JAMES D. MCCALLEY
IOWA STATE UNIVERSITY
Electrical and Computer Engineering Department
Vita
Revised 8-26-2016

1.0 PERSONAL DATA

Name:	James D. McCalley
Address:	111 Coover, Ames Iowa 50011
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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:

2016-	Distinguished Professor
2015-	London Professorship
2008-2015	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	Math & Physics High School Teacher, U.S. Peace Corps, Sierra Leone, West Africa
1978-1981	Construction Inspector, Atlanta Gas-Light Company, Atlanta, GA

4.0 HONORS AND AWARDS

2016	Anson Marston Distinguished Professor
2016	Engineering Student Council's Faculty Member of the Year Award
2015	London Professor of Power Systems Engineering
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

- 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.
- 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.
- EE 458, *Economic Systems for Electric Power Planning* (2004 F, 2005F, 2006F, 2008S, 2010S, 2011F, 2014F). This course was developed with Professor Ratnesh Kumar of the ISU Department of Electrical and Computer Engineering and Professor Oscar Volij of ISU Department of Economics. Additional development occurred later via the influence of Dr. Leigh Tesfatsion of the ISU Department of Economics and via Dr. Yonghong Chen, chief market engineer for the Midcontinent Independent System Operator (MISO). Dr. McCalley has taught all of this course twice and at least half of it in all other offerings listed above. This popular course provides undergraduates with fundamentals of optimization, microeconomics, and electricity markets.
- 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.
- 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.
- 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.
- EE 552: *Power system planning* (2008F, 2010F, 2013S). This course was developed entirely by J. McCalley and in 208 was taught to 15 on-campus students and 10 off-campus students. Dr. McCalley integrated 9 lectures from industry personnel into this course. He has taught it twice since with similar numbers of on-campus and off-campus students. This course incorporates results of one of Dr. McCalley's most significant research areas.
- EE 459/559: *Electromechanical wind energy conversion and grid integration* (2009S, 2012S, 2013S, 2014S). This course was jointly developed with Professors Ajjarapu and Aliprantis. Approximately 1/3 of this course was developed by Dr. McCalley the first time it was taught. It was delivered to 13 on-campus and 11 off-campus students. Dr. McCalley taught all of this course in Spring 2012, Spring 2013, and Spring 2014. During these last three offerings, Dr. McCalley has substantially evolved this course so that it is a mainstay of the ECpE Electric Power and Energy Systems undergraduate and graduate level curricula.
- ENGR 340: Introduction to Wind Energy: System Design and Delivery (2011F, 2012F, 2013F, 2014F). This course was jointly developed with Professors Frank Peters (IMSE) and Sri Sritharan (CCEE). Approximately 1/3 of this course was developed by Dr. McCalley.
- WESEP 501: Wind energy resources (Fall 2012). This course was jointly developed by 7 faculty, led by Professor Gene Takle. Approximately 1/10 of this course was develop by Dr. McCalley.
- WESEP 502: Wind energy systems and delivery (Spring 2013). This course was jointly developed by 7 faculty, led by Professor John Jackman. Approximately 1/5 of this course was developed by Dr. McCalley. A laboratory component was developed by Nick David under supervision of Dr. McCalley.
- WESEP 594: Wind Energy Real-Time Research Collaborative (Fall 2012, Spring 2013, Fall 2013, Spring 2014, Fall 2014, Spring 2015, Fall 2015). This one-credit seminar course, organized by Dr.

McCalley, is run every semester. All students in the WESEP Ph.D. program are required to take this course every semester.

- WESEP 512: Wind Energy System Deployment (Fall 2015). This course was developed by Dr. McCalley. A laboratory component was developed by Nick David under supervision of Dr. McCalley.

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)
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, 2015S)
EE 491/492 Senior Design Projects (1997F-1998S, 1998F-1999S, 2003F-2004S (2 of them), 2004S-2004F, 2005S-2005F, 2006S-2006F, 2009S-2010F, 2011S-2011F, 2011F-2012S, 2012F-2013S, 2013F-2014S)
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 553 Steady-State Analysis (1993F, 1994F, 2009F, 2011S, 2012F)
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). In 2008, Dr. McCalley as PI teamed with five colleagues to win a $2M NSF EFRI award to investigate energy and transportation system interdependencies. In 2011, Dr. McCalley as PI teamed with 20 colleagues to win a $3.1M NSF IGERT award to develop a PhD program in Wind Energy Science, Engineering and Policy. Since 2011, Dr. McCalley has continued his work on security assessment, defense systems, energy/transportation interdependencies, long-term planning, and wind energy. He has recently served as PI with 5 co-PIs to submit a pre-proposal to the NSF for an Engineering Research Center.

6.0 GRANTS AND CONTRACTS

Awarded

1. **J. McCalley**, "The Midwest Regional Partnership and Interconnection Seams Study," subcontractor on proposal to DOE Grid Modernization Call, led by National Renewable Energy Lab, $180k, ISU share, 5/15/16-12/31/17.
2. **J. McCalley**, "Opportunities and Benefits for Deploying VSC-Based HVDC," ISU Electric Power Research Center, $86k, 8/15-8/17.
3. K. Hedman, V. Vittal, and **J. McCalley**, $220k ($70k ISU share), "Risk Assessment of Constraint Relaxation Practices," Power Systems Engineering Research Center (PSERC), $75k, 8/31/14-8/31/16.

4. **J. McCalley**, I. Dobson, V. Ajjarapu, and S. Khaitan, "New Network Designs and Control Strategies: Defending Against Extreme Contingencies," Southern California Edison Company, $425k, 6/1/2014-6/1/2016.
5. **J. McCalley** and B. Hobbs, "Transmission planning under uncertainty," Bonneville Power Administration, $513k ($260k ISU share), 10/1/22014-10/1/2107.
6. **J. McCalley**, "Co-Optimization of Transmission with other Resources – Demonstration," $220k ($44k ISU share), National Association of Regulatory Utility Commissioners via subcontract to Energy Exemplar, 9/1/14-2/12/15.
7. C. Harding and **J. McCalley**, "Leveraging a Geographic Information System in High Wind Penetration Transmission Design," ISU Electric Power Research Center, $70k, 8/1/2014-8/1/2016.
8. **J. McCalley**, S. Khaitan, "Time Domain Transient Stability Simulation of Large Interconnected Power Systems," Lawrence Livermore National Laboratory, $50k, 2/1/2014-2/1/2015.
9. **J. McCalley**, V. Ajjarapu, I. Dobson, C. Christy, S. Khaitan "The MidAmerica Regional Microgrid Education and Training (MARMET) Consortium," subcontract to the Missouri University of Science and Technology (MST) (a $4.4M award made to MST, M. Crow principal investigator, by U.S. Department of Energy), $1.05M (ISU share), Oct 1, 2013-September 30, 2018.
10. K. Hedman, V. Vittal, and **J. McCalley,** "Constraint Relaxations: Analyzing the Impacts on System Reliability, Dynamics, and Markets," Power Systems Engineering Research Center, $220k ($70k, ISU share), 9/1/13-8/31/15.
11. **J. McCalley**, "Co-optimization of transmission and other supply resources," National Association of Regulatory Utility Commissioners, on behalf of the Eastern Interconnection States Planning Consortium, $30k, 2/15-13-8/30/13.
12. **J. McCalley**, "Time Domain Transient Stability Simulation of Large Interconnected Power Systems," Lawrence Livermore National Laboratory, $50k, 8/1/12-6/30/13.
13. **J. McCalley** (PI), I. Dobson, and V. Ajjarapu, "Transmission planning and defense plans," ISU Electric Power Research Center, $60k, August 2012-August 2014.
14. **J. McCalley** (PI), V. Krishnan, "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.
15. **J. McCalley (PI)**, P. Sarkar, J. Jackman, E. Takle, "Interdisciplinary Graduate Education, Research, and Training: Wind Energy Science, Engineering, and Policy," National Science Foundation, $3.1M, September 2011-August 2016.
16. **J. McCalley** (PI), "Wind farm to backbone transmission," ISU Electric Power Research Center, $60k, August 2011-August 2013.
17. 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 ($200k ISU share), November 2010-July 2012.
18. **J. McCalley (PI),** W. Jewell, M. Illic, C. Demarco, J. Momoh, "Broader Analysis of Smart Grid Issues," Department of Energy, $170k, ($30k ISU share), March 2011-December 2011.
19. 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.
20. **J. McCalley** (PI), D. Aliprantis, "Design of a national transmission overlay," US Department of Energy, $190k, March 2010-March 2012.
21. 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.
22. 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 ($250 ISU share), 12/15/10-12/15/12.
23. **J. McCalley (PI),** "Analysis of Very Low Frequency Oscillations," ISU Electric Power Research Center (EPRC), $50k, 8/1/09-7/31/10.
24. **J. McCalley (PI)**, "Development of an undergraduate minor in wind energy," $65k, 8/10/10-8/10/11, Department of Energy.
25. 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

26. **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," $2.0M, 9/15/08-9/14/14.
27. S. Ryan, J. Min, and **J. McCalley, "**Generation Expansion Planning: Portfolio Optimization," ISU Electric Power Research Center, $100k, 9/1/08-8/31/10.
28. **J. McCalley (PI)**, C. Singh, "Special Protection Schemes: Limitations, Risks, and Management," Power System Engineering Research Center, $94,925 (ISU share), 6/1/08-9/1/10.
29. **J. McCalley (PI)**, "Risk-based security assessment and decision," Department of Energy, through CERTS/NSF, $240k, 9/1/08-9/1/2012.
30. **J. McCalley (PI), "**Efficient processing of system scenarios in statistical studies for operational and investment planning studies," ISU Electric Power Research Center, $52,033, 1/1/08-8/1/09.
31. **J. McCalley (PI),** W. Meeker, "Power Transformer Health Assessment," MidAmerican Energy Company, $113,000, 3/1/2007-6/30/2008.
32. 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 ($90k ISU share).
33. 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.
34. **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.
35. **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.
36. **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.
37. S. Talukdar (PI), I. Dobson, and **J. McCalley**, "Risk of Cascading Outages," Power Systems Engineering Research Center (PSerc), $180,000, ($60k McCalley share)6/05-6/07.
38. S. Meliopoulis, I. Hiskens, V. Vittal, V. Ajjarapu, **J. McCalley**, "Optimal Allocation of Static and Dynamic VAR Resources," $230k, 6/1/05-6/1/07.
39. **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.
40. R. Thomas, P. Sauer, V. Vittal, **J. McCalley**, B. Lesieutre, J. Thorpe, T. Overbye, A. Bose, and M. Venkatasubramianian, 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).
41. **J. McCalley (PI),** "Power Engineering Educational Resources in North America," IEEE Power Engineering Society Power Engineering Education Committee, $5000, 1/04-8/04.
42. 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.
43. **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.
44. **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.
45. **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.
46. **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.
47. **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.

48. **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.
49. **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.
50. **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.
51. **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).
52. V. Vittal (PI), S. Venkata, **J. McCalley**, G. Sheble, V. Ajjarapu, 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%.
53. **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.
54. **J. McCalley** (PI), V. Ajjarapu, G. Sheble, V. Vittal, and S. Venkata, National Science Foundation, $115,000, "Module Based Multimedia Courseware Development foor Power System Education," May 1, 1997-May 1, 2000. This proposal was submitted jointly with faculty at Virginia Tech.
55. **J. McCalley** (PI), V. Ajjarapu, 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.
56. **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.
57. **J. McCalley** (PI), The Electric Power Research Institute (EPRI), $120,000, "Power System Security Assessment Using Risk," September 1, 1997 – September 1, 1999.
58. **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.
59. **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.
60. **J. McCalley** (PI), V. Ajjarapu, 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.
61. **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.
62. **J. McCalley** (PI), Pacific Gas and Electric Company, $128,000, "Rapid Determination of Available Transmission Capacity," October 10, 1994 to December 31, 1996.
63. **J. McCalley** (PI), The Iowa State University Electric Power Research Center, $23,966, "Probabilistic Dynamic Security Assessment," June 1, 1994 to June 1, 1995.
64. **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.

65. **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. V. Ajjarapu, J. Wang, and **J. McCalley**, "Development of a Large-Scale Realistic Open Access Test System for OPF studies," US Department of Energy, ARPA-E, $1.65M, 3/1/16-3/1/18.
2. **J. McCalley**, R. Brown, J. Bushnell, B. Hobbs, and J. Tester, "Engineering Research Center (ERC) for Energy System Integration and Infrastructure Design (ESID)," US National Science Foundation, pre-proposal, 1/1//17-12/31/27.

7.0 PUBLICATIONS

As of January 18, 2016, Publish or Perish (based on GoogleScholar) indicates 5380 citations of articles where Dr. McCalley was author or co-author, with an H-index of 37. 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" "S McCalley" "RW McCalley" "JW McCalley" "B McCalley" "P McCalley" "G McCalley" "W McCalley" "WW McCalley" "JR McCalley" "H McCalley" "RB McCalley" "BW McCalley" "D 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 8th International Conference on Probabilistic Methods Applied to Power Systems, September 2004, Ames Iowa.

Books *Asterisk indicates the co-author was under the supervision of Dr. McCalley

1. S. Khaitan, and **J. McCalley** and C. C. Liu, *Cyber Physical Systems Approach to Smart Grid Power Systems*. Power System Series, Springer, Inc., Germany, 2014.
2. **J. McCalley** and *M. Ni, "Operational Security-Related Decision-Making in Electric Power Systems," in preparation.

Book chapters *Asterisk indicates the co-author was under the supervision of Dr. McCalley

1. Y. Gu, J. Bakke and **J. McCalley**, "Day-ahead and real-time markets simulation methodology on hydro storage," in *Energy Storage for Smart Grids*, ISBN 978-0-12-410491-4, 2015, Elsevier.
2. S. Khaitan and **J. McCalley**, "Parallelization and Load Balancing Techniques for HPC", *Encyclopedia of Business Analytics and Optimization (EBAO)*, IGI Global 2013.
3. S. Khaitan and **J. McCalley**, "Cyber Physical Systems: A Review", *Encyclopedia of Business Analytics and Optimization (EBAO)*, IGI Global 2013.
4. S. Khaitan and **J. McCalley**, "MASTER: A JAVA Based Multithreaded Work-Stealing Technique for Parallel Contingency Analysis in Power Systems", *High Performance Computing, Grids and Clouds*, Published by IOS Press, 2013.
5. S. Khaitan and **J. McCalley**, "Dynamic Load Balancing and Scheduling for Parallel Power System Dynamic Contingency Analysis" *High Performance Computing in Power and Energy Systems*, Springer-Verlag Inc., 2012.

6. S. Khaitan and **J. McCalley**, "High Performance Computing for Power System Dynamic Simulation" *High Performance Computing in Power and Energy Systems*, Springer-Verlag Inc., 2012.
7. *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.
8. **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.
9. **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 *Asterisk indicates the co-author was under the supervision of Dr. McCalley

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1. S. Khaitan and **J. McCalley**, "IMPACT: A Constraint-Aware Scheduling and Load-Balancing Technique for Parallel Contingency Analysis", under review, *IEEE Transactions on Power Systems*.
2. *D. Mejia-Giraldo, **James McCalley**, "Balancing robustness and cost in power system capacity expansion planning," Under review by IEEE Transactions on Power Systems.

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 Janiero, 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 *Asterisk indicates the co-author was under the supervision of Dr. McCalley

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.
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97. *Y. Dai, **J. McCalley**, and V. Vittal, "Annual Risk Assessment for Thermal Overload," Proceedings of the 1998 American Power Conference , Chicago, Illinios, April, 1998.
98. *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.
99. *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.
100. 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.
101. *N. Yang, **J. McCalley**, "Small Signal Stability and Ω Analysis for the Unvertanties in Static Load Modeling," Proceedings of the 1997 North American Power Symposium , Laramie, Wyoming, Oct., 1997.
102. *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.
103. *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.
104. 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.

105. *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.
106. **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.
107. *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.
108. *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.
109. *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.
110. *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.
111. *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.
112. *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.
113. *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.
114. *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.
115. 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.
116. *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.
117. *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.
118. 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.
119. 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.
120. **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.
121. *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.
122. **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.
123. **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.

124. **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.
125. Z. Qu, J. Dorsey, J. Bond, and **J. McCalley**, "Design of a Continuous Control for Synchronous Machines," Proceedings of American Control Conference, June 1992.
126. 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**, "Hybrid energy conversion systems: impact on the integrity of energy delivery," presented at the 2nd International Skoltech Conference, "Shaping research in integrated gas-, heat- and electric- energy infrastructures," Skoltech University, Moscow, Russia, May 30-31, 2016.
2. **J. McCalley**, "Wind energy: a mature electric resource," presented to the Ames Golden-K Kiwanis Club, March 31, 2016, Ames, Iowa.
3. **J. McCalley, "**Wind, solar and natural gas: issues for high wind energy penetration in electric power grids," Keynote talk, WINDFARMS 2015, International Colloquium on large Wind-Power Plants: Interaction, Control & Integration, Leuven, Belgium, July 9, 2015.
4. **J. McCalley,** "Integrated Energy Systems: Co-optimization and Design Issues," presented in the panel session "Energy Systems Integration," IEEE Power and Energy Society General Meeting, July 28, 2015.
5. **J. McCalley**, "Wind Energy Research and Education," Tutorial delivered at the Spring Industry-Advisory Board Meeting of the Power Systems Engineering Research Center (PSERC), May 20, 2015, Ames Iowa.
6. **J. McCalley**, "Co-optimization of transmission and other resources," delivered at the EUCI Post-conference workshop on "Deriving Value from Modeling Generation and Transmission Co-optimization under Dynamic Conditions," a short-course with R. Johnson and B. Hobbs, Atlanta, Georgia, May 15, 2015.
7. **J. McCalley**, "Co-optimization of transmission and other resources, with impedances," delivered at the EUCI Post-conference workshop on "Deriving Value from Modeling Generation and Transmission Co-optimization under Dynamic Conditions," a short-course with R. Johnson and B. Hobbs, Atlanta, Georgia, May 15, 2015.
8. **J. McCalley**, "Co-optimization to address electric/natural gas investment," delivered at the EUCI Post-conference workshop on "Deriving Value from Modeling Generation and Transmission Co-optimization under Dynamic Conditions," a short-course with R. Johnson and B. Hobbs, Atlanta, Georgia, May 15, 2015.
9. **J. McCalley**, "Co-optimization under uncertainty," delivered at the EUCI Post-conference workshop on "Deriving Value from Modeling Generation and Transmission Co-optimization under Dynamic Conditions," a short-course with R. Johnson and B. Hobbs, Atlanta, Georgia, May 15, 2015.
10. **J. McCalley** and B. Hobbs, "Co-Optimization and Anticipative Planning Methods for Bulk Transmission and Resource Planning Under Long-Run Uncertainties," presentation given at the Bonneville Power Administration (BPA) Summit on Technology Innovation, January 28, 2015.
11. **J. McCalley, "**Wind, gas, DG: what should we do?" Electric Power and Energy Systems Seminar, Electrical and Computer Engineering Department, Iowa State University, September 23, 2014.
12. **J. McCalley**, "Energy Infrastructure Design at the Continental Level," Panel Session on Energy Systems Integration, Research Challenges and Opportunities," IEEE Power and Energy Society General Meeting, July 31, 2014.

13. **J. McCalley, "**Design of a high capacity interregional electric transmission grid," Presentation to Engineers at American Electric Power Company, Columbus, Ohio, June 26, 2014.
14. **J. McCalley, "**Wind Energy: Why It Will Out-Perform Natural Gas as Our Nation's Primary Energy Resource," Presentation to Ames Golden-K Kiwanis Club, June 5, 2014.
15. **J. McCalley, "**Wind Energy: Why It Will Out-Perform Natural Gas as Our Nation's Primary Energy Resource: A Basis for a Ph.D. Degree Program in Wind Energy Science, Engineering & Policy" Presentation at Rose-Hulman Institute of Technology, April 9, 2014.
16. **J. McCalley, "**Design of high capacity interregional electric transmission," Departmental Seminar, Electrical and Computer Engineering Department, Iowa State University, March 31, 2014
17. **J. McCalley,** "New approaches to balancing security and economy: risk-based security-constrained economic dispatch (RB-SCED)," PSERC Webinar, January 21, 2014.
18. **J. McCalley**, "Cognitive approaches: how I "do" research," ISU ECpE Electric Power and Energy Systems Seminar, October 15, 2013.
19. **J. McCalley**, "Storage Technologies: Modeling for Energy & Ancillary Services Markets," Utility-Variable Generation Integration Group, Portland Oregon, Fall Technical Workshop, October 31, 2013.
20. **J. McCalley**, "High Wind Penetrations: Ancillary Services and Transmission," Energy 2013, Iowa Association of Municipal Utilities, Ankeny, Iowa, October 2, 2013.
21. **J. McCalley**, "A US Interregional High-Capacity Transmission Overlay," Super Session on Transmission System Efficiency and Reliability Improvements, IEEE Power Engineering Society General Meeting, Vancouver, July 25, 2013.
22. **J. McCalley**, "Renewable-motivated multi-regional energy system planning," Panel Session on Future Power System Planning Challenges, IEEE Power Engineering Society General Meeting, Vancouver, July 24, 2013.
23. **J. McCalley**, "Storage Technologies: Modeling for Energy & Ancillary Services Markets," Utility-Variable Generation Integration Group, Fall Technical Workshop, October 31, 2013.
24. **J. McCalley**, "A national transmission overlay," PSERC Future Grid Workshop, UW-Madison, May 29, 2013.
25. **J. McCalley**, "National Energy and Transportation Infrastructure Design," Lawrence Livermore National Laboratory, April 22, 2013.
26. **J. McCalley,** "Storage technologies and wind in electricity markets," ISU Wind Energy Initiative, April 19, 2013.
27. **J. McCalley**, "Approaches for long-term electric power system planning," at the Grid Transformation Workshop, sponsored by the Bonneville Power Administration, Portland OR, March 20, 2013.
28. **J. McCalley**, "Performance and Economic Evaluation of Storage Technologies," US Department of Energy Headquarters," Washington D.C., March 12, 2013.
29. **J. McCalley**, "Gas/electric interdependencies – the long-term view," Panel session on *Gas/electric interface*, at the *Three Interconnections Meeting: Facing the Future with Interconnection-wide Planning*, Washington D.C., February 7, 2013.
30. **J. McCalley**, "A course in planning future energy systems," invited presentation on a panel session on curriculum development: transmission expansion planning for systems with renewable energy resources, 2012 General Meeting of the IEEE Power and Energy Society, July 23, 2012, San Diego.
31. **J. McCalley**, "21st Century National Energy & Transportation Infrastructures: Long-Term Planning for Sustainability, Cost & Resilience," National Science Foundation Workshop on Resilient and Sustainable Infrastructures, November 27, 2012.
32. **J. McCalley**, "Grid Enablers of Sustainable Energy Systems: Conclusions and Research Directions," PSERC Future Grid Initiative Webinar, November 24, 2012.
33. **J. McCalley**, "Co-optimized analysis & design of electric & natural gas infrastructures," National Association for Regulatory Utility Commissioners (NARUC) Summer Committee Meeting, *Panel Discussion for: Gas – Electric Interdependency Studies: How Do We Do It*? July 22, 2012, Portland Oregon.
34. **J. McCalley**, "System Protection Schemes: Limitations, Risks, and Management," presentation to the 4th Seminar on Electric Protection, Vina del Mar, Chile, July 19, 2012.

35. **J. McCalley**, "System Protection Schemes: Limitations, Risks, and Management," presentation to the Pontificia Universidad Católica De Valparaíso, Conecta Engineers, SPS-SIPS Owners, Santiago, Chile, July 18, 2012.
36. **J. McCalley**, "Operations and Planning," PSERC Future Grid Forum, Wash DC, June 27, 2012.
37. **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, 2012.
38. **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 3, 2012.
39. **J. McCalley,** "Co-optimized design of electric & natural gas infrastructures: a long-term necessity," a panel session at the Eastern Interconnection States Planning Consortium," Atlanta, Georgia, June 1, 2012.
40. **J. McCalley,** "A national transmission overlay design," Utility Wind Integration Group Conference, San Diego, California, May 7, 2012.
41. **J. McCalley**, "Cooptimization in power systems planning; What, why, and how," The Eastern Interconnection States' Planning Council: Co-optimization of Transmission Conference, April 11, 2012, Atlanta, Georgia.
42. **J. McCalley**, "Transmission Design at the National Level: Benefits, Risks and Possible Paths Forward," PSERC Future Grid Initiative Webinar, January 24, 2012.
43. **J. McCalley**, "Frequency Performance and Overloads Under High Variable Resource Penetration," Presentation to Engineers at Southern California Edison Company, Los Angeles, CA, January 14, 2012.
44. **J. McCalley,** "Seamless Power System Analytics: Background and Issue Formulation," Grid Transformation Workshop, sponsored by the Electric Power Research Institute, November 1-2, 2011, Argonne National Laboratory, Chicago, Ill.
45. **J. McCalley,** "21st Century National Energy and Transportation Infrastructures: Long-term Planning for Cost, Sustainability, and Resilience," NSF Workshop on Engineering and Social Response to the Energy-Climate Nexus, July 7, 2011.
46. **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.
47. **J. McCalley**, "Wind and energy," Ames Lion's Club, December 17, 2009, Ames, Iowa.
48. **J. McCalley**, 21st Century National Energy and Transportation Infrastructures: Balancing Sustainability, Costs, & Resiliency (NETSCORE-21)," NSF-Virginia Tech RESIN Workshop, December 7, 2009.
49. **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.
50. **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.
51. **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://www.youtube.com/user/NETSCORE21.
52. **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.
53. **J. McCalley**, "US Wind Energy Growth: Issues for 20% by 2030," Osborn Research Group, January 12, 2009, Iowa State University.
54. **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.
55. **J. McCalley,** "Risk-based security assessment and decision," OE Visualization and Controls Peer Review, 21/22 October 2008, Washington, DC.

56. **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.
57. **J. McCalley,** W. Meeker, Y. Hong, & Z. Gai, "Power Transformer Health Assessment & Life Prediction," presentation to MidAmerican Energy Engineers, Davenport, Iowa, June 5, 2008.
58. **J. McCalley,** "Risk-Based Security Assessment and Decision," presentation to CERTS/DOE Transmission Reliability Program, Richland, WA, May 21, 2008.
59. **J. McCalley**, "Operational Defense of Power System Cascading Outages," Panel on Cascading Failures & Blackouts, April 23, 2008, IEEE PES T&D Conference and Exposition.
60. **J. McCalley**, "Grid Management: New Methods and Tools," invited presentation to the California ISO, Folsom California, August 21, 2007.
61. **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.
62. **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.
63. **J. McCalley,** "Auto-Steered Information-Decision Processes for Electric System Asset Management," departmental seminar, Iowa State University, January 17, 2007.
64. **J. McCalley**, "Decision models for Bulk Energy Transportation Networks," departmental seminar, Iowa State University, November 10, 2006.
65. **J. McCalley**, "Decision models for Bulk Energy Transportation Networks," invited lecture, Arizona State University, October 6, 2006.
66. 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.
67. **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.
68. **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.
69. **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.
70. **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.
71. **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.
72. **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.
73. **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.
74. **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.
75. **J. McCalley**, "Maintenance Scheduling Optimization for Transmission Equipment," invited workshop talk at the EPRI Workshop on Asset Management, April 10, 2003, New York.
76. **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.
77. **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.
78. **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.

79. **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.
80. **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.
81. **J. McCalley**, "Module Based Courseware Development for Engineering Education," IEEE Web Education Workshop, April 21-22, 2001, Washington DC.
82. **J. McCalley**, "Decision Support for System Operators," a PSerc-sponsored seminar delivered via internet to multiple universities and companies, October 3, 2000.
83. **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.
84. **J. McCalley**, "Probabilistic Risk Assessment in Operations," ISU Electric Power Seminar, March 2, 2000.
85. **J. McCalley,** "Panel Session on Complex Interactive Networks, IEEE PES Summer Meeting, July 19, 2000, Seattle, Washington.
86. **J. McCalley**, "RBSA Results on the Southern System," presented to 20 engineers at the Southern Company, Birmingham, Alabama, January 20, 2000.
87. **J. McCalley,** "PowerLearn: Where to go from here?," ISU Electric Power Seminar, Sept. 2, 1999.
88. **J. McCalley,** "Security Assessment and Future Research," EPRI Grid Operations and Planning Business Area Council Focus Group, June 7, 1999.
89. **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.
90. **J. McCalley**, "Developments in Reliability Assessment for Electric Power Systems," ISU Electric Power Seminar, October 13, 1998.
91. **J. McCalley**, "A New Approach to Reliability Assessment," Presentation to the TRELSS User's Group, Boise, Idaho, September 28, 1998.
92. **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.
93. **J. McCalley**, "Research Program Overview," The Electric Power Research Center (EPRC) Spring Meeting, April, 1998.
94. **J. McCalley**, "A Composite Reliability Index," presentation to engineers at Southern Company Services, April 28, 1998, Birmingham, Alabama.
95. **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.
96. **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.
97. **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.
98. **J. McCalley**, "PowerLearn: Module Based Multimedia Courseware Development for Power System Engineering Education," ISU Electric Power Seminar, December 2, 1997.
99. **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.
100. **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.
101. **J. McCalley**, "Risk-Based Security Assessment for Electric Power Systems," ISU Electric Power Seminar, September 2, 1997.

102. **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.
103. **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.
104. **J. McCalley**, “Risk-Based Security Assessment,” Presentation to the Portuguese Regulatory Authority, Lisbon, Portugal, July 16, 1997.
105. **J. McCalley**, “A Modular-Based Instructional Development Approach for Power System Engineering Education,” ISU Electric Power Seminar, April 29, 1997.
106. **J. McCalley**, “Multimedia Techniques in Electric Power Research," IEEE Summer Meeting, Denver, CO., July, 1996.
107. **J. McCalley**, “Risk-Based Security Assessment”, Western Systems Coordinating Council Reliability Subcommittee, Denver, CO., May 31, 1996.
108. **J. McCalley**, “Risk Based Security Assessment," Electric Power Research Center/Power Affiliates Annual Meeting, Ames, Iowa, May 1, 1996.
109. **J. McCalley**, “Reliability Needs for the Deregulated Electric Power Industry," IEEE Winter Meeting, New York, February, 1996.
110. **J. McCalley**, “Security Assessment Economics and Risk," ISU Electric Power Research Center, Board of Directors Meeting, October 20, 1995.
111. **J. McCalley**, “Competitive Electric Energy Systems: An Overview of Critical Engineering Issues," IEEE Nebraska Section, Lincoln, NE, March 15, 1995.
112. **J. McCalley**, “Reliability and Competitive Electric Energy Systems," University of Nebraska, Department of Electrical Engineering,Lincoln, NE, March 16, 1995.
113. **J. McCalley**, “Competitive Electric Energy Systems: Reliability of Bulk Transmission and Supply," ISU Electric Power Seminar, December 6, 1994.
114. **J. McCalley**, “Engineering Issues for Competitive Electric Energy Systems," Pacific Gas and Electric Company, Computer Services Department, San Francisco, CA, July 28, 1994.
115. **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.
116. **J. McCalley**, “Security Assessment Needs: Looking Ahead," ISU Electric Power Research Center, Board of Directors Meeting, October 20, 1993.
117. **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.
118. **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.
119. **J. McCalley**, “Security Assessment for Open Transmission Systems," ISU Electric Power Seminar, March 23, 1993.
120. **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. Pat Quinn (EE), “HVDC Transmission Systems,” 2014.
2. James Slegers (EE), “Research to Backbone Transmission Design for High Wind Penetration,” 2013
3. Qi Qihui (EE), “Use of the National Energy Modeling System in Analysis of Emission Cosntraints” 2013.
4. Lizbeth Gonzalez Marciaga (EE), “Hydrogen as a storage mechanism for spilled wind energy,” 2013
5. Jose Villarreal (EE), “Use of Markal-Times in Analysis of Large-Scale Energy Systems,” 2011
6. Hugo Villegas (EE), “Electromechanical Oscillations in Hydro-Dominant Power Systems: Application to Columbia,” 2011
7. Muhammad Riaz (EE), “Compressed air storage modeling for wind farms,” 2010.
8. Umer Raja Imtiaz (EE), “Battery Storage in Power Systems,” 2010.

9. Seshendra Vasireddy (EE), 2009, “Decision Paths for US Energy Investment.”
10. Shuyang Zhang (EE), 2009 “Power balancing issues with for systems with high wind penetration levels.”
11. Zhi Gao (EE), 2009, “Life prediction of power transformers.”
12. Eknath Vittal (EE), 2008, “Steady-state and dynamic analysis of power systems with high wind penetration.” (Co-supervised with V. Ajjarapu)
13. Venkat Krishnan (EE), 2007, “Planning Controllers in HV Electric Power Systems.”
14. Abdul Kadar Adarte (EE), 2006, “Online Computation of System Operating Limits with respect to Thermal Constraints”
15. Greg Woodward, 2005, “Planning Electric High Voltage Transmission in MISO”
16. Sreerama Yeddenapudi (EE), 2005, “Reliability Evaluation of Distribution Systems for Maintenance Resource Allocation”
17. Yuan Li (EE), 2005, “Risk-based distribution maintenance and optimization.”
18. Ana Quelhas (EE), 2001, “Risk-based Unit Commitment.”
19. Chee-Wooi Ten (EE), 2001, “Visualization in Risk-Based Security Assessment.”
20. Xuehua Chen (EE), 2001, “Preventive/Corrective actions as formal decision making paradigms.”
21. Vijayanand Vishwanathan (EE), 2001, “Multiagent Negotiations for Electric Power Systems” **student received University Research Excellence Award.**
22. Vijaya Sudhakar (EE), 2000, “A Parallel Processing Approach to Security Assessment.”
23. Wei Qin (EE), 2000, Risk-based security and maintenance scheduling for transmission companies.”
24. Venkat Thekammadom (EE), 2000, “Marginal Value of Transmission Services Based on Risk Assessment of System Security.”
25. Jinhui Chen (EE), 2000, “Comparison of Deterministic and Probabilistic Security Assessment.”
26. Jun Zhang (EE), 1999, “A Bayesian Approach to Transmission Line Thermal Overload Assessment.”
27. Madura Bhave (EE), 1999, “Module Development for Engineering Education using Multimedia, Simulation, and Cooperative Learning.”
28. Sanyi Zhao (Statistics), 1998, Reliablity Assessment of Special Protection Schemes,
29. Ning Yang (EE), 1998, “Robust Control Design for TCSC.”
30. Qinghua Liu (EE), 1997, “Modal Analysis of TCSC Effectiveness.”
31. Q. Zhou (Computer Science), 1996, “Feature Selection for Electrical Power System Security Assessment Using Genetic Algorithm and Neural Networks.”
32. Blaine Krause (EE), 1995, “Rapid Assessment of Stability Limited Available Transmission Capacity for Transaction Selection.”
33. Manjula Kommareddy (EE), 1994, “Prony Analysis: A Tool for Modal Identification in Power Systems.”

Ph.D. Degrees Awarded

1. Guangyuan Zhang (EE), 2015, “New ancillary service market design for improving MW-frequency control performance.” Employed by the New York Independent System Operator.
2. Oluwaseyi Olatujoye (EE), 2015, “Long-term cooptimized planning with uncertainty.”
3. Yifan Li (EE), 2014, “Transmission design and optimization at the national level,” employed at the MidContinent Independent System Operator, St. Paul MN.
4. Lei Tang (EE), 2014, “Next generation on-line dynamic security assessment,” employed at NextEra Energy Services, Juno Beach, Florida.
5. Qin Wang (EE), 2013, “Risk-based security constrained economic dispatch.” **Student received University Research Excellence Award**, employed at the National Renewable Energy Laboratory.
6. Diego A. Mejia (EE), 2013, “Infrastructure planning optimization algorithms.” **Student received University Research Excellence Award**, employed as an assistant professor at Universidad de Antioquia, Medellin, Colombia.
7. Trishna Das (EE), 2013, “Storage and wind energy.”
8. Y. Gu (EE), 2012, “Tools for Transmission Planning, Wind and Storage,” now employed as a senior transmission analyst at NRG Energy in Princeton, NJ.
9. C. Fu (EE), 2011, “Numerical integration methods for fast simulation,” employed as a senior transmission engineer at Dynegy, Houston, Texas.
10. E. Ibanez (EE), 2011, “National Energy and Transportation Modeling,” employed at National Renewable Energy Laboratory, Golden Colorado.

11. V. Krishnan (EE), 2010, "Efficient sampling for power system operational studies," employed at National Renewable Energy Laboratory, Golden Colorado.
12. Yuan Li (EE), 2008, "Benders decomposition for integrated decisions in operations & planning," Employed by Pacific Gas & Electric Company, San Francisco, California.
13. Siddhartha Khaitan (EE), 2008, "Defense against cascading blackouts." **student received University Research Excellence Award**, Employed as Research Professor at Iowa State University, Ames, Iowa.
14. Fei Xiao (EE), 2008, On-line Risk Based Security Assessment for Operational Decision-Making." Employed at New York ISO, Schenectady, New York.
15. Haifeng Liu (EE), 2007, "Reactive Power Planning for Reconfigurable Power Systems." Employed at California ISO, Folsom, California.
16. Esteban Gil (EE), 2007, "Reliability of Integrated Energy Systems." Previously with McLennan Magasanik Associates, Melbourne, Austrailia, now assistant professor at Universidad Técnica Federico Santa María, Chile.
17. 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.
18. Yong Jiang (EE), 2006, "Condition-Based Failure Rate Estimation and Optimal Maintenance Scheduling for Electrical Transmission System," Employed at Mid-continent ISO, Carmel, Indiana.
19. 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., Houston TX.
20. Zhong, Zhang (EE), 2003, "Distributed Decision-Making in Electric Power System Maintenance Scheduling using Multi-Agent Systems," Employed at Mid-continent ISO, Carmel, Indiana.
21. Kun Zhu (EE), 2003, "Emergency response system for electric power systems," Employed at Mid-continent ISO, Carmel, Indiana.
22. Vincent Van Acker (EE), 2001, "High Dimensional Risk Assessment for Security in Competitive Electric Power Systems," Employed at AREVA T&D, Seattle, WA.
23. 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.
24. Y. Dai (EE), 1999, "Annual Risk Assessment for Overload and Voltage Insecurity," Employed at ABB-Bailey, Houston, TX.
25. 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.
26. Guozhong 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.
27. 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.
28. 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. Abhinav Venkatraman, "Use of GIS in Transmission Planning Under Uncertainty," co-advising with Chris Harding of Department of Geological and Atmospheric Sciences

Ph.D. Students in Progress

1. 2009-present: Mei Li, "Reconfigurable transmission networks."
2. 2010-present, S. Lemos Cano, "Gas-Electric Co-optimization"
3. 2013-present, Armando Figueroa Acevedo, "Interregional Transmission"
4. 2013-present, Xian Guo, "Constraint relaxation"
5. 2014-present: Shika Sharma, "Impact of Distributed Resources and Microgrids on Cost, Sustainability, and Reliability of Energy Supply," co-advising with Ian Dobson.
6. 2015-present: Qian Zhang, "Defense system design using HVDC link controllers"
7. 2015-present: Patrick Maloney, "Long-term cooptimized planning with uncertainty"

8. 2015-present: Rishi Sharma, “Geomagnetic Disturbances in Electric Power Systems”

10.0 OTHER SUPERVISION

Post-doctoral researchers and or visiting students or faculty

1. February 2015-present, Ali Jahanbani-Ardakani, Cooptimization under uncertainty.
2. September 2008-2014: Venkat Krishnan, “Continental-wide energy integration studies.”
3. September 2009-2010: Caixia Wang, “MW-Hz Issues Caused by High Wind Penetration Levels.”
4. October 2009-2010: Yang Wang, “Risk-based Corrective Security Constrained Unit Commitment.”
5. June 2008-2014, Siddhartha Khaitan, “Computational algorithms for on-line cascading assessment.”
6. July 2008-2010, Renchang Dai, “Hybrid wind systems,” “Risk-based security assessment,” and “Special Protection Schemes.”
7. August 2007-June 2008, Viet Nguyen, visiting faculty, “Power system course development.”
8. October 2006-present, Kannan Subramanian, “Generation Planning Algorithms.”
9. June 1999-April 2002: Ming Ni, “Operational Decision-Making using Risk-Based Assessment”
10. February 1999-May 2000: Mashiur Bhuiyan, “Reliability and Risk for Electric Power System Security Assessment.”
11. August 1995 to August 1996: Fereshteh Fatehi, “Controller Design Methods Using Thyristor Controlled Series Capacitors.”
12. October 1994 to November 1996: Shimo Wang, “Rapid Determination of Available Transmission Capacity for Stability Limited Systems.”
13. December 1993 to May 1994: Chaoyang Jing, Post-Doctoral Researcher, “An Energy Approach to Analysis of Interarea Oscillations.”

Undergraduate students

1. 2011-2013: one undergraduate student each summer in the ISU REU on Wind Energy Science, Energy and Policy.
2. 2007-2009: Keith Johnson, “Carbon Sequestration Methods.”
3. 2006-2006: Eduardo Ibanez, “Construction/Visualization of a US Fuel Transportation Model ”
4. 2005-2006: Jeremy Hamilton, “Coal transportation along US Waterways.”
5. 2005-2006: Zhi Gao, “Visualization of risk-based security assessment.”
6. 2004-2005: Aung Oo, “Condition data for power transformers,”
7. 2003-2005: Parik Advani, “PowerLearn Web Site Maintenance.”
8. 2002-2004: Jeremy Angga, “PowerLearn Web Site Expansion.”
9. 2002-2003: Joe Lang, “PowerLearn content updates.”
10. 2001-2003: Aris Gunawan, “PowerLearn Web Site Expansion.”
11. 2000-2000: Tzun Wei, “Visualization of Security Assessment Results.”
12. 2000-2000: Ding Mi: “Java Applets for Educational Modules.”
13. 2000-2001: Matt Englebart, “PowerLearn Web Site Maintenance.”
14. 1999-1999: Chee-wooi Ten, “PowerLearn Web Site Maintenance.”
15. 1997-1999: Lukasz Darowski, “Visualization in Educational Modules,” Freshman Honors Student
16. 1998-1999: Dede Subakti, “PowerLearn Web Site Design and Maintenance.”
17. 1997-1998: Alberto Alonso, “PowerLearn Web Site Design.”
18. 1996-1998: Matt Mitchell, “Feature Selection using Neural Networks and Genetic Algorithms.”
19. 1996-1997: Brad Nickell, “Accuracy Testing of Security Boundaries.”
20. 1996-1996: Darin Massner, “Comparison of Voltage Instability Tools.”
21. 1995-1996: Anh Nguyen: “Survey Development for Quantifying Security Impact.”
22. 1995-1996: Tom Risse: “Stability Study for IEEE RTS System.”

11.0EXTENSION AND OUTREACH ACTIVITIES

1. Provided 1.5 hour short course talk, “Co-optimization for Expansion Planning,” September 17, 2015, Iowa State University Short Course on “Economics for Electric Power.”
2. Provided 3 hours of instruction at the short course on “Energy Systems Integration 102,” National Renewable Energy Laboratory, Golden Colorado, August 3-7, 2015:

    a. “Integrated Energy System: Co-optimization & Design Issues”
    b. “Economies of scale vs societal interest in small autonomous systems”
3. Provided 3 hours of instruction, With B. Hobbs, at a workshop on “Workshop on Co-Optimization and Anticipative Planning Methods for Bulk Transmission And Resource Planning Under Long-Run Uncertainties,” for 25 engineers employed by the Bonneville Power Administration (BPA), Portland, OR., Jan 29, 2015.
4. Provided 3 hours of instruction at the short course on “Energy Systems Integration 101,” National Renewable Energy Laboratory, Golden Colorado, July 21-25, 2014:
    a. “Integrated Energy/Transportation Continent-wide Infrastructure Design”
    b. “Gas-Electric Nexus”
    c. “Energy Systems Orientation and Electric Systems Expansion Planning”
5. Organized and hosted the “Honorary Symposium for Aziz Fouad,” July 7, 2014, Iowa State University.
6. Organized the “Workshop on Energy, Transportation and Water Infrastructure: Policy and Social Perspectives,” July 17-19, 2013, Iowa State University.
7. 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.
8. 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.”
9. 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.”
10. 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”
11. 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.
12. Member, Board of Directors of the Iowa Wind Energy Association, 2008-2012.
13. Member, Annual Meeting Organizing Committee of the Iowa Wind Energy Association, 2008-2012.
14. Organized the Iowa Energy Workforce Workshop, November 26, 2007, Iowa State University.
15. 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.
16. Presented 2 hour tutorial at Midwest ISO Short Course for Power System Operators, “Transmission Security: Rules, Risks, and Blackouts,” April 25, 2006, Minneapolis, Minnesota.
17. Presented 2 hour tutorial to ISU College for Seniors, “Energy Systems; A Critical National Infrastructure,”11/2/04.
18. 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.
19. 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.
20. Serving as organizer and general chair of the 2004 8th International Conference on Probabilistic Methods Applied to Power Systems (PMAPS-2004).
21. Distance-education mode of instruction in all senior-level and graduate level courses taught since 1992.
22. Instructor for ISU Power System Operators Short Course, “Reliability for Operators,” Ames, April, 2001.
23. Instructor and co-organizer for short course, “Reliability and Risk Assessment for Electric Power Systems,” April 25-28, 2001, Iowa State University.
24. 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.

25. 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.
26. Instructor for ISU Power System Operators Short Course, "Reliability for Operators," Ames, April 1999.
27. Presentation on ISU Power Program to Alliant Energy Company, Debuque, IA, November, 1998.
28. Presentation on ISU Power Program to Midwest Energy Co., Des Moines, IA, December, 1998.
29. Presentation on ISU Power Program to Omaha Public Power District., Omaha, NE, February, 1998.
30. Instructor, Professional Engineering Review Course, October 1996. Presented for Iowa Utilities via Iowa Communication Network (ICN).
31. Instructor for ISU Power System Operators Short Course, "Risk-Based Security Assessment," Ames, IA, April 1996.
32. Instructor for ISU Power System Operators Short Course, "Power Systems Security for Competitive Electric Energy Systems," Ames, IA, April 25, 1995.
33. Instructor for ISU Power System Operators Short Course, "System Security With Open Access," Ames, IA, April 26, 1993.

12.0 PROFESSIONAL ACTIVITIES

1) 1988-present: Registered professional engineering license in the state of California.
2) 2007-2011: Systems Stem Leader of the Power Systems Engineering Research Center (PSERC)
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, European Transactions on Electrical Power John Wiley & Sons, 2005.
5) Editor of Special Issue on Probabilistic Methods Applied to Power Systems, Electric Power and Energy Systems, Elsiever, 2005.
6) 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.
7) 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) 2005-2012 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

7) Developed and submitted proposal to host 2004 North American Power Symposium at ISU.
8) 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
9) Instrument Society of America (ISA), member 1996-1998.
10) National Science Foundation (NSF)
    a) 2015, Review Panel for NSF Proposals, 2/2/15
    b) 2014, Review team for NSF Engineering Research Center, 6/14
    c) 2014, Review Panel for NSF Proposals, 5/5/14
    d) 2012, Review Panel for NSF Proposals, 6/26/12
    e) 2012, Review Panel for NSF Proposals, 5/30/12
    f) 2010, Review Panel for NSF Proposals, 5/17/10
    g) 2010, Review Panel for NSF Proposals, 1/22/10
    h) 2009, Review Panel for NSF Proposals, 10/30/09
    i) 2009, Review Panel for NSF Proposals, 6/30/09
    j) 2008, Review Panel for NSF Proposals, 6/30/08
    k) 2008, Review Panel for NSF Proposals, 6/2/08
    l) 2005, Review Panel for NSF Proposals on Power Engineering, Washington D.C.
    m) 2001, Review Panel for NSF Proposals on Power Engineering, Washington D.C.
    n) 1995, Invited participant in NSF Round Table Discussion on "Power Engineering Education in a Changing Utility Environment," Washington, D.C., June 10-11, 1995.
    o) 1995, Review Panel for NSF Initiative on Sensors and Sensor Systems, Washington
    p) 1994-date, Reviewer for NSF Proposals, average 1/year
11) Member of technical organizing committee for PMAPS VI, Madeira Island, Portugal, Sept., 2000.
12) Member of technical organizing committee for PMAPS VII, Naples, Italy, Sept. 2002.
13) Organized special session on Power System Decision-Making Techniques for PMAPS VII, Naples, Italy, Sept. 2002.
14) Conference General Chairman for the 8th International Conference on Probabilistic Methods Applied to Power Systems (PMAPS VIII), Iowa State University, Ames, Iowa, September 11-16, 2004. 174 papers with 205 attendees, Served as coordinator of paper reviews, organizer of conference including all paper 12 special sessions, 25 regular sessions, 3 tutorials, 2 workshops, and all social activities (dinners, socials, etc).
15) Member of technical organizing committee for PMAPS IX, Stockholm, Sweden, June 2006.
16) Member of PMAPS International Society, overseeing body of PMAPS, 2004-2006.
17) Member of technical organizing committee for PMAPS X, Mayaguez, Puerto Rico, June 2008.
18) Member of technical organizing committee for PMAPS XI, Singapore, June 2010
19) Chair of Conference Selection Committee for PMAPS X.
20) 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

13.0 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.
6. 2012: Member of Search Committee for the Iowa Energy Center director

College Service

1.	2009-2011	Member, College Honors and Awards Committee
2.	2004-2009	Member, College of Engineering Promotion and Tenure Committee
3.	2008-2012	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.	2014-present	Chair, ECpE Department PTRC Committee
2.	2014-2015	Chair, ECpE Department Faculty Search Committee
3.	2012-2014	Chair, Strategic Planning Committee
4.	2011-2014	Member, Strategic Planning Committee
5.	2011-2014	Member, Research Committee
6.	2010-2012	Member, Honors and Awards Committee
7.	2009-2010	Member, Search Committee for Department Chair
8.	2008-2011	Chair of Departmental Search Committee
9.	2008	Member, Search Committee for Department Chair
10.	2009-2015	Mentor for Ayman Fayed
11.	2007-2014	Mentor for Dionysios Aliprantis
12.	2004-2009	Mentor for Sang Kim
13.	2004	Member of Promotion and Tenure Committee
14.	2003-2006	Chair of ABET Preparation Team
15.	2003-2006	Associate Chair of Electrical and Computer Engineering
16.	2003-2006	Chair of Computer Usage Committee
17.	2003	Member, Department Chair Search Committee
18.	2002-2005	Chair, Electric Power and Energy Systems Area Committee
19.	2001-2003	Chair, Department Curriculum Committee
20.	2000	Member of Departmental ABET Task Force
21.	2000	Chair of Curriculum Committee EE Course Catalog Task Force
22.	1999-2006	Member of Graduate Committee
23.	1999-2000	Member of Promotion and Tenure Committee
24.	1998-2000	Chair, Election and Oversight Committee
25.	1996-2000	Member of Election and Oversight Committee
26.	1996	Member of Power Systems Simulation Laboratory Upgrade Committee
27.	1996	Member of Organizing Committee for ISU Midwest Electro-Technology Conf.
28.	1995-2003	Member of Curriculum Committee
29.	1995	Computer Systems Administrator Search Committee
30.	1994	DEO Evaluation Committee
31.	1993	Ad Hoc Subcommittee on Curriculum Development
32.	1993-1998	Circuits, Systems and Controls Area Committee
33.	1992-Present	Electric Power and Energy Systems Area Committee