Anderson Rodrigo de Queiroz
Raleigh, North Carolina, USA
Skype: arqueiroz
ardequei@ncsu.edu / adequeiroz@nccu.edu
https://ardequeiroz@github.io

EDUCATION

- **Ph.D. Operations Research and Industrial Engineering**, The University of Texas at Austin, Dissertation: On a Sampling-based Decomposition Algorithm with Application to Hydrothermal Scheduling: Cut Formation and Solution Quality. Advisor: David P. Morton, 2007-2011

- **M.S. Electrical Engineering**, Federal University of Itajubá, Thesis: Operational Marginal Cost Simulation in Electricity Spot Markets Using Neural Networks. Advisor: José W. Marangon Lima, 2006-2007 (*in Portuguese*)

- **B.S. Electrical Engineering**, Major in Electrical Power Systems, Federal University of Itajubá, 2001-2005

FIELDS OF EXPERTISE

- Optimization Methods: Stochastic, Large Scale, Linear, Non-Linear, Integer, Dynamic

- Data Analytics: Artificial Neural Networks, Decision Analysis, Clustering Analysis, Regression, Benchmarking Regulation, Time Series Forecasting

- Power, Energy and Water Infrastructures: Planning and Coordination, Climate Effects in Energy Systems, Water-Energy Nexus, Capacity Expansion, Distributed Generation, Energy Storage, Renewable Power Integration, Locational Marginal Prices and Economics, Wholesale and Retail Electricity Markets

- Computing and Systems
  - Programming Languages: Python, C++, Matlab, MPI, OpenMP
  - Optimization Packages and Libraries: GAMS, COIN-OR, PYOMO, CPLEX, Gurobi, GLPK
  - Other Software: R, Minitab, Statistica, @RISK, Scilab, DPL

LANGUAGES

Portuguese: Native   English: Fluent   Spanish: Comprehend

HONORS & AWARDS

- FAPEMIG/CAPES Post Doc Fellow, 2013
- FULBRIGHT/CAPES Scholar, 2007-2011
- CAPES Scholar, 2006-2007
- Graduate Dean's Prestigious Fellowship Supplement, University of Texas at Austin, 2008
- XI Brazilian Energy Planning Congress, Cuiabá – Brazil, Best paper award, 2018

PROFESSIONAL EXPERIENCE

- **North Carolina Central University (10/2017 – present)**
  Assistant Professor, School of Business (10/2017 – present)

- **North Carolina State University (11/2015 – present)**
  Adjunct Research Professor, CCEE Department (10/2017 – present)
  Operations Research Graduate Faculty (03/2017 – present)
  Research Assistant Professor, CCEE Department (11/2016 – 09/2017)
  Post-Doctorate Research Scholar, CCEE Department (11/2015 – 10/2016)

- **Federal University of Itajubá (UNIFEI) (07/2012 – 11/2015)**
  Assistant Professor, Institute of Electrical and Energy Systems (07/2013 – 11/2015)
  Post-Doctorate Fellow, Institute of Electrical and Energy Systems (07/2012 – 06/2013)

- **Marangon Consulting and Engineering (01/2006 – 07/2013)**
  Position: Associate Researcher

- **The University of Texas at Austin (08/2012 – 12/2014)**
  Position: Research Affiliate in the Operations Research and Industrial Engineering Department

UNDERGRADUATE COURSES

- Data Analytics in R – NCCU, Durham (F22)
- Modeling and Optimization for Analytics – NCCU, Durham (F22)
- Applied Time Series Analysis, Durham (F22)
- Special Topics in Data Analytics (Energy & Society) – NCCU, Durham (F22)
- Decision Sciences – NCCU, Durham (F17, S18)
- Operations Management – NCCU, Durham (F17, S18, F18, S19, F19, S20, F20, S21, F21, S22)
- Quantitative Methods for Business – NCCU, Durham (S18, F18, S19, F19, S20, F20, S21, F21, S22)
- Elementary Statistics – NCCU, Durham (Summer 19,20,21,22)
- Civil Engineering Systems – NCSU, Raleigh (S17)
- Electricity Markets and Trading – UNIFEI, Itajubá (S15)
- Electric Circuits I – UNIFEI, Itajubá – (F13, S14, F14, S15, F15)
- Electric Circuits II – UNIFEI, Itajubá – (F13, F14; F15)

GRADUATE COURSES & LECTURES

- Managerial Statistics – NCCU, Durham (S19, F19, F20, F21)
- Production Systems and Management – NCCU, Durham (F18, S20, S21, S22)
- Quantitative Methods for Business – NCCU, Durham (F17)
- Markets for Electric Power: Guest lecture – An Overview About the Brazilian Electricity Market: Optimization and Pricing, Duke University, Durham (04/2019)
- Energy Systems Modeling: Guest lecture – Computational Optimization Modeling – NCSU, Raleigh (09/2017)
- Power Systems Operation and Planning Course – Offered by the Graduate School in Electrical Eng., Lectures on Mathematical Optimization Modeling and Application, Power Generation Planning and Scheduling, UNIFEI, Itajubá – (F12; F13; F14)
- Power Systems Economics Course – Offered by the Graduate School in Electrical Engineering, Lectures on Multi-stage Stochastic Optimization, Hydro-thermal scheduling, Locational Marginal Prices, Electricity Price Formation, UNIFEI, Itajubá – (07/2011, 07-09/2012, 07-09/2013, 07-09/2014, 05-07/2015)

RESEARCH GRANTS

- **Funded**

1. de Queiroz, A.R. (co-PI), Gabr, M. (co-PI) Mooring System Analysis and Fragility Curve Estimation: The Economic Impact of Low Probability High Impact Events on Ocean Current Devices, Funded by the UNC Coastal Studies Institute, Renewable Ocean Energy for North Carolina Program, 2022-2023
2. Vermillion, C. (PI), de Queiroz, A.R. (co-PI), Fused Portfolio, Site, and Device Sizing Optimization for Harness North Carolina's Coastal Renewable Energy Resources, Funded by the UNC Coastal Studies Institute, Renewable Ocean Energy for North Carolina Program, 2022-2023
3. Valdivia, W.A. (PI), de Queiroz, A.R. (co-PI), A Data-Driven Risk-Based Enterprise for Operational Decision Support, Funded by Department of Homeland Security Center of Excellence on Cross-Border Threat Screening and Supply Chain Defense, 2021-2023
4. DeCarolis, J.F. (PI), de Queiroz, A.R. (co-PI), Gabr, M.A. (co-PI), Assessing the Risk of Hurricane Damage to Marine Hydrokinetic Devices, Funded by the UNC Coastal Studies Institute, Renewable Ocean Energy for North Carolina Program, 2021-2022
5. DeCarolis, J.F. (PI), de Queiroz, A.R. (co-PI), Analyzing Investments in NC Offshore Renewable Energy Under Uncertain Resource Availability and Hurricane Damages, Funded by the UNC Coastal Studies Institute, Renewable Ocean Energy for North Carolina Program, 2020-2021

6. DeCarolis, J.F. (PI), de Queiroz, A.R. (co-PI), Optimizing Investments in Offshore Renewable Energy in the North Carolina Electric Sector, Funded by the UNC Coastal Studies Institute, Renewable Ocean Energy for North Carolina Program, 2019-2020
7. Sankarasubramanian, A. (PI), DeCarolis, J.F. (co-pi), de Queiroz, A.R. (co-PI), Collaborative Research: NSF-NSFC: Improving FEW system sustainability over the SEUS and NCP: A cross-regional synthesis considering uncertainties in climate and regional development, Funded by the Environmental Sustainability Program of the National Science Foundation, 2018-2021
8. DeCarolis, J.F. (PI), de Queiroz, A.R. (co-PI), Johnson, J. (co-PI), Baran, M. (co-PI), Lu, N. (co-PI), Lubkeman, D. (co-PI), Tang, W. (co-PI), Galik, C. (co-PI), Fell, H. (co-PI), Kalland, S. (co-PI), Proudlove, A. (co-PI), Panzarella, I (co-PI), A Proposed Energy Storage Study for North Carolina, Funded by the UNC Policy Collaboratory, 2017-2018
9. DeCarolis, J.F. (PI), de Queiroz, A.R. (co-PI), Diversifying Investments in NC Offshore Renewable Energy Technologies, Funded by the UNC Coastal Studies Institute, Renewable Ocean Energy for North Carolina Program, 2017-2018
10. DeCarolis, J.F. (PI), de Queiroz, A.R. (co-PI), Exploring Cost-Effective Deployment Strategies for Gulf Stream Energy, Funded by the UNC Coastal Studies Institute, Renewable Ocean Energy for North Carolina Program, 2016-2017
11. DeCarolis, J.F. (PI), de Queiroz, A.R. (co-PI), Refinement of the FREEDM Center Cost-Benefit Model, Funded by the NCSU Future Renewable Electric Energy, 2016-2017
12. Lima, J.W.M. (PI), de Queiroz, A.R. (co-PI), Lima, L.M.M. (co-PI), Climate Change Impacts in the Assured Energy of the Brazilian Power Generation System, Funded by the Brazilian Electricity Regulation Agency ANEEL, 2011-2014

- **In Review**

13. Leung, T. (PI), De Queiroz, A.R. (co-PI), Zheng, G. (co-PI), Valdivia-Granda, W. (co-PI), Comprehensive Risk-Based Analytical Approach to Foreign Plant Pest and Disease Classification, MSI STEM Research and Development Consortium (MSRDC), Solicitation # W911SR-14-2-0001 RPP-2020

- **In Preparation**

14. Sankarasubramanian, A. (PI), de Queiroz, A.R. (co-PI), Mishra, A. (co-PI), Devineni, N. (co-PI), You, L. (co-PI) AccelNet-Implementation: International Network of Networks (FEWS-AccelNet) for Accelerating FEWS Resilience under S2S Hydroclimatic Risk and Variability, under Review at the National Science Foundation – Program Solicitation NSF 21-511, 2022-2026, to be submitted - October of 2022
15. Galik, C., de Queiroz, A.R., Edwards, E., Sankarasubramanian, A., Collaborative Research: SAI-R. Institutions, Markets, and Policies-Assessing Complex Trajectories for energy and water Infrastructure, to be submitted - May of 2023

OTHER RESEARCH PROJECTS

- Open Energy Outlook (OEO) for the United States, Sloan Foundation, **de Queiroz, A.R. Role**: Researcher in Uncertainty Quantification with Energy System Models, 2020-2023
- Global Awareness and Forecasting System to Protect US Borders from Pests and Diseases, RPP R&D Effort for Solicitation # W911SR-14-2-0001 RPP-1914, **de Queiroz, A.R. Role**: Researcher in Data Analytics and Forecasting, 2020-2021
- Tools for Energy Modeling and Optimization Analysis (Temoa), **de Queiroz, A.R. Role**: Researcher in Optimization and Model Development, 11/2015-present
- NSF, National Science Foundation, Cyber-Enabled Water and Energy Systems Sustainability Utilizing Climate Information, **de Queiroz, A.R. Role**: Researcher in Co-optimization of Water and Energy Systems under Seasonal Climate Forecasts, 11/2015-06/2021
- APINE, Brazilian Association for Independent Electricity Producers, Technical and Economic Arrangements for Biogas Electricity Generation from Urban Solid Residues, 01/2014 – 11/2014
- CTEEP, São Paulo Electricity Transmission Company, Optimal FACTS Allocation in the Electricity Transmission Grid for Operational Improvements, 2011 – 2013

- ABRADEE, Brazilian Distribution Companies Association, Distribution Tariffs Adjustment and Improvement on the Calculation Procedure, 2009 – 2010
- HIDROPAN Electricity Utility, Methodology to Compute Transmission Tariffs Between Distribution Companies Using Load Flow Influence Area, 2009 – 2010
- LIGHT, Rio de Janeiro Electricity Distribution Company, Brazil, Research Project, Optimization of Transmission System Usage Contracts, 2008 – 2009
- PETROBRAS, Brazilian Petroleum, Determining a New Methodology to Calculate the Distribution Tariffs Applied to Power Generators, 2007 – 2009
- LIGHT, Rio de Janeiro Electricity Distribution Company, Electricity Demand Elasticity Facing Distribution Tariffs Variations, 2005 – 2006
- CPFL, Paulista Power & Energy Company, Forecasting Electricity Prices in the Brazilian Spot Market, 2005 – 2006

CONSULTING PROJECTS

- CEMIG, The Role of Energy Storage and Distributed Generation in the Electricity Distribution Networks, 2021
- ABSOLAR, Brazilian Solar Energy Association, Technical & Economical Assessment of Energy Storage in Brazil, 11/2020-10/2021
- CELESC, Electricity Distribution Company, Investment Analysis in Distribution Networks, 2012
- FEDERAL ENERGIA, Electricity Trader, Electricity Prices Forecasting for the Brazilian Spot Market, 2012
- VALE, Vale do Rio Doce Mining Company, Energy Prices and Tariffs Projection to Verify the Viability of Thermal Power Generators, 2008
- CODEVASF, São Francisco Power Generation Company, Assured Energy Evaluation for the São Francisco River with Perspective of Virtual Electricity Energy Generation, 2008
- CELG, Goiás State Electricity Distribution Company, Model and Analysis for Adequacy and Foundation of Electricity Quality Goals, 2007
- ABRADEE, Brazilian Distribution Companies Association, Transmission Tariffs Between Distribution Companies based on Asset Sharing, 2006-2007
- ANEEL, Brazilian Electricity Regulation Agency, Development and Implementation of Electricity Distribution Procedures in Brazil with Emphasis in Distribution Network Planning, 2005

PUBLICATIONS

- **JOURNAL PAPERS**

1. Patankar, N., Eshraghi, H., de Queiroz, A.R., DeCarolis, J., (2022) Using robust optimization to inform US deep decarbonization planning, Energy Strategy Reviews, 100892
2. Ford, L., de Queiroz, A.R., Sankarasubramanian, A., DeCarolis, J.F., (2022) Co-Optimization of Reservoir and Power Systems (COREGS) for Seasonal Planning and Operation, Energy Reports, 8, 8061-8078
3. Patankar, N., Fell, H., DeCarolis, J., de Queiroz, A.R., Curtis, J., (2022) Improving the Representation of Energy Efficiency in an Energy System Optimization Model, Applied Energy, *Vol 306(B): 118083*
4. Henry, C. L., Eshraghi, H., Lugovoy, O., Waite, M. B., DeCarolis, J. F., Farnham, D. J., Peer, R.A.M., Wu, Y., de Queiroz, A.R., Potashnikov, V., Modi, V., and Caldeira, K. (2021). Promoting reproducibility and increased collaboration in electric sector capacity expansion models with community benchmarking and intercomparison efforts, Applied Energy, 304, 117745
5. De Faria, V.A.D., de Queiroz, A.R., Lima, L.M.M., Lima, J.W.M., da Silva, B.C., (2021) An assessment of multi-layer perceptron networks for streamflow forecasting in large-scale interconnected hydrosystems, International Journal of Environmental Science and Technology, *https://doi.org/10.1007/s13762-021-03565-y*
6. Sioshansi, R., Denholm, P., Arteaga, J., Awara, S., Bhattacharjee, S., Botterud, A., Cole, W., Cortes, A., de Queiroz, A.R., DeCarolis, J.F., Ding, Z., Diorio, N., Dvorkin, Y., Helman, U., Johnson, J., Konstantelos, I., Mai, T., Pandzic, H., Sodano, D., Stephen, G., Svoboda, A., Zareipour, H., and Zhang, Z. (2021). Energy-Storage Modeling: State-of-the-

Art and Future Research Directions, IEEE Transactions on Power Systems, 37(2): 860-875 [doi: 10.1109/TPWRS.2021.3104768](doi:10.1109/TPWRS.2021.3104768)

7. Medeiros, G.O.S., Lima, L.M.M., de Queiroz, A.R., Lima, J.W.M., dos Santos, L.C.B., Barbosa, M.A., Alvares, J.E., (2021) Efficiency analysis for performance evaluation of electric distribution companies, [International Journal of Electrical Power and Energy Systems, 134:107430](#)

8. Medeiros, G.O.S., de Queiroz, A.R., Lima, R.M., Pereira, C.R.S., Santos, A.H.M., Czank Jr, L., dos Santos, R.A., Carvalho Jr, E.L., (2021) Transmission Towers Spotting in Power Systems Considering Engineering and Environmental Aspects: A Dynamic Programming Approach, [International Transactions on Electrical Energy Systems, 31(9): e13000](#)

9. Cawthorne, D., de Queiroz, A.R., Eshraghi, H., Sankarasubramanian, A., and DeCarolis, J.F., (2021) The Role of Temperature Variability on Seasonal Electricity Demand in the Southern US", [Frontiers in Sustainable Cities 3:644789](#)

10. Sodano, D., DeCarolis, J., de Queiroz, A.R., Johnson, J.X., (2021) The Symbiotic Relationship of Solar Power and Energy Storage in Providing Capacity Value, [Renewable Energy, 177: 823-832](#)

11. Eshraghi, H., de Queiroz, A.R., Sankarasubramanian, A., DeCarolis, J.F., (2021) Quantification of Climate-Induced Interannual Variability in Residential US Electricity Demand, [Energy, 236: 121273](#)

12. DeCarolis, J. F., Jaramillo, P., Johnson, J. X., McCollum, D. L., Trutnevyte, E., Daniels, D. C., Akın-Olçum, G., Bergerson, J., Joon-Choi, S., Craig, M.T., de Queiroz, A.R., et al. (2020). Leveraging open-source tools for collaborative macro-energy system modeling efforts. [Joule, 4(12), 2523-2526](#)

13. Aquila, G., de Queiroz, A. R., Balestrassi, P. P., Junior, P. R., Rocha, L. C. S., Pamplona, E. O., & Nakamura, W. T. (2020). Wind energy investments facing uncertainties in the Brazilian electricity spot market: A real options approach. [Sustainable Energy Technologies and Assessments, 42, 100876](#)

14. Mukhopadhyay, S., Arumugam, S., de Queiroz, A.R., (2020) Performance Comparison of Equivalent Reservoir and Multi-Reservoir Models in forecasting hydropower potential for Linking Water and Power System, [Journal of Water Resources Planning and Management, 147(4): 04021005](#)

15. Aquila, G., de Queiroz, A. R., Junior, P. R., Rocha, L. C. S., de Oliveira Pamplona, E., & Balestrassi, P. P. (2020). Contribution for bidding of wind-photovoltaic on grid farms based on NBI-EFA-SNR method. [Sustainable Energy Technologies and Assessments, 40, 100754](#)

16. de Oliveira, L. G., Aquila, G., Balestrassi, P. P., de Paiva, A. P., de Queiroz, A. R., de Oliveira Pamplona, E., & Camatta, U. P. (2020). Evaluating economic feasibility and maximization of social welfare of photovoltaic projects developed for the Brazilian northeastern coast: An attribute agreement analysis. [Renewable and Sustainable Energy Reviews, 123: 109786](#)

17. Aquila, G., de Queiroz, A. R., Lima, L.M.M., Balestrassi, P.P., Lima, J.W.M., Pamplona, E.O., (2020) Modeling and Design of Wind-Solar Hybrid Generation Projects in Long-term Energy Auctions: A Multi-objective Optimization Approach, [IET Renewable Power Generation, 14(14): 2612 – 2619](#)

18. Li, B., Thomas, J., de Queiroz, A.R., DeCarolis, J.F., (2020) Open Source Energy System Modeling Using Break-Even Costs to Inform State-Level Policy: A North Carolina Case Study, [Environmental Science & Technology, 54(2): 665-676](#)

19. Hafiz, F., Awal, M.A., de Queiroz, A.R., Husain, I., (2020) Real-time Stochastic Optimization of Energy Storage Management using Deep Learning based Forecasts for Residential PV Applications, [IEEE Transactions on Industry Applications](#), 56(3): 2216 – 2226

20. de Queiroz, A.R., Mulcahy, D., DeCarolis, J.F., Sankarasubramanian, A., Mahinthakumar, K., Lu, N., (2019) Repurposing an Energy System Optimization Model for Seasonal Power Generation Planning, [Energy, 181: 1321-1330](#)

21. Hafiz, F., de Queiroz, A.R., Husain, I., (2019) Coordinated Control of PEV and PV-based Storage System under Generation and Load Uncertainty, [IEEE Transactions on Industry Applications, 55(6): 5524-5532](#)

22. Santos, A.H.M., de Lima, R.M., Pereira, C.R.S., Osis, R., Medeiros, G.O.S., de Queiroz, A.R., Flauzino, B.K., et al., (2019) Optimizing Routing and Tower Spotting of Electricity Transmission Lines: An Integration of Geographical Data and Engineering Aspects into Decision-Making, [Electric Power Systems Research, 176: 105953](#)

23. Hafiz, F., Chen, C., Chen, B., de Queiroz, A.R., Husain, I., (2019) Utilizing Demand Response for Distribution Service Restoration to Achieve Grid Resiliency against Natural Disasters, IET Generation, Transmission & Distribution, 13(14): 2942-2950

24. Patankar, N., de Queiroz, A.R., DeCarolis, J.F., Bazilian, M., Chattopadhyay, D., (2019) Building Conflict Uncertainty into Electricity Planning: A South Sudan Case Study, Energy for Sustainable Development, 49: 53-64

25. Hafiz, F., de Queiroz, A.R., Fajri, P., Husain, I., (2019) Energy management and optimal storage sizing for a shared community: A multi-stage stochastic programming approach, Applied Energy, 236: 42-54

26. de Queiroz, A.R., de Faria, V.A.D., Lima, L.M.M., Lima, J.W.M., (2019) Hydro Power Revenues Under the Threat of Climate Change in Brazil, Renewable Energy, 133: 873-882

27. Hafiz, F., de Queiroz, A.R., Husain, (2018) Solar Generation, Storage, and Electric Vehicles in Power Grids: Challenges and Solutions with Coordinated Control at the Residential Level, IEEE Electrification Magazine, 6(4): 83-90

28. Eshraghi, H., de Queiroz, A.R., DeCarolis, J.F., (2018) US Energy-Related Greenhouse Gas Emissions in the Absence of Federal Climate Policy, Environmental Science & Technology, 52(17): 9595–9604

29. Medeiros, G.O.S., Lima, R.M., de Queiroz, A.R., et al., (2018) Methodology for Electricity Transmission Lines Pole Spotting Based on Dynamic Programming, Brazilian Energy Magazine, 24(3): 51-64 *(in portuguese)*

30. Aquila, G., Rocha, L.C.S., Pamplona, E.O., de Queiroz, A.R., Fonseca, M.N., (2018) Proposed Method for Contracting of Wind-Photovoltaic Connected Projects to the Brazilian Electric System using Multi-objective Programming, Renewable and Sustainable Energy Reviews, 97: 377-389

31. Faria, V.A.D., de Queiroz, A.R., Lima, L.M.M., Lima, J.W.M., (2018) Cooperative game theory and last addition method in the allocation of firm energy rights, Applied Energy, 226: 905-915

32. Rodrigues, L.F., do Carmo, B.K.S., Gomes, A.A.L., de Queiroz, A.R., Lima, J.W.M., Ribeiro, P.F., (2018) Demand-Side Management Via Photovoltaic Generation with Storage in The Context of the Brazilian Tariff Model, Hipótese, v. 4(2): 172-189 *(in portuguese)*

33. Aquila, G., Peruchi, R.S., Rotela Junior, P., Rocha, L.C.S., de Queiroz, A.R., Pamplona, E.O., Balestrassi, P.P. (2018) Analysis of the wind average speed in different Brazilian states using the nested GR&R measurement system, Measurement, 115: 217-222

34. Fonseca, M.N., Pamplona, E.O., de Queiroz, A.R., et al., (2018) Multi-objective Optimization Applied for Designing Hybrid Power Generation Systems in Isolated Networks, Solar Energy, 161: 207-219

35. Li, B., de Queiroz, A.R., DeCarolis, J.F., Bane, J., He, R., Keeler, A.G., Neary, V.S., (2017) The Economics of Electricity Generation from Gulf Stream Currents, Energy, 134: 649-658

36. Aquila, G., Rotela Jr, P., Pamplona, E.O., de Queiroz, A.R., (2017) Wind Power Feasibility Analysis under Uncertainty in the Brazilian Electricity Market, Energy Economics, 65: 127-136

37. Aquila, G., Pamplona, E.O., de Queiroz, A.R., Rotela Jr, P., Fonseca, M.N., (2017) An Overview of Incentive Policies for the Expansion of Renewable Energy Generation in Electricity Power Systems and the Brazilian Experience, Renewable and Sustainable Energy Reviews, 70: 1090-1098

38. de Queiroz, A.R., Lima, L.M.M., Lima, J.W.M., Silva, B.C., Scianni, L.A., (2016) Climate Change Impacts in the Energy Supply of the Brazilian Hydro-dominant Power System, Renewable Energy, 99: 379-389

39. de Queiroz, A.R., (2016) Stochastic Hydro-thermal Scheduling Optimization: An Overview, Renewable and Sustainable Energy Reviews, 62: 382-395

40. Aquila, G., Rocha, L.C.S., Rotela Jr, P., Pamplona, E.O., de Queiroz, A.R., de Paiva, A.P., (2016) Wind power generation: An impact analysis of incentive strategies for cleaner energy provision in Brazil, Journal of Cleaner Production, 137: 1100-1108

41. Mendes de Lima, Osis, R., de Queiroz, A.R., Moreira Santos, A.H., (2016) Least-cost path Analysis and Multi-Criteria Assessment for Routing Electricity Transmission Lines, IET Generation, Transmission & Distribution, 10(16): 4222-4230

42. de Queiroz, A.R., Morton, D.P., (2013) Sharing Cuts under Aggregated Forecasts when Decomposing Multi-stage Stochastic Programs, Operations Research Letters, 41(3): 311-316

- **RECENTLY SUBMITTED PAPERS**

1. de Faria, V.A.D., de Queiroz, A.R., DeCarolis, J.F., (2022a) Optimizing Offshore Renewable Portfolios Under Resource Variability, Applied Energy (Second Round of Reviews at Applied Energy, Spring 2022)
2. de Faria, V.A.D., de Queiroz, A.R., DeCarolis, J.F., (2022b) Scenario Generation and Risk-averse Stochastic Portfolio Optimization Applied to Offshore Renewable Energy Technologies, Energy (In Review Energy, Spring 2022)
3. Scianni, L.AB., Aquila, G., de Faria, V.A.D., Lima, J.W.M., Lima, L.M.M., de Queiroz, A.R., Short-Term Load Forecasting Using Neural Networks and Global Climate Models: An Application to the Brazilian Electricity Market, Engineering Applications of Artificial Intelligence (Submitted Fall 2022)
4. Torres, F.L.R., Kuki, C.A.C., Reboita, M.S., Lima, L.M.M., Lima, J.W.M., de Queiroz, A.R., Improving Seasonal Precipitation Forecast in Brazil Using Machine Learning Techniques and Climate Indices, Weather and Forecasting, (Submitted Spring 2022)
5. Medeiros, G.O.S., Lima, L.M.M., de Queiroz, A.R., Lima, J.W.M., Self-Efficiency Analysis for Distribution Companies using An Unified Network Methodology, (In Review at Utilities Policy, Fall 2022)

- **WORKING PAPERS**

1. Aquila, G., Scianni, L.AB., de Faria, V.A.D., Lima, J.W.M., Lima, L.M.M., de Queiroz, A.R., Short-Term Load Forecasting in Electricity Power Systems: An Overview and the Brazilian Experience, Target: Renewable & Sustainable Energy Reviews, (In Preparation)
2. Torres, F.L., Lima, J.W.M., de Queiroz, Electricity Market Modeling with Multilateral Negotiation between Agents in Hydrothermal Generation Systems, Energy Economics, (In Preparation)
3. de Queiroz, A.R., Lima, L.M.M., Morton, D.P., Solution Quality Assessment in Multi-stage Stochastic Programs with Application to Hydro-thermal Power Generation Scheduling, Applied Energy (In Preparation)
4. Eshraghi, H., de Queiroz, A.R., Patankar, N., Johnson, J.X., DeCarolis, J.F., Exploring Technology Pathways to Achieve Deep Decarbonization in the United States, Target: Joule, (In Preparation)

- **SELECTED PEER-REVIEWED CONFERENCES PAPERS**

1. de Queiroz, A.R., Gabr, M., DeCarolis, J.F., Jamaleddin, N., de Faria, V.A.D., (2022) Assessing the Risk of Hurricane Damage to Marine Hydrokinetic Devices, 2022 NC Renewable Ocean Energy Symposium
2. Kuki, C. A. C., Torres, F. L. R., de Faria, V. A. D., de Queiroz, A. R., Lima, L. M. M., & Lima, J. W. M., (2020) Short-term flow forecasting strategies: a case study in the Rio Grande and Rio Paranaíba Basins, Annals of the Brazilian Automation Society. *(in Portuguese)*
3. Hafiz, F., Awal, M.A., de Queiroz, A.R., Husain, I., (2019) Real-time Stochastic Optimization of Energy Storage Management using Rolling Horizon Forecasts for Residential PV Applications, IEEE Industry Applications Society, *DOI: 10.1109/IAS.2019.8912315*
4. dos Santos, L.C.B., Medeiros, G.S.O., Lima, L.M.M., de Queiroz, A.R., Alvares, J.E., Gomes, R., Barbosa, M.A., and Lima, J.W.M., (2019) Efficiency analysis for performance evaluation of electricity distribution companies, Proceedings of the 32nd International Conference on Efficiency, Cost, Optimization, Simulation And Environmental Impact of Energy Systems
5. Hafiz, F., de Queiroz, A.R., Husain, I., (2018) Coordinated Control of PEV and PV-based Storage System Under Generation and Load Uncertainties, IEEE Industry Applications Society
6. Medeiros, G.O.S., Lima, R.M., de Queiroz, A.R., et al., (2018) Methodology for Electricity Transmission Lines Pole Spotting Based on Dynamic Programming, XI Brazilian Energy Planning Congress, Cuiabá – Brazil, <u>Best paper award</u>, *(in portuguese)*
7. Faria, V. A., de Queiroz, A. R., Lima, L. M., & Lima, J. W., (2018) Analysis of multiple solutions in the calculus of firm energy, Simpósio Brasileiro de Sistemas Eletricos (SBSE)
8. Medeiros, G. O., Lima, J. W. M., Lima, L. M. M., & de Queiroz, A. R., (2018) Weight limits in the DEA benchmarking model for Brazilian electricity distribution companies, Simpósio Brasileiro de Sistemas Elétricos (SBSE)
9. Hafiz, F., de Queiroz, A.R., Husain, I., Fajri, P., (2017) Charge Scheduling of a Plug-in Electric Vehicle Considering Load Demand Uncertainty based on Multi-stage Stochastic Optimization, IEEE North American Power Symposium

10. Sun, L., Thomas, J., Singh, S., Li, D. Baran, M., Lubkeman, D., DeCarolis, J.F., de Queiroz, A.R., White, L. and Watts, S., (2017) Cost-Benefit Assessment Challenges for a Smart Distribution System: A Case Study, *Proceedings of the IEEE Power and Energy Society General Meeting*

11. Hafiz, F., de Queiroz, A. R., and Husain, I., (2017) Multi-stage stochastic optimization for a PV-storage hybrid unit in a household, IEEE Industry Applications Society

12. Silva, S.R., de Queiroz, A.R., Lima, L.M.M., Lima, J.W.M., (2014) Effects of Wind Penetration in the Scheduling of a Hydro-Dominant Power System, Proceedings of the IEEE PES General Meeting, Washington

13. Scianni, L. A., de Queiroz, A. R., Lima, L. M., and Lima, J. M., (2013) The influence of climate change on hydro generation in Brazil, IEEE Powertech Conference, Grenoble

14. Lima, L.M.M., de Queiroz, A.R., Marangon Lima, J.W., (2011) From Voltage Level to Locational Pricing of Distribution Network: the Brazilian Experience, Proceedings of the IEEE PES General Meeting, Detroit

15. de Queiroz, A.R., Lima, L.M.M., Marangon Lima, J.W., (2011) Thermal Generation Investment Analysis Using Decision Tools, Proceedings of the IEEE PES General Meeting, Detroit

16. de Queiroz, A.R., Lima, L.M.M., Morton, D.P., Marangon Lima, J.W., (2010) Determining the Optimal Transmission System Usage Contracts for a Distribution Company, Proceedings of the IEEE PES General Meeting, Minneapolis

17. Guardia, E.C., de Queiroz, A.R., Marangon Lima, J.W., (2010) Estimation of Electricity Elasticity for Demand Rates and Load Curve in Brazil, Proceedings of the IEEE PES General Meeting, Minneapolis

18. Oliveira, F.A., de Queiroz, A.R., Lima, J.M., & Balestrassi, P.P., (2008) The influence of operational marginal cost simulation methods on electricity contract portfolio strategies in Brazil. In 16th IEEE Power System Computation Conference, Glasgow.

19. de Queiroz, A.R., Oliveira, F.A., Marangon Lima, J.W., Balestrassi, P.P., (2007) Simulating Electricity Spot Prices in Brazil Using Neural Network and Design of Experiments, Proceedings of the IEEE Powertech Conference, Lausanne

- **BOOKS & BOOK CHAPTERS**
1. Aquila, G., Pamplona, E., de Queiroz, A.R., (2015) Impact of Incentive Policies for Renewable Energy: An Analysis of Strategies to Enable Wind Power in Brazil, São Paulo: New Academic Publications, ISBN: 978-3-8417-1649-1, pg. 1-188, *(in portuguese)*

2. de Queiroz, A.R., Lima, L.M.M., Scianni, L.A., Lima, J. W. M., (2014) Foundations for Future Assured Energy Evaluation, In: Lima, J.W.M., Collischonn, W., Marengo, J.A., Climate Change Effects on Electric Power Generation, 1st edition, São Paulo: Hunter Books, v. 1, p. 287-331 *(in portuguese)*

3. de Queiroz, A.R., Lima, L.M.M., Scianni, L.A., Lima, J. W. M., (2014) Leading Climate Impacts in the Assured Energy of a Power Generation System, In: Lima, J.W.M., Collischonn, W., Marengo, J.A., Climate Change Effects on Electric Power Generation, 1st edition, São Paulo: Hunter Books, v. 1, p. 333-357 *(in portuguese)*

4. Lima, J.W.M., Lima, L.M.M., Moraes, M.S., de Queiroz, A.R., (2011) Locational Price Signals Module, in: Electricity Tariffs Structure in Natural Monopolies – New Trends in the Electric Power Sector, 1ed., Delgado, M. (ed.), Rio de Janeiro: Synergia, pg. 149-175, *(in portuguese)*

- **OTHER PUBLICATIONS**
1. de Queiroz, A.R., Lima, L.M.M., Lima, J.W.M., Silva, B.C., Scianni, L.A., (2017) Climate Change Impacts in the Energy Supply of the Brazilian Hydro-dominant Power System, Renewable Energy Global Innovations, May 2017

2. DeCarolis, J.F., Dulaney, K., Fell, H., Galik, C., Johnson, J., Lu, N., Lubkeman, D., de Queiroz, A.R., Gambino, C., et al., (2018) Energy Storage Options for North Carolina, Technical Report available at: http://go.ncsu.edu/energy_storage

ORAL PRESENTATIONS AT TECHNICAL CONFERENCES

1. Assessing the Risk of Hurricane Damage to Marine Hydrokinetic Devices, NC Renewable Ocean Energy Symposium, 05/2022

2. Machine Learning for Electricity Price Forecasting in Brazil, IEEE PES GM, Online, 08/2020

3. Data Analytics to Improve Wind and Hydro Coordination under the Threat of Climate Change, UNC Biostatistics 70th Anniversary Celebration, Durham NC, 10/2019

4. Value Streams for Utility Scale Storage Projects for Providing Generation Adequacy Services, Center for Advanced Power Engineering Research (CAPER), Charleston SC, 11/2018
5. Data Analytics to Improve Wind and Hydro Coordination under the Threat of Climate Change, IEEE PES GM, Portland OR, 08/2018
6. The Value of Stochastic Programming for Energy Systems Planning, INFORMS, Nashville TN, 11/2016
7. On the Solution Quality Assessment in Multi-stage Stochastic Optimization Under Different Model Representations, XIV International Conference on Stochastic Programming, Búzios RJ, 06/2016
8. Stochastic Power Generation Scheduling Using TEMOA, INFORMS Optimization Conference, Princeton NJ, 03/2016
9. Analysis of Multiple Optimal Solutions in the Firm Energy Rights Computation, Brazilian Symposium of Operations Research, Porto de Galinhas PE, 08/2015
10. Investment Decision Analysis for Retrofit of Hydropower Plants Considering Climate Change Scenarios, Brazilian Symposium of Operations Research, Porto de Galinhas PE, 08/2015
11. Effects of Wind Penetration in the Scheduling of a Hydro-Dominant Power System, IEEE PES GM, Washington DC, 07/2014
12. Solution Quality and Jackknife Estimators in Large Scale Hydroelectric Scheduling, INFORMS, San Francisco CA, 11/2014
13. Energy Supply Risk Due to Selling Over the Physical Generation Capacity, INFORMS, Phoenix AZ, 11/2012
14. On a Sampling-based Decomposition Algorithm Under Aggregate Interstage Dependency Model, INFORMS, Charlotte NC, 11/2011
15. On a Sampling-based Decomposition Algorithm Applied to Hydrothermal Scheduling: Solution Quality and Bounds, INFORMS, Charlotte NC, 11/2011
16. Thermal Generation Investment Analysis Using Decision Tools, IEEE PES GM, Detroit MI, 07/2011
17. Hydroelectric Scheduling: Inflow Forecasting and Parallel Decomposition, INFORMS, Austin TX, 11/2010
18. Determining the Optimal Transmission System Usage Contracts for a Distribution Company, IEEE PES GM, Minneapolis MN, 07/2010

ORAL PRESENTATIONS AT UNIVERSITIES, COMPANIES AND RESEARCH INSTITUTES

1. Energy Storage Impacts in the Economic Dispatch of the Brazilian Power System, ABSOLAR, Rio de Janeiro 07/2021
2. An Overview About the Brazilian Electricity Market: Optimization and Pricing, Duke University, Durham 04/2019
3. Energy Management for Community Shared Solar PV-Storage System under Uncertainties, NCCU, Durham 04/2018
4. Optimization under Uncertainty and Analytics Applied to Enhance Decision-making, NCCU, Durham, 07/2017
5. Optimization under Uncertainty and Analytics in Electrical & Energy Systems, ECE at NCSU, Raleigh 03/2017
6. Applied Analytics to Identify Potential Opportunities for Investment in Hydro Power, SAS, Cary, 02/2017
7. Optimization Under Uncertainty with Applications to Electrical and Energy Systems, OR at NCSU, Raleigh, 11/2016
8. Decision-Making Models and Methods Under Uncertainty Applied to Sustainable Systems, SAS, Cary, 11/2016
9. Decision-Making and Economics in Electric Power Systems, ECE Department at NCSU, Raleigh, 09/2016
10. Multi-stage Stochastic Power Generation Scheduling and Sampling-Based Decomposition, NCSU, Raleigh, 02/2016
11. On the Effects of Climate Change Scenarios in Hydro Power Assured Energy, Graduate Seminar, UNIFEI, 04/2015
12. Mathematical Decomposition and Solution Quality in Multi-stage Hydrothermal Scheduling, Workshop of Optimization Under Uncertainty: Energy, Transportation and Natural Resources, UC Davis, Davis, 11/2014
13. Optimization Techniques Applied to Electrical Power Systems, Graduate Seminar, UNIFEI, Itajubá, 11/2012
14. On a Sampling-based Decomposition Algorithm with Application to Hydrothermal Scheduling: Cut Formation and Solution Quality, CEPEL, Rio de Janeiro, 07/2012

ORAL PRESENTATIONS FOR PROFESSIONAL EDUCATION
1. Machine Learning Applied to Electricity Demand Forecasting, Specialization Course in Electrical Systems (CESE) FUPAI, 08/2021
2. Economics of Power Systems Module, Specialization Course in Electrical Systems (CESE) UNIFEI, 07/2014, 05/2015
3. Computational Methods Module, Specialization Course in Electrical Systems (CESE) UNIFEI, 05/2014, 03/2015
4. Power System Operations Module, Specialization Course in Electrical Systems (CESE) UNIFEI, 12/2014

5. Power Generation Module, Specialization Course in Energy Trading (CECE) at the Brazilian Electricity Trading Chamber, 12/2013
6. Hydro-thermal Scheduling and Optimization in Power Systems, Specialization Course in Electrical Systems (CESE) UNIFEI, 05/2011, 05/2012, 05/2013

STUDENT SUPERVISION AND ORIENTATION

- **Advisor of Doctoral Students**
1. de Faria, V.A.D., Operations Research Program at North Carolina State University

- **Co-Advisor of Doctoral Students**
1. Scianni, L.B., Machine Learning Methods Applied to Short-term Electricity Demand Forecasting, 04/2022-present
2. Eshraghi, H., An Assessment of the US Energy System Under Uncertainty, CCEE Department at North Carolina State University, 01/2016-02/2020 (working as senior consultant at Lumina Decision Systems)
3. Fonseca, M.N., Optimizing Hybrid Energy Generation Project Design for Isolated Communities, 12/2015-09/2017 (working as a professor at the Federal University of Goias)
4. Li, B., An Assessment of North Carolina's Future Electricity System Under Uncertainty, 03/2016-12/2017 (working as a Research Scientist at Idaho National Labs)
5. Aquila, G. Proposed Method for Contracting of Wind-Photovoltaic Connected Projects to the Brazilian Electric System using Multi-objective Programming, 01/2016 – 04/2019, (working as a Postdoctoral Researcher at UNIFEI)

- **Co-Advisor of Master Students**
1. Scianni, L.B., Machine Learning Methods Applied to Short-term Electricity Demand Forecasting, 03/2020-04/2021
2. Torres, F.L., Electricity Free Market Modeling with Multilateral Negotiation between Agents in Hydrothermal Generation Systems, 03/2017-06/2018
3. Silva, S.R., Wind and Hydro Generation Complementarity in the Coordination of Power Systems, 05/2012-05/2014
4. Pietrafesa, T., Hydro-thermal Scheduling Considering Different Modeling Perspectives, 03/2012-11/2015
5. Borborema, F., Motorization and Retrofit of Hydro Power Generators for Planning Capacity Reserve Under Climate Change Scenarios, 03/2013-05/2015
6. Aquila, G., Wind Power Viability Analysis Considering Different Incentive Policies, 03-11/2015
7. Dall'Orto, C., Evaluation of Horizon Reduction for Energy Planning and Coordination of the National Interconnected Power System, 12/2014 – 12/2016

- **Undergraduate Students**
1. Scomparin, T.S., and Mazzon, R.C., Electricity Portfolio Optimization for a Power Generation Company, Electrical Engineering Final Project, 05/2014 – 11/2014
2. de Faria, V.A.D., Optimal Allocation of Firm Energy in Hydro Power Systems, undergraduate research 03/2014 – 11/2015 / Climate Effects in Hydro Power Generation, undergraduate research, 12/2015 – 09/2016 / Forecasting Water Inflows using Artificial Neural Network, 01/2018-present
3. Freire, F., Short-term Electricity Prices formation from Hydro-thermal Scheduling and Optimization, undergraduate research, 03/2014 – 11/2015
4. Medeiros, G.S., Optimization and Benchmarking Techniques Applied to Electricity Distribution Companies Efficiency Estimation, undergraduate research, 08/2014 – 11/2015

- **Ph.D. and Master's committees**
1. Paduani, V., Real-Time Modeling and Control of DERs with Advanced Grid-Support Functionalities, Oral Prelim, ECE Department at North Carolina State University, February of 2022
2. Torres, L.F., Improving Forecasts of Hydrological Variables that Impact Energy Prices using Bayesian Weighting and Machine Learning, Oral Prelim, ISE Department at UNIFEI, December of 2021
3. Dos Santos, C.H. Monitoring of Simulation Models as Digital Twins: An approach based on Machine Learning and Control Chart, Oral Prelim, IEPG Department at UNIFEI, September of 2021

4. Ford. L. Simulation, Optimization, and Statistical Modeling for Improved Operation of Reservoir and Power Systems Under a Changing Climate, Oral Prelim, CCEE Department at North Carolina State University, October of 2021

5. Sodano, D., A Sensitivity Analysis of Utility-Scale Solar Photovoltaic and Energy Storage Capacity Values, Master Thesis, CCEE Department at North Carolina State University, April of 2020

6. Eshraghi, H., An Assessment of the US Energy System Under Uncertainty, PhD Final Defense, CCEE Department at North Carolina State University, February of 2020.

7. Mukhopadhyay, S., Improving Reservoir Management with Sub-seasonal to Seasonal Streamflow Forecast, PhD Final Defense, January 2020

8. Patankar, N., Addressing Uncertainty in Energy System Optimization Models Over a Long Planning Horizon, PhD Dissertation, CCEE Department at North Carolina State University, August of 2019

9. Arango, L.G., Technical and Economic Analysis of the Impact of Commercial Losses on the Electricity Market, PhD Dissertation, ISE Department at UNIFEI, July of 2019

10. Machado, P., Traffic Sign Replacement Strategy, PhD Dissertation, CCEE Department at North Carolina State University, May of 2019

11. Aquila, G., Proposed Method for Contracting of Wind-Photovoltaic Connected Projects to the Brazilian Electric System using Multi-objective Programming, DSc Dissertation, IPEG Department at UNIFEI, April of 2019

12. Hafiz, F., Stochastic Optimization of Energy Management for Residential Systems with Distributed Energy Resources, PhD Dissertation, ECE Department at North Carolina State University, December of 2018

13. Torres, L.F., Spot Market Modeling with Multilateral Negotiation between Agents in Hydrothermal Generation Systems, Master Thesis, ISE Department at UNIFEI, June of 2018

14. Maciel, L., Social tariffs in a smart grid context: Its impact on a "collective welfare" function encompassing the surplus of consumers and the spread of income, DSc Dissertation, ISE Department at UNIFEI, November of 2020

15. Deccache, E., Modeling a customer's consumption decision in an environment where there is steal of energy, DSc Dissertation, ISE Department at UNIFEI, December of 2019

16. Li, B., An Assessment of North Carolina's Future Electricity System Under Uncertainty, PhD Dissertation, CCEE Department at North Carolina State University, December of 2017

17. Fonseca, M.N., Optimizing Hybrid Energy Generation Project Design for Isolated Communities, DSc Dissertation, IPEG Department at UNIFEI, September of 2017

18. Hambridge, S. Frequency based real-time pricing for residential prosumers, Ph.D. Dissertation, ECE Department at North Carolina State University, July of 2017

19. Xuan, Y., A New Simulation and Optimization Multi-Reservoir System Model, Master Thesis, CCEE Department at North Carolina State University, June of 2017

20. Dall'Orto, C., Evaluation of Horizon Reduction for Energy Planning and Coordination of the National Interconnected Power System, Master Thesis, ISE Department at UNIFEI, December of 2016

21. Aquila, G., Wind Power Viability Analysis Considering Different Incentive Policies, Master Thesis, IPEG Department at UNIFEI, November of 2015

22. Borborema, F., Motorization and Retrofit of Hydro Power Generators for Planning Capacity Reserve Under Climate Change Scenarios, Master Thesis, ISE Department at UNIFEI, May of 2016

23. Pietrafesa, T., Hydro-thermal Scheduling Considering Different Modeling Perspectives, Master Thesis, ISE Department at UNIFEI, November of 2015

24. Silva, S.R., Wind and Hydro Generation Complementarity in the Coordination of Power Systems, Master Thesis, ISE Department at UNIFEI, May of 2014

SYNERGISTIC ACTIVITIES

- **Memberships in Professional and Honorary Societies**
  - INFORMS
  - IEEE
  - Power Engineering Society
  - Stochastic Programming Society
  - Decision Making Under Deep Uncertainty
  - SOBRAPO (Brazilian OR Society)

- **Session Chair at Professional Conferences**
  - PSOPE The Economics of Battery Storage under Different Market Structures, IEEE PES General Meeting, August of 2019
  - TA17 Stochastic Programming for Long Term Planning, INFORMS Annual Meeting, November of 2016

- **Reviewer for Professional Journals**
  - IEEE Transactions of Power Systems
  - IEEE Transactions on Sustainable Energy
  - Int. Journal of Electrical Power and Energy Systems
  - Journal of Control, Automation and Electrical Systems
  - Applied Energy
  - Energy Economics
  - Journal of Modern Power Systems
  - Hydrology Research
  - Energy Policy
  - Renewable Energy
  - Energy Efficiency
  - Journal of Optimization Theory
  - Operations Research
  - European Journal of Operational Research
  - IET Generation, Transmission & Distribution
  - Renewable and Sustainable Energy Reviews
  - Energies

- **Editorial Board**
  - Frontiers on Energy Research (Associate Editor)