

Johanna L. Mathieu

Department of Electrical Engineering and Computer Science
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Education

University of California, Berkeley <i>Ph.D., Mechanical Engineering</i> Advisors: Duncan Callaway & Ashok Gadgil	Berkeley, CA 2012
University of California, Berkeley <i>M.S., Mechanical Engineering</i>	Berkeley, CA 2008
Massachusetts Institute of Technology <i>S.B., Ocean Engineering</i> Minor in Ancient and Medieval Studies	Cambridge, MA 2004

Positions

University of Michigan <i>Associate Professor with Tenure, EECS (Electrical and Computer Engineering Division)</i> <i>Assistant Professor, EECS (Electrical and Computer Engineering Division)</i> <i>Interim Director, Institute for Energy Solutions</i> <i>Associate Director, Institute for Energy Solutions</i>	Ann Arbor, MI <i>Sep 2020 - Present</i> <i>Jan 2014 - Aug 2020</i> <i>Sep 2024 - Aug 2025</i> <i>Sep 2022 - Aug 2024</i>
National Renewable Energy Laboratory <i>Collaborative Appointment</i>	Golden, CO <i>Oct 2020 - Mar 2021</i>
ETH Zurich <i>Postdoctoral Researcher, Power Systems Laboratory</i>	Zurich, Switzerland <i>Jul 2012 - Dec 2013</i>
Lawrence Berkeley National Laboratory <i>Affiliate, Environmental Energy Technologies Division</i>	Berkeley, CA <i>Feb 2007 - Aug 2012</i>
Bangladesh University of Engineering and Technology <i>Visiting Researcher, Department of Civil Engineering</i>	Dhaka, Bangladesh <i>May 2008 - Jul 2008</i>
MIT Sea Grant College Program <i>Research Assistant, Center for Coastal Resources</i>	Cambridge, MA <i>Dec 2005 - Jun 2006</i>
U.S. Peace Corps <i>Education Volunteer</i>	Morogoro & Mahiwa, Tanzania <i>Sep 2004 - Oct 2005</i>
Woods Hole Oceanographic Institution <i>Summer Student Fellow, Advanced Engineering Laboratory</i>	Woods Hole, MA <i>Summer 2003</i>
University of Southampton <i>Visiting Researcher, Institute for Sound and Vibration Research</i>	Southampton, United Kingdom <i>January 2003</i>
Massachusetts Institute of Technology <i>Undergraduate Researcher, Deep Sea Archaeology Research Group</i>	Cambridge, MA <i>Fall 2001, Spring 2002, Fall 2002</i>
University of Rhode Island Graduate School of Oceanography <i>Summer Undergraduate Research Fellow in Oceanography</i>	Narragansett, RI <i>Summer 2002</i>

Teaching

UM EECS 460, Control System Analysis & Design <i>Instructor</i>	Ann Arbor, MI <i>Winter '20</i>
UM EECS 463, Power System Design and Operation <i>Instructor</i>	Ann Arbor, MI <i>Winter '14; Fall '15, '18, '21, '23</i>
UM EECS 498, Grid Integration of Alternative Energy Sources <i>Instructor</i>	Ann Arbor, MI <i>Winter '15, '23</i>
UM EECS 534, Analysis of Electric Power Distribution Systems and Loads <i>Course Developer & Instructor</i>	Ann Arbor, MI <i>Fall '14, '16, '22, '24; Winter '19</i>
UM EECS 536, Power System Markets & Optimization <i>Course Developer & Instructor</i>	Ann Arbor, MI <i>Fall '19; Winter '16, '18, '22, '24</i>
UM Multidisciplinary Design Program <i>Faculty Mentor, Campus Farm Solar Energy Management System</i>	Ann Arbor, MI <i>2024</i>
Short Course: Grid 101 <i>Course Developer (with I. Hiskens) & Instructor</i>	Ann Arbor, MI <i>May '18</i>
UC Berkeley CE 290, Design for Sustainable Communities <i>Graduate Student Instructor</i>	Berkeley, CA <i>Spring '09, '10</i>
Mahiwa Secondary School, Physics & Mathematics <i>U.S. Peace Corps Volunteer & Secondary School Teacher</i>	Mahiwa, Tanzania <i>Jan - Oct '05</i>
St. Walburg's Hospital Adult Education Program, Physics <i>U.S. Peace Corps Volunteer & Adult Education Teacher</i>	Nyangao, Tanzania <i>Spring '05</i>

Guest Lectures

- UM EECS 298, *A Brief Introduction to the Grid*, Sep 13, 2023.
- Earth Day at 50 Teach-Out: Reimagining the Future of Sustainability, *A Sustainable Power Grid*, Mar 2020.
- Technical University of Denmark Center for Electric Power and Energy Summer School, *Data-Driven Distributionally Robust Optimization*, Jun 18, 2019.
- UM ESE 501, *A Brief Introduction to the Grid*, Oct 9, 2019.
- UM ESE 501, *A Brief Introduction to the Grid*, Oct 10, 2018.
- UM EECS 500, *Coordinating Electric Loads to Improve Power System Reliability and Economics*, Oct 16, 2015.
- UM EECS 500, *How Your Refrigerator Can Help Get More Renewable Energy on the Power Grid*, Oct 3, 2014.
- UM CEE 679, *Energy Arbitrage with Thermostatically Controlled Loads*, Feb 24, 2014.
- UC Berkeley ERG 254, *Demand Response*, Nov 29, 2011.

Awards & Honors

- DOE Clean Energy Education and Empowerment (C3E) Fundamental & Applied Research Award, 2024.
- IEEE PES General Meeting Best of the Best Conference Paper, 2024. (with A. Lin and S. Lei)

- R&D 100 Award for “Grid Regulation Delivered by Aggregations of Loads (GRID-BAL),” 2023.
Special Recognition (Gold): Market Disruptor - Services.
Special Recognition (Silver): Corporate Social Responsibility.
(with ARPA-E OPEN Project Team)
- IEEE PES Wanda Reder Pioneer in Power Award, 2023.
- DOE Clean Energy Education and Empowerment (C3E) Award Finalist, 2022, 2023.
- Outstanding Associate Editor for *IEEE Transactions on Power Systems*, 2021.
- National Academy of Engineering EU-US Frontiers of Engineering Symposium Participant, 2021.
- National Academy of Engineering US Frontiers of Engineering Symposium Presenter, 2021.
- UM Henry Russel Award, 2021.
- Outstanding Reviewer for *IEEE Transactions on Sustainable Energy*, 2020.
- National Academy of Engineering US Frontiers of Engineering Symposium Participant, 2019.
- NSF CAREER Award, 2019.
- UM ECE Ernest and Bettine Kuh Distinguished Faculty Award, 2018.
- Senior Member of the IEEE, 2018.
- ACEEE Summer Study on Energy Efficiency in Buildings paper selected for a special issue of *Energy Efficiency*, 2018. (with A. Keskar, D. Anderson, J.X. Johnson, and I.A. Hiskens)
- A Best Paper on Distribution Systems, Microgrids, and Renewables, IEEE PES General Meeting, 2018. (with G.S. Ledva and S. Peterson)
- Honorable Mention, INFORMS Junior Faculty Interest Group Paper Competition, 2017. (with B. Li and R. Jiang)
- Energy Policy Research Conference paper selected for a special issue of *The Electricity Journal*, 2017. (with S. Forrester, A. Zaman, and J.X. Johnson)
- IEEE PES PowerTech Conference High Quality Paper Award, 2017. (student award: M. Yao)
- Power Systems Computation Conference paper selected for a special issue of the *International Journal of Electrical Power and Energy Systems*, 2014. (with O. Mégel and G. Andersson)
- A Best Paper on Markets, Economics, and Planning, IEEE PES General Meeting, 2014. (with T.B. Rasmussen, M. Sørensen, H. Jóhannsson, and G. Andersson)
- First Prize in Global Poverty Reduction Category, UC Berkeley Bears Breaking Boundaries White Paper Competition, 2007. (with T. Khan, K. Jahani, M. Seflek, and A.J. Gadgil)
- UC Berkeley Chancellor’s Fellowship, 2006.
- National Defense Science and Engineering Graduate (NDSEG) Research Fellowship, 2006.
- Honorable Mention, National Science Foundation Graduate Research Fellowship Program, 2006.
- MIT Department of Ocean Engineering Robert Bruce Wallace Prize, 2003.
- Best Undergraduate Paper, Society of Naval Architects and Marine Engineers New England Section Paper Night, 2004. (with M.B. Greytak, K.S. Wasserman, A.K. Baker, J.D. Chambers, and B.M. Mueller)
- Best Undergraduate Paper, Autonomous Undersea Systems Institute Symposium on Unmanned Untethered Submersible Technologies, 2003.
- Best Undergraduate Paper, Society of Naval Architects and Marine Engineers New England Section Paper Night, 2003.
- MIT Sea Grant College Program Dean A. Horn Award, 2003.
- Marine Technology Society Remotely Operated Vehicle Scholarship, 2002.

Publications

Journal Papers (*contributed equally)

- [J52] O.E. Oyefeso, D.A. Geller, I.M. Granitsas, D.S. Callaway, and **J.L. Mathieu**. “A hardware-in-the-loop experimental testbed using air conditioners for grid balancing”. In: (review).
- [J51] W. Wu, S. Lei, Q.Z. Sun, and **J.L. Mathieu**. “Energy efficiency of commercial HVAC-based virtual batteries for load shifting”. In: (review).
- [J50] **J.L. Mathieu**, G. Verbič, T. Morstyn, M. Almassalkhi, K. Baker, J. Braslavsky, K. Bruninx, Y. Dvorkin, G.S. Ledva, N. Mahdavi, H. Pandžić, A. Parisio, and V. Perić. “A new definition of demand response in the distributed energy resource era”. In: (review).
- [J49] J. Peng, J. King, and **J.L. Mathieu**. “Optimal replacement of coal with wind and battery energy storage”. In: *Environmental Research: Energy* 1.4 (2024), p. 045009.
- [J48] I.M. Granitsas, O.E. Oyefeso, G.S. Ledva, S.A. Mock, S.R. Hinson, I.A. Hiskens, and **J.L. Mathieu**. “Controlling air conditioners for frequency regulation: A real-world example”. In: *IEEE Transactions on Smart Grid* (accepted).
- [J47] A. Stuhlmacher, S. Guikema, and **J.L. Mathieu**. “Assessing power and water network resilience when water pumps provide frequency regulation”. In: (review).
- [J46] J. Peng, J. Buchsbaum, C. Hausman, and **J.L. Mathieu**. “Power system decarbonization: A comparison between carbon taxes and forcing coal power plant retirements”. In: *IEEE Transactions on Sustainable Energy* 15.4 (2024), pp. 2310–2321.
- [J45] S. Jang, N. Ozay, and **J.L. Mathieu**. “An invariant set construction method, applied to safe coordination of thermostatic loads”. In: *IEEE Transactions on Control of Network Systems* (accepted).
- [J44] S. Jang, N. Ozay, and **J.L. Mathieu**. “Probabilistic constraint construction for network-safe load coordination”. In: *IEEE Transactions on Power Systems* 39.2 (2024), pp. 4473–4485.
- [J43] J. Buchsbaum, C. Hausman, **J.L. Mathieu**, and J. Peng. “Spillovers from ancillary services to wholesale energy markets”. In: *The RAND Journal of Economics* 55.1 (2024), pp. 87–111.
- [J42] J. de Chalendar, A. Keskar, J.X. Johnson, and **J.L. Mathieu**. “Living laboratories can and should play a greater role to unlock flexibility in US commercial buildings”. In: *Joule* 8.1 (2024), pp. 13–28.
- [J41] A.J. Lin, S. Lei, A. Keskar, I.A. Hiskens, J.X. Johnson, and **J.L. Mathieu**. “The sub-metered HVAC Implemented For Demand Response (SHIFDR) Dataset”. In: *ASME Journal of Dynamical Systems, Measurement, and Control (Special issue on Energy in Smart Infrastructures: Storage and Utilization)* 146.1 (2024), p. 011107.
- [J40] M. Yao, S. Roy, and **J.L. Mathieu**. “Using demand response to improve power system small-signal stability”. In: *Sustainable Energy, Grids and Networks* 36 (2023), p. 101214.
- [J39] *K. Girigoudar, *M. Yao, **J.L. Mathieu**, and L. Roald. “Integration of centralized and distributed methods to mitigate voltage unbalance using solar inverters”. In: *IEEE Transactions on Smart Grid* 14.3 (2023), pp. 2034–2046.
- [J38] B. Li, R. Jiang, and **J.L. Mathieu**. “Integrating unimodality into distributionally robust optimal power flow”. In: *TOP (Special Issue on OR & Statistics in Energy)* 30 (2022), pp. 594–617.
- [J37] A. Keskar, S. Lei, T. Webb, S. Nagy, I.A. Hiskens, **J.L. Mathieu**, and J.X. Johnson. “Assessing the performance of global thermostat adjustment in commercial buildings for load shifting demand response”. In: *Environmental Research: Infrastructure and Sustainability* 2.1 (2022), p. 015003.
- [J36] A. Andrews, J. Roth, R.K. Jain, and **J.L. Mathieu**. “Data-driven examination of the impact energy efficiency has on demand response capabilities in institutional buildings”. In: *ASME Journal of Engineering for Sustainable Buildings and Cities* 3.2 (2022), p. 024501.

- [J35] S. Lei, **J.L. Mathieu**, and R.K. Jain. “Performance of existing methods in baselining demand response from commercial building HVAC fans”. In: *ASME Journal of Engineering for Sustainable Buildings and Cities* 2.2 (2021), p. 021002.
- [J34] M. Yao, I.A. Hiskens, and **J.L. Mathieu**. “Mitigating voltage unbalance using distributed solar photovoltaic inverters”. In: *IEEE Transactions on Power Systems* 36.3 (2021), pp. 2642–2651.
- [J33] S.C. Ross and **J.L. Mathieu**. “Strategies for network-safe load control with a third-party aggregator and a distribution operator”. In: *IEEE Transactions on Power Systems* 36.4 (2021), pp. 3329–3339.
- [J32] L. Herre, **J.L. Mathieu**, and L. Söder. “Impact of market timing on the profit of a risk-averse load aggregator”. In: *IEEE Transactions on Power Systems* 35.5 (2020), pp. 3970–3980.
- [J31] A. Stuhlmacher and **J.L. Mathieu**. “Chance-constrained water pumping to manage water and power demand uncertainty in distribution networks”. In: *Proceedings of the IEEE (Special Issue on Multi-Energy Systems)* 108.9 (2020), pp. 1640–1655.
- [J30] G.S. Ledva and **J.L. Mathieu**. “Separating feeder demand into components using substation, feeder, and smart meter measurements”. In: *IEEE Transactions on Smart Grid* 11.4 (2020), pp. 3280–3290.
- [J29] A. Keskar, D. Anderson, J.X. Johnson, I.A. Hiskens, and **J.L. Mathieu**. “Do commercial buildings become less efficient when they provide grid ancillary services?” In: *Energy Efficiency (Special Issue for the 2018 ACEEE Summer Study on Energy Efficiency in Buildings)* 13.3 (2020), pp. 487–501.
- [J28] B. Li, R. Jiang, and **J.L. Mathieu**. “Distributionally robust optimal power flow assuming unimodal distributions with misspecified modes”. In: *IEEE Transactions on Control of Network Systems (Special Issue on Analysis, Control, and Optimization of Energy Networks)* 6.3 (2019), pp. 1223–1234.
- [J27] M. Yao, D.K. Molzahn, and **J.L. Mathieu**. “An optimal power flow approach to improve power system voltage stability using demand response”. In: *IEEE Transactions on Control of Network Systems (Special Issue on Analysis, Control, and Optimization of Energy Networks)* 6.3 (2019), pp. 1015–1025.
- [J26] S.C. Ross, G. Vuylsteke, and **J.L. Mathieu**. “Effects of load-based frequency regulation on distribution network operation”. In: *IEEE Transactions on Power Systems* 34.2 (2019), pp. 1569–1578.
- [J25] M. Vrakopoulou, B. Li, and **J.L. Mathieu**. “Chance constrained reserve scheduling using uncertain controllable loads, Part I: Formulation and scenario-based analysis”. In: *IEEE Transactions on Smart Grid* 10.2 (2019), pp. 1608–1617.
- [J24] B. Li, M. Vrakopoulou, and **J.L. Mathieu**. “Chance constrained reserve scheduling using uncertain controllable loads, Part II: Analytical reformulation”. In: *IEEE Transactions on Smart Grid* 10.2 (2019), pp. 1618–1625.
- [J23] B. Li, R. Jiang, and **J.L. Mathieu**. “Ambiguous risk constraints with moment and unimodality information”. In: *Mathematical Programming* 173.1-2 (2019), pp. 151–192.
- [J22] N.A. Ryan, Y. Lin, N. Mitchell-Ward, **J.L. Mathieu**, and J.X. Johnson. “Use-phase drives lithium ion battery life cycle environmental impacts when used for frequency regulation”. In: *Environmental Science & Technology* 52.17 (2018), pp. 10163–10174.
- [J21] G.S. Ledva, L. Balzano, and **J.L. Mathieu**. “Real-time energy disaggregation of a distribution feeder’s demand using online learning”. In: *IEEE Transactions on Power Systems* 33.5 (2018), pp. 4730–4740.
- [J20] G.S. Ledva, E. Vrettos, S. Mastellone, G. Andersson, and **J.L. Mathieu**. “Managing communication delays and model error in demand response”. In: *IEEE Transactions on Power Systems* 33.2 (2018), pp. 1299–1308.
- [J19] S. Forrester, A. Zaman, **J.L. Mathieu**, and J.X. Johnson. “Policy and market barriers to energy storage providing multiple services”. In: *The Electricity Journal (Special Issue for the Energy Policy Institute’s Seventh Annual Energy Policy Research Conference)* 30.9 (2017), pp. 50–56.

- [J18] P. Fortenbacher, **J.L. Mathieu**, and G. Andersson. “Modeling and optimal operation of distributed battery storage in low voltage grids”. In: *IEEE Transactions on Power Systems* 32.6 (2017), pp. 4340–4350.
- [J17] Y. Lin, **J.L. Mathieu**, J.X. Johnson, I.A. Hiskens, and S. Backhaus. “Explaining inefficiencies in commercial buildings providing power system ancillary services”. In: *Energy and Buildings* 152 (2017), pp. 216–226.
- [J16] O. Mégel, **J.L. Mathieu**, and G. Andersson. “Hybrid stochastic-deterministic multi-period DC optimal power flow”. In: *IEEE Transactions on Power Systems* 32.5 (2017), pp. 3934–3945.
- [J15] Y. Zhang, S. Shen, and **J.L. Mathieu**. “Distributionally robust chance-constrained optimal power flow with uncertain renewables and uncertain reserves provided by loads”. In: *IEEE Transactions on Power Systems* 32.2 (2017), pp. 1378–1388.
- [J14] Y. Lin, P. Barooah, and **J.L. Mathieu**. “Ancillary services through demand scheduling and control of commercial buildings”. In: *IEEE Transactions on Power Systems* 32.1 (2017), pp. 186–197.
- [J13] J.A. Taylor, **J.L. Mathieu**, D.S. Callaway, and K. Poolla. “Price and capacity competition in balancing markets with energy storage”. In: *Energy Systems* 8.1 (2017), pp. 169–197.
- [J12] T. Haring, **J.L. Mathieu**, and G. Andersson. “Comparing centralized and decentralized contract design enabling direct load control for reserves”. In: *IEEE Transactions on Power Systems* 31.3 (2016), pp. 2044–2054.
- [J11] Y. Lin, J.X. Johnson, and **J.L. Mathieu**. “Emissions impacts of using energy storage for power system reserves”. In: *Applied Energy* 168 (2016), pp. 444–456.
- [J10] O. Mégel, **J.L. Mathieu**, and G. Andersson. “Scheduling distributed energy storage units to provide multiple services under forecast error”. In: *International Journal of Electrical Power and Energy Systems (Special Issue for the 18th Power Systems Computation Conference)* 72 (2015), pp. 48–57.
- [J9] **J.L. Mathieu**, M. Kamgarpour, J. Lygeros, G. Andersson, and D.S. Callaway. “Arbitraging intraday wholesale energy market prices with aggregations of thermostatic loads”. In: *IEEE Transactions on Power Systems* 30.2 (2015), pp. 763–772.
- [J8] **J.L. Mathieu**, M.E.H. Dyson, and D.S. Callaway. “Resource and revenue potential of California residential load participation in ancillary services”. In: *Energy Policy* 80 (2015), pp. 76–87.
- [J7] N.J. Addy, S. Kiliccote, D.S. Callaway, and **J.L. Mathieu**. “How baseline model implementation choices affect demand response assessments”. In: *ASME Journal of Solar Energy Engineering – Including Wind Energy and Building Energy Conservation* 137.2 (2015), p. 021008.
- [J6] J.A. Taylor and **J.L. Mathieu**. “Index policies for demand response”. In: *IEEE Transactions on Power Systems* 29.3 (2014), pp. 1287–1295.
- [J5] **J.L. Mathieu**, S. Koch, and D.S. Callaway. “State estimation and control of electric loads to manage real-time energy imbalance”. In: *IEEE Transactions on Power Systems* 28.1 (2013), pp. 430–440.
- [J4] **J.L. Mathieu**, D.S. Callaway, and S. Kiliccote. “Variability in automated responses of commercial buildings and industrial facilities to dynamic electricity prices”. In: *Energy and Buildings* 43.12 (2011), pp. 3322–3330.
- [J3] **J.L. Mathieu**, P.N. Price, S. Kiliccote, and M.A. Piette. “Quantifying changes in building electricity use, with application to demand response”. In: *IEEE Transactions on Smart Grid* 2.3 (2011), pp. 507–518.
- [J2] **J.L. Mathieu** and J.K. Hedrick. “Transformation of a mismatched nonlinear dynamic system into strict feedback form”. In: *ASME Journal of Dynamical Systems, Measurement, and Control* 133.4 (2011), p. 041010.

- [J1] **J.L. Mathieu**, A.J. Gadgil, S.E.A. Addy, and K. Kowolik. “Arsenic remediation of drinking water using iron-oxide coated coal bottom ash”. In: *Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering* 45.11 (2010), pp. 1446–1460.

Book Chapters.....

- [B4] **J.L. Mathieu**. “Algorithms for Energy Justice”. In: *Women in Power: Research and Development Advances in Electric Power Systems, Springer Women in Engineering and Science Series*. Ed. by Jill S. Tietjen, Marija D. Ilic, Lina Bertling Tjernberg, and Noel N. Schulz. Cham, Switzerland: Springer Nature Switzerland AG, 2023.
- [B3] **J.L. Mathieu**. “Demand response: Coordination of flexible electric loads”. In: *Encyclopedia of Systems and Control, 2nd Edition*. Ed. by J. Baillieul and T. Samad. London: Springer, 2020.
- [B2] G.S. Ledva, Z. Du, L. Balzano, and **J.L. Mathieu**. “Disaggregating load by type from distribution system measurements in real-time”. In: *Energy Markets and Responsive Grids*. Ed. by S. Meyn, T. Samad, I.A. Hiskens, and J. Stoustrup. London: Springer, 2018. Chap. 17, pp. 413–437.
- [B1] J.A. Taylor and **J.L. Mathieu**. “Uncertainty in demand response - identification, estimation, and learning”. In: *Tutorials in Operations Research: The Operations Research Revolution*. Ed. by D. Aleman, A. Thiele, J.C. Smith, and H.J. Greenberg. INFORMS, 2015. Chap. 4, pp. 56–70.

Conference Proceedings (**presenter, *contributed equally).....

- [C111] **A. Stuhlmacher and **J.L. Mathieu**. “Demand Response Potential of Drinking Water Distribution Networks”. In: *Proceedings of the Hawaii International Conference on System Sciences (HICSS)*. Kona, HI, Jan. 2025.
- [C110] **J. Peng, S. Vijayshankar, J. King, and **J.L. Mathieu**. “Trade-offs between Battery Energy Storage and Hydrogen Storage in Off-Grid Green Hydrogen Systems”. In: *Proceedings of the Hawaii International Conference on System Sciences (HICSS)*. Kona, HI, Jan. 2025.
- [C109] S. Jang, **J.L. Mathieu**, and **N. Ozay. “Data-Driven Network-Aware Control of Thermostatically Controlled Loads with Unknown Dynamics”. In: *Proceedings of the IEEE Conference on Decision and Control (CDC)*. Milan, Italy, Dec. 2024.
- [C108] **M.R. Abdussami, **J.L. Mathieu**, and A. Verma. “Evaluation of operational benefits of retrofitting nuclear-renewable integrated energy systems at coal plant sites”. In: *Proceedings of the American Nuclear Society Winter Conference and Expo*. Orlando, FL, Nov. 2024.
- [C107] **J. Knudtson and **J.L. Mathieu**. “Topological models underestimate the impact of hazards on coupled power and water distribution systems”. In: *Proceedings of the North American Power Symposium (NAPS)*. El Paso, TX, Oct. 2024.
- [C106] **X. Farrell and **J.L. Mathieu**. “Evaluating probabilistic load forecasting in predicting long-term household savings from electricity rate plan recommendations”. In: *Proceedings of the North American Power Symposium (NAPS)*. El Paso, TX, Oct. 2024.
- [C105] H. Moring, X. Farrell, and ****J.L. Mathieu**. “Fair-over-time distributed energy resource coordination”. In: *Proceedings of the Allerton Conference on Communication, Control, and Computing*. Urbana, IL, Sept. 2024, (Invited).
- [C104] **A.J. Lin and **J.L. Mathieu**. “The cost of HVAC demand response: Using experimental data to track down the causes of inefficiency in sub-hourly HVAC load shifting”. In: *Proceedings of the ACEEE Summer Study on Energy Efficiency in Buildings*. Pacific Grove, CA, Aug. 2024.
- [C103] **A.J. Lin, S. Lei, and **J.L. Mathieu**. “Experimental investigation of building HVAC load-shifting efficiency”. In: *Proceedings of the IEEE Power & Energy Society General Meeting*. Seattle, WA, July 2024, (“Best of the Best” conference paper, Also a poster).

- [C102] **S. Chen, **J.L. Mathieu**, and P. Seiler. “The effects of renewable power and forecast error correlation on balancing reserve needs”. In: *Proceedings of the International Conference on Probabilistic Methods Applied to Power Systems (PMAPS)*. Auckland, New Zealand, June 2024.
- [C101] **H. Moring, H. Nagarajan, K. Girigoudar, D.M. Fobes, and **J.L. Mathieu**. “Robust partitioning and operation for maximal uncertain-load delivery in distribution grids”. In: *Proceedings of the Power Systems Computation Conference (PSCC) and a Special Issue of Electric Power Systems Research*. Paris-Saclay, France, June 2024.
- [C100] ***H. Moring, *S. Jang, N. Ozay, and **J.L. Mathieu**. “Nodal operating envelopes vs. network-wide constraints: what is better for network-safe coordination of DERs?” In: *Proceedings of the Power Systems Computation Conference (PSCC) and a Special Issue of Electric Power Systems Research*. Paris-Saclay, France, June 2024.
- [C99] I.M. Granitsas, I.A. Hiskens, and ****J.L. Mathieu**. “Nonlinear behavior in high-frequency aggregate control of thermostatically controlled loads”. In: *Proceedings of the Power Systems Computation Conference (PSCC) and a Special Issue of Electric Power Systems Research*. Paris-Saclay, France, June 2024.
- [C98] **A. Stuhlmacher, **J.L. Mathieu**, and P. Seiler. “Optimizing dual-axis solar panel operation in an agrivoltaic system and implications for power systems”. In: *Proceedings of the Hawaii International Conference on System Sciences (HICSS)*. Honolulu, HI, Jan. 2024.
- [C97] **H. Moring and **J.L. Mathieu**. “Inexactness of second order cone relaxations for calculating operating envelopes”. In: *Proceedings of the IEEE International Conference on Smart Grid Communications (SmartGridComm)*. Glasgow, Scotland, Oct. 2023.
- [C96] **S. Chen, **J.L. Mathieu**, and P. Seiler. “Stochastic planning of a mostly-renewable power grid”. In: *Proceedings of the IEEE Conference on Control Technology and Applications*. Bridgetown, Barbados, Aug. 2023.
- [C95] **I. Granitsas, G.S. Ledva, I.A. Hiskens, and **J.L. Mathieu**. “Parameter identifiability and estimation of thermostatically controlled loads”. In: *Proceedings of the IEEE Power & Energy Society PowerTech Conference*. Belgrade, Serbia, June 2023.
- [C94] **H. Moring and **J.L. Mathieu**. “A comparison of strategies for managing energy constraints of energy storage providing frequency regulation”. In: *Proceedings of the Hawaii International Conference on System Sciences (HICSS)*. Lahaina, Maui, HI, Jan. 2023.
- [C93] S. Jang, N. Ozay, and ****J.L. Mathieu**. “Data-driven estimation of probabilistic constraints for network-safe distributed energy resource control”. In: *Proceedings of the Allerton Conference on Communication, Control, and Computing*. Monticello, IL, Oct. 2022, (Invited).
- [C92] **O. Oyefeso, G.S. Ledva, M. Almassalkhi, I.A. Hiskens, and **J.L. Mathieu**. “Control of aggregate air-conditioning load using packetized energy concepts”. In: *Proceedings of the IEEE Conference on Control Technology and Applications*. Trieste, Italy, Aug. 2022.
- [C91] **I. Granitsas, I.A. Hiskens, and **J.L. Mathieu**. “Incorporating delayed temperature dynamics into residential air conditioner models for grid frequency regulation”. In: *Proceedings of the IEEE Conference on Control Technology and Applications*. Trieste, Italy, Aug. 2022.
- [C90] **A. Stuhlmacher and **J.L. Mathieu**. “Uncertainty-aware methods for leveraging water pumping flexibility for power networks”. In: *Proceedings of the IREP Symposium on Bulk Power System Dynamics and Control*. Banff, Canada, July 2022.
- [C89] **S. Chen, **J.L. Mathieu**, and P. Seiler. “Stochastic model predictive controller for wind farm frequency regulation in waked conditions”. In: *Proceedings of the Power Systems Computation Conference (PSCC) and a Special Issue of Electric Power Systems Research*. Porto, Portugal, June 2022.

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- [R9] D.S. Callaway, **J.L. Mathieu**, M.E.H. Dyson, M. Kamgarpour, S. Koch, and J. Lygeros. *Mitigating renewables intermittency through non-disruptive distributed load control*. Technical Report. PSERC Industry-University Meeting on Preparing for the Future Grid, Madison, WI, May 2013.
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- [R7] **J.L. Mathieu** and D.S. Callaway. *The value of real-time data in controlling electric loads for demand response*. White Paper. Carnegie Mellon University Conference on the Electricity Industry: Data Driven Sustainable Energy Systems, Pittsburgh, PA, Mar. 2012.
- [R6] S. Oren, D. Callaway, **J.L. Mathieu**, A. Papavasiliou, T. Mount, M. Zhang, R. Thomas, G. Gross, and A. Dominguez-Garcia. *Renewable energy integration and the impact of carbon regulation on the electric grid*. White Paper. PSERC Future Grid Initiative, 2012.
- [R5] G. Ghatikar, **J.L. Mathieu**, M.A. Piette, E. Koch, and D. Hennage. *Open automated demand response dynamic pricing technologies and demonstration*. Technical Report LBNL-3921E. Lawrence Berkeley National Laboratory, Aug. 2010.
- [R4] **J.L. Mathieu**, T. Khan, K. Jahani, M. Seflek, and A.J. Gadgil. *Berkeley arsenic alleviation group*. White Paper. UC Berkeley Bears Breaking Boundaries Competition, 2007, (First prize – ‘Global Poverty Reduction’ category).
- [R3] **J.L. Mathieu**. *A long range optical hydrothermal plume detector*. Technical Report. Woods Hole Oceanographic Institution, Project supervisor: A. Bradley, 2003.
- [R2] **J.L. Mathieu**. *Acoustic backscatter from sediment and archaeological wood*. Technical Report. University of Southampton Institute for Sound, Vibration Research & MIT Undergraduate Research Opportunities Program, Project supervisors: J. Dix, and D. Mindell, 2003.
- [R1] **J.L. Mathieu** and A.K. Hansen. *A chemical sensor to aid in the search for underwater archaeological sites*. Technical Report No. 2003-1. University of Rhode Island, 2002, pp. 55–62.

Theses.....

- [T2] **J.L. Mathieu**. “Modeling, analysis, and control of demand response resources”. PhD thesis. University of California, Berkeley (LBNL-5544E), May 2012.
- [T1] **J.L. Mathieu**. “Design of a rural water provision system to decrease arsenic exposure in Bangladesh”. MS project report. University of California, Berkeley (LBNL-1422E), Dec. 2008.

Abstracts with Oral Presentations (presenter, *contributed equally)**.....

- [A35] **X. Farrell and **J.L. Mathieu**. *Quantifying Confidence in Electricity Rate Plan Recommendations for Low-to-Moderate Income Homes in Detroit*. INFORMS Annual Meeting, Phoenix, AZ. Oct. 2023.
- [A34] **A. Stuhlmacher, S. Guikema, and **J.L. Mathieu**. *Assessing network resilience under an optimal water pumping control strategy to provide frequency regulation*. INFORMS Annual Meeting, Phoenix, AZ. Oct. 2023.
- [A33] X. Farrell and ****J.L. Mathieu**. *Quantifying Confidence in Electricity Rate Plan Recommendations Considering Variability in Future Electricity Usage*. Allerton Conference on Communication, Control, and Computing, Monticello, IL. Sept. 2023.
- [A32] S. Jang, N. Ozay, and ****J.L. Mathieu**. *Aggregator-Utility Coordination for Network-Aware DER Control*. Conference on Information Sciences and Systems, Baltimore, MD. Mar. 2023.
- [A31] ****J.L. Mathieu**, S. Jang, N. Ozay, and S.C. Ross. *Network-aware electric load coordination*. INFORMS Annual Meeting, Indianapolis, IN. Oct. 2022.

- [A30] **J. Peng, **J.L. Mathieu**, C. Hausman, and J. Buchsbaum. *Long-term impacts of energy storage providing regulation on power plant retirements and system emissions*. INFORMS Annual Meeting, Indianapolis, IN. Oct. 2022.
- [A29] J. Buchsbaum, **C. Hausman, **J.L. Mathieu**, and J. Peng. *Spillovers from ancillary services to wholesale power markets: Implications for climate policy*. American Economic Association Meeting. Jan. 2022.
- [A28] **K. Girigoudar, M. Yao, **J.L. Mathieu**, and L. Roald. *Control strategies to mitigate voltage unbalance using solar PV inverters*. INFORMS Annual Meeting (virtual). Oct. 2021.
- [A27] **A. Stuhlmacher, L. Roald, and **J.L. Mathieu**. *An adjustable robust optimization model for drinking water pumping as a flexible load*. INFORMS Annual Meeting (virtual). Oct. 2021.
- [A26] J. Buchsbaum, **C. Hausman, **J.L. Mathieu**, and J. Peng. *Multi-product firms in electricity markets: Implications for climate policy*. Association of Environmental and Resource Economists Summer Conference (virtual). June 2021.
- [A25] J. Buchsbaum, **C. Hausman, **J.L. Mathieu**, and J. Peng. *Multi-product firms in electricity markets: Implications for batteries and climate policy*. Western Economic Association International Conference (virtual). Mar. 2021.
- [A24] J. Buchsbaum, **C. Hausman, **J.L. Mathieu**, and J. Peng. *Spillovers from ancillary services to wholesale power markets: Implications for climate policy*. University of California Energy Institute POWER Conference (virtual). Mar. 2021.
- [A23] A. Keskar, D. Anderson, **J.X. Johnson, I.A. Hiskens, and **J.L. Mathieu**. *Buildings as batteries: An experimental investigation into energy efficiency impacts of demand response*. International Symposium on Sustainable Systems and Technology, Portland, OR. June 2019.
- [A22] **A. Keskar, D. Anderson, J.X. Johnson, I.A. Hiskens, and **J.L. Mathieu**. *Buildings as batteries: An experimental investigation into energy efficiency impacts of demand response*. Engineering Sustainability Conference, Pittsburgh, PA. Apr. 2019.
- [A21] ****J.L. Mathieu** and S.C. Ross. *Distribution network-aware load coordination architectures and control strategies*. Conference on Information Sciences and Systems, Baltimore, MD. Mar. 2019.
- [A20] **B. Li, R. Jiang, and **J.L. Mathieu**. *Distributionally robust chance-constrained optimal power flow assuming log-concave distributions*. INFORMS Annual Meeting, Phoenix, AZ. Nov. 2018.
- [A19] **S.C. Ross and **J.L. Mathieu**. *Stability of electrical grids with 100% renewable generation*. Michigan University-Wide Sustainability & Environment Conference, Ann Arbor, MI. Feb. 2018.
- [A18] **D.K. Molzahn, M. Yao, and **J.L. Mathieu**. *A multi-period OPF approach to improve voltage stability using demand response*. INFORMS Annual Meeting, Houston, TX. Oct. 2017.
- [A17] B. Li, **R. Jiang, and **J.L. Mathieu**. *Ambiguous risk constraints with moment and unimodality information*. INFORMS Annual Meeting, Houston, TX. Oct. 2017.
- [A16] ****J.L. Mathieu** and J. Taylor. *Reducing degradation in batteries used for frequency regulation via nonlinear control*. INFORMS Annual Meeting, Houston, TX. Oct. 2017, Invited.
- [A15] **D.K. Molzahn, M. Yao, and **J.L. Mathieu**. *A multi-period optimal power flow approach to improve power system voltage stability using demand response*. FERC Technical Conference on Increasing Real-Time and Day-Ahead Market Efficiency through Improved Software, Washington, DC. June 2017.
- [A14] **N. Ryan, Y. Lin, N. Mitchell-Ward, **J.L. Mathieu**, and J.X. Johnson. *Life cycle environmental impacts of using lithium ion batteries for power system reserves and strategies for mitigation*. International Society for Industrial Ecology and International Symposium on Sustainable Systems and Technology Joint Conference, Chicago, IL. June 2017.

- [A13] **N. Ryan, Y. Lin, N. Mitchell-Ward, **J.L. Mathieu**, and J.X. Johnson. *Life cycle environmental impacts of using lithium ion batteries for power system reserves and strategies for mitigation*. Association of Environmental Engineering and Science Professors Biennial Conference, Ann Arbor, MI. June 2017.
- [A12] **N. Ryan, Y. Lin, N. Mitchell-Ward, **J.L. Mathieu**, and J.X. Johnson. *Life cycle environmental impacts of using lithium ion batteries for power system reserves and strategies for mitigation*. Engineering Sustainability Conference, Pittsburgh, PA. Apr. 2017.
- [A11] **B. Li, R. Jiang, and **J.L. Mathieu**. *Distributionally robust risk-constrained optimal power flow using moment and unimodality information*. INFORMS Annual Meeting, Nashville, TN. Nov. 2016, Invited.
- [A10] Y. Lin, N. Mitchell-Ward, **J.L. Mathieu**, and **J.X. Johnson. *Examining life cycle environmental impacts of energy storage for power system reserves*. INFORMS Annual Meeting, Nashville, TN. Nov. 2016, Invited.
- [A9] Y. Lin, **J.L. Mathieu**, **N. Mitchell-Ward, and J. Johnson. *Examining life cycle environmental impacts of energy storage for power system reserves*. International Symposium on Sustainable Systems and Technology, Phoenix, AZ. May 2016.
- [A8] **J. Taylor and **J.L. Mathieu**. *Strategic price bidding in electricity markets with only renewables*. INFORMS Annual Meeting, Philadelphia, PA. Nov. 2015, Invited.
- [A7] ****J.L. Mathieu**, O. Mégel, and G. Andersson. *Scheduling energy storage resources to provide multiple services*. INFORMS Annual Meeting, Philadelphia, PA. Nov. 2015, Invited.
- [A6] ****J.L. Mathieu**, Y. Zhang, S. Shen, and B. Li. *Chance-constrained optimal power flow with uncertain reserves*. INFORMS Annual Meeting, Philadelphia, PA. Nov. 2015, Invited.
- [A5] ****J.L. Mathieu**, S. Shen, Y. Zhang, and B. Li. *Data-driven optimization approaches for optimal power flow with uncertain reserves from load control*. FERC Technical Conference on Increasing Real-Time and Day-Ahead Market Efficiency through Improved Software, Washington, DC. June 2015.
- [A4] ****J.L. Mathieu**, M. Vrakopoulou, G. Andersson, and S. Shen. *Stochastic optimal power flow with uncertain reserves from flexible loads*. FERC Technical Conference on Increasing Real-Time and Day-Ahead Market Efficiency through Improved Software, Washington, DC. June 2014.
- [A3] ****J.L. Mathieu** and E. Vrettos and G. Andersson. *Control of thermostatic loads using moving horizon estimation of individual load states*. Midwest Workshop on Control and Game Theory, Columbus, OH. Apr. 2014.
- [A2] ****J.L. Mathieu**, M.E.H. Dyson, and D.S. Callaway. *Using residential loads like grid-scale batteries: The resource, potential revenues, and costs*. Los Alamos National Laboratory Conference on Optimization and Control for Smart Grids, Santa Fe, NM. May 2012.
- [A1] ****J.L. Mathieu** and D.S. Callaway. *Using residential electric loads in energy and ancillary services markets*. Trans-Atlantic INFRADAY Conference on Applied Infrastructure Modeling and Policy Analysis, Pre-conference Event at FERC, Washington, DC. Nov. 2011.

Posters (denotes presenter)**.....

- [P46] **H. Moring, H. Nagarajan, K. Girigoudar, D.M. Forbes, and **J.L. Mathieu**. *Optimal Configuration of Networked Microgrids Robust to Load Uncertainty*. NREL Workshop on Autonomous Energy Systems, Golden, CO. Sept. 2024.
- [P45] **H. Nguyen, S. Chen, and **J.L. Mathieu**. *Analysis of renewable complementarity in Michigan*. UM Undergraduate Research Opportunities Program (UROP) Symposium, Ann Arbor, MI. July 2024.
- [P44] **C. Watson, **J.L. Mathieu**, J. Brooks, and X. Farrell. *Reworking your energy bill: Applying energy justice to utility tariffs to optimize for equitability*. UM Summer Undergraduate Research in Engineering (SURE) Program Symposium, Ann Arbor, MI. July 2024.

- [P43] **S. Jang, **J.L. Mathieu**, N. Ozay, and H. Moring. *A network-wide constraint approach for network-safe DER coordination*. IEEE Power & Energy Society General Meeting Student Poster Competition, Seattle, WA. July 2024.
- [P42] **J.L. Mathieu**, C. Gronlund, M. O’Neill, S. Miller, T. Reames, Z. Rowe, M.C. Gutierrez, R. Garcia, G. Washington, K. Rinehart, M. Miller, **J. Brooks, X. Farrell, G. Cusumano, K.C. Ketenci, A. Malh, and K. Monroe. *Reducing barriers to residential energy security*. NSF Smart and Connected Communities PI Meeting, Nashville, TN. Feb. 2024.
- [P41] **X. Farrell and **J.L. Mathieu**. *Quantifying Confidence in Electricity Rate Plan Recommendations for Low-to-Moderate Income Homes in Detroit*. NREL Workshop on Autonomous Energy Systems, Golden, CO. Sept. 2023.
- [P40] **A. Stuhlmacher and **J.L. Mathieu**. *Assessing the resilience of an optimal water pumping strategy to provide frequency regulation*. IEEE Power & Energy Society General Meeting Student Poster Competition, Orlando, FL. July 2023.
- [P39] **A. Stuhlmacher, **J.L. Mathieu**, and P. Seiler. *Optimizing dual-axis solar panel operation in an agrivoltaic system under uncertainty*. AgriVoltaics World Conference (virtual). Apr. 2023.
- [P38] **N. Ozay, **J.L. Mathieu**, and **S. Jang. *Scalable and safe control synthesis for systems with symmetries*. NSF CPS PI Meeting, Arlington, VA. Nov. 2022.
- [P37] ****J.L. Mathieu**, C. Gronlund, M. O’Neill, S. Miller, T. Reames, **Z. Rowe, **S. Clark, R. Garcia, **G. Washington, R. Nikodem, M. Miller, **J. Brooks, X. Farrell, **M. Hall, D. Smith, and K.C. Ketenci. *Reducing barriers to residential energy security*. NSF Smart and Connected Communities PI Meeting, Arlington, VA. Oct. 2022.
- [P36] **S. Jang, N. Ozay, and **J.L. Mathieu**. *Safe coordination of thermostatic loads with scalable invariant set construction*. NREL Workshop on Autonomous Energy Systems, Golden, CO. July 2022.
- [P35] **H. Moring and **J.L. Mathieu**. *Scheduling battery energy storage systems under battery capacity degradation uncertainty*. NREL Workshop on Autonomous Energy Systems, Golden, CO. July 2022.
- [P34] **A. Stuhlmacher and **J.L. Mathieu**. *Computationally tractable uncertainty-aware framework for optimal water pumping in coupled power-water systems*. NREL Workshop on Autonomous Energy Systems, Golden, CO. July 2022.
- [P33] **D. Li, A. Stuhlmacher, and **J.L. Mathieu**. *Estimating the demand response potential of drinking water distribution networks in Arizona*. UM Undergraduate Research Symposium, Ann Arbor, MI. Apr. 2022.
- [P32] **C. Bertcher, A. Stuhlmacher, and **J.L. Mathieu**. *Comparison of linearized three-phase unbalanced power flow models*. IEEE Power & Energy Society General Meeting Student Poster Competition (virtual). July 2021.
- [P31] **N. Ozay and **J.L. Mathieu**. *Scalable and safe control synthesis for systems with symmetries*. NSF CPS PI Meeting (virtual). May 2021.
- [P30] **O. Oyefeso, G.S. Ledva, **J.L. Mathieu**, and I.A. Hiskens. *Aggregate modeling and asynchronous, anonymous coordination of distributed air conditioning load resources under packetized energy management*. UM Engineering Research Symposium (virtual). Feb. 2021.
- [P29] ****J.L. Mathieu**. *Overcoming the technical challenges of coordinating distributed load resources at scale*. ARPA-E 2018 OPEN Grid Projects Kick-off Meeting, New Orleans, LA. Feb. 2020.
- [P28] N. Ozay and ****J.L. Mathieu**. *Scalable and safe control synthesis for systems with symmetries*. NSF CPS PI Meeting, Arlington, VA. Nov. 2019.

- [P27] **B. Hicks, H. Lee, S. Lei, and **J.L. Mathieu**. *Alternative technique in the approximation of comparative baselines for the energy efficiency evaluation of HVAC systems during demand response events*. UM Summer Research Opportunities Program (SROP) Symposium, Ann Arbor, MI. July 2019.
- [P26] **C. Bertcher, A. Stuhlmacher, and **J.L. Mathieu**. *UM bus electrification: Challenges and solutions*. UM Undergraduate Research Symposium, Ann Arbor, MI. Apr. 2019.
- [P25] **A. Stuhlmacher and **J.L. Mathieu**. *Stochastic water distribution network operation considering power distribution network constraints*. UM Engineering Research Symposium, Ann Arbor, MI. Nov. 2018.
- [P24] **S.C. Ross, G. Vuylsteke, and **J.L. Mathieu**. *Effects of load-based frequency regulation on distribution network operation*. University of Vermont Future of Energy Workshop, Burlington, VT. Sept. 2018. (Best poster award).
- [P23] **B. Li, R. Bent, H. Nagarajan, R. Jiang, and **J.L. Mathieu**. *Decomposition and cutting-plane based algorithm for stochastic climate adaptation problem using special ordered sets*. Los Alamos National Laboratory Student Symposium, Los Alamos, NM. July 2018. (Outstanding poster award - computing).
- [P22] **A. Keskar, S. Afshari, P. Giessner, D. Anderson, I. Hiskens, J.X. Johnson, and **J.L. Mathieu**. *Using University of Michigan buildings as batteries*. Michigan University-Wide Sustainability & Environment Conference, Ann Arbor, MI. Feb. 2018.
- [P21] **M. Yao, D.K. Molzahn, and **J.L. Mathieu**. *The impact of load models in an algorithm for improving voltage stability via demand response*. UM Engineering Research Symposium, Ann Arbor, MI. Nov. 2017.
- [P20] **A. Kern, O. Mégel, J.X. Johnson, and **J.L. Mathieu**. *Approximation methods for scheduling battery energy storage for multiple services*. UM Engineering Research Symposium, Ann Arbor, MI. Nov. 2017.
- [P19] **A. Stuhlmacher, **J.L. Mathieu**, and V. Gupta. *Water-power distribution network coupling for optimal pumping to reduce energy costs and promote resilience*. UM Engineering Research Symposium, Ann Arbor, MI. Nov. 2017.
- [P18] **A. Keskar, S. Afshari, I. Hiskens, J.X. Johnson, and **J.L. Mathieu**. *Quantifying energy efficiencies of buildings providing ancillary services*. UM Engineering Research Symposium, Ann Arbor, MI. Nov. 2017.
- [P17] **S.C. Ross, G. Vuylsteke, and **J.L. Mathieu**. *Impacts on the local power network when residential loads provide energy balancing services to the regional network*. UM Engineering Research Symposium, Ann Arbor, MI. Nov. 2017.
- [P16] **A. Keskar, S. Afshari, I. Hiskens, J.X. Johnson, and **J.L. Mathieu**. *Improving the energy efficiency of buildings participating in power system ancillary services*. MCubed Symposium, Ann Arbor, MI. Nov. 2017.
- [P15] **P. Giessner, I. Hiskens, **J.L. Mathieu**, J. Johnson, S. Afshari, and A. Keskar. *Energy storage through building HVAC systems*. UM Undergraduate Research Opportunities Program (UROP) Symposium, Ann Arbor, MI. Aug. 2017.
- [P14] **M. Yao, **J.L. Mathieu**, and D.K. Molzahn. *Using demand response to improve electric power system stability margins*. UM Engineering Research Symposium, Ann Arbor, MI. Nov. 2016.
- [P13] **S. Crocker, A. Stuhlmacher, and **J.L. Mathieu**. *Effects of aggregate load control on the physical components of distribution networks*. IEEE Power & Energy Society General Meeting Student Poster Competition, Boston, MA. July 2016.
- [P12] **A. Stuhlmacher, S. Crocker, and **J.L. Mathieu**. *Effects of aggregate load control on the physical components of distribution networks*. UM Summer Research Opportunities Program (SROP) Symposium, Ann Arbor, MI. July 2016.

- [P11] **S. Crocker and **J.L. Mathieu**. *Adaptive state estimation and control of thermostatic loads for real-time energy balancing*. UM Engineering Research Symposium, Ann Arbor, MI. Oct. 2015.
- [P10] **B. Li and **J.L. Mathieu**. *Chance-constrained optimal power flow with uncertain load control*. UM Engineering Research Symposium, Ann Arbor, MI. Oct. 2015.
- [P9] **Y. Lin, **J.L. Mathieu**, and J. Johnson. *Environmental impacts of using distributed energy storage for power system reserves*. International Symposium on Sustainable Systems and Technology, Dearborn, MI. May 2015.
- [P8] **G.S. Ledva, E. Vrettos, S. Mastellone, G. Andersson, and **J.L. Mathieu**. *Applying networked estimation and control algorithms to address communication bandwidth limitations and latencies in demand response*. UM Engineering Research Symposium, Ann Arbor, MI. Nov. 2014.
- [P7] **G. Vuylsteke, **J.L. Mathieu**, and P. Howe. *Tangible benefits of using non-disruptive demand response to help the power grid*. UM Undergraduate Research Opportunities Program (UROP) Symposium, Ann Arbor, MI. Aug. 2014.
- [P6] ****J.L. Mathieu** and D.S. Callaway. *Mitigating renewables intermittency through non disruptive load control*. PSERC Future Grid Initiative Workshop, Berkeley, CA. Dec. 2011.
- [P5] ****J.L. Mathieu**, S. Koch, and D.S. Callaway. *Modeling, state estimation, and control of thermostatically controlled loads for load following and regulation*. UC Berkeley Energy Symposium, Berkeley, CA. Oct. 2011.
- [P4] ****J.L. Mathieu**, S. Koch, and D.S. Callaway. *Modeling, state estimation, and control of thermostatically controlled loads for load following and regulation*. Lawrence Livermore National Laboratory Current Challenges in Computing Conference: Energy Resources Modeling, Napa, CA. Aug. 2011.
- [P3] ****J.L. Mathieu**, A.J. Gadgil, D.S. Callaway, P.N. Price, and S. Kiliccote. *Response of commercial and industrial facilities to dynamic electricity prices*. UC Berkeley Energy Symposium, Berkeley, CA. Mar. 2010.
- [P2] **M. Seflek, **T. Khan, **J.L. Mathieu**, K. Jahani, and A.J. Gadgil. *Arsenic-free Bangladesh*. National Collegiate Inventors and Innovators Alliance Annual Conference, Tampa, FL. Mar. 2007.
- [P1] **K. Wasserman, M.B. Greytak, **J.L. Mathieu**, A.K. Baker, J.D. Chambers, and B.M. Mueller. *From waves to watts: A wave energy conversion device for the Charles river basin*. Marine Technology Society & IEEE OCEANs Conference Student Poster Session, Kobe, Japan. Feb. 2004.

Datasets, Code

- [D10] A.J. Lin, S. Lei, A. Keskar, I.A. Hiskens, J.X. Johnson, J.L. Mathieu, T. Kennedy, S. DeMink, K. Morgan, C. Flynn, P. Giessner, D. Anderson, J. Dongmo, S. Afshari, H. Li, and A. Ceilsinki. *SHIFDR: Sub-metered HVAC Implemented For Demand Response: Michigan Buildings Dataset*. <https://doi.org/10.7302/vmwh-ek70>. 2023.
- [D9] G.S. Ledva, I.M. Granitsas, O. Oyefeso, S.A. Nugroho, P. Phanivong, I.A. Hiskens, and J.L. Mathieu. *Co-Simulation testbed and controllers for compressor-based loads providing grid balancing services*. <https://github.com/Giannisgran/Co-Simulation-testbed-and-controllers-for-compressor-based-loads-providing-grid-balancing-services>. 2023.
- [D8] G.S. Ledva, Z. Du, S. Peterson, L. Balzano, and J.L. Mathieu. *Inferring the behavior of distributed energy resources from incomplete measurements (documents)*. <https://deepblue.lib.umich.edu/handle/2027.42/149480>. 2019.
- [D7] G.S. Ledva, Z. Du, S. Peterson, L. Balzano, and J.L. Mathieu. *Inferring the behavior of distributed energy resources from incomplete measurements (code)*. https://deepblue.lib.umich.edu/data/concern/data_sets/nv9352905. 2019.

- [D6] M. Yao, K. Koorehdavoudi, S. Roy, D. Molzahn, I. Hiskens, and J.L. Mathieu. *Demand Response Algorithms to Improve Electric Power System Stability Margins (documents)*. <https://deepblue.lib.umich.edu/handle/2027.42/150104>. 2019.
- [D5] M. Yao, J.L. Mathieu, I. Hiskens, D. Molzahn, K. Koorehdavoudi, and S. Roy. *Demand Response Algorithms to Improve Electric Power System Stability Margins (code)*. https://deepblue.lib.umich.edu/data/concern/data_sets/7h149p88r. 2019.
- [D4] B. Li, Y. Zhang, S. Shen, and J.L. Mathieu. *Data-driven approaches to managing uncertain load control in sustainable power systems (documents)*. <https://deepblue.lib.umich.edu/handle/2027.42/149653>. 2019.
- [D3] B. Li, Y. Zhang, S. Shen, and J.L. Mathieu. *Data-driven approaches to managing uncertain load control in sustainable power systems (code/data)*. https://deepblue.lib.umich.edu/data/concern/data_sets/mc87pq28n. 2019.
- [D2] N.A. Ryan, Y. Lin, N. Mitchell-Ward, J.L. Mathieu, and J.X. Johnson. *EI-LI-ION-9BUS-TESTSYSTEM*. <https://github.com/naryan002/EI-LI-ION-9BUS-TESTSYSTEM>. 2018.
- [D1] J.L. Mathieu, L. Balzano, and G.S. Ledva. *Data Files for Real-Time Energy Disaggregation of a Distribution Feeder's Demand*. https://deepblue.lib.umich.edu/data/concern/data_sets/cv43nx208. 2017.

Funding

NSF Civic Innovation Challenge Track B Grant	\$1,000k
<i>Piloting a Decarbonization-Ready Common Home Assessment</i>	
Feb 2024 - Jan 2026	
Co-PI, with PI Jill Harlow (Pecan Street) and Co-PIs Scott Hinson (Pecan Street), Carina Gronlund	
Subcontract from National Renewable Energy Laboratory	\$89k
<i>Energy Storage and Hydrogen Storage</i>	
Dec 2023 - Dec 2024	
UM PI, with PI Jennifer King	
NSF Civil Infrastructure Systems Grant	\$500k
<i>Planning for Uncertainty in Coupled Water-Power Distribution Networks</i>	
May 2023 - Apr 2026	
PI, with Co-PIs Seth Guikema and Vijay Gupta	
NSF Civic Innovation Challenge Stage 1 Grant	\$50k
<i>Designing a Decarbonization-Ready Common Home Assessment</i>	
Oct 2022 - Mar 2023	
Co-PI, with PI Suzanne Russo (Pecan Street) and Co-PIs Josh Elling (Jefferson East) and Gibran Washington (EcoWorks)	
UM Bold Challenges Winter 2022 Incubation + Nurture Phases	\$75k
<i>Equitable Mitigation, Adaptation, and Resilience for Infrastructure Systems</i>	
Jan 2022 - Apr 2023	
Collaboration with Parth Vaishnav, Michael Craig, and Carina Gronlund	
UM Research Catalyst and Innovation Program Anti-Racism Grant	\$50k
<i>Enhanced Energy Monitoring for Energy Justice in Detroit</i>	
Sep 2021 - Aug 2023	
PI, with Co-PIs Tony Reames, Carina Gronlund, Marie O'Neill, Rachel Jenkins (Pecan Street), and Gibran Washington (EcoWorks)	

NSF Smart and Connected Communities Grant & REU Supplement	\$2,116k
<i>Reducing Barriers to Residential Energy Security through an Integrated Case-management, Data-driven, Community-based Approach</i>	
Sep 2020 - Aug 2025	
Co-PI / PI, with PI Tony Reames and Co-PIs Carina Gronlund, Marie O'Neill, Shelie Miller, and Barbara Israel	
NSF I-Corps Grant	\$50k
<i>Fast Timescale Residential Demand Response</i>	
Jun 2020 - Nov 2023	
Technical Lead, with Entrepreneurial Lead Gregory Ledva and Industry Mentor Hawk Asgeirsson	
ARPA-E OPEN Project	\$2,900k
<i>Overcoming the Technical Challenges of Coordinating Distributed Load Resources at Scale</i>	
Jun 2019 - Mar 2023	
PI, with Co-PIs Ian Hiskens, Duncan Callaway, Drew Geller (LANL), and Scott Hinson (Pecan Street)	
NSF CAREER Award & REU Supplement	\$516k
<i>Stochastic Capacity Scheduling and Control of Distributed Energy Storage Enabling Stacked Services</i>	
Feb 2019 - Jan 2025	
PI	
Alfred P. Sloan Foundation Grant	\$250k
<i>Price, Generation, Emissions, and Transmission Impacts of Energy Storage in PJM</i>	
Jan 2019 - Dec 2021	
Co-PI, with PI Catherine Hausman	
NSF Cyber-Physical Systems Grant (Small)	\$500k
<i>Scalable and Safe Control Synthesis for Systems with Symmetries</i>	
Jan 2019 - Dec 2023	
Co-PI, with PI Necmiye Ozay	
DOE Building Technologies Office – Subcontract from SLAC National Accelerator Laboratory	\$525k
<i>I-DREEM: Impact of Demand Response on short and long term building Energy Efficiency Metrics</i>	
Feb 2018 - Sep 2022	
UM PI, with Lead PI Sila Kiliccote / Rishee Jain and Co-PIs Ian Hiskens and Jeremiah Johnson	
Full project funding: \$1,700k	
DOE Solar Energy Technologies Office – Subcontract from Argonne National Laboratory	\$220k
<i>Mitigating Phase Unbalance for Distribution Systems with High Penetrations of Solar PV</i>	
Nov 2018 - Dec 2019	
UM PI, with Lead PI Daniel Molzahn and Co-PIs Ian Hiskens, Line Roald, and David Pinney (NRECA)	
Full project funding: \$750k	
NSF Engineering Research Center Planning Grant	\$100k
<i>Comprehensive Energy Storage Solutions in Electrified Transportation</i>	
Sep 2018 - Aug 2019	
Co-I, with PI Anna Stefanopoulou and Co-PIs Heath Hofmann, Don Siegel, Christian Lastoskie, and Chris Mi	
Michigan Institute for Computational Discovery and Engineering Catalyst Grant	\$75k
<i>Computational Energy Systems</i>	
Apr 2017 - Mar 2018	
Co-PI, with PI Pascal Van Hentenryck and Co-PIs Jon Lee, Ruiwei Jiang, and Eunshin Byon	
UM College of Engineering Team Development Seed Funding	\$7k
<i>Harnessing Highly Distributed Load Resources for Renewable Integration</i>	

Sep 2016 Collaboration with Ian Hiskens	
UM Office of Research Seminar Grant & Renewal	\$15k
<i>Seminar Series on Emerging Topics in Sustainable Electric Power Systems</i> Jul 2016 - Jun 2018 PI, with organizational team Ian Hiskens, Pascal Van Hentenryck, Ruiwei Jiang, and Jeremiah Johnson Matching funds from ECE, IOE, SNRE/SEAS, UMEI: \$11.5k	
UM Graham Sustainability Institute MCubed Sustainability Block Grant	\$10k
<i>Urban Sustainability: Energy, Food and Health</i> Jun 2016 - May 2017 Collaboration with Marie O'Neill and Ming Xu	
UM MCubed Program Grant	\$60k
<i>Improving the Energy Efficiency of Buildings Participating in Power System Ancillary Services</i> Oct 2015 - Dec 2017 Collaboration with Jeremiah Johnson and Ian Hiskens	
NSF EAGER: Renewables Grant	\$279k
<i>Demand Response Algorithms to Improve Electric Power System Stability Margins</i> Sep 2015 - Aug 2018 PI	
NSF Environmental Sustainability Grant	\$310k
<i>Environmental Impacts of Using Distributed Energy Storage for Power System Reserves</i> Sep 2015 - Aug 2019 Co-PI, with PI Jeremiah Johnson	
NSF Energy, Power, Control and Networks Grant & REU Supplement	\$408k
<i>Inferring the Behavior of Distributed Energy Resources from Incomplete Measurements</i> Aug 2015 - Jul 2019 PI, with Co-PI Laura Balzano	
NSF CyberSEES Grant & REU Supplement	\$416k
<i>Data-Driven Approaches to Managing Uncertain Load Control in Sustainable Power Systems</i> Sep 2014 - Aug 2017 PI, with Co-PIs Siqian Shen and Ian Hiskens	
UM Energy Institute Grant & Renewal	\$80k
<i>Assessing the Environmental Impacts of Providing Power System Reserves with Demand Response and Distributed Energy Storage</i> Sep 2014 - Dec 2016 Collaboration with Jeremiah Johnson	

Talks

- (Upcoming) Iowa State University (Ames, IA), *TBD*, Jan 21, 2025.
- (Upcoming) University of Hawaii Manoa (Honolulu, HI), *TBD*, Jan 14, 2025.
- 2024 China-US Academic Dialogue on Green Power Development (Beijing, China), *Participation of Distributed Energy Resources in Electricity Markets*, Dec 10, 2024.
- Resources for the Future Webinar (virtual), *Exploring Detroit's Innovative Model for Tackling Energy Insecurity*, May 23, 2024. (with Tony Reames, Joshua Elling, and Heather Zygmuntowicz)

- Michigan Municipal Electric Association Meeting (Grand Rapids, MI), *Demand Response Opportunities and Challenges*, May 2, 2024.
- Cornell Energy Seminar (Ithaca, NY), *Nodal Operating Envelopes vs. Network-wide Constraints: What is better for network-safe coordination of DERs?*, Feb 29, 2024.
- Champéry Power Conference (Champéry, Switzerland), *Nodal Operating Envelopes vs. Network-wide Constraints: What is better for network-safe coordination of DERs?*, Feb 6, 2024.
- Intelligent Building Operations Workshop (virtual), Panel: Identifying Barriers to Adoption, Sept 29, 2023.
- NREL Workshop on Autonomous Energy Systems (Golden, CO), *Energy Justice for Detroit*, Sep 8, 2023.
- IEEE PES General Meeting (Orlando, FL), Panel: Women in Power (WIP) Technical Session, *The Sub-metered HVAC Implemented For Demand Response (SHIFDR) Dataset*, Jul 19, 2023.
- IEEE PES PowerTech (Belgrade, Serbia), Panel: DER Operating Envelopes and their Applications in Energy Markets and Planning, *Network-Aware Control of DER Aggregations Through Utility-Aggregator Coordination*, Jun 27, 2023.
- DOE OE Electricity Advisory Committee (Arlington, VA), Panel: Demand and Distribution Edge, *Distributed Energy Resources - modeling, control, optimization, and data*, Jun 8, 2023.
- NSF Joint US-European Workshop: Flexible Electric Grid Critical Infrastructure for Resilient Society (Philadelphia, PA), Panel: Social, Behavioral, and Economic Science Synergy with the Electric Grid Transformation, *Energy Justice Through Power Systems Research*, Apr 21, 2023.
- Cell Press Sustainability Forum (virtual), Panel: Interfacing Renewable Energy Infrastructure and Human Behavior to Pursue Energy Security, Mar 1, 2023.
- Faculty Symposium on Anti-Racism Research & Scholarship at UM (Ann Arbor, MI), Panel: Developing Anti-Racist Practices, Protocols, & Interventions, *Energy Justice for Detroit*, Jan 31, 2023.
- University of Vermont (Burlington, VT), *Balancing Power Grids with Aggregations of Residential Air Conditioning Units – Control Design, Experiments, and Field Tests*, Nov 11, 2022.
- DOE SETO Solar Colloquium (virtual), *Algorithms for Energy Justice*, Sep 15, 2022.
- University of Washington Clean Energy Institute International Conference on Energy Conversion and Storage (Friday Harbor, WA), *How Energy Storage Affects Grid Emissions: Empirical and Simulation Results*, Sep 10, 2022.
- IEEE PES General Meeting (Denver, CO), Panel: Cyber Secure Grid-Interactive Efficient Buildings to Enhance Power System Flexibility and Resilience, *Aggregations of Houses Improving Grid Reliability Through Provision of Fast Grid Services - Preliminary Results from Experimental and Field Testing*, Jul 21, 2022.
- IEEE PES General Meeting (Denver, CO), Panel: Women in Power (WIP) Technical Session, *Aggregate Load Coordination to Balance Renewable Generation*, Jul 19, 2022.
- NREL Workshop on Autonomous Energy Systems (Golden, CO), *Data-Driven Algorithms for Energy Justice in Detroit*, Jul 14, 2022.
- Pecan Street Webinar (virtual), *Air Conditioning and the Grid: Can Better Technology Ease the Pressure of a Warming Planet*, Jun 2, 2022. (with Scott Hinson and Gregory Ledva)
- DISTRIBUTECH (Dallas, TX), *Field Testing Fast Timescale Energy Balancing Using Residential Compressor-based Loads*, May 24, 2022. (with Scott Hinson)
- IEEE PES T&D Conference, Panel: Distribution Network-Aware DER Coordination (New Orleans, LA), *Network Safe Control of TCLs Using Formal Methods*, Apr 26, 2022.
- MIT enOPTIMAL Seminar Series (virtual), *Planning for Uncertainty in Coupled Power-Water Distribution Networks*, Mar 11, 2022.

- Swiss National Competence Center for Research (NCCR) Automation Seminar Series (virtual), *Managing Uncertainty in Coupled Power and Water Distribution Networks*, Sep 27, 2021.
- NREL Workshop on Resilient Autonomous Energy Systems (virtual), *Impact of Market Timing on the Profit of a Risk-Averse Load Aggregator*, Sep 8, 2021.
- IEEE PES General Meeting (virtual), Super Session: Grid Edge - Devices, Control, Applications and System Operation, *Establishing Credibility for Load Coordination at Scale*, Jul 28, 2021.
- IEEE PES General Meeting (virtual), Panel: Physics-Informed Machine Learning for Power Systems, *Separating Feeder Demand Into Components Using Diverse Measurements from the Distribution Network, Physics-based Models, and Online Learning*, Jul 26, 2021.
- University of Massachusetts (virtual), *Real-Time Disaggregation of Electric Feeder Demand Using Online Learning*, Apr 16, 2021.
- National Academy of Engineering US Frontiers of Engineering Symposium (virtual), *Enabling the Operation of Future Grids Using New Tools in Control Theory and AI*, Feb 25, 2021.
- Implementing the A²Zero Carbon Neutrality Plan in Buildings Series (virtual), Panel: Electrification & Decarbonization Strategies, *Leveraging (existing + newly electrified) Flexible Resources to Decarbonize the Grid*, Feb 9, 2021.
- University of Washington (virtual), *Managing Uncertainty in Coupled Power and Water Distribution Networks*, Jan 19, 2021.
- International Workshop on Non-Intrusive Load Monitoring (virtual), *Applications of Non-Intrusive Load Monitoring (NILM) to Power Systems and New NILM-type Problems*, Nov 18, 2020. (Keynote)
- IEEE SmartGridComm (virtual), Special Session: Special Topics @ SmartGridComm 2020, *Coordinating DERs to Provide Ancillary Services Without Hurting the Distribution Network*, Nov 11, 2020.
- Carnegie Mellon University (virtual), *Network-Aware Electric Load Coordination Architectures and Control Strategies*, Oct 9, 2020.
- International Conference on Probabilistic Methods Applied to Power Systems (virtual), Panel: Economic Considerations of Risk and Uncertainty, *Strategies for Network-Safe Load Control by a Third-Party Aggregator*, Aug 20, 2020.
- IEEE PES General Meeting (virtual), Panel: Research and Educational Experiences of NSF CAREER Awardees, *Stochastic Capacity Scheduling and Control of Distributed Energy Storage Enabling Stacked Services*, Aug 5, 2020.
- Iowa State University (virtual), *Network-Aware Electric Load Coordination Architectures and Control Strategies*, Jul 21, 2020.
- Colorado School of Mines (Golden, CO), *Network-Aware Electric Load Coordination Architectures and Control Strategies*, Feb 28, 2020.
- ARPA-E Open 2018 – Grid Projects Kick-off Meeting (New Orleans, LA), *Overcoming the Technical Challenges of Coordinating Distributed Load Resources at Scale*, Feb 19, 2020.
- NSF CPS PI Meeting (Arlington, VA), *Lightning Talk: Scalable and Safe Control Synthesis for Systems with Symmetries*, Nov 22, 2019.
- Georgia Tech Workshop on Electric Energy Systems and Optimization (Atlanta, GA), *The Value of Including Unimodality Information in Distributionally Robust Optimal Power Flow*, Nov 15, 2019.
- IEEE Global Conference on Signal and Image Processing (Ottawa, Canada), Symposium: Machine Learning, Optimization, and Security for Future Energy Delivery Systems, *Learning About Loads to Improve Power System Operation and Control*, Nov 13, 2019. (Keynote)
- North Carolina State University (Raleigh, NC), Panel: Power Shift – The Future of Energy and the Women Shaping It, Nov 5, 2019.

- Michigan Public Services Commission Distribution Planning Stakeholder Meeting (Lansing, MI), *DER Coordination as a Non-wire Solution: Opportunities and Challenges in Michigan*, Oct 16, 2019.
- IEEE PES General Meeting (Atlanta, GA), Panel: The Economics of Battery Storage under Different Market Structures, *Scheduling and Controlling Aggregations of Distributed Energy Storage Devices to Provide Stacked Services*, Aug 8, 2019.
- IEEE PES General Meeting (Atlanta, GA), Panel: Distributed Demand Response Dilemma: Defect or Engage, *Coordinating Loads to Provide Ancillary Services While Keeping Consumers Happy*, Aug 6, 2019.
- Ford Motor Company Research and Innovation Center (Dearborn, MI), *Coordinating Uncertain Electric Vehicles for Grid Services*, Jun 5, 2019.
- Isaac Newton Institute (Cambridge, UK), The Mathematics of Energy Systems Closing Workshop: Looking forward to 2050, *Optimal Power Flow with Stochastic Reserves*, Apr 30, 2019.
- Ceres and UM Energy Institute Electric Vehicle Open Forum and Policy Roundtable (Ann Arbor, MI), Panel: Michigan's Grid and Charging Infrastructure: Empirical Analysis and Outlook, Apr 3, 2019.
- UM SEAS Climate + Energy Theme Lightning Talks (Ann Arbor, MI), *Supporting Renewable Energy Integration with Flexible Loads and Storage*, Mar 21, 2019.
- UM SEAS Cities + Mobility + Built Environment Theme Lightning Talks (Ann Arbor, MI), *Using Appliances and University of Michigan Buildings as Batteries to Support Renewable Energy Integration*, Feb 27, 2019.
- Indian Institute of Technology Bombay – NSF – Japan Science and Technology Agency – Research Council of Norway Workshop on Distributed Energy Management and Data Sciences for Smart Grids (Mumbai, India), *Network-Aware Cost-Effective Coordination of Distributed Energy Resources*, Jan 15, 2019.
- Michigan State University (East Lansing, MI), *An Optimal Power Flow Approach to Improve Power System Voltage Stability Using Demand Response*, Oct 11, 2018.
- University of Vermont Future of Energy Workshop (Burlington, VT), *Coordinating Distributed Energy Resources Without Breaking the Bank, or the Grid*, Sep 27, 2018. (Keynote)
- IEEE PES General Meeting (Portland, OR), Panel: The Role of DERs in the Transmission-Distribution Coordination, *Using DERs in the Distribution System to Improve Transmission System Voltage and Rotor Angle Stability*, Aug 9, 2018.
- University of Michigan Energy Institute UROP Lunchbox Discussion (Ann Arbor, MI), *Coordinating Electric Loads to Improve Power System Sustainability, Reliability, and Economics*, Jul 24, 2018.
- University of Illinois Urbana Champaign (Urbana, IL), *Real-Time Energy Disaggregation of a Distribution Feeder's Demand Using Online Learning*, Apr 23, 2018.
- Stanford Smart Grid Seminar (Palo Alto, CA), *A Multiperiod Optimal Power Flow Approach to Improve Power System Voltage Stability Using Demand Response*, Mar 1, 2018.
- Technical University of Denmark (Lyngby, Denmark), *Demand Response Algorithms to Improve Electric Power System Stability Margins*, Jun 26, 2017.
- Commonwealth Scientific and Industrial Research Organisation (CSIRO) Energy Centre (Newcastle, Australia), *Overview of Load Control Research*, Nov 10, 2016.
- IEEE SmartGridComm (Sydney, Australia), Workshop: Smart Buildings As Enablers for a Smarter Grid, *Engaging Distributed Flexible Electric Loads in Power System Operation*, Nov 6, 2016.
- UM Control Seminar (Ann Arbor, MI), *Optimal Scheduling and Control of Distributed Energy Storage to Provide Power Grid Support*, Sep 23, 2016.
- IEEE PES General Meeting (Boston, MA), Panel: Modeling the End-User in CPS-based Simulation Studies, *Scheduling and Controlling Building Power Consumption to Provide Ancillary Services*, Jul 20, 2016.

- NSF Workshop on Cyber-Physical Systems Applications to the Power Grid (Boston, MA), *Scheduling, Inference, and Coordination of Distributed Energy Resources: Overview of 3 NSF-funded projects*, Jul 16, 2016.
- Göran Andersson's Farewell Event at ETH Zurich (Zurich, Switzerland), *Managing Communication Delays and Model Error in Demand Response*, Jun 10, 2016.
- Institute for Mathematics and its Applications (Minneapolis, MN), Workshop: Control at Large Scales – Energy Markets and Responsive Grids, *Inferring the Behavior of Distributed Flexible Electric Loads*, May 12, 2016.
- University of California at San Diego Seminars in Energy Research (San Diego, CA), *Inference and Control of Electric Loads Given Sparse Measurements and Communications Delays*, Apr 20, 2016.
- MIT Department of Mechanical Engineering (Cambridge, MA), *Inference and Control of Electric Loads Given Sparse Measurements and Communications Delays*, Apr 8, 2016.
- University of Toronto Centre for Power and Information Seminar (Toronto, Canada), *Inference and Control of Distributed Energy Resources with Sparse Measurements and Communications Delays*, Dec 4, 2015.
- LBNL/UC Berkeley DR/Renewables/ISO Meeting (Berkeley, CA), *Scheduling and Coordinating Uncertain Electric Loads to Provide Power System Reserves*, Mar 6, 2015.
- Cornell University Information, Systems, and Networks Seminar Series (Ithaca, NY), *Uncertain Power System Reserves from Electric Loads*, Nov 14, 2014.
- Schloss Dagstuhl (Wadern, Germany), Seminar: Modeling, Verification, and Control of Complex Systems for Energy Networks, *Uncertain Power System Reserves from Loads*, Oct 30, 2014.
- UM ECE Administrative Staff Lecture (Ann Arbor, MI), *How Your Refrigerator Can Help Get More Renewable Energy on the Power Grid*, Oct 17, 2014.
- IEEE Transportation Electrification Conference and Expo (Dearborn, MI), Panel: Transportation Technologies of Vehicle to Infrastructure Interaction: Current Status and Challenges, *Coordinating Uncertain Electric Vehicles for Demand Response*, Jun 16, 2014.
- Los Alamos National Laboratory Center for Nonlinear Studies (Los Alamos, NM), *Planning and Control of Uncertain Electric Loads to Help out the Power Grid*, Apr 29, 2014.
- University of New Mexico Department of Mechanical Engineering (Albuquerque, NM), *How Your Refrigerator Can Help Get More Renewable Energy on the Power Grid*, Apr 11, 2014.
- IEEE UM Student Branch – Professor Speaker Series (Ann Arbor, MI), *How Your Refrigerator Can Help Get More Renewable Energy on the Power Grid*, Mar 12, 2014.
- UM Control Seminar (Ann Arbor, MI), *Planning and Control of Uncertain Electric Loads to Help Out the Power Grid*, Feb 14, 2014.
- IEEE Conference on Decision and Control (Florence, Italy), Workshop: Ancillary Services from Flexible Loads to Help the Electric Grid of the Future, *Demand Response Today and Thermostatic Loads for Ancillary Services*, Dec 9, 2013.
- University College Dublin Electricity Research Centre, (Dublin, Ireland), *Planning and Control of Demand Response Resources Given Partial Information and Uncertainty*, Nov 26, 2013.
- IEEE PES General Meeting (Vancouver, Canada), Panel: Grid Integration of Energy Efficient Buildings, *Theoretical, Practical and Market-related Issues Associated with the Challenges of Making Buildings Responsive to Real-Time Power System Conditions*, Jul 24, 2013.
- IEEE PES General Meeting (Vancouver, Canada), Transaction Paper Presentation, *State Estimation and Control of Electric Loads to Manage Real-Time Energy Imbalance*, Jul 24, 2013.
- University of Washington Departments of Electrical and Mechanical Engineering (Seattle, WA), *Harnessing Distributed Flexible Resources for Sustainable Electric Energy Systems*, Apr 23, 2013.
- INRIA – National Institute for Research in Computer Science and Control (Paris, France), *Controlling Electric Loads to Manage Energy Imbalances in Power Systems*, Apr 17, 2013.

- Dartmouth College Thayer School of Engineering (Hanover, NH), *Harnessing Distributed Flexible Resources for Sustainable Electric Energy Systems*, Apr 4, 2013.
- UM Department of Electrical Engineering and Computer Science (Ann Arbor, MI), *Harnessing Distributed Flexible Resources for Sustainable Electric Energy Systems*, Mar 25, 2013.
- University of Vermont School of Engineering (Burlington, VT), *Harnessing Distributed Flexible Resources for Sustainable Electric Energy Systems*, Mar 21, 2013.
- York University Lassonde School of Engineering (Toronto, Canada), *Harnessing Distributed Flexible Resources for Sustainable Electric Energy Systems*, Feb 28, 2013.
- University of California at Santa Barbara Department of Mechanical Engineering (Santa Barbara, CA), *Harnessing Distributed Flexible Resources for Sustainable Electric Energy Systems*, Feb 4, 2013.
- University of Florida Laboratory for Cognition and Control in Complex Systems Interdisciplinary Workshop on Smart Grid Design and Implementation (Gainesville, FL), *Harnessing Residential Loads for Demand Response: Engineering and Economic Considerations*, Dec 8, 2012.
- Lucerne University of Applied Science and Arts (Lucerne, Switzerland), *Residential Loads for Demand Response*, Nov 26, 2012. (with Evangelos Vrettos)
- Austrian Institute of Technology Energy Department (Vienna, Austria), *Understanding the Capabilities of Electric Loads in Traditional and Emerging Demand Response Programs*, Nov 6, 2012.
- EPFL – Swiss Federal Institute of Technology (Lausanne, Switzerland), *Managing Energy Imbalances in Power Systems using Residential Appliances*, Oct 30, 2012.
- ETH Zurich – Swiss Federal Institute of Technology (Zurich, Switzerland), *Modeling, Analysis, and Control of Electric Loads for Traditional and Emerging Demand Response Programs*, Sept 28, 2012.
- Pacific Northwest National Laboratory Smart Grid Controls, Optimization, and Economics Workshop (Richland, WA), *Moving from Open-loop to Closed-loop Control of Demand Response Resources*, Jun 15, 2012.
- LBNL Environmental Energy Technologies Division Seminar (Berkeley, CA), *Modeling, Analysis, and Control of Demand Response Resources*, Apr 27, 2012.
- UC Berkeley Department of Mechanical Engineering (Berkeley, CA), *Modeling, Analysis, and Control of Demand Response Resources*, Apr 19, 2012.
- UC Berkeley Expert System Technologies Lab Seminar (Berkeley, CA), *How your refrigerator can help the smart grid: understanding the size of the resource in California, potential revenues, and costs*, Apr 4, 2012.
- Carnegie Mellon University Conference on the Electricity Industry (Pittsburgh, PA), *The Value of Real-Time Data in Controlling Electric Loads for Demand Response*, Mar 13, 2012.
- UC Berkeley Center for the Built Environment Building Science Group Seminar (Berkeley, CA), *Estimating What Didn't Happen: Demand Response Baseline Models and their Errors*, Nov 30, 2011.
- LBNL/UC Berkeley DR/Renewables/ISO Meeting (Berkeley, CA), *Modeling, State Estimation, and Control of Aggregated Heterogeneous Appliances for Load Following*, Oct 17, 2011.
- UC Berkeley Variaya Energy Group (Berkeley, CA), *Modeling, State Estimation, and Control of Aggregated Heterogeneous Appliances for Power Systems Services*, Jul 21, 2011.
- LBNL/UC Berkeley DR/Renewables/ISO Meeting (Berkeley, CA), *Examining Uncertainty in Demand Response Baseline Models and Variability in Automated Responses to Dynamic Pricing*, Apr 7, 2011.
- LBNL Environmental Energy Technologies Division Seminar (Berkeley, CA), *Methods for Analyzing Electric Load Shape*, Jun 17, 2010. (with Phillip Price)
- UC Berkeley Blum Center Safe Water and Sanitation Symposium (Berkeley, CA), *Recent Fieldwork, Preliminary Prototype, and Preliminary Survey Results for ARUBA in Bangladesh*, Apr 10, 2009.
- UC Berkeley Blum Center Safe Water and Sanitation Symposium (Berkeley, CA), *Design for Sustainable Communities: Removing Arsenic from Drinking Water in Rural Bangladesh*, Feb 13, 2008.

- Engineers for a Sustainable World (ESW) Annual Conference (San Francisco, CA), *Design for Sustainable Communities: Removing Arsenic from Drinking Water in Rural Bangladesh*, Feb 5, 2008.
- Aquatic Nuisance Species Task Force Spring Meeting (Hyannis, MA), *MIT Sea Grant Multilingual Aquatic Invasive Species Outreach Campaign*, May 25, 2006.

Workshop Participation

- University Energy Institute Leaders Collaborative Summit, Columbus, OH, Oct 2024.
- University Energy Institute Leaders Collaborative Summit, Phoenix, AZ, Feb 2024.
- CMU Smart Cities (Energy) Listening Session to Inform NSF Future Funding (virtual), Nov 2022.
- NSF Smart & Connected Communities PI Meeting, Arlington, VA, Oct 2022.
- ARPA-E Energy Innovation Summit, Denver, CO, May 2022.
- Institute for Policy Integrity at New York University School of Law and DOE Office of Economic Impact and Diversity Conference on Advancing Energy Justice: Tools for Justice40 and Equitable Deep Decarbonization (virtual), May 2022.
- NREL Workshop on Responsible and Trustworthy AI in Clean Energy (virtual), Mar 2022.
- NSF Cyber-Physical Systems PI Meeting (virtual), Jun 2021.
- ARPA-E Energy Innovation Summit (virtual), May 2021.
- NSF Workshop on Next Big Research Challenges in Cyber-Physical Systems (virtual), Apr 2021.
- NSF Workshop on Grid at the Edge, From Unresolved Problems to Research Questions and Directions (virtual), Mar 2021.
- ARPA-E Engineering Microgrids with Control Co-Design Workshop (virtual), Oct 2020.
- NSF I-Corps (virtual), Apr-Jun 2020.
- NSF Workshop on Forging Connections between Machine Learning, Data Science, & Power Systems Research, Alexandria, VA, Mar 2020.
- NREL Workshop and Demo on Real-time Optimization and Control of Next-Generation Distribution Infrastructure, Golden, CO, Jan 2020.
- NSF Cyber-Physical Systems PI Meeting, Arlington, VA, Nov 2019.
- ARPA-E Energy Innovation Summit, Denver, CO, Jul 2019.
- Indian Institute of Technology Bombay – NSF – Japan Science and Technology Agency – Research Council of Norway Workshop on Distributed Energy Management and Data Sciences for Smart Grids, Mumbai, India, Jan 2019.
- NSF Cyber-Physical Systems PI Meeting, Alexandria, VA, Nov 2018.
- NREL Autonomous Energy Grids Workshop, Golden, CO, Sep 2017.
- IEEE PES Power and Energy Education Committee Workshop: Cyber-Physical Systems Applications to the Power Grid, Boston MA, Jul 2016.
- Institute for Mathematics and its Applications Workshop: “Control at Large Scales: Energy Markets and Responsive Grid,” Minneapolis, MN, May 2016.
- Big Ten Women’s Workshop, Milwaukee, WI, Mar 2016.
- Michigan Road Scholars, May 2015.
- NSF CAREER Proposal Writing Workshop, Boston, MA, Apr 2015.
- Dagstuhl Seminar: “Modeling, Verification, and Control of Complex Systems for Energy Networks,” Schloss Dagstuhl, Wadern, Germany, Oct 2014.
- ARPA-E Grid of the Future Workshop: From Vertical to Flat, Washington, DC, Jul 2014.

- IEEE PES Power and Energy Education Committee Workshop: Transforming Cyber-Physical Systems Education with Emphasis on the Power Grid, Washington, DC, Jul 2014.
- Dissertations Initiative for the Advancement of Climate Change Research (DISCCRS) Symposium, Colorado Springs, CO, Oct 2013.
- University of Florida Laboratory for Cognition and Control in Complex Systems Interdisciplinary Workshop on Smart Grid Design and Implementation, Gainesville, FL, Dec 2012.
- PSERC Future Grid Initiative Workshop, University of California, Berkeley, CA, Dec 2011.
- International Development Design Summit, MIT, Cambridge, MA, Jul-Aug 2008.
- National Collegiate Inventors and Innovators Alliance (NCIIA) Advanced Innovation to Venture Workshop, MIT, Cambridge, MA, Mar 2008.
- Engineers for a Sustainable World Business/Engineering Sustainability Workshop, University of Maryland, College Park, MD, Feb 2007.

In the News

- "A Michigan city's 'sustainable energy utility' got the green light from voters. What now?" *Smart Cities Dive*, Dec 10, 2024.
- "DOE Announces 2024 Clean Energy Education and Empowerment Awardees." *US Department of Energy*, Oct 23, 2024.
- "Johanna Mathieu receives DOE C3E Award for achievements in clean energy research." *UM ECE News and Awards*, Oct 23, 2024.
- "Extreme weather poses a challenge for heat pumps." *WIRED*, Aug 13, 2024.
- "Austin Lin awarded IEEE PES Prize Conference Paper for work quantifying HVAC load-shifting efficiency." *UM ECE News and Awards*, Aug 12, 2024.
- "Nuclear is getting a reaction in Michigan. Is it reaching critical mass?" *MLive*, May 21, 2024.
- "Energy storage for grid reliability can increase carbon emissions: UMich study." *Utility Dive*, Apr 24, 2024.
- "Integrating battery storage into electrical grids can sometimes increase emissions due to market forces." *UM ECE News and Awards*, Apr 10, 2024.
- "Large open dataset aims to improve understanding of building electricity demand response." *UM ECE News and Awards*, Jan 30, 2024.
- "Living Labs: testing energy efficiency and flexibility in University buildings." *UM ECE News and Awards*, Jan 18, 2024.
- "Can this city's microgrid plan skirt the traditional utility model? The city of Ann Arbor wants to decarbonize its own way." *Latitude Media*, Jan 18, 2024.
- "Research seeking to improve integration of renewable energy into the grid wins R&D 100 award." *UM ECE News and Awards*, Aug 29, 2023.
- "Equity in the energy technology transition is new Institute's goal." *UM ECE News and Awards*, May 16, 2023.
- "Johanna Mathieu awarded 2023 IEEE PES Wanda Reder Pioneer in Power Award." *UM ECE News and Awards*, May 16, 2023.
- "Team working to reduce energy burdens in Detroit recognized with Michigan Difference Student Leadership Award." *UM ECE News and Awards*, Apr 18, 2023.
- "From the lab: Innovations for the green energy transition." *Social Impact Design for Business Podcast*, Feb 9, 2023.
- "DTE to charge more for peak-time power." *The Detroit News*, Feb 8, 2023.

- "Streamlining home assessments for energy justice." *UM ECE News and Awards*, Dec 2, 2022.
- "Our Ailing Power Grid Isn't Cut Out for Climate Change." *CNET*, Oct 27, 2022.
- "Why hasn't Henry Ford's ideal power grid become a reality?" *Popular Science*, Jul 27, 2022.
- "Extreme heat, weather may lead to blackouts for millions this summer." *The National Desk*, May 21, 2022.
- "The global shift to clean energy." *Connected World*, May 1, 2022.
- "New collaborative project for advancing energy justice in Detroit." *UM ECE News and Awards*, Nov 1, 2021.
- "Energy equity depends on data, and experts say there isn't enough of it." *Utility Dive*, Jul 8, 2021.
- "U-M, community partners tackle energy insecurity in three Detroit neighborhoods." *Michigan News*, Nov 23, 2020.
- "Student Energy Club hosts all-female panel: discusses women in STEM and the future of energy." *NC State University Technician*, Nov 7, 2019.
- "The National Academy of Engineering invites Prof. Johanna Mathieu to symposium to advance the engineering frontier." *The Michigan Engineer News Center*, Jul 16, 2019.
- "New research for the future of sustainable power and energy." *UM ECE News and Awards*, Feb 20, 2019.
- "Battery economics could power the future of energy." *The Michigan Engineer News Center*, Feb 19, 2019.
- "Innovative project tests the boundaries of HVAC demand response systems." *Electric Light and Power*, Feb 15, 2019.
- "How air conditioners could advance a renewable power grid." *The Michigan Engineer News Center & The University Record*, Feb 6, 2019.
- "Johanna Mathieu receives NSF CAREER Award to help build a smarter, more sustainable grid." *UM ECE News and Awards*, Feb 1, 2019.
- "What this week's natural gas crisis tells us about Michigan's energy infrastructure needs." *Michigan Radio Stateside*, Feb 1, 2019.
- "Using University of Michigan buildings as batteries." *The Michigan Engineer News Center*, Sep 21, 2017.
- "The Hidden Systems that our Society Relies on are Stupid: Power." *The Michigan Engineer Magazine*, Spring 2015.
- "EmPOWERing Homeowners: For those with smart meters, energy knowledge is power. And money." *Consumers Energy Re: Energize Publication*, 2014.
- "Prof. Johanna Mathieu Working to Bring Power from Sustainable Sources to Your Home." *UM ECE News and Awards*, 2014.

Students, Postdocs, and Visitors

Ph.D. Students

- Bowen Li, Jan 2014 - Dec 2018, now a postdoc at Imperial College London
- Gregory Ledva, Sep 2014 - Dec 2018, now at Virtual Peaker
- Stephanie Crocker Ross, Sep 2014 - Dec 2019, now at EnergyHub
NSF Graduate Research Fellow
Rackham Predoctoral Fellow
- Mengqi (Molly) Yao, Sep 2016 - Aug 2020, now at Lucid Motors
- Anna Stuhlmacher, Sep 2017 - Apr 2023, now an assistant professor at Michigan Tech
NSF Graduate Research Fellow
Rackham Predoctoral Fellow
- Ioannis (Giannis) Granitsas, Sep 2019 - Jun 2024, co-advised by I. Hiskens, now at Virtual Peaker

- Sunho Jang, Sep 2019 - Jun 2024, co-advised by N. Ozay, now at Brookhaven National Laboratory
- Oluwagbemileke Oyefeso, Sep 2019 - Dec 2024, co-advised by I. Hiskens
- Jing Peng, Sep 2019 - Dec 2024, now at EPRI
- Hannah Moring, Sep 2020 - Present
- Sunny Chen, Sep 2020 - Present, co-advised by P. Seiler
- Austin Lin, Sep 2020 - Present
NSF Graduate Research Fellow
- Jo Brooks, Sep 2021 - Present
Michigan Difference Student Leadership Award - Innovation or Research Award
- Xavier Farrell, Sep 2021 - Present
Michigan Difference Student Leadership Award - Innovation or Research Award
North American Power Symposium Honorable Mention Graduate Presentation
- Jenna Knudtson, Sep 2023 - Present

Postdocs.....

- Yashen Lin, Sep 2014 - May 2016, co-advised by J. Johnson, now at Siemens
UM Energy Institute Partnerships for Innovation in Sustainable Energy Technologies Fellow
Dow Sustainability Postdoctoral Fellow
- Sina Afshari, Sep 2016 - Jul 2017, co-advised by J. Johnson and I. Hiskens, now at Korrus
- Anulekha Dhara, Oct 2018 - Mar 2019, now at Target India
- Gregory Ledva, Jan 2019 - Feb 2021, now at Virtual Peaker
- Shunbo Lei, Apr 2019 - Jun 2021, co-advised by I. Hiskens, now at CUHK-Shenzhen
- Sebastian Nugroho, Jun 2021 - Nov 2022, co-advised by I. Hiskens, now at Cummins

Master's Students.....

- Anthoula Panagou (ETH Zurich), Master's thesis, May - Nov 2013, co-advised by M. Vrakopoulou and M. Zima, examined by G. Andersson
- Gregory Ledva (ETH Zurich), Master's thesis, Sep 2013 - Mar 2014, co-advised by E. Vrettos and S. Mastellone, examined by G. Andersson
- William Gourlay, Energy Systems Engineering capstone project, May - Aug 2014
- Pragya Agrawal, Research, Jun - Aug 2014, co-advised by L. Balzano and D. Molzahn
- Priya Thyagarajan, Energy Systems Engineering capstone project, May - Aug 2015
- Mengqi Yao, Research, Sep 2015 - Aug 2016
- Abigail Kern, Research, Jan 2017 - Jun 2018, co-advised by J. Johnson
- Aditya Keskar, Research + Master's thesis, May 2017 - Apr 2018, co-advised by J. Johnson and I. Hiskens
Rackham Summer Awardee
- Han Pyo Lee, Research, Jan 2019 - Jun 2020
- Han Lee, Research + Energy Systems Engineering capstone project, Jun 2019 - Apr 2020
- Ruikai Xu, Research, Sep 2019 - Apr 2020
- Yaoyu Fan, Research, Jul - Dec 2021
- Sehwan Joo, Research, Sep - Dec 2021
- Wonjae Lee, Research, Sep - Dec 2022
- Kira Edwards, Research + Energy Systems Engineering capstone project, Oct 2022 - Dec 2023
Dow Sustainability Fellow
- Gavin Silveira, Energy Systems Engineering capstone project, May - Aug 2024

- Panupong Srisuthankul, Energy Systems Engineering capstone project, Aug - Dec 2024
- Giuliana Cusumano, Research, Aug - Dec 2024

Undergraduate Students

- Kristin Kowolik (UC Berkeley), Sep 2007 - Aug 2008, co-advised by A. Gadgil
- Shefah Qazi (UC Berkeley), Jan - Aug 2008, co-advised by A. Gadgil
- Mads Sørensen (DTU), Bachelor's Thesis, Feb - Jun 2013, co-advised by H. Jóhannsson
- Theis Bo Rasmussen (DTU), Bachelor's Thesis, Feb - Jun 2013, co-advised by H. Jóhannsson
- Gabrielle Vuylsteke, Jun - Dec 2014 & Sep 2016 - Apr 2017
UM Energy Institute Undergraduate Research Opportunities Program (UIROP) Student
- Spencer Maroukis, Jun 2015 - Jun 2016
NSF Research Experiences for Undergraduates (REU) Student
- Sarah Peterson, May 2016 - Apr 2017
Summer Undergraduate Research in Engineering (SURE) Student
NSF Research Experiences for Undergraduates (REU) Student
- John Wolfe, May - Nov 2016
Summer Undergraduate Research in Engineering (SURE) Student
- Anna Stuhlmacher (Boston University), Jun - Jul 2016
UM Summer Research Opportunity Program (SROP) Student
- Paul Giessner, Jun - Aug 2017, co-advised by I. Hiskens and J. Johnson
UM Energy Institute Undergraduate Research Opportunities Program (UIROP) Student
- Maggie Chen, May 2018 - Apr 2019
- Jordan Dongmo Nzangue, May 2018 - Apr 2019
- Catherine Bertcher, Sep 2018 - May 2021
NSF Research Experiences for Undergraduates (REU) Student
- Bruce Hicks (Mississippi State University), Jun - Jul 2019
UM Summer Research Opportunity Program (SROP) Student
- Miguel Siller (Universidad de Monterrey, Mexico), Jun - Aug 2019
UM Summer Undergraduate Research in Engineering (SURE) Student
- Brendan Mathews, Jul 2020 - May 2021, co-advised by P. Seiler
NSF Research Experiences for Undergraduates (REU) Student
- Jo Brooks, Feb - Aug 2021
- Bereket Barma (Addis Ababa Institute of Technology), Jun - Aug 2021
African Undergraduate Research Adventure (AURA) Student
- Amanuel Solomon (Addis Ababa Institute of Technology), Jun - Aug 2021
African Undergraduate Research Adventure (AURA) Student
- Daniel Li, Jan - Apr 2022
NSF Research Experiences for Undergraduates (REU) Student
- Mayani Emmanuel (University of Rwanda), Jun - Aug 2022
African Undergraduate Research Adventure (AURA) Student
- Sravya Ganti, Sept 2023 - Present
NSF Research Experiences for Undergraduates (REU) Student
- Samuel Fay, Jan - Apr 2024
- Brendan Ireland, Jan - Apr 2024

- Casseia Watson, May - Aug 2024
Summer Undergraduate Research in Engineering (SURE) Student
- Huy Nguyen (Grand Rapids Community College), May - Aug 2024
Undergraduate Research Opportunities Program (UIROP) Student

Visiting Ph.D. Students

- Martin Wittrock (DTU), Feb - Jul 2015
- Lars Herre (KTH), May - Oct 2017

Ph.D. Committees

- Sina Sadeghi Bagsorkhi (EE:S), 2015, Advisor: Ian Hiskens
- Kan Zhou (EE:S), 2015, Advisor: Heath Hoffman
- Ian Beil (EE:S), 2015, Advisor: Ian Hiskens
- Elizabeth Ratnam (University of Newcastle, Australia), 2016, Advisor: Steven Weller
- Chanaka Keerthisinghe (University of Sydney, Australia), 2016, Advisors: Gregor Verbič, Archie Chapman
- Shankar Mohan (EE:S), 2017, Advisor: Anna Stefanopoulou
- Jonathan Martin (EE:S), 2017, Advisor: Ian Hiskens
- Olivier Mégel (ETH, ITET), 2017, Advisor: Göran Andersson
- Daniel Esteban Morales Bondy (DTU, EE), 2017, Advisors: Henrik Bindner, Kai Heussen
- Jennifer Marley (EE:S), 2017, Advisor: Ian Hiskens
- Jun Hou (EE:S), 2017, Advisors: Jing Sun, Heath Hofmann
- Erik Miebling (EE:S), 2018, Advisor: Demosthenis Teneketzis
- Yiling Zhang (IOE), 2019, Advisor: Siqian Shen
- Yuanyuan Guo (IOE), 2019, Advisor: Ruiwei Jiang
- Md Salman Nazir (EE:S), 2019, Advisor: Ian Hiskens
- Jonas Kersulis (ECE), 2019, Advisor: Ian Hiskens
- Geunyeong Byeon (IOE), 2020, Advisor: Pascal Van Hentenryck
- Yejun (Wayne) Lao (CEE), 2020, Advisor: Jeffrey Scruggs
- Youngchan Jang (IOE), 2021, Advisor: Eunshin Byon
- Sijia Geng (ECE), 2021, Advisor: Ian Hiskens
- Ahmad Attarha (Australian National University), 2022, Advisor: Paul Scott, Sylvie Thiebaux
- Elvin Vindel (Carnegie Mellon University CEE), 2022, Advisors: Burcu Akinci, Mario Bergés
- Aditya Keskar (North Carolina State University CCEE), 2023, Advisor: Jeremiah Johnson
- Mohannad Alkhraijah (Georgia Tech ECE), 2024, Advisor: Daniel Molzahn
- Marisol Garrouste (NERS), 2024, Advisors: Brendan Kochunas, Michael Craig
- Peter Gade (DTU, EE), 2024, Advisor: Jalal Kazempour, Henrik Bindner
- Maitreyee Marathe (UW-Madison ECE), 2024, Advisors: Line Roald, Giri Venkataramanan
- Madeline Miller (SEAS), Advisors: Shelie Miller, Tony Reames
- Papa Yaw Owusu-Obeng (SEAS), Advisor: Michael Craig
- Md Rafiul Abdussami (NERS), Advisor: Aditi Verma

Service

Society Memberships.....

- Institute of Electrical and Electronics Engineers (IEEE)
 - Power & Energy Society (PES)
 - Control Systems Society (CSS)
- International Institute for Research and Education in Power Systems (IREP)
- (*Intermittently*) Institute for Operations Research and the Management Sciences (INFORMS)

Technical Committees.....

- IEEE PES Smart Buildings, Loads, and Customer Systems (SBLC) Technical Committee
 - Past Chair, Jul 2023 - Present
 - Chair, Jul 2021 - Jul 2023
 - Vice Chair, Jul 2019 - Jul 2021
 - Secretary, Sep 2018 - Aug 2019
 - Technical Committee Program Chair, Sep 2016 - Sep 2018
- Co-Chair, Task Force on Demand Response in the DER Era (co-sponsored by the Power System Economics Subcommittee of IEEE PES PSOPE and the Loads Subcommittee of IEEE PES SBLC), Jul 2022 - Present
- Member, Power Systems Computation Conference Council, Jun 2024 - Present
- Member, IEEE CSS Technical Committee on Energy Systems

Editorships & Technical Program Committees.....

- Associate Editor, IEEE Open Journal of Control Systems, Jan 2025 - Present
- Associate Editor, IEEE Transactions on Control of Network Systems, Jan 2022 - Dec 2024
- Associate Editor, IEEE Transactions on Power Systems, Jan 2018 - Dec 2021
- Associate Editor, IEEE Power Engineering Letters, Jan 2018 - Dec 2021
- Editorial Board, Sustainable Energy, Grids and Networks, Oct 2020 - Present
- Technology Conferences Editorial Board, IEEE Control Systems Society, Jan 2022 - Present
- Conference Editorial Board, IEEE Control Systems Society, Jul 2019 - Present
- Chair, Technical Program Committee (SBLC papers), IEEE PES General Meeting, 2017, 2018
- Chair, Technical Program Committee (SBLC papers), IEEE PES T&D Conference, 2018
- Workshop Chair, IEEE CSS Conference on Control Technology and Applications, 2025
- Technical Program Committee, ACM e-Energy, 2022
- Technical Program Committee, Power Systems Computation Conference, 2018, 2020, 2022, 2024
- Technical Program Committee, IEEE SmartGridComm, 2013, 2017, 2018, 2023
- Reviewer Committee, Conference on Probabilistic Methods Applied to Power Systems, 2020
- Contributor, IEEE PES Trending Tech: Energy Equity and Energy Justice in Power Systems, 2023
- Contributor, IEEE PES Trending Tech: Intelligent Electrification, 2022
- Contributor, IEEE Communications Society Best Readings in Smart Grid Communications, 2014

Conferences, Workshops, and Tutorials.....

- Panel Session Organizer and Chair, IEEE PES T&D Conference, 2022:
"Distribution network-aware DER coordination"

- Invited Session Organizer, IEEE Conference on Decision and Control, 2021: "Advanced Strategies to Control Distributed Energy Resources", "Machine Learning for Control of Power Systems"
- Panel Session Organizer and Chair, IEEE PES General Meeting, 2021: "The Interplay Between Energy Efficiency and Demand Response for Smart Buildings: Implications for Power Systems - Parts I & II"
- Invited Session Organizer and Chair, INFORMS Annual Meeting, 2018: "Managing Uncertainty in Electric Power Networks"
- Tutorial Co-Organizer, INFORMS Annual Meeting, 2015: "Uncertainty in Demand Response – Identification, Estimation, and Learning"
- Invited Session Organizer and Chair, American Control Conference, 2015: "Load Coordination and Control in Electric Power Systems"
- Workshop Co-Organizer, IEEE Conference on Decision and Control, 2013: "Ancillary Services from Flexible Loads to Help the Electric Grid of the Future"
- Session Chair, IEEE Conference on Decision and Control, 2013, 2016, 2018, 2021
- Session Chair, American Control Conference, 2022
- Session Chair, IEEE Conference on Smart Grid Communications, 2020
- Session Chair, IEEE PES General Meeting, 2017, 2019, 2021
- Session Chair, IEEE PES PowerTech Conference, 2019, 2023
- Session Chair, North American Power Symposium, 2015
- Session Chair, Power System Computation Conference, 2014, 2018, 2020, 2022
- Session Chair, IREP Bulk Power Systems Dynamics and Control Symposium, 2022
- Session Chair, Hawaii International Conference on System Sciences, 2024, 2025

Reviewing

- *Journals*: Annual Reviews in Control; Applied Energy; ASME Journal of Dynamic Systems, Measurement, and Control; Automatica; Complexity; Energy; Energy and Buildings; Energy Policy; Energy Systems; Environmental Science and Technology; IEEE Control Systems Letters; IEEE Journal on Selected Areas in Communications: Smart Grid Communications Series; IEEE Power Engineering Letters; IEEE Transactions on Automatic Control; IEEE Transactions on Control of Network Systems; IEEE Transactions on Control Systems Technology; IEEE Transactions on Energy Conversion; IEEE Transactions on Power Systems; IEEE Transactions on Smart Grid; IEEE Transactions on Sustainable Energy; International Journal of Control; International Journal of Electrical Power and Energy Systems; Journal of Energy Storage; Plos One; Proceedings of the IEEE; Sustainable Cities and Society; Sustainable Energy, Grids, and Networks; Utilities Policy
- *Conferences*: American Control Conference; Conference on Probabilistic Methods Applied to Power Systems; European Control Conference; First International Workshop on Smart Grid Modeling and Simulation; Hawaii International Conference on System Sciences; IEEE Conference on Control Technology and Application; IEEE Conference on Decision and Control; IEEE Conference on Smart Grid Communications; IEEE PES General Meeting; IEEE PES PowerTech Conference; IEEE PES T&D Conference; IEEE Photovoltaics Specialists Conference; Mediterranean Conference on Control and Automation; North American Power Symposium; Power Systems Computation Conference
- *Proposals/Projects*: ARPA-E; Department of Energy; Ohio State University Sustainable and Resilient Economy Program; National Science Foundation; Sloan Foundation; State of Utah Science, Technology, and Research Initiative
- INFORMS ENRE Section Student Best Paper Award Committee, 2018

- AACC O. Hugo Schuck Best Paper Award Committee, 2024

Advisory Roles.....

- Technical Advisory Group Member, LBNL/DOE project: A framework to characterize the performance of building components in providing flexible loads and building services using a hardware-in-the-loop approach, 2020 - 2022
- Independent Panel Member, Assessment of extreme rainfall events in Detroit in 2021, conducted for the Board of Directors of the Great Lakes Water Authority, 2021 - 2022
- Technical Review Committee Member, DOE National Transmission Planning Study, 2022-2024
- Assistant Professor Midterm Evaluation Committee Member, Technical University of Denmark, 2024

Internal Service.....

- ECE Faculty Search Committee Member, Sep 2014 - Aug 2020
- ECE Power/Energy Graduate Student Advisor, Sep 2014 - Dec 2016, Sep 2019 - Aug 2020, Sep 2023 - Aug 2024
- Power System Seminar Series Organizer, Sep 2016 - Apr 2018
- CoE Dow Sustainability Selection Committee Member, 2017
- Energy Institute Visioning & Director Search Committee Member, Dec 2017 - Jul 2018
- School for Environment and Sustainability Faculty Search Committee Member, Sep - Dec 2018
- CoE Nominating Committee Member, Fall 2019
- ECE Faculty Workload Task Force Member, Sep 2021 - May 2022
- PhD Admissions Committee Member, Sep 2021- May 2022
- CoE Energy Task Force Member, Sep 2021 - Mar 2022
- UM Renewable Energy Purchase Agreement RFP Evaluation Committee Member, Apr - Jun 2022
- ECE Executive Committee Member, Sep 2022 - Aug 2024
- Graham Sustainability Institute Clean Energy Conversations Convener, Sep 2022 - Present
- Third-year Review Committee Member, 2022
- Tenure Casebook Committee Member, 2022, 2024
- UM Electric Vehicle Center Tech Lead - Grid, 2023 - Present
- COE Launch Committee Member, W24-F24, W25-F25
- ECE Faculty Mentor, 2024 - Present
- ECE Division Chair Search Committee Member, 2024
- UM Center for Innovation in Detroit ECE Ad Hoc Committee Chair, 2024 - Present
- ECE Power & Energy Technical Area Director, Jun 2024 - Present