Curriculum Vitae

VALENTINA CECCHI, Ph.D.

University of North Carolina at Charlotte • Department of Electrical and Computer Engineering
9201 University City Blvd. • Charlotte NC 28223-0001
Office: 1.704.687.8730 • Fax: 1.704.687.4762
Email: vcecchi@uncc.edu • Webpage: http://coefs.uncc.edu/vcecchi/

EDUCATION

Drexel University / Philadelphia, PA, USA

- Ph.D. Electrical Engineering, Dissertation: *Temperature-Dependent Transmission Line Models for Electric Power Systems and Their Impacts on System Studies*, Aug 2010
- Master of Science in Electrical Engineering, Thesis: *A Modeling Approach for Electric Power Transmission Lines in the Presence of Non-Fundamental Frequencies*, Dec 2007
- Bachelor of Science in Electrical Engineering, *magna cum laude*, June 2005

PROFESSIONAL APPOINTMENTS

Assistant Professor / University of North Carolina at Charlotte / August 2010 – present

- *Research*: Published 45 peer review articles, procured over $2M (of which $522,541 as sole or lead PI) in research and educational grant funding through federal agencies and industry, including NSF, U.S. DOE, EPRI and Duke Energy. Supervised/supervising 6 Ph.D. students (3 completed), 5 M.S. students (3 completed), and 16 undergraduate RAs. Mentored 10 Senior Design teams (34 students).
- *Teaching*: Developed two new graduate level courses: Electric Power Distribution Systems I and II and one undergraduate/graduate special topic course crossed-listed among all engineering disciplines. Taught 16 semester-long courses covering 8 different topics, including: Network Theory I, Linear Systems Theory, Electric Power Distribution Systems I and II, Senior Design.
- *Service*: Served various roles in departmental, college and university committees, including chair of the Power Systems Focus Area Improvement Team and member of the ECE Department Chair Search Committee. Served on professional committees, including as the 2015 North American Power Symposium (NAPS) general co-chair, as IEEE NC Council secretary, and in IEEE PES PEEC.

Graduate Research Assistant / Center for Electric Power Engineering, Drexel University/ Aug 2005 – Aug 2010

- Novel transmission line mathematical modeling and simulation
- Non-destructive testing and measurement of power systems
- Development of power system experiments for outreach education
- Fault detection studies using wavelet transforms

Teaching Assistant / Electrical and Computer Engineering Dept., Drexel University / Aug 2005 – Aug 2010

- Power Systems courses
- Advanced Electronics courses

Design Engineer / Technology Department, Italferr – Ferrovie dello Stato, Rome, Italy / Mar 2008 – Oct 2008

- Design and supervision of new and existing substations for high-speed railway networks

Undergraduate Research Assistant / Center for Electric Power Engineering, Drexel University / Mar 2004 – Sep 2005

- Assisted in the design, implementation, and testing of the RDAC: Reconfigurable Distribution Automation and Control Laboratory
- Developed a network reconfiguration experiment for a power distribution class

PUBLICATIONS AND RESEARCH

Synopsis:

Publications: *45 published peer-reviewed journal & conference articles (9 published and 4 under-review journal articles), and 2 book chapters. 170 citations per Google Scholar.*

Funding: *$2,095,138 (13 funded grants and contracts, sole or lead PI for 7). Funding by source: NSF (NSF - $730,606), U.S. DOE (DOE - $968,180), Utilities/Industry (Duke Energy, Southern California Edison, Quanta - $379,852), Institutional Grants (UNC Charlotte - $16,500). Individual Share of the Total: $753,224. As Sole or Lead PI: $522,541. Additional Funding in terms of Equipment and Software Donations: $277,418.*

PUBLICATIONS

Journal and Magazine Articles (9 published articles, 4 under review)

[J1] A. St. Leger, V. Cecchi, K. Miu, and C. Nwankpa, "Automated Test Measurement System for Determining Frequency Dependent Parameter Model of Transmission Lines in a Laboratory Environment", accepted for publication in *Measurement, Elsevier Journal of the International Measurement Confederation*, 2016.

[J2] M. Azarbayjani, B. Futrell, V. Cecchi, T. Gentry, A. Ebong, "The Road Map to the Integrated Design Process of a Net-Zero Energy Solar House: A Case Study of a Solar Decathlon Competition Entry", *Journal of Green Building*, Vol. 9, Issue 2, 2014, pp. 20-37. (Cited by 3)

[J3] V. Cecchi, M. Knudson, and K. Miu, "System Impacts of Temperature-Dependent Transmission Line Models", *IEEE Transactions on Power Delivery*, Vol. 28, Issue 4, October 2013, pp. 2300-2308.

[J4] A. Kailas, V. Cecchi, and A. Mukherjee, "A Survey of Communications and Networking Technologies for Energy Management in Buildings and Home Automation", *Journal of Computer Networks and Communications*, Vol. 2012, 2012. (Cited by 45)

[J5] V. Cecchi, A. St. Leger, K. Miu, and C. Nwankpa, "Incorporating Temperature Variations into Transmission Line Models", *IEEE Transactions on Power Delivery*, Volume 26, Issue 4, October 2011, pp. 2189-2196. (Cited by 11)

[J6] K. Miu, V. Cecchi, M. Kleinberg, A. Deese, M. Tong, and B. Kleinberg, "A Distribution Power Flow Experiment for Outreach Education," *IEEE Transactions on Power Systems*, Volume 25, Issue 1, February 2010, pp. 3-9. (Cited by 8)

[J7] V. Cecchi, A. St. Leger, K. Miu, and C. Nwankpa, "Modeling Approach for Transmission Lines in the Presence of Non-Fundamental Frequencies", *IEEE Transactions on Power Delivery*, Volume 24, Issue 4, October 2009, pp. 2328-2335. (Cited by 14)

[J8] V. Cecchi, X. Yang, K. Miu, and C. Nwankpa, "Instrumentation and Measurement of a Power Distribution System Laboratory for Meter Placement and Network Reconfiguration Studies", *IEEE Transactions on Instrumentation and Measurement*, Volume 56, Issue 4, Aug. 2007, pp. 1224-1230. (Cited by 21)

[J9] V. Cecchi, X. Yang, K. Miu, and C. Nwankpa, "Instrumentation and Measurement of a Power Distribution System Laboratory for Meter Placement and Network Reconfiguration Studies", *IEEE Instrumentation and Measurement Magazine*, Volume 10, Issue 5, October 2007, pp. 10-19. (Cited by 2)

Manuscripts under Review

[J10] A. Shrestha, V. Cecchi, R. Cox, "Transient Stability Preventive Control using Quasi-Linear Behavior of Critical Machines", submitted for publication in the *IEEE Transactions on Power Systems.*

[J11] B. Poudel, V. Cecchi, "Frequency-Dependent Models of Electric Power Lines for Steady-State Harmonic Analysis – Part I: Model Derivation and Circuit Realization", submitted for publication in the *Elsevier Journal of Electric Power Systems Research.*

[J12] B. Poudel, V. Cecchi, "Frequency-Dependent Models of Electric Power Lines for Steady-State Harmonic Analysis – Part II: Model Evaluation and Practical Applications", submitted for publication in the *Elsevier Journal of Electric Power Systems Research.*

[J13] M. Davoudi, V. Cecchi, J. Romero-Agüero, "Increasing Hosting Capacity of Distribution Feeders via Reconfiguration and Modern Operation Practices", submitted for publication in the *IEEE Trans. on Smart Grid.*

Manuscripts in Preparation

[IP1] C. Liu, V. Cecchi, S. Kamel, "Solution and Optimization of AC Resistance in Large Mixed Medium Power Conductors", in preparation for submission to the *IEEE Transactions on Power Delivery*.

Book Chapters (2 total, 2 since joining UNC Charlotte)

[B1] A. Kailas, V. Cecchi, A. Mukherjee, *A Survey of Contemporary Technologies for Smart Home Energy Management*, in Handbook of Green Information and Communication Systems, Elsevier, 2012. (Cited by 6)

[B2] A. Mukherjee, V. Cecchi, R. Tenneti, A. Kailas, *Embedded Computing in the Emerging Smart Grid*, in Handbook of Green Information and Communication Systems, Elsevier, 2012. (Cited by 1)

Refereed Conference Articles (36 total, 28 since joining UNC Charlotte)

[C1] M. Davoudi, V. Cecchi, J. Romero-Agüero, "Network Reconfiguration with Relaxed Radiality Constraint for Increased Hosting Capacity of Distribution Systems", to appear in the *Proceedings of the 2016 IEEE Power & Energy Society (PES) General Meeting*.

[C2] A. Shrestha, V. Cecchi, R.W. Cox, "Optimal Power Flow-based Generation Shedding for Dynamic Remedial Action Scheme", to appear in the *Proc. of the 2016 IEEE PES T & D Conference and Exposition*.

[C3] S. N. K. Jagarlapudi, V. Cecchi, "Investigating Wind Speed-Dependent Models for Electric Power Transmission Lines", to appear in the *Proc. of the 2016 IEEE Int'l Symposium on Circuits & Systems*.

[C4] A. Shrestha, V. Cecchi, R.W. Cox, "Minimum-Cost Generation-Shedding for Dynamic Remedial Action Scheme", *Proc. of the 2015 IEEE PES General Meeting*. Pub. Year: 2015. (Cited by 1)

[C5] B. Poudel, V. Cecchi, "Frequency-Dependent Transmission Line Modeling for Steady State Power System Harmonic Analysis", *Proc. of the 2015 North American Power Symposium (NAPS)*. Pub. Year: 2015.

[C6] S. Zilberdrut, V. Cecchi, "Investigating the Effects of Grid Equivalent Circuit at a Point of Common Coupling on Bus Voltage Variations Due to Variable Distributed Generation", *Proceedings of the 2015 North American Power Symposium (NAPS)*. Pub. Year: 2015.

[C7] C. Liu, V. Cecchi, S. Kamel, "Analysis of AC Resistance in Non-Ferrous Bimetallic Solid Conductors", *Proceedings of the 2015 North American Power Symposium (NAPS)*. Pub. Year: 2015.

[C8] M. Davoudi, V. Cecchi, J. Romero-Agüero, "Effects of Stiffness Factor on Bus Voltage Variations in the Presence of Intermittent Distributed Generation", *Proceedings of the IEEE 2015 NAPS*. Pub. Year: 2015. (Cited by 1)

[C9] A.S. Deese, V. Cecchi, B. Poudel, "Introduction of Emerging Technologies to Distribution System Laboratory Modules via Simulation", *Proc. of the 2015 IEEE PES General Meeting*. Pub. Year: 2015.

[C10] M. Davoudi, V. Cecchi, J. Romero-Agüero, "Increasing Penetration of Distributed Generation with Meshed Operation of Distribution Systems", *Proc. of the 2014 North American Power Symposium (NAPS)*. Pub. Year: 2014. (Cited by 6)

[C11] A. Shrestha, V. Cecchi, R.W. Cox, "Dynamic Remedial Action Scheme using online transient stability analysis," *Proc. of the 2014 North American Power Symposium (NAPS)*. Pub. Year: 2014. (Cited by 6)

[C12] B. Poudel, V. Cecchi, "An Approach for Modeling Frequency-Dependent Apparent Resistance of Power Transmission Lines", *Proceedings of the 2014 North American Power Symposium (NAPS)*. Pub. Year: 2014. (Cited by 1)

[C13] V. Cecchi, M. Azarbayjani, B. Tempest, "Collaborative Research and Education in the Design and Building of a Net-Zero Energy Solar Powered House – Testimony of a Solar Decathlon 2013 Entry", *2014 American Society for Engineering Education (ASEE)*, International Forum. Publication Year: 2014.

[C14] M. Davoudi, V. Cecchi, and J. Romero-Agüero, "Evaluation of Meshed Distribution Systems for Increased Penetration of Distributed Generation," *CIGRE US National Committee*, *2014 Grid of the Future Symposium*, Oct. 2014.

[C15] M. Azarbayjani, V. Cecchi, B. Tempest, "Lessons Learned from an Interdisciplinary Collaboration in Design and Construction of a Net-Zero Energy Solar House", A*SME 2014 8th International Conference on Energy Sustainability*. Publication Year: 2014.

[C16] M. Azarbayjani, B. Futrell, V. Cecchi, "Integrative Photovoltaic Shadings in a Net-Zero-Energy Solar House", *American Solar Energy Society*, *SOLAR 2014*. Publication Year: 2014.

[C17] M. Davoudi, V. Cecchi, J. Romero-Agüero, "Investigating the Ability of Meshed Distribution Systems to Increase Penetration Levels of Distributed Generation", *Proceedings of the IEEE SoutheastCon 2014*. Publication Year: 2014. (Cited by 5)

[C18] B. Poudel, V. Cecchi, "Harmonic Power Flow using Multi-Segment Frequency-Dependent Transmission Line Models", *Proceedings of the 2013 North American Power Symposium (NAPS)*. Publication Year: 2013. (Cited by 2)

[C19] V. Cecchi, S. Kamalasadan, J. Enslin, M. Miller, "Grid Impacts and Mitigation Measures for Increased PV Penetration Levels using Advanced PV Inverter Regulation", *Proceedings of the 2013 IEEE Energy Conversion Congress and Exposition (ECCE)*. Pub. Year: 2013. (Cited by 10)

[C20] A.S. Deese, V. Cecchi, K. Miu, "Capacitor Placement and Control Experiment for Reconfigurable Distribution Automation and Control Laboratory", *Proceedings of the 2013 IEEE PES General Meeting*. Publication Year: 2013. (Cited by 1)

[C21] B. Chowdhury, B. Parkhideh, A. Martin, Z. Salami, J. Enslin, V. Cecchi, S. Kamalasadan, M. Noras, "Enhancing Power and Energy Systems Concepts with Laboratory Experience", *Proceedings of the 2013 IEEE PES General Meeting*. Publication Year: 2013. (Cited by 2)

[C22] A. Shrestha, V. Cecchi, R. Cox, "A Real-Time Platform for Validating Continuous Wide-Area Control Systems", *Proceedings of the 2013 IEEE PES Innovative Smart Grid Technologies (ISGT)*. Publication Year: 2013. (Cited by 3)

[C23] V. Cecchi, M. Knudson, K. Miu, and C. Nwankpa, "A Non-Uniformly Distributed Parameter Transmission Line Model", *Proceedings of the 2012 North American Power Symposium (NAPS)*. Publication Year: 2012. (Cited by 1)

[C24] R.T.S. Sai, A. Mukherjee, V. Cecchi, and A. Kailas, "Architecture Exploration of a Heterogeneous Embedded Processor for the Smart Grid", *Proceedings of the IEEE SoutheastCon 2012*. Pub. Year: 2012. (Cited by 2)

[C25] V. Cecchi and M. Knudson, "Study of the Effects of Temperature-Dependent Electric Power Transmission Line Models on Estimation of Transfer Capabilities", *Proceedings of the 2012 NAUN WSEAS/NAUN International Conferences (NAUN 2012)*, *Circuits, Systems and Signals*. Pub. Year: 2012.

[C26] V. Cecchi, K. Miu, A. St. Leger, and C. Nwankpa, "Study of the Impacts of Ambient Temperature Variations along a Transmission Line Using Temperature-Dependent Line Models", *Proceedings of the 2011 IEEE PES General Meeting*. Publication Year: 2011. (Cited by 2)

[C27] N. BouSaba, J. Conrad, C. Hargrove, V. Cecchi, "Keys to Success in the IEEE Hardware Competition", *Proceedings of the 2011 American Society for Engineering Education Annual Conference and Exposition (ASEE)*. Publication Year: 2011.

[C28] P. Schmidt, V. Cecchi, N. BouSaba, S. G. Teng, D. Hoch, S. Patterson, D. Sharer, "An Optimization Routine for Assigning Students to Capstone Project Groups", *Proc. of the 2011 American Society for Engineering Education Annual Conference and Exposition (ASEE)*. Publication Year: 2011. (Cited by 1)

[C29] C. Schegan, V. Cecchi, X. Yang, K. Miu, "A Model Specific Simulation of Power Distribution Grids for Non-Destructive Testing of Network Reconfiguration Schemes", *Proceedings of the 2010 Conference on Grand Challenges in Modeling & Simulation (SummerSim)*. Publication Year: 2010.

[C30] K. Miu, A. Deese, X. Yang, V. Cecchi, M. Kleinberg, C. Schegan, "Integrating Distribution Automation and Control Techniques into Power System Curriculum", *Proceedings of the 2009 IEEE PES General Meeting*. Publication Year: 2009. (Cited by 2)

[C31] V. Cecchi, A. St. Leger, K. Miu, and C. Nwankpa, "Loading Studies for Power Transmission Line Models in the Presence of Non-Fundamental Frequencies", *Proceedings of the 2007 Summer Computer Simulation*

Conference (SCSC). Publication Year: 2007. (Cited by 2)

[C32] V. Cecchi, A. St. Leger, K. Miu, and C. Nwankpa, "Experimental Setup for Investigating Gamma Transmission Line Models in the Presence of Non-Fundamental Frequencies", *Proceedings of the 2007 IEEE Power Engineering Society General Meeting*. Pub. Year: 2007. (Cited by 3)

[C33] K. Miu, V. Cecchi, M. Tong, B. Kleinberg, and M. Kleinberg, "Adapting Existing Distribution Power Flow Experiments for Outreach Education", *Proceedings of the 2007 IEEE Power Engineering Society General Meeting*. Pub. Year: 2007. (Cited by 2)

[C34] V. Cecchi, M. Kleinberg, M. Tong, B. Kleinberg, and K. Miu, "Design of Power Engineering Outreach Experiments using Feedback from Non-Engineers and Grade 9-12 Students", *Proceeding of the 2007 American Society for Engineering Education Annual Conference and Exposition (ASEE)*. Pub. Year: 2007. (Cited by 2)

[C35] V. Cecchi, X. Yang, K. Miu, and C. Nwankpa, "Instrumentation and Measurement of a Power Distribution System Laboratory for Network Reconfiguration Studies", *Proceedings of the 2006 IEEE Instrumentation and Measurement Technology Conference (IMTC)*. Pub. Year: 2006. ***1st Place: Student Paper Competition*** (Cited by 1)

[C36] X. Yang, V. Cecchi, K. Miu, and C. Nwankpa, "Reconfigurable Distribution Automation and Control Laboratory: A Network Reconfiguration Experiment for Load Balancing and Loss Reduction in Power Distribution Systems", *Proceeding of the 2005 American Society for Engineering Education Annual Conference and Exposition (ASEE)*. Pub. Year: 2005. (Cited by 3)

Patents and Intellectual Property

- Provisional Patent: Bikash Poudel and Valentina Cecchi, "Frequency-Dependent Electric Power Line Modeling Approach", Report Date: March 23, 2016.

INVITED TALKS AND PRESENTATIONS

- Invited Panelist: "Introduction of Emerging Technologies to Distribution Systems via Simulation", at *IEEE PES General Meeting*, Boston, MA, 2016.
- Invited Panelist: "Multi-Institutional Power System Education Collaboration, GEARED University Curricula", at *IEEE PES General Meeting*, Boston, MA, 2016.
- Moderator, *First Roundtable on Italian Technology & Italian FDI*, Charlotte, NC, 2016.
- J.H.R. Enslin, V. Cecchi, J. Romero-Agüero, "Advanced Real-Time Control and Alternative Closed-Loop Operation of Power Distribution Systems for High Penetration of Distributed Energy Resources", *DistribuTECH – Africa 2014*, Cape Town, 17-19 March 2014.
- "Research in Power Delivery Systems", *E4 Carolinas Emerging Leaders Program*, Charlotte, NC, 2013.
- J. Romero-Agüero, J.H.R. Enslin, J. Spare, L. Willis, F. Katiraei, V. Cecchi, "Closed-loop Operation of Power Distribution Systems for Integration of High Penetration Levels of Distributed Energy Resources", *DistribuTECH 2013*, January 2013.
- *Smart or "Smarter" Grid… Moving Towards the Modern Power System*, North American Young Generation in Nuclear (NAYGN) Meeting, Shaw Group, Charlotte, NC, 2012.
- *Electric Power Lines: Investigating the Backbone in Power System Modeling and Analysis*, Georgia Institute of Technology, Power System Technical Interest Group, Atlanta, GA, 2012.
- *Towards the Modern Power System*, *IEEE Charlotte Section*, Charlotte, NC, 2011.
- Invited Panelist: "A Distribution Power Flow Experiment for Outreach Education", at *IEEE PES General Meeting*, Calgary, CA, 2011.

RESEARCH GRANTS (Total Awarded $2,372,556)

Grants and Contracts Awarded (Total: $2,095,138, Individual Share of the Total: $753,224)

Sole or Lead Principal Investigator ($522,541)

1. **Duke Energy Microgrid at Mt. Holly and Distribution Circuit Modeling and Analysis**
   Principal Investigator: V. Cecchi
   Co-PI: M. Manjrekar
   Source of Support: Duke Energy
   Award Period: 7/1/2016 – 12/31/2016
   Award Amount: $68,054 (Individual Share: 65%)
2. **A Novel Electric Power Line Modeling Approach: Coupling of Dynamic Line Ratings with Temperature-Dependent Line Model Structures**
   Principal Investigator: V. Cecchi
   Co-PI: None
   Source of Support: National Science Foundation
   Award Period: 9/1/2015 – 8/31/2018
   Award Amount: $257,232 (Individual Share: 100%)
3. **Conference Support for 2015 North American Power Symposium**
   Principal Investigator: V. Cecchi
   Co-PI: S. Kamalasadan
   Source of Support: National Science Foundation
   Award Period: 9/1/2015 – 8/31/2016
   Award Amount: $15,000 (Individual Share: 50%)
4. **Quanta Technology Graduate Research Assistantship** (research fellowship)
   Principal Investigator: V. Cecchi
   Co-PI: None
   Source of Support: Quanta Technology
   Award Period: 8/1/2015 – 5/1/2016
   Award Amount: $25,137 (Individual Share: 100%)
5. **Collaborative Research: Smart Power Distribution System Curriculum - Multi-Institution Demonstration and Deployment**
   Principal Investigator: V. Cecchi
   Co-PI: None
   Source of Support: National Science Foundation
   Award Period: 9/1/2012 – 9/1/2015
   Award Amount: $89,487 (Individual Share: 100%)
6. **Photo Voltaic Generation Integration Study**
   Principal Investigator: V. Cecchi
   Co-PI: J. Enslin, S. Kamalasadan
   Source of Support: Duke Energy Corporation
   Award Period: 5/30/2012 – 12/30/2012
   Award Amount: $55,631 (Individual Share: 40%)
7. **Towards a Future Microgrid: Renewable, Sustainable, and Transportable Energy Source** (institutional grant)
   Principal Investigator: V. Cecchi
   Co-PI: S. Kamalasadan
   Source of Support: UNC Charlotte Faculty Research Grant
   Award Period: 1/15/2011 – 5/30/2012
   Award Amount: $12,000 (Individual Share: 50%)

Co-Principal Investigator ($1,572,597)

1. **Interconnection between EPIC Laboratories and Duke Energy Mount Holly Facilities**
   Principal Investigator: M. Manjrekar
   Co-PIs: B. Chowdhury, J. Enslin, S. Kamalasadan, V. Cecchi
   Source of Support: Duke Energy
   Award Period: 8/1/2015 – 5/31/2016
   Award Amount: $21,801 (Individual Share: 5%)
2. **Hybrid Real-Time Simulator (OPAL-RT with RTDS) based Advanced Modeling and Analytical System Solutions of SCE Grid with Renewable Energy Resource and Storage**
   Principal Investigator: S. Kamalasadan
   Co-PIs: B. Chowdhury, J. Enslin, M. Manjrekar, V. Cecchi, R. Shankar
   Source of Support: Southern California Edison
   Award Period: 1/1/2015 – 8/31/2015
   Award Amount: $150,000 (Individual Share: 10%)
1. **Towards a STEM Diversity Center at UNC Charlotte** (institutional grant)
   Principal Investigator: M. Walter
   Co-PI: V. Cecchi, M. Azarbayjani
   Source of Support: UNC Charlotte Chancellor's Diversity Challenge Fund
   Award Period: 8/2014 – 6/2015
   Award Amount: $4,500 (Individual Share: 33%)
3. **Leveraging Industry Research to Educate a Future Electric Grid Workforce (GEARED)**
   Principal Investigator: B. Chowdhury
   Co-PIs: J. Enslin, B. Parkhideh, V. Cecchi, M. Manjrekar, R. Cox, Z. Salami
   Source of Support: Electric Power Research Institute and U.S. DOE
   Award Period: 1/1/2014 – 12/31/2018
   Award Amount: $868,180 (Individual Share: 15%)
4. **Energy Storage Integration Study**
   Principal Investigator: S. Kamalasadan
   Co-PI: J. Enslin, V. Cecchi
   Source of Support: Duke Energy Corporation
   Award Period: 2/1/2013 – 9/30/2013
   Award Amount: $59,229 (Individual Share: 20%)
5. **MRI: Acquisition of Real-Time Digital Simulator for Real-Time Studies in Next Generation Power Grid Infrastructure**
   Principal Investigator: J. Enslin
   Co-PI: V. Cecchi, S. Kamalasadan
   Source of Support: National Science Foundation
   Award Period: 8/15/2012 – 12/31/2015
   Award Amount: $368,887 (Individual Share: 33%)
6. **Department of Energy – 2013 Solar Decathlon Competition**
   Principal Investigator: M. Azarbayjani
   Co-PI: V. Cecchi, B. Futrell, A. Ebong, L. Swayne
   Source of Support: Department of Energy (DOE)
   Award Period: 10/01/2011 – 9/30/2012
   Award Amount: $100,000 (Individual Share: 20%)
   Total Amount Raised: $1.2M

Software Donations (Total: $277,418, Individual Share of the Total: $69,355)

1. **SEL Relay Testbed** (equipment donation)
   Source of Support: Schweitzer Engineering Laboratories, Inc.
   In-Kind Donation Amount: $177,418 (Individual Share: 25%)
2. **RTDS Software Platform** (software donation)
   Source of Support: RTDS, Inc.
   In-Kind Donation Amount: $100,000 (Individual Share: 25%)
3. **GE/Alstom e-terradistribution and e-terracontrol** (software donation)
   Source of Support: GE/Alstom
   In-Kind Donation Amount: unknown

RECENT RESEARCH COLLABORATIONS

University of North Carolina at Charlotte • *Department of Electrical and Computer Engineering*: Johan Enslin, Sukumar Kamalasadan, Robert Cox, Badrul Chowdhury, Madhav Manjrekar, Arindam Mukherjee, *Engineering Technology*: Maciej Noras, *Department of Computer Science*: Bill Ribarsky, *Department of Architecture*: Mona Azarbayjani, Benjamin Futrell, *School of Business*: Linda Swayne. **Drexel University** • *Electrical and Computer Engineering Department, Center for Electric Power Engineering*: Karen Miu, Chika Nwankpa. **United States Military Academy** • *Department of Electrical Engineering and Computer Science*: Aaron St. Leger. **The College of New Jersey** • *Department of Electrical and Computer Engineering*: Anthony Deese. **University of Texas at El Paso** • *Department of Electrical and Computer Engineering*: Paras Mandal. **Cornell University** • *Department of Electrical and Computer Engineering*: Hsiao-Dong Chiang. **Appalachian State University** • *Department of Sustainable Technology and the Built Environment*: Brian Raichle, Jeff Ramsdell. **Washington State University** • *School of Electrical Engineering and Computer Science*: Anurag Srivastava.

PROFESSIONAL AFFILIATIONS

Professional Societies

- Institute of Electrical and Electronics Engineers (IEEE), Member (2005 – present)
  - Power and Energy Society
  - Circuits and Systems Society
  - Power Electronics Society
  - Instrumentation and Measurement Society
  - Education Society
  - Women in Engineering (WIE)
- American Society for Engineering Education (ASEE), Member (2005 – present)
- The Society of Women Engineers (SWE), Member

Honor Societies

- Eta Kappa Nu, An Electrical and Computer Engineering Honor Society (2004 - present)
- The National Society of Collegiate Scholars (2001 - present)

Honors

- ***1st Place***: Student Poster Competition, 2016 IEEE Power and Energy Society, Transmission and Distribution Conference, Dallas, TX, May 2-5, 2016. (*Student's Award*)
- ***3rd Place***: Student Poster Competition, 2016 IEEE Power and Energy Society, Transmission and Distribution Conference, Dallas, TX, May 2-5, 2016. (*Student's Award*)
- Charlotte Business Journal 2013 Young Leader in Energy Award, 2013.
- E4 Carolinas Emerging Leaders Program, 2013.
- ***3rd Place***: Engineering, U.S. DOE Solar Decathlon Competition, 2013.
- ***1st Place***: People's Choice Award, U.S. DOE Solar Decathlon Competition, 2013.

- Stellar Student Speaker, Honorable Mention, 2015 Appalachian Energy Summit, Boone, NC, July 13-15, 2015. (*Student's Award*)
- ***3rd Place***: Student Poster Competition, 2012 IEEE Power and Energy Society, Transmission & Distribution Conference, Orlando, FL, May 7-10, 2012. (*Student's Award*)
- ***1st Place***: Student Poster Competition, 2011 IEEE Power and Energy Society, General Meeting, Detroit, MI, July 24-28, 2011. (*Student's Award*)
- ***2nd Place***: Student Poster Competition, 2008 IEEE Power and Energy Society, Transmission and Distribution Conference, Chicago, IL, April 21-24, 2008.
- ***1st Place***: Student Paper Competition, 2006 IEEE Instrumentation and Measurement Technology Conference, Sorrento, Italy, April 24-27, 2006.
- Dean's Fellowship, A.J. Drexel Scholarship, and Drexel University Dean's List.
- Esther K. Swerdlow Scholarship, Drexel University, for high proficiency in the study of mathematics.

TEACHING

Synopsis:

Teaching:	*16 semester-long courses covering 8 different topics.*
Curriculum:	*Developed 2 new graduate courses and 1 undergraduate/graduate special topic course crossed-listed among all engineering disciplines.*
Advising:	*6 Ph.D. students (3 graduated, 3 current), 5 M.S. students (3 graduated, 2 current), 8 undergraduate RAs and 8 undergraduate RAs for the Solar Decathlon Project.*
Mentored:	*10 undergraduate senior design projects (5 award-winning teams) and 14 independent study projects.*

COURSES TAUGHT

Undergraduate Courses

- ECGR 2111: Network Theory I (*core curriculum course*)
  - Fall 2012, Spring 2014, Spring 2015, Spring 2016
- ECGR 3156: Electromagnetic & Electronic Devices Laboratory (*core curriculum course*)
  - Spring 2013
- ECGR 3253-E01/C01: Senior Design I – EE and CpE (*core curriculum course*)
  - Fall 2010
- ECGR 3253-E01/C01: Senior Design II – EE and CpE (*core curriculum course*)
  - Fall 2010
- ECGR 4090/CEGR 4090/MEGR 3090: (*course co-developed with Dr. Ebong*)
  Special Topic: Solar Decathlon Construction Phase
  - Spring 2013
- ECGR 4892-003: Individual Study: Modeling of Electric Power Distribution Systems
  - Spring 2014
- ECGR 3890: Individual Study
  - Spring 2011
- ECGR 4892-C01: Individual Study
  - Fall 2011
- ECGR 4892: Independent Study: Solar Decathlon
  - Summer 2012

Graduate Courses

- ECGR 6111/8111: Linear Systems
  - Spring 2011
- ECGR 6144/8144: Electric Power Distribution Systems I (*developed course*)
  - Fall 2011, Spring 2014, Spring 2015
- ECGR 6145/8145: Electric Power Distribution Systems II (*developed course*)
  - Spring 2012, Fall 2014, Spring 2016
- ECGR 5090/CEGR 5090: (*course co-developed with Dr. Ebong*)
  Special Topic: Solar Decathlon Construction Phase
  - Spring 2013
- ECGR 6890: Individual Study and Projects
  - Fall 2011, Spring 2012, Fall 2012, Spring 2013, Spring 2016
- ECGR 8890: Individual Study and Projects: Harmonics in Power Systems
  - Spring 2013, Spring 2014
- ECGR 8890: Individual Study and Projects: Electric Power Substation Engineering
  - Fall 2014
- ECGR 8890: Individual Study and Projects
  - Spring 2015, Spring 2016

STUDENT ADVISING

Advised Ph.D. Students (3 graduated, 3 current)

- B. Poudel, *Frequency-Dependent Electric Power Line Modeling for Steady-State Harmonic Analysis*, May 2016. (now at EnerNex)
- A. Shrestha, *Dynamic Remedial Action Scheme using Online Transient Stability Analysis*, May 2016. (now at Schweitzer Engineering Laboratories, Inc.- SEL)
- C. Liu, *Skin Effect in Large Bi-Media Power Conductors*, May 2016. (now at Southwire Company, LLC)
- M. Davoudi, tentative title: *Increasing Hosting Capacity of Distribution Systems by Means of Network Reconfiguration with Relaxed Radiality Constraints*, expected completion: May 2017.
- M. M. Rahman, tentative title: *Coupling of Dynamic Line Ratings Systems and Temperature Dependent Transmission Line Models*, expected completion: December 2018.
- T. Lawanson, title to be defined, expected completion: May 2019.

Advised M.S. Students (3 graduated, 2 current)

- S. N. K. Mohan Jagarlapudi, *Investigation of Wind Speed Dependent Electric Power Transmission Line Models*, December 2015.
- M. Davoudi, *Investigation of Distribution System Meshed Configuration to Increase Maximum Allowable Penetration of Renewable and Distributed Generation*, December 2014.
- D. Sheth, *An Approach to Power System Protection that Adapts to Changes in System Topology*, August 2013.
- S. H. Siddagangaiah, *Impact of Grid Perceived Impedance on Voltage Stability*, expected completion: May 2017.
- E. Mora, *Investigation of Distribution System Protection Methodologies in the Presence of Distributed Generation*, expected completion: May 2018.

Advised Undergraduate Research Assistants (8 funded undergrad RAs and 8 funded from the U.S. DOE Solar Decathlon Project)

- L. Hall and H. Damewood, *funded by EPIC Associate research award: Establish hardware/software platform to evaluate and validate novel electric power line models.* (Aug 2015 – May 2016)
- L. Tucker, L. Cole (BSME), J. Barney (BSME), *funded by UNC Charlotte Chancellor's Diversity Challenge Fund: Towards a STEM Diversity Center at UNC Charlotte.* (January 2015 – June 2015)
- S. Zilbedrut, *funded by EPIC Associate research award: Investigating applicability and explore system-level applications of point-of-load distribution feeder impedance*. **Stellar Student Speaker, Honorable Mention, 2015 Appalachian Energy Summit**. (Aug 2014 – May 2015)
- J. Cappelletti (BSME), *funded by EPIC Associate research award: Investigating applicability and explore system-level applications of point-of-load distribution feeder impedance.* (Aug 2014 – Dec 2014)
- P. O'Connor*, funded by Duke Energy Photo Voltaic Generation Integration Study.* (June – Dec 2012)
- C. Truong, J. Polk (BSME), J. Wittmer, S. Lanier (BSME), B. Ouimette (BSME), J. Cappelletti (BSME), M. Koening, M. Trejo (BSCE), *funded by the US DOE Solar Decathlon project.* (Jan – May 2013)

Advised Undergraduate Senior Design Projects (10 projects, 34 students)

- P. Rankin, E. Joniaux, J. Tribble, *Integrated Distribution Energy Management System* (sponsored by Duke Energy), **IEEE PES T&D 2016 Student Poster Competition 1st place winner**, Fall 2015 – Spring 2016.
- C. DeCoste, B. Madden, J. McCall, A. Scaria, *Distribution Management System for CRI Campus* (sponsored by Duke Energy), **COE Senior Design Program 2nd place winner**, Fall 2014 – Spring 2015.
- S. Zilberdrut, D. McKenzie, R. Sherretts, *Automatic Reconfiguration Scheme and Load Management for UNC Charlotte Campus* (sponsored by SEL), **COE Senior Design Program 2nd place winner**, Fall 2014 – Spring 2015.
- R.M. Al Onazy, D. Wilson, A. Al Matar, *Modeling, Analysis and Management Strategies for Large-Scale Renewables* (sponsored by Duke Energy), Spring 2014 – Fall 2014.
- D. Martin, M. Hamed Al Malki, A. Ksionsk, S. Belle Isle, *Integrated PV and Natural Gas Microgrid*, Fall 2013 – Spring 2014.
- J. Hart, D. Barton, P. Hight, *Solar Decathlon Home Control System*, Fall 2012 – Spring 2013.
- P. O'Connor, W. Bomela, M. Knudson, *Study of Grid-Connected Renewable Sources for Smart Grid Applications* (sponsored by Duke Energy), **IEEE PES T&D 2012 Student Poster Competition 3rd place winner**, Fall 2011 – Spring 2012.
- P. Finnie, R. Ricono, S. Hoyos, J. Shipley, M. Bixler, *Renewable and Modular Micro-Source for Smart Grid Applications*, **COE Senior Design Program 1st place winner** and **IEEE PES GM 2011 Student Poster Competition 1st place winner**, Spring 2011 – Fall 2011.
- A. Suleiman, Y. Siddiqui, B. Fitzgerald, *UNC Charlotte Parking*, Fall 2010 – Spring 2011.
- J. Welch, C. Yang, A. Jackson, *Smart Home Energy Management System* (sponsored by Duke Energy), Fall 2010 – Spring 2011.

UNIVERSITY AND PROFESSIONAL SERVICE

Synopsis:

University Service: *Served roles on 20 committees/responsibilities (11 departmental, 6 college, and 3 university-level), including chair of the Power Systems Focus Area Improvement Team (FAIT) and member of the ECE Chair Search Committee.*

Scholarly Service: *Served roles on 13 committees/responsibilities, including NAPS 2015 conference general chair, conference organizing and steering committee, conference session chair, reviewer for 9 journals and 5 conference proceedings, and NSF panel reviewer.*

UNIVERSITY SERVICE

The Electrical and Computer Engineering Department (11 committees/responsibilities)

- Department Review Committee, Non-voting member (May 2015 – May 2016)
- Power Engineering Technical Thrust (TT) Group, Member (Aug 2010 – Present) and Chair (Aug 2014 – Present)
- Power Systems Focus Area Improvement Team (FAIT), Member (Aug 2010 – Present) and Chair (Aug 2014 – Present)
- Outreach Committee, Member (Aug 2014 – Present)
- ECE Department Chair Search Committee, Member (Aug 2014 – May 2015)
- Core Courses and Laboratory Focus Area Improvement Team (FAIT) (Aug 2011 – May 2014)
- Undergraduate Student Academic Advisor, with 41 undergraduate advisees in 2015-2016 (Aug 2010 – Present)
- Graduate Student Academic Advisor, with 23 graduate advisees in 2015-2016 (Aug 2010 – Present)
- Member of Multiple Ph.D. and M.S. Committees (Aug 2010 – Present)
- ECE Power & Energy Concentration, Proposal Development Member
- IEEE Women In Engineering (WIE), Active participant in the founding of the chapter

The William States Lee College of Engineering (6 committees/responsibilities)

- College of Engineering Faculty Organization Executive Committee, Secretary (Aug 2016 – Present)
- ECE Chair Search Committee, Member (Aug 2014 – April 2015)
- EPIC Hiring Committee, Member (Aug 2011 – April 2012)
- College of Engineering Alumni Affairs Staff Hiring Committee, Member (June – Dec 2012)
- College of Engineering Freshman Learning Community Annual Women's Lunch, Participant (2012 – Present)
- EPIC Associate and Member of the Power System Research Cluster (Aug 2010 – Present)

The University of North Carolina at Charlotte (3 committee/responsibilities)

- Alpha Omega Epsilon sorority for women in engineering and applied sciences, Faculty Advisor (Jan 2011 – Present)
- EPIC Power and Energy Society Student Chapter, Faculty Advisor (2011 – 2014)
- Judge for the Sustainability Awards in the UNC Charlotte Undergraduate Research Conference (2014)

PROFESSIONAL SERVICE

Committees (13 committees/responsibilities)

- North American Power Symposium 2015, General Chair – Co-chair with Dr. Kamalasadan (2014 – 2015)
- IEEE PES, PEEC Student Activities Subcommittee, Secretary (2014 – Present)

- IEEE PES, PEEC Lifelong Learning Subcommittee, Secretary-Elect (2014 – Present)
- IEEE Line Rating Prediction Task Force (2015 – Present)
- EPRI Integrated Grid Collaboration Site, Contributor (2014 – Present)
- IEEE PES, Career Promotion and Workforce Development, Secretary, Vice-Chair (2013 – Present)
- IEEE North Carolina Council, Secretary (2012 – 2014)
- IEEE Charlotte Section, Power and Energy Society (PES), Treasurer (2013)
- IEEE Charlotte Section, Education Society, Treasurer (2013)
- North America Power Symposium (NAPS) Steering Committee (2012 – Present)
- 2012 NC Smart Grid Forum Local Organizing Committee, Vice-Chair (2011 – 2012)
- 2012 NC Smart Grid Forum Steering Committee (2011 – 2012)
- IEEE PES Young Professionals (formerly GOLD) Committee (2010 – Present)

Scholarly Service

- NSF Panel Reviewer, 2013 – present
- Session Chair at NAPS 2014, Washington State University, WA, Fall 2014
- Session Chair at NAPS 2013, Kansas State University, KS, Fall 2013
- Session Chair at NAPS 2012, University of Illinois Urbana-Champaign, IL, Summer 2012
- Session Chair at NAUN 2012, Vouliagmeni Beach, Athens, Greece, Spring 2012
- Journal and Conference Article Reviewer for:
  - IEEE Transactions on Power Systems
  - IEEE Transactions on Power Delivery
  - IEEE Transactions on Smart Grid
  - IEEE Transactions on Power Electronics
  - IEEE Transactions on Industry Applications
  - IEEE Transactions on Sustainable Energy
  - Elsevier Journal of Electrical Power Systems Research
  - Elsevier International Journal of Electrical Power & Energy Systems
  - IEEE Intelligent Systems Magazine
  - IEEE ISGT (2014 – Present)
  - IEEE PES GM (2013 – Present)
  - NAPS (2012 – Present)
  - IEEE SmartGridComm Symposium 2012
  - IEEE IAS Conference, 2012