," to appear in Proc. of the 2007 IEEE PES General Meeting, June 2007, Tampa Fl.
28. \*Y. Li, **J. McCalley**, S. Ryan, "Risk-Based Unit Commitment," Proc. of the 2007 IEEE PES General Meeting, June, 2007, Tampa Fl.
29. \*F. Xiao, **J. McCalley**, "Risk-Based Multi-Objective Optimization for Transmission Loading Relief Strategies," Proc. of the 2007 IEEE PES General Meeting, June, 2007, Tampa Fl.
30. J. Pathak, \*Y. Li, V. Honavar, and **J. McCalley**, "A Service-Oriented Architecture for Electric Power Transmission System Asset Management," Second International Workshop on Engineering Service-Oriented Applications: Design and Composition, Dec. 4, 2007, Chicago, Illinois.
31. \*H. Liu, L. Jin, **J. McCalley**, R. Kumar, V. Ajjarapu, "Planning Minimum Reactive Compensation to Mitigate Voltage Instability," Proc. of the 2006 IEEE Power Engineering Society General Meeting, June 2006, Toronto.
32. \*F. Xiao, **J. McCalley**, Y. Ou, J. Adams, S. Myers, "Contingency Probability Estimation Using Weather and Geographical Data for On-Line Security Assessment," Proceedings of the 9<sup>th</sup> International Conference on Probabilistic Methods Applied to Power Systems, June 11-15, 2006.
33. \*Y. Li, \*S. Yeddapanudi, **J. McCalley**, A. Chowdhury, W. Jewell, "Resource Management for Distribution System Maintenance Using Optimized Risk Reduction," Proceedings of the 9<sup>th</sup> International Conference on Probabilistic Methods Applied to Power Systems, June 11-15, 2006.
34. **J. McCalley**, V. Honavar, S. Ryan, W. Meeker, R. Roberts, D. Qiao and \*Y. Li, "Auto-steered Information-Decision Processes for Electric System Asset Management," in Computational Science - ICCS 2006, 6th International Conference, Reading, UK, May 28-31, 2006, Proceedings, Part III, Series: Lecture Notes in Computer Science , Vol. 3993, Volume package Computational Science -- ICCS 2006. Part 1-4, Alexandrov, V.N.; van Albada, G.D.; Sloot, P.M.A.; Dongarra, J.J. (Eds.), 2006.

35. \*Y. Li, **J. McCalley**, \*S. Yeddanapudi, M. Moorehead, A. Chowdhury, "Degradation-path model for wood pole asset management," Proceedings of the 2005 North American Power Symposium, Ames, Iowa, Oct. 2005.
36. J. Warner, W. Jewell, and **J. McCalley**, "Predicting Recloser Failure Rates From Field Condition Assessment," Proc. of the Frontiers of Power Conference, Oct. 24-25, 2005, Oklahoma State University, Stillwater.
37. \*S. Yeddanapudi, \*Y. Li, **J. McCalley**, A. Chowdhury, W. Jewell, "Development of a Predictive Reliability Assessment Tool for Distribution Systems," Proceedings of the 2005 North American Power Symposium, Ames, Iowa, Oct. 2005.
38. \*H. Liu, L. Jin, **J. McCalley**, R. Kumar, V. Ajjarapu, "Linear complexity search algorithm to locate shunt and series compensation for enhancing voltage stability," in *Proc. 2005 North American Power Symposium*, Ames, Iowa, Oct. 2005, pp. 344-350.
39. L. Jin, \*H. Liu, R. Kumar, V. Ajjarapu, **J. McCalley**, N. Elia, V. Vittal, "An Application Of Reachable Set Analysis In Power System Transient Stability Assessment," in Proc. of IEEE Power Engineering Society General Meeting, San Francisco, May, 2005.
40. \*H. Liu, L. Jin,, **J. McCalley**, R. Kumar, V. Ajjarapu, N. Elia, V. Vittal, "Reachability Analysis Based Voltage Stability Assessment and Minimum Load Shedding Determination," Proc. of IEEE Power Engineering Society General Meeting, San Francisco, May, 2005.
41. \*Q. Chen and **J. McCalley**, "A Cluster Distribution as a Model for Estimating High-Order Event Probabilities in Power Systems," won first prize as best student-authored paper, Proceedings of the 8<sup>th</sup> International Conference on Probabilistic Methods Applied to Power Systems, September 12-16, 2004.
42. \*H. Liu, **J. McCalley**, R. Kumar, N. Elia, V. Ajjarapu, V. Vittal, "Planning power system hybrid control for transmission enhancement," 2004 North American Power Symposium, August, 2004, Moscow, Idaho.
43. \*Y. Jiang, \*Z. Zhang, **J. McCalley**, T. Van Voorhis, "Risk-Based Maintenance Optimization for Transmission Equipment," Proc. of the EPRI Substation Equipment Diagnostics Conference, New Orleans, Feb 15-18, 2004.
44. IEEE Power Engineering Society Task Force on Probabilistic Aspects of Reliability Criteria, **J. McCalley** - Chair, "Probabilistic Security Assessment For Power System Operations," Proc. of the IEEE Summer Meeting, June, 2004, Denver, CO.
45. \*Z. Zhang, \*Y. Jiang, and **J. McCalley**, "Condition-based failure-rate estimation for transformers," Proc. of the 2003 North American Power Symposium, Rolla, Missouri, Oct., 2003.
46. \*Y. Jiang, \*Z. Zhang, T. Van Voorhis, and **J. McCalley**, "Risk-based maintenance optimization for transformers," Proc. of the 2003 North American Power Symposium, Rolla, Missouri, Oct., 2003.
47. \*E. Gil, \*A. Quelhas, **J. McCalley**, and T. Van Voorhis, "Modeling integrated energy transportation networks for analysis of economic efficiencies and network interdependencies," Proc. of the 2003 North American Power Symposium, Rolla, Missouri, Oct., 2003.
48. \*A. Quelhas and **J. McCalley**, "Modeling Energy System Information Flows," Proc. of the 2002 North American Power Symposium," Tempe, Arizona, Oct. 2002.
49. \*Z. Zhang, \*V. Vishwanathan, **J. McCalley**, V. Honavar, "A Multiagent Security-Economy Decision Support Infrastructure for Deregulated Electric Power Systems," Proc. of the 2002 Probabilistic Methods Applied to Power Systems, Sept. 2002, Naples, Italy.
50. \*A. Quelhas, \*M. Ni, **J. McCalley**, Y. Shlumberger, "A Probabilistic Approach to Manage Security Levels through Unit Commitment," Proc. of the 2002 Probabilistic Methods Applied to Power Systems, Sept. 2002, Naples, Italy.
51. \*X. Chen, \*M. Ni, and **J. McCalley**, "Use of Multicriterion Techniques For Control-Room Security Economy Decision-Making," Proc. of the 2002 Probabilistic Methods Applied to Power Systems, Sept. 2002, Naples, Italy.
52. \*Y. Jiang, \*M. Ni, **J. McCalley**, T. Van Voorhis, "Risk-Based Maintenance Allocation and Scheduling for Bulk Electric Power Transmission System Equipment," Proc. of Fifteenth International Conference On Systems Engineering (ISENG 2002), Las Vegas, August 6-8, 2002.
53. \*J. Pu, **J. McCalley**, "On-line Analysis of High Order Contingencies," 2001 North American Power Symposium, College Station, Texas, Oct., 2001.
54. \*K. Zhu, \*Q. Chen, **J. McCalley**, "Voltage Sag Risk Assessment using Trajectory Sensitivity," 2001 North American Power Symposium, College Station, Texas, Oct., 2001.

55. \*Q. Chen, **J. McCalley**, "High Order Contingency Identification from System Topology Analysis", 2001 North American Power Symposium, College Station, Texas, Oct., 2001.
56. \*A. Quelhas, \*M. Ni, **J. McCalley**, Y. Schlumberger, J. Pecas-Lopes, "Long-Term Unit Commitment Adjustment based on Risk Assessment," 2001 North American Power Symposium, College Station, Texas, Oct., 2001.
57. \*V. Vishwanathan, **J. McCalley**, V. Honavar, "Design and Implementation of a Multi-agent System Infrastructure and Negotiation Framework for Electric Power Systems," Proc. of the IEEE Power Tech Conference, Porto, Portugal, Sept., 2001.
58. \*Q. Chen, \*K. Zhu, and **J. McCalley**, "Dynamic Decision-Event Trees for Rapid Response to Unfolding Events in Bulk Transmission Systems," Proc. of the IEEE Power Tech Conference, Porto, Portugal, Sept., 2001.
59. \*W. Fu and **J. McCalley**, "Risk-Based Optimal Power Flow," Proc. of the IEEE Power Tech Conference, Porto, Portugal, Sept., 2001.
60. J. Jung, G. Karady, **J. McCalley**, G. Heydt, C-C. Liu, A. Phadke, V. Vittal, "Wide area protection and control using a strategic power infrastructure defense system," Proceedings of the CIGRE Annual Meeting, Paris, August, 2001.
61. **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.
62. \*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.
63. 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.
64. \*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.
65. \*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.
66. \*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.
67. \*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.
68. \*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.
69. 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.
70. \*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.
71. \*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.
72. \*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.
73. \*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.
74. \*M. Bhave, **J. McCalley**, V. Ajarapu, G. Sheble, S. Venkata, V. Vittal, M. Mallini, A. Phadke, J. Da La Ree, "Project Powerlearn - Development of a Complete Module," Proceedings of the 1998 North American Power Conference, pp. 228-233, Cleveland, Ohio, Oct., 1998.

75. \*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.
76. S. Kothapalli, V. Ajjarapu, 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.
77. **J. McCalley**, \*G. Zhou, \*V. Van Acker, \*M. Mitchell, V. Vittal, \*S. Wang, and J. Pecos-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.
78. \*Y. Dai, **J. McCalley**, and V. Vittal, "Annual Risk Assessment for Thermal Overload," Proceedings of the 1998 American Power Conference, Chicago, Illinois, April, 1998.
79. \*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.
80. \*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.
81. V. Vittal, **J. McCalley**, V. Ajjarapu, 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.
82. \*N. Yang, **J. McCalley**, "Small Signal Stability and  $\Omega$  Analysis for the Unvertanties in Static Load Modeling," Proceedings of the 1997 North American Power Symposium, Laramie, Wyoming, Oct., 1997.
83. \*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.
84. \*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.
85. V. Vittal, **J. McCalley**, V. Ajjarapu, 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.
86. \*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.
87. **J. McCalley**, V. Ajjarapu, 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.
88. \*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.
89. \*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.
90. \*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.
91. \*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.
92. \*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.
93. \*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.

94. \*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.
95. \*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.
96. 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.
97. \*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.
98. \*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.
99. 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.
100. 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.
101. **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.
102. \*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.
103. **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.
104. **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.
105. **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.
106. Z. Qu, J. Dorsey, J. Bond, and **J. McCalley**, "Design of a Continuous Control for Synchronous Machines," Proceedings of American Control Conference, June 1992.
107. 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**, "Online Risk-based Security-Constrained Economic Dispatch and Market Operation," at the Federal Energy Regulatory Commission's technical conference, *Increasing Real-Time and Day-Ahead Market Efficiency through Improved Software*, Washington DC, June 25 – June 27, 2012.
2. **J. McCalley**, "Long-Term Natural Gas and Electricity Infrastructure Requirements," a panel session at the June 2012 Eastern Interconnection States Planning Consortium," Boston, MA., June 2012.
3. **J. McCalley**, "A national transmission overlay design," Utility Wind Integration Group Conference, May, 2012.
4. **J. McCalley**, "Cooptimization in power systems planning: What, why, and how," a panel session at the May 2012 Eastern Interconnection States Planning Consortium," Atlanta, Georgia, May 2012.
5. **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.
6. **J. McCalley**, "Wind and energy," Ames Lion's Club, December 17, 2009, Ames, Iowa.
7. **J. McCalley**, 21st Century National Energy and Transportation Infrastructures: Balancing Sustainability, Costs, & Resiliency (NETSCORE-21)," NSF-Virginia Tech RESIN Workshop, December 7, 2009.

8. **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.
9. **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.
10. **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>.
11. **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.
12. **J. McCalley**, "US Wind Energy Growth: Issues for 20% by 2030," Osborn Research Group, January 12, 2009, Iowa State University.
13. **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.
14. **J. McCalley**, "Risk-based security assessment and decision," OE Visualization and Controls Peer Review, 21/22 October 2008, Washington, DC.
15. **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.
16. **J. McCalley**, W. Meeker, Y. Hong, & Z. Gai, "Power Transformer Health Assessment & Life Prediction," presentation to MidAmerican Energy Engineers, Davenport, Iowa, June 5, 2008.
17. **J. McCalley**, "Risk-Based Security Assessment and Decision," presentation to CERTS/DOE Transmission Reliability Program, Richland, WA, May 21, 2008.
18. **J. McCalley**, "Operational Defense of Power System Cascading Outages," Panel on Cascading Failures & Blackouts, April 23, 2008, IEEE PES T&D Conference and Exposition.
19. **J. McCalley**, "Grid Management: New Methods and Tools," invited presentation to the California ISO, Folsom California, August 21, 2007.
20. **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.
21. **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.
22. **J. McCalley**, "Auto-Steered Information-Decision Processes for Electric System Asset Management," departmental seminar, Iowa State University, January 17, 2007.
23. **J. McCalley**, "Decision models for Bulk Energy Transportation Networks," departmental seminar, Iowa State University, November 10, 2006.
24. **J. McCalley**, "Decision models for Bulk Energy Transportation Networks," invited lecture, Arizona State University, October 6, 2006.
25. 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.
26. **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.
27. **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.
28. **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.
29. **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.

30. **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.
31. **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.
32. **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.
33. **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.
34. **J. McCalley**, "Maintenance Scheduling Optimization for Transmission Equipment," invited workshop talk at the EPRI Workshop on Asset Management, April 10, 2003, New York.
35. **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.
36. **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.
37. **J. McCalley**, "Competition in the Universities and Hiring Pools for Engineers: Info-, Nano-, Bio-tech, and the Power/Energy Engineering Position," Invited talk to the Mid-American Energy Conference, October 2, 2002, Davenport, Iowa.
38. **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.
39. **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.
40. **J. McCalley**, "Module Based Courseware Development for Engineering Education," IEEE Web Education Workshop, April 21-22, 2001, Washington DC.
41. **J. McCalley**, "Decision Support for System Operators," a PSerc-sponsored seminar delivered via internet to multiple universities and companies, October 3, 2000.
42. **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.
43. **J. McCalley**, "Probabilistic Risk Assessment in Operations," ISU Electric Power Seminar, March 2, 2000.
44. **J. McCalley**, "Panel Session on Complex Interactive Networks, IEEE PES Summer Meeting, July 19, 2000, Seattle, Washington.
45. **J. McCalley**, "RBSA Results on the Southern System," presented to 20 engineers at the Southern Company, Birmingham, Alabama, January 20, 2000.
46. **J. McCalley**, "PowerLearn: Where to go from here?," ISU Electric Power Seminar, Sept. 2, 1999.
47. **J. McCalley**, "Security Assessment and Future Research," EPRI Grid Operations and Planning Business Area Council Focus Group, June 7, 1999.
48. **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.
49. **J. McCalley**, "Developments in Reliability Assessment for Electric Power Systems," ISU Electric Power Seminar, October 13, 1998.
50. **J. McCalley**, "A New Approach to Reliability Assessment," Presentation to the TRELSS User's Group, Boise, Idaho, September 28, 1998.
51. **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.

52. **J. McCalley**, "Research Program Overview," The Electric Power Research Center (EPRC) Spring Meeting, April, 1998.
53. **J. McCalley**, "A Composite Reliability Index," presentation to engineers at Southern Company Services, April 28, 1998, Birmingham, Alabama.
54. **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.
55. **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.
56. **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.
57. **J. McCalley**, "PowerLearn: Module Based Multimedia Courseware Development for Power System Engineering Education," ISU Electric Power Seminar, December 2, 1997.
58. **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.
59. **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.
60. **J. McCalley**, "Risk-Based Security Assessment for Electric Power Systems," ISU Electric Power Seminar, September 2, 1997.
61. **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.
62. **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.
63. **J. McCalley**, "Risk-Based Security Assessment," Presentation to the Portuguese Regulatory Authority, Lisbon, Portugal, July 16, 1997.
64. **J. McCalley**, "A Modular-Based Instructional Development Approach for Power System Engineering Education," ISU Electric Power Seminar, April 29, 1997.
65. **J. McCalley**, "Multimedia Techniques in Electric Power Research," IEEE Summer Meeting, Denver, CO., July, 1996.
66. **J. McCalley**, "Risk-Based Security Assessment", Western Systems Coordinating Council Reliability Subcommittee, Denver, CO., May 31, 1996.
67. **J. McCalley**, "Risk Based Security Assessment," Electric Power Research Center/Power Affiliates Annual Meeting, Ames, Iowa, May 1, 1996.
68. **J. McCalley**, "Reliability Needs for the Deregulated Electric Power Industry," IEEE Winter Meeting, New York, February, 1996.
69. **J. McCalley**, "Security Assessment Economics and Risk," ISU Electric Power Research Center, Board of Directors Meeting, October 20, 1995.
70. **J. McCalley**, "Competitive Electric Energy Systems: An Overview of Critical Engineering Issues," IEEE Nebraska Section, Lincoln, NE, March 15, 1995.
71. **J. McCalley**, "Reliability and Competitive Electric Energy Systems," University of Nebraska, Department of Electrical Engineering, Lincoln, NE, March 16, 1995.
72. **J. McCalley**, "Competitive Electric Energy Systems: Reliability of Bulk Transmission and Supply," ISU Electric Power Seminar, December 6, 1994.
73. **J. McCalley**, "Engineering Issues for Competitive Electric Energy Systems," Pacific Gas and Electric Company, Computer Services Department, San Francisco, CA, July 28, 1994.
74. **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.
75. **J. McCalley**, "Security Assessment Needs: Looking Ahead," ISU Electric Power Research Center, Board of Directors Meeting, October 20, 1993.

76. **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.
77. **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.
78. **J. McCalley**, "Security Assessment for Open Transmission Systems," ISU Electric Power Seminar, March 23, 1993.
79. **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 Bhava (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." Previously with McLennan Magasanik Associates, Melbourne, Australia, now professor at
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 ?? Ph.D., 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	Swapan 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 8<sup>th</sup> International Conference on Probabilistic Methods Applied to Power Systems (PMAAPS-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 8<sup>th</sup> 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. 2009-2011: 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