Curriculum Vitae

Mostafa Ardakani
(Mostafa Sahraei-Ardakani)

February 2023

Department of Electrical and Computer Engineering
University of Utah
Email: mostafa.ardakani@utah.edu
http://ardakani.ece.utah.edu

2218 Merrill Engineering Building
50 Central Campus Dr.
Salt Lake City, UT 84112
Phone: (801) 587-8883

EDUCATION

Ph.D., Energy Engineering—Energy Management and Policy, 2013
The Pennsylvania State University
Dissertation: Policy Analysis in Transmission-Constrained Electricity Markets

M.Sc., Electrical Engineering—Power Systems, 2008
University of Tehran
Thesis: Dynamic Modeling of Electricity Markets

B.Sc., Electrical Engineering—Control, 2006
University of Tehran

PROFESSIONAL APPOINTMENTS

Associate Professor, July 2022 – Present
Department of Electrical and Computer Engineering, University of Utah, Salt Lake City, UT

Assistant Professor, July 2016 – June 2022
Department of Electrical and Computer Engineering, University of Utah, Salt Lake City, UT

Post-Doctoral Scholar, 2013 – June 2016
School of Electrical, Computer, and Energy Engineering, Arizona State University, Tempe, AZ

GRANTS AND CONTRACT FUNDING

Current Grants and Contract Funding (Total: $1,596,996 – Ardakani Share: $744,433)

"Electrifying and Broadbanding the Comb Ridge/El Capitan Community in Kayenta Chapter of the Navajo Nation – A Resilient Solar-Based Autonomous Microgrid Solution (MICROGRID-KAYENTA)"
Funding Agency: Department of Energy
Amount: $2,685,277 (Ardakani Share: $107,261)
Period: 09/2022 – 08/2024
Annual Support: 1.5 person-month

"CAREER: Deregulated Market for Flexible Transmission"
Funding Agency: National Science Foundation
Amount: $500,000
PI: Mostafa Sahraei-Ardakani
Period: 05/2022 – 04/2027
Annual Support: 1 person-month

"EAGER: SAI: Socio-Technological Guided Enhancement of Power Infrastructure Resilience"
Funding Agency: National Science Foundation
Amount: $298,833 (Ardakani Share: $48,555)
PI: Chelsea Schelly—Michigan Tech (Utah PIs: Mostafa Sahraei-Ardakani, Ge Ou, Jianli Chen)
Period: 9/2021 – 8/2023
Annual Support: 0.25 person-month

"Elements: Open Access Data Generation Engine for Bulk Power System under Extreme Windstorms"
Funding Agency: National Science Foundation
Amount: $498,032 (Ardakani Share: $195,878)
PI: Ge Ou (Co-PI: Mostafa Sahraei-Ardakani)
Period: 7/2020-7/2023
Annual Support: 0.5 person-month

Past Grants and Contract Funding (Total: $996,714)

"EAGER: Real-Time: Effective Power System Operation during Hurricanes using Historical and Real-Time Data"
Funding Agency: National Science Foundation
Amount: $298,681 + $49,563 (Supplemental Funding)
PI: Mostafa Sahraei-Ardakani (with Ge Ou and Zhaoxia Pu)
Period: 10/15/2018 – 10/14/2020
Annual Support: 0.75 person-month

"Efficient Utilization of Flexible Transmission for Renewable Energy Integration"
Funding Agency: National Science Foundation
Amount: $167,240
PI: Mostafa Sahraei-Ardakani
Period: 3/1/2018 – 2/28/2021

"PAROTS: Practical and Reliable Operational Transmission Solutions"
Funding agency: Advanced Research Projects Agency—Energy (ARPA-E)
Amount: $250,000
PI: Mostafa Sahraei-Ardakani
Period: 11/2018 – 11/2019
Annual Support: 1 person-month

"Automated Preventive Power System Operation During Hurricanes"
Funding Agency: Utah Science Technology and Research (USTAR) initiative
Amount: $196,230
PI: Mostafa Sahraei-Ardakani (with Ge Ou and Zhaoxia Pu)
Period: 4/1/2018 – 10/1/2019
Annual Support: 0.75 person-month

"Visualization and decision support tool for interdependent critical infrastructure"
Funding Agency: University of Utah Research Foundation
Amount: $35,000
PI: Mostafa Sahraei-Ardakani
Period: 1/2017 – 9/2018

Pending Proposals

"Towards the development of a network-level resilience assessment and optimization procedure for power transmission infrastructure subject to hurricanes"
Funding Agency: National Science Foundation
PI: Ge Ou (University of Florida)
Sahraei-Ardakani's Support: $19,728
Support: 0.25 person-month
Period: 09/2023 – 08/2026

"Plug-in Electric Vehicle Community Partnership with Navajo Nation"
Funding Agency: Department of Energy
PI: Cathy Liu (co-PIs: Sahraei-Ardakani, Li, and Liu)
Funding: $1,600,000
Support: 0.5 person-month
Period: 10/2023 – 12/2026

"Ojo Encino Shaandiin Solar Project"
Funding Agency: Department of Energy
PI: Ojo Encino Chapter—Navajo Nation
Funding: $1,698,698 (Ardakani Share: $239,673)
Support: 1.5 person-month
Period: 1/1/2024 – 12/31/2026

"Hy-SAR: Hydrogen-Enabled Source-Agnostic Resilient North American Grid Consortium"
Funding Agency: Department of Energy
PI: Mostafa Ardakani (University of Utah PI—Led by University of Connecticut)
Funding: $1,490,000 (Ardakani Share: $749,500)
Support: 1.7 person-month
Period: 09/01/2023-08/31/2026

PUBLICATIONS

Refereed Journal Articles (Under Review/Working Papers)

1. F. Jafarishiadeh and **M. Sahraei-Ardakani**, "Resilient Operation of Large Power Systems During Disturbances with Controlled Islanding," *IEEE Transactions on Power Systems,* under review, 2023.
2. O. Mirzapour, X. Rui, and **M. Sahraei-Ardakani**, "Transmission Impedance Control Impacts on Carbon Emissions and Renewable Energy Curtailment," *Energy*, under review, 2022.
3. F. Jafarishiadeh and **M. Sahraei-Ardakani**, "Unit Commitment with Transmission Anti-Icing Constraints," *IEEE Transactions on Power Systems,* under review, 2022.
4. Y. Al-Abdullah, M. Al-Saffar, A. Al-Yakoob, and **M. Sahraei-Ardakani**, "Impacts of Kuwait's Proposed Renewable Energy Goals on the Grid Operations," *International Journal of Sustainable Energy,* under review, 2022.

Refereed Journal Articles

1. S. Tiwari, C. Schelly, G. Ou, **M**. **Sahraei-Ardakani**, J. Chen, and F. Jafarishiadeh, "Conceptualizing Resilience: An Energy Services Approach," *Energy Research and Social Science,* vol. 94, Dec. 2022.
2. B. Willing, A. Ho, **M. Sahraei-Ardakani,** and K. Powell, "System Benefits of Industrial Battery Storage: A Comparison of Grid and Facility Control and Dispatch," *Sustainable Energy, Grids, and Networks,* forthcoming, 2022.
3. X. Rui and **M. Sahraei-Ardakani,** "A Successive Flow Direction Enforcing Algorithm for Optimal Operation of Variable-Impedance FACTS Devices," *Electric Power Systems Research,* vol. 211, Oct. 2022.
4. S. Sadat and **M. Sahraei-Ardakani**, "Tuning Successive Linear Programming to Solve AC Optimal Power Flow Problem for Large Networks," *International Journal of Electrical Power and Energy Systems*, vol. 137, May 2022.
5. X. Rui, T. Nudell, and **M. Sahraei-Ardakani**, "Linear Modelling of Series FACTS Devices in Power System Operation Models," *IET Generation, Transmission, & Distribution*, forthcoming, vol. 16, no. 6, pp. 1047-1063, March 2022.
6. Y. Al-Abdullah, M. Al-Saffar, A. Al-Azmi, and **M. Sahraei-Ardakani**, "Impacts of COVID-19 on Kuwait's Electric Power Grid," *Electricity Journal*, vol. 34, no. 9, Nov. 2021.
7. F. Mohammadi, **M. Sahraei-Ardakani,** D. Trakas, and N. Hatziargyriou, "Machine Learning Assisted Stochastic Unit Commitment during Hurricanes with Predictable Line Outages," *IEEE Transactions on Power Systems,* vol. 36, no. 6, pp. 5131 – 5142, Nov. 2021.
8. F. Mohammadi, F. Jafarishiadeh, J. Xue, **M. Sahraei-Ardakani**, and G. Ou, "Deterministic Proxies for Stochastic Unit Commitment During Hurricanes," *IET Generation Transmission and Distribution,* vol. 15, no. 8, pp. 1357-1370, April 2021.
9. F. Mohammadi, **M. Sahraei-Ardakani,** Y. Al-Abdullah, and G. T. Heydt, "Cost-Benefit Analysis of Desalination: A Power Market Opportunity," *Electric Power Components and Systems,* vol. 48, no. 11, pp. 1091-1101, 2020.
10. Y. Zheng and **M. Sahraei-Ardakani**, "Leveraging Existing Water and Wastewater Infrastructure to Develop Distributed Pumped Storage Hydropower in California," *Journal of Energy Storage*, vol. 34, Feb. 2021.

11. F. Mohammadi and **M. Sahraei-Ardakani,** "Tractable Stochastic Unit Commitment for Large Systems during Predictable Hazards," *IEEE Access,* vol. 8, pp. 115078-115088, June 2020.
12. J. Xue, X. Li, F. Mohammadi, **M. Sahraei-Ardakani**, Z. Pu, and G. Ou, "Impact of Transmission Tower-Line Interaction to the Bulk Power System during Hurricane," *Reliability Engineering and System Safety,* vol. 203, Nov. 2020.
13. F. Jafarishiadeh, F. Mohammadi, and **M. Sahraei-Ardakani**, "Preventive Dispatch for Transmission De-icing," *IEEE Transactions on Power Systems,* vol. 35, no. 5, pp. 4104-4107, Sept. 2020.
14. F. Mohammadi and **M. Sahraei-Ardakani,** "Multidimensional Scenario Selection for Power Systems with Stochastic Failures," *IEEE Transactions on Power Systems,* vol. 35, no. 6, pp. 4528-4538, Nov. 2020.
15. Y. Sang, J. Xue, **M. Sahraei-Ardakani,** and G. Ou, "An Integrated Preventive Operation Framework for Power Systems During Hurricanes," *IEEE Systems Journal,* vol. 14, no. 3, pp. 3245-3255, Sept 2020.
16. F. Mohammadi, **M. Sahraei-Ardakani,** Y. Al-Abdullah, and Gerald T. Heydt, "Coordinated Scheduling of Power Generation and Water Desalination Units," *IEEE Transactions on Power Systems,* vol. 34, no. 5, pp. 3657-3666, Sept. 2019.
17. Y. Sang and **M. Sahraei-Ardakani**, "Effective Power Flow Control via Distributed FACTS Considering Future Uncertainties," *Electric Power System Research,* vol. 168, pp. 127-136, March 2019.
18. **M. Sahraei-Ardakani,** "Merchant Power Flow Controllers," *Energy Economics,* vol. 74, pp. 878-885, Aug. 2018.
19. **M. Sahraei-Ardakani** and Y. Sang, "Discussion on Linear Modeling of Variable Reactance in 'Co-optimization of Transmission Expansion Planning and TCSC Placement Considering the Correlation Between Wind and Demand Scenarios'," *IEEE Transactions on Power Systems,* vol. 33, no 5, pp. 5808-5809, Sep. 2018.
20. A. Nikoobakht, J. Aghaei, M. Parvania, and **M. Sahraei-Ardakani,** "Contribution of FACTS Devices in Power Systems Security using MILP-Based OPF," *IET Generation, Transmission & Distribution,* vol. 12, no. 15, pp. 3744 – 3755, 2018.
21. Y. Sang, **M. Sahraei-Ardakani,** and M. Parvania, "Stochastic Transmission Impedance Control for Enhanced Wind Energy Integration," *IEEE Transactions on Sustainable Energy*, vol. 9, no. 3, pp. 1108-1117, Jul. 2018.
22. Y. Sang and **M. Sahraei–Ardakani,** "The Interdependence between Transmission Switching and Variable-Impedance Series FACTS Devices," *IEEE Transactions on Power Systems*, vol. 33, no. 3, pp. 2792-2803, May 2018.
23. Q. Zhang and **M. Sahraei-Ardakani,** "Distributed DCOPF with Flexible Transmission," *Electric Power System Research,* vol. 154, pp. 37-47, Jan 2018.
24. X. Li, P. Balasubramanian, **M. Sahraei-Ardakani**, K. W. Hedman, and R. Podmore, "Real-Time Contingency Analysis with Corrective Transmission Switching," *IEEE Transactions on Power Systems*, vol. 32, no. 4, pp. 2604 - 2617, Jul. 2017.
25. M. Abdi-Khorsand, **M. Sahraei-Ardakani,** and Y. Al-Abdullah**,** "Corrective Transmission Switching with *N-1-1* Contingency Analysis," *IEEE Transactions on Power Systems – Special Issue on Harnessing Flexible Transmission Assets,* vol. 32, no. 2, pp. 1606-1615, Mar. 2017.
26. **M. Sahraei-Ardakani** and K. W. Hedman, "Computationally Efficient Control of FACTS Set Points in DC Optimal Power Flow with Shift Factor Structure," *IEEE Transactions on Power Systems*, vol. 32, no. 3, pp. 1733 - 1740, May 2017.

27. Y. Al-Abdullah, **M. Sahraei-Ardakani,** "Analysis of Reserve Relaxations in Electric Energy Markets," *Electric Power System Research,* vol. 141, pp. 460-466, Dec. 2016.
28. J. Lyon, S. Maslennikov, **M. Sahraei-Ardakani**, T. Zhang, E. Litvinov, X. Li, P. Balasubramanian, and K. Hedman, "Harnessing Smart Flexible Transmission: Corrective Transmission Switching for ISO-NE," *IEEE Power and Energy Technology Systems Journal*, vol. 3., no. 3, pp. 109-118, Sep. 2016.
29. **M. Sahraei-Ardakani** and S. Blumsack, "Transfer Capability Improvement through Market-Based Operation of Series FACTS Devices," *IEEE Transactions on Power Systems,* vol. 31, no. 5, pp. 3702-3714, Sep. 2016.
30. P. Balasubramanian, **M. Sahraei-Ardakani**, X. Li, and K. W. Hedman, "Towards Smart Corrective Switching: Analysis and Advancement of PJM's Switching Solutions," *IET Generation, Transmission, and Distribution*, vol. 10, no. 8, pp. 1984-1992, 2016.
31. **M. Sahraei-Ardakani** and K. Hedman, "A Fast LP Approach for Enhanced Utilization of FACTS Devices," *IEEE Transactions on Power Systems*, vol. 31, no. 3, pp. 2204-2213, May 2016.
32. **M. Sahraei-Ardakani** and K. Hedman, "Day-Ahead Corrective Adjustment of FACTS Reactance: A Linear Programming Approach," *IEEE Transactions on Power Systems,* vol. 31, no. 4, pp. 2867-2875, Jul. 2016.
33. **M. Sahraei-Ardakani**, X. Li, P. Balasubramanian, K. Hedman, and M. Abdi-Khorsand, "Real-Time Contingency Analysis with Transmission Switching on Real Power System Data," *IEEE Transactions on Power Systems*, vol. 31, no. 3, pp. 2501-2502, May 2016.
34. **M. Sahraei-Ardakani**, S. Blumsack, and A. Kleit, "Estimating Zonal Electricity Supply Curves in Transmission-Constrained Electricity Markets," *Energy,* vol. 90, pp. 10-19, Feb. 2015.
35. **M. Sahraei-Ardakani**, S. Blumsack, and A. Kleit, "Distributional Impacts of State-Level Energy Efficiency Policies in Regional Electricity Markets," *Energy Policy,* vol. 49, pp. 365-372, Oct. 2012.
36. **M. Sahraei-Ardakani** and A. Rahimi-Kian, "A Dynamic Replicator Model of the Players' Bids in an Oligopolistic Electricity Market", *Electric Power System Research,* vol. 79, pp. 781-788, May 2009.

Refereed Conference Papers

1. O. Mirzapour, F. Mohammadi, and **M. Sahraei-Ardakani**, "Multidimensional Scenario Selection for Power Systems with Line and Generation Outages," *in Proc. Of 2022 North American Power Symposium (NAPS),* Salt Lake City, UT, USA.
2. F. Jafarishiadeh, X. Zhu, **M. Sahraei-Ardakani**, and G. Ou, "Power Outage Prediction using Hurricane Forecast," *in Proc. Of 2022 North American Power Symposium (NAPS),* Salt Lake City, UT, USA.
3. X. Rui, M. Liu, **M. Sahraei-Ardakani**, and T.R. Nudell, "ADMM-Based Distributed DC Optimal Power Flow with Power Flow Control," *in Proc. Of 2022 North American Power Symposium (NAPS),* Salt Lake City, UT, USA.

4. X. Zhu, G. Ou, F. Jafarishiadeh, and **M. Sahraei-Ardakani**, "A Data Generation Engine and Workflow for Power Network Damage and Loss Estimation under Hurricane," *in Proc. Of 2022 North American Power Symposium (NAPS),* Salt Lake City, UT, USA.
5. X. Rui and **M. Sahraei-Ardakani**, "Parallel Stochastic Unit Commitment with Optimal FACTS Operation Using Progressive Hedging," *in Proc. of 2022 IEEE Power & Energy Society General Meeting (PESGM),* Denver, CO, USA.
6. M.F. Fard, **M. Sahraei-Ardakani**, G. Ou, and M. Liu, "Targeted Hardening of Electric Distribution System for Enhanced Resilience against Earthquakes," *in Proc. of 31st International Symposium on Industrial Electronics (ISIE),* June 2022, Anchorage, AK, USA.
7. S. Sadat, X. Rui, **M. Sahraei-Ardakani,** "Computational Impacts of SVCs on Optimal Power Flow using Approximated Active-Set Interior Point Algorithm," *in Proc. Of 2021 North American Power Symposium (NAPS),* College Station, TX, USA.
8. S. Sadat, and **M. Sahraei-Ardakani,** "Customized Sequential Quadratic Programming for Solving Large-Scale AC Optimal Power Flow," *in Proc. Of 2021 North American Power Symposium (NAPS),* College Station, TX, USA.
9. F. Mohammadi, **M. Sahraei-Ardakani,** D. Trakas, and N. Hatziargyriou, "Machine Learning Assisted Stochastic Unit Commitment: A Feasibility Study," *in Proc. Of 2020 North American Power Symposium (NAPS),* Tempe, AZ, USA.
10. F. Jafarishiadeh, **M. Sahraei-Ardakani,** M. Liu, "Preventive Unit Commitment for Transmission Line De-icing in Changing Weather Conditions," *in Proc. Of 2020 North American Power Symposium (NAPS),* Tempe, AZ, USA. (Best Paper Award)
11. O. Mirzapour and **M. Sahraei-Ardakani**, "Environmental Impacts of Power Flow Control with Variable-Impedance FACTS," *in Proc. Of 2020 North American Power Symposium (NAPS),* Tempe, AZ, USA.
12. S. Sadat and **M. Sahraei-Ardakani**, "Initializing Successive Linear Programming Solver for ACOPF using Machine Learning," *in Proc. Of 2020 North American Power Symposium (NAPS),* Tempe, AZ, USA.
13. A. Wahid, S. A. Sadat, **M. Sahraei-Ardakani**, and A. Tajalli, "Power System Emulator Based on PLL Architecture," *2020 IEEE International Symposium on Circuits & Systems*, Seville, Spain, May 2020.
14. **M. Sahraei-Ardakani,** F. Mohammadi, G. Ou, Z. Pu, J. Xue, X. Lin, and Y. Sang, "Reliability Enhancement via Integration of Extreme Weather Forecast in Power System Operation*," 9th International Conference on Power and Energy Systems (ICPES 2019),* December 2019, Perth, Australia.
15. F. Mohammadi, **M. Sahraei-Ardakani,** Y. Al-Abdullah, and G. T. Heydt, "Can Desalination be an Economically Viable Solution for Water Scarcity?" *IEEE Global Humanitarian Conference,* October 2019, Seattle, WA, USA.
16. Y. Sang, J Xue, **M. Sahraei-Ardakani**, and G. Ou, "Comparing a New Power System Preventive Operation Method with a Conventional Industry Practice during Hurricanes," *2019 North American Power Symposium (NAPS)*, Wichita, KS, USA.

17. G. T. Heydt, F. Mohammadi, M. Sahraei-Ardakani, Y. Al-Abdullah, "Large Scale Desalination: Potential for a Significant Electric Energy Market," *2019 North American Power Symposium (NAPS)*, Wichita, KS, USA.
18. Y. Sang and **M. Sahraei-Ardakani**, "Enhancing Wind Energy Integration by Co-optimizing Energy Storage Systems and Transmission Switching," *in Proc. of IEEE PES General Meeting 2019,* July 2019, Atlanta, GA, USA.
19. F. Mohammadi and **M. Sahraei-Ardakani**, "Towards Tractable Stochastic Unit Commitment for Preventive Operation during Hurricanes," *IEEE PES General Meeting 2019,* accepted, July 2019, Atlanta, GA, USA.
20. F. Mohammadi, **M. Sahraei-Ardakani,** and Y. Al-Abdullah, "Coordinated Operation of Power Generation and Water Desalination," *10th IFAC Symposium on Control of Power and Energy Systems (CPES)*, Sept. 2018, Tokyo, Japan.
21. Y. Al-Abdullah and **M. Sahraei-Ardakani**, "Differences in locational marginal prices: Deterministic vs. stochastic market formulations," *2018 5th International Conference on Renewable Energy: Generation and Applications (ICREGA),* Al-Ain, UAE.
22. S. Sadat, D. Haralson, and **M. Sahraei-Ardakani,** "Security versus Computation Time in IV-ACOPF with SOCP Initialization," *2018 IEEE International Conference on Probabilistic Methods Applied to Power Systems (PMAPS),* Boise, ID, USA.
23. Y. Sang, J. Xue, **M. Sahraei-Ardakani,** and G. Ou, "Effective Scenario Selection for Preventive Stochastic Unit Commitment during Hurricanes," *2018 IEEE International Conference on Probabilistic Methods Applied to Power Systems (PMAPS),* Boise, ID, USA.
24. Y. Sang and **Mostafa Sahraei-Ardakani**, "Analyzing the Mutual Influence of Conventional and Distributed FACTS via Stochastic Co-optimization," *2018 IEEE International Conference on Probabilistic Methods Applied to Power Systems (PMAPS),* Boise, ID, USA.
25. Y. Sang and **Mostafa Sahraei-Ardakani**, "Economic Benefit Comparison of D-FACTS and FACTS in Transmission Networks with Uncertainties," *IEEE PES General Meeting 2018,* Portland, OR, USA.
26. S. Sadat, D. Haralson, and **M. Sahraei-Ardakani**, "Evaluation of Various Techniques to Warm-Start a Successive Linear Programming Algorithm for Solving the IV ACOPF," *IEEE PES General Meeting 2018,* Portland, OR, USA.
27. Q. Zhang and **M. Sahraei-Ardakani,** "Impact of Communication Limits on Convergence of Distributed DCOPF with Flexible Transmission," *2017 North American Power Symposium,* Morgantown, WV, USA.
28. Y. Sang and **M. Sahraei-Ardakani,** "The Link Between Power Flow Control Technologies: Topology Control and FACTS," *2017 North American Power Symposium,* Morgantown, WV, USA. (Best Paper Award)
29. **M. Sahraei-Ardakani** and Ge Ou, "Day-Ahead Preventive Scheduling of Power Systems During Natural Hazards via Stochastic Optimization," *IEEE PES General Meeting 2017*, Chicago, IL, USA.
30. **M. Sahraei-Ardakani**, A. Korad, K. Hedman, P. Lipka, and S. Oren, "Performance of AC and DC Based Transmission Switching Heuristics on a Large-Scale Polish System," *IEEE PES General Meeting 2014,* Washington, DC, USA.

31. **M. Sahraei-Ardakani** and S. Blumsack, "Marginal Value of FACTS Devices in Transmission-Constrained Electricity Markets," *IEEE PES General Meeting 2013*, Vancouver, BC, Canada.
32. **M. Sahraei-Ardakani** and S. Blumsack, "Active Participation of FACTS Devices in Wholesale Electricity Markets," *31st USAEE North American Conference,* 2012, Austin, TX, USA.
33. **M. Sahraei-Ardakani** and S. Blumsack, "Market Equilibrium for Dispatchable Transmission Using FACTS Devices," *IEEE PES General Meeting 2012*, San Diego, CA, USA.
34. S. Blumsack and **M. Sahraei-Ardakani**, "When is Transmission Not Transmission: Regulating Flexible Electric Transmission Architecture," *In Proc. of 31st Annual Eastern Conference,* 2012, Shawnee, PA, USA.
35. **M. Sahraei-Ardakani**, S. Blumsack, and A. Kleit, "Zonal Supply Curve Estimation With Fuzzy Marginal Fuel in Electricity Markets," *30th USAEE North American Conference*, 2011, Washington, DC, USA. [Best Paper Award]
36. **M. Sahraei-Ardakani**, M. Peydayesh, and A. Rahimi-Kian, "DG planning under uncertainty using AHP Method," *IEEE PES General Meeting 2008*, Jul. 2008, Pittsburgh, PA, USA
37. **M. Sahraei-Ardakani**, M. Roshanaei, A. Rahimi-Kian, and C. Lucas, "A Study of Electricity Market Dynamics Using Invasive Weed Optimization," *IEEE Symposium on Computational Intelligence and Games (CIG08),* pp. 276- 282, Dec. 2008, Perth, Australia
38. **M. Sahraei-Ardakani**, A. Rahimi-Kian, and M. Nili-Ahmadabadi, "Hierarchical Nash-Q learning in continuous games," *IEEE Symposium on Computational Intelligence and Games (CIG08)*, pp. 276- 282, Dec. 2008, Perth, Australia.
39. **M. Sahraei-Ardakani**, A. Rahimi-Kian, and M. Nili-Ahmadabadi, "Hierarchical Nash-Cournot Q-Learning in Electricity Markets," *17th IFAC World Congress*, Jul. 2008, Seoul, Korea.

Invited Talks and Conference Presentations

1. **M. Sahraei-Ardakani,** J. Chen, M. Liu, and S. Yusaf, "Developing broadband infrastructure in the Navajo Nation: challenges and possible solutions," *Utah RF Day*, University of Utah, September 2022.
2. **M. Sahraei-Ardakani,** J. Chen, M. Liu, and S. Yusaf, "Energy and broadband infrastructure in US Native communities: The case of Navajo Nation," *NSF SRS RN Network: Connecting Rural and Urban Environments for Equitable Access to Transportation, Telecommunications and Energy (CREEATTE),* University of Tennessee—Knoxville, August 2022.
3. M. Liu and **M. Sahraei-Ardakani**, "Connecting Diné Communities: Challenges, Opportunities, and Pathways," *IEEE PES General Meeting 2022,* July 2022, Denver, CO, USA.
4. **M. Sahraei-Ardakani**, M. Liu, and S. Yusaf, "Access to electricity in US native communities: The case of Navajo Nation," *Energy and Climate Transformations: 3rd International Conference on Energy Research & Social Science*, Manchester, UK, June 2022.
5. **M. Sahraei-Ardakani,** F. Mohammadi, and G. Ou, "Integration of Severe Weather Forecast Data in Grid Operation," *IEEE PES General Meeting 2020,* August 2020, Montreal, Canada.
6. **M. Sahraei-Ardakani** and F. Mohammadi, "Enhancing Scalability of Stochastic Unit Commitment during Extreme Weather using Machine Learning," *INFORMS Annual Meeting 2020*.

7. **M. Sahraei-Ardakani***,* F. Mohammadi, and G. Ou, "Machine Learning Assisted Preventive Stochastic Unit Commitment," *Increasing Market and Planning Efficiency Through Software*, Federal Energy Regulatory Commission, June 2020, Washington, DC, USA.
8. **M. Sahraei-Ardakani**, G. Ou, and Z. Pu, "An Integrated Platform for Preventive Power System Operation during Hurricanes," *HurriCon*, East Carolina University, February 2020.
9. F. Mohammadi and **M. Sahraei-Ardakani,** "Scalable Stochastic Unit Commitment During Hurricanes," *INFORMS Annual Meeting 2019,* Seattle, WA, USA.
10. Y. Sang and **M. Sahraei-Ardakani,** "Effective Power Flow Control Via Distributed FACTS Considering Future Uncertainties," *INFORMS Annual Meeting 2019,* Seattle, WA, USA.
11. **M. Sahraei-Ardakani,** F. Mohammadi, G. Ou, and Z. Pu, "Scalable Preventive Unit Commitment for Operation during Extreme Weather," *Increasing Market and Planning Efficiency Through Software*, Federal Energy Regulatory Commission, Jun. 2019, Washington, DC, USA.
12. J. Xue, G. Ou, Y. Sang, and **M. Sahraei-Ardakani,** "Structural Sensitivity Analysis of Transmission Tower's Finite Element Model for Power Outage Prediction," 2019 *Engineering Mechanics Institute Conference*, Los Angeles, CA. USA.
13. **M. Sahraei-Ardakani** and Y. Sang, "Optimal Portfolio of Power Flow Control Technologies: Topology and Impedance Control," *INFORMS Annual Meeting 2018*, Phoenix, AZ, USA.
14. **M. Sahraei-Ardakani** and Y. Sang, "Energy Storage Planning in Presence of Topology Control," *INFORMS Annual Meeting 2018*, Phoenix, AZ, USA.
15. **M. Sahraei-Ardakani** and Y. Sang, "Coordinated Planning and Operation of M-FACTS and Transmission Switching," *23rd International Symposium on Mathematical Programming (ISMP)*, Jul. 2018, Bordeaux, France.
16. **M. Sahraei-Ardakani** and Ge Ou "Preventive Power System Operation During Hurricanes," *Increasing Market and Planning Efficiency Through Software*, Federal Energy Regulatory Commission, Jun. 2018, Washington, DC, USA.
17. **M. Sahraei-Ardakani,** "Enhanced Operation of Power Flow Controllers through Efficient Algorithms," 2018 *IEEE T&D Conference and Exposition,* April 2018, Denver, CO.
18. **M. Sahraei-Ardakani,** "Operation of Power Flow Controllers: Computational Efficiency and Market Participation," *EPRI ISO/RTO Market Design Tech Conference*, Feb. 2017, [Online].
19. **M. Sahraei-Ardakani,** "Harnessing Flexible Transmission for Economic and Reliable Operation of Electric Power Systems," *Sharif University of Technology,* Dec. 2016, Tehran, Iran.
20. **M. Sahraei-Ardakani,** "Market-Based Operation of Flexible Transmission," *University of Tehran,* Dec. 2016, Tehran, Iran.
21. **M. Sahraei-Ardakani,** "Reserve Deliverability Enhancement through Flexible Transmission," *INFORMS Annual Meeting 2016*, Nashville, TN, USA.
22. **M. Sahraei-Ardakani,** "Co-optimization of Series Facts Device Set Points and Generation Dispatch," *INFORMS Annual Meeting 2016*, Nashville, TN, USA.
23. **M. Sahraei-Ardakani,** "Operator Involvement in Electricity Market Solution," *Penn State University*, Feb. 2016, University Park, PA, USA.

24. **M. Sahraei-Ardakani** and Seth Blumsack, "A Market Design for Participation of Flexible AC Transmission System (FACTS) Devices," *42nd Annual Conference,* Eastern Economic Association, Feb. 2016, Washington, DC, USA.
25. K. Hedman, **M. Sahraei-Ardakani,** P. Balasubramanian, and X. Li, "Flexible Transmission Decision Support: Scalable Heuristics for Power Flow Control Devices," *INFORMS Annual Meeting 2015*, Philadelphia, PA, USA.
26. **M. Sahraei-Ardakani** and K. Hedman, "Modeling and Reformulations of Flexible AC Transmission System (FACTS) Devices in Power Systems," *22nd International Symposium on Mathematical Programming (ISMP)*, Jul. 2015, Pittsburgh, PA, USA.
27. K. Hedman and **M. Sahraei-Ardakani**, "Flexible Transmission Decision Support Systems," *Increasing Market and Planning Efficiency Through Software*, Federal Energy Regulatory Commission, Jun. 2015, Washington, DC, USA.
28. **M. Sahraei-Ardakani** and K. Hedman, "System Operator Modifications to Electricity Market Solutions," *INFORMS Annual Meeting 2014*, San Francisco, CA, USA.
29. S. Blumsack and **M. Sahraei Ardakani**, "Market-Based Control of Flexible Transmission Architectures," Center for Nonlinear Studies, Los Alamos National Laboratory, May 2012, Santa Fe, NM, USA.

White Papers and Technical Reports

1. A. Kleit, S. Blumsack, Z. Lei, L. Hutelmyer, **M. Sahraei-Ardakani**, and S. Smith, "Impacts of Electricity Restructuring in Rural Pennsylvania," Center for Rural Pennsylvania, March 2011.
2. **M. Sahraei-Ardakani**, S. Blumsack, and A. Kleit, "Zonal Supply Curve Estimation in Transmission-Constrained Electricity Markets," 2011, Available at SSRN: http://ssrn.com/abstract=1937411.

GRADUATE STUDENTS AND POSTDOCTORAL SCHOLARS ADVISED

Visiting Scholars

1. Zhiyang Lu, August 2019-August 2020

Post-Doctoral Scholars

1. Dr. Yingying Zheng, March-December 2019 (Currently Assistant Professor of Biological Engineering at Utah State University)

Current M.S. and Ph.D. Students

1. Fateme Jafarishideh, Ph.D. Student, Expected Graduation: 2023
2. Xinyang Rui, Ph.D. Student, Expected Graduation: 2024
3. Omid Mirzapour, Ph.D. Student, Expected Graduation: 2024
4. Mahdi Al-Saffar, Ph.D. Student, Expected Graduation: 2025

Past M.S. and Ph.D. Students

1. Sayed Abdullah Sadat, Ph.D. (Currently Postdoc at UC San Diego)

2. Farshad Mohammadi, Ph.D. (Currently with: The Energy Authority)
3. Yuanrui Sang, Ph.D. (Currently Assistant Professor at University of Texas at El Paso)
4. David Haralson, M.S. (Currently with: Western Electricity Coordinating Council)
5. Shirsha Nandy, M.S. (Currently with Rio Tinto)
6. Tianlong Zhang, M.S. (Currently with Galileo Financial Technologies)

Undergraduate Researchers

1. Brittany Pruneau

TEACHING EXPERIENCE

Instructor

1. Introduction to Electric Circuits, University of Utah, Spring 2022
2. Power Systems Operation and Planning, University of Utah, Spring 2020 and Spring 2021
3. Introduction to Optimization, University of Utah, Spring 2019
   (*A new course that I developed for the College of Engineering at the University of Utah*)
4. Energy Infrastructure Planning and Management, CII-Tech, Ethiopia, Summer 2017
   (*Developed and taught; I taught this course a part of a master's program on Renewable Energy Engineering*)
5. Modern Power Transmission, University of Utah, Spring 2017 and Spring 2018
   (*A new course that I developed and taught for the electrical engineering program at the University of Utah*)
6. Power Electronics Fundamentals, University of Utah, Fall 2016, Fall 2017, Fall 2018, and Fall 2019
7. Circuits I, (Faculty Associate), Arizona State University, Fall 2013 and Spring 2014

Co-Instructor

Modeling Electric Power Systems, Penn State University, Fall 2012

Teaching Assistant

Solar Project Development, Penn State University, Fall 2012
Computational Economics, Penn State University, Spring 2012

HONORS AND AWARDS

1. National Science Foundation Faculty Early Career Development Award, January 2022.
2. 2020 North American Power Symposium (NAPS) best paper award for the paper: "Preventive Unit Commitment for Transmission Line De-icing in Changing Weather Conditions," with Fatemeh Jafarishiadeh and Mingxi Liu, April 2021

3. 2017 North American Power Symposium (NAPS) best paper award for the paper: "The Link Between Power Flow Control Technologies: Topology Control and FACTS," with Yuanrui Sang, 2017
4. Edson entrepreneurship award, Arizona State University, 2015
5. EEEPI summer research award, Penn State University, 2012
6. Outstanding Organization Award – PSU IEEE Student Chapter, Penn State University, 2012
7. Dennis J. O'Brien USAEE best student paper award, 30th USAEE North American Conf., 2011
8. Engineering Research Award, Penn State graduate exhibition, 2011
9. IFAC Asian student travel award, IFAC, South Korea, 2008

INDUSTRY EXPERIENCE

Data Scientist, May 2014 – August 2014
Seven Lakes Technologies, West Lake Village, CA.
Instrumentation and Control Engineer, 2006 – 2009
Moshanir Power Consulting Company, Tehran, Iran.

Research Associate, 2008 – 2009
Niroo Research Institute, Tehran, Iran.

SERVICE TO PROFESSION

University Service, University of Utah

- **Committee Services:**
  1. Undergraduate Committee, Department of Electrical and Computer Engineering, Since July 2018
  2. Graduate Committee, Department of Electrical and Computer Engineering, October 2018 – October 2019
  3. Teaching Excellence Committee, College of Engineering, Since June 2018
  4. University Interdisciplinary Teaching Programs Committee, University of Utah, Since July 2018
  5. Global Change and Sustainability Center (GCSC) Executive Board Member, University of Utah, Since September 2019.

- **Others:**

  1. Bringing North American Power Symposium (NAPS) to University of Utah in 2022: Together with Dr. Mingxi Liu, I was able to submit a successful proposal to host NAPS 2022 at the University of Utah. NAPS is a medium size conference (~300 attendees) and will help enhance the visibility of the Electrical and Computer Engineering program and the College of Engineering. Dr. Liu and I will be co-chairs of the symposium and are currently working with the University Conference and Event Management to organize the event in Fall 2022.
  2. Relationship with Kuwait Institute for Scientific Research (KISR): I have initiated and established a relationship with KISR, which has led to joint proposals and co-authored

publications. Additionally, leveraging this relationship, I have been able to hire a PhD student, Mahdi AlSaffar, whose education is fully funded by KISR.

Graduate Student Thesis/Dissertation Committee Member

- External Examiner for PhD Dissertation by Dima Imad Kayyali, McGill University, 2021.

Technical Committee Member – Conferences:

- 2019 International Conference on Power and Energy Systems (ICPES 2019)

Session/Panel Chair – Conference:

- 52nd North American Power Symposium (NAPS): Transmission Systems and FACTS
- 2019 INFORMS Annual Meeting: Power Flow Optimization and Control
- 2019 INFORMS Annual Meeting: Power System Operation During Extreme Weather

Peer Reviewer – Journals

IEEE Transactions on Power Systems; IEEE Transactions on Smart Grid, IEEE Systems Journal; IEEE Access; Electric Power Systems Research; Sustainable Energy, Grid, and Networks; Automatica; IET Generation, Transmission & Distribution; International Transactions on Electrical Energy Systems; Energy Economics; Energy; The Energy Journal; Desalination; Energy Engineering; Utilities Policy; International Journal of Electrical Power and Energy Systems

Peer Reviewer – Conferences

IFAC Conferences, Hawaii International Conference on System Sciences, IEEE PES General Meeting

Leadership

IEEE Student Chapter Graduate Student Liaison, January 2011 – August 2012
Penn State University (Outstanding New Student Organization of the Year 2011-2012)

PROFESSIONAL MEMBERSHIPS

IEEE, since 2006
INFORMS, since 2014
MOS, Since 2015
ESIG, Since 2018
IAEE/USAEE, 2011-2013