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ENERGY AND ENVIRONMENTAL ECONOMICS, INC.
Managing Consultant

Boston, MA

Ms. Li primarily works in resource planning area, providing utilities with analysis to enhance their planning efforts for resource adequacy. Her recent projects include characterizing the benefits of a regional resource adequacy program in the Desert Southwest and exploring capacity market rules for Independent System Operators (ISOs) on the east coast. She also uses E3's RECAP model to help clients in the Pacific Northwest to characterize reliability challenges facing the region in a manner that is broadly accessible to regulators, policymakers, and stakeholders. Ms. Li joined E3 in 2021 after completing a Master of Environmental Management program from Duke University. She previously interned with Wood Mackenzie Power & Renewables where she helped design models to automate wind speed database setup and power output simulation. Ms. Li also holds a B.E. in Environmental Science from Hohai University.

Some of Ruoshui's recent projects include:

California Public Utilities Commission, 2024-2026 Integrated Resource Planning (2025)

E3 provided support to CPUC for the 2025 filing requirements modeling that will be updated for the preferred system portfolio modeling in 2026. Ruoshui led the update of sample day selection in this cycle based on latest load and renewable profiles and refined the methodology to introduce a more streamlined qualitative evaluation for sample days modeled in RESOLVE.

Public Service Company of Colorado, Resource Adequacy Study (2024)

Public Service Company of Colorado ("PSCo") retained E3 to provide an update to its planning reserve margin (PRM) requirement and the effective load carrying capability (ELCC) values applied to different resources in support of its 2024 Just Transition Solicitation and future evaluation for new resources. Ruoshui led the technical analysis to characterize the system's future resource adequacy needs and the ability of different resources to contribute to those needs using E3's RECAO model.

Puget Sound Energy, Puget Sound Energy Resource Adequacy Study (2022-2024)

E3 provided support for Puget Sound Energy in developing its 2023 Electric Progress Report and 2025 Integrated Resource Planning. Ruoshui led the team to develop resource adequacy needs, planning reserve margins and resource-specific ELCCs in the region with E3's RECAP model. The analysis considers impacts of regional climate change and Northwest Power Pool (NWPP) Reserve Sharing Program.

Utilities in the Desert Southwest, Resource Adequacy in the Desert Southwest (2022)

In the aftermath of recent blackouts in California and Texas, a group of utilities in the Southwest retained E3 to provide an independent assessment of the resource adequacy situation in the Desert Southwest region. Ruoshui was the team's key technical analyst, using E3's loss-of-load probability model, RECAP, to explore the region's near- and mid-term reliability need under different climate, resource, and load uncertainties.

New York Independent System Operator (NYISO), NYISO ELCC Implementation Support (2022)

E3 provided continuous support to NYISO to explore the design decisions the ISO will need to make as it implements its ELCC methodology. In this work, Ruoshui provided technical analysis through scenario-based study in RECAP to develop straw man proposals for creating ELCC technology-classes. Ruoshui also assisted the NYISO in developing the methodology for representing transmission constraints and calculating locality specific ELCC values for different technologies.

DUKE UNIVERSITY, NICHOLAS SCHOOL OF THE ENVIRONMENT

Teaching Assistant

Durham, NC

August 2020 – May 2021

- Graded assignments and created modeling tutorials for instructors Dr. Dalia Patino-Echeverri and Dr. Luana Lima on *Modeling for Energy Systems and Markets for U.S. Electric Systems*.
- Held office hours to answer questions related to power system economic/engineering concepts
- Instructed students on Python debugging to create multiple linear programming models in lab sessions

TSINGHUA UNIVERSITY

Intern, Research Center for Energy Transition and Social Development

Remote

August 2020 – July 2021

- Researched worldwide best-practice showcases of tri-networks integration (energy, transportation, and information networks) to explore scenarios of reaching net-zero in future power and transportation industry.
- Published 4 editorials introducing Germany's solar subsidy policy; Germany's high-renewable penetration power grid; Slovenia's Net Energy Metering schema; and Vienna's citizen solar plants with blockchain.

WOOD MACKENZIE

Research Intern at Energy Transition Practice Team

Houston, TX

May 2020 – August 2020

- Proposed an algorithm in Python to collect global wind speed data from NASA MERRA-2 database and simulate wind power generation based on user-specific turbine model/heights. Deployed critical speed coefficient to MySQL database at a remote server.
- Built Excel sheet model to calculate Levelized Cost Of New Entry for installed capacity to enter PJM's Capacity Market.

HOHAI UNIVERSITY

Research Assistant

Nanjing, CHINA

October 2017 – April 2020

- Measure scarce water saving via international agricultural products trade.
- Research on nitrogen loss embodied in global crop trade.
- Analyze the transition of thermal power plants in Beijing under resource and environmental constraints.
- Research on the impact of water footprint for six megacities in China.

Project Experience

- Solar Net Energy Metering
 - Conducted Optimal Power Flow (OPF) analysis to quantify how NEM schema changes grid power flow and influences congestion, nodal price, and utility's avoided cost.
 - Evaluated NEM policies by performing a cost-benefit analysis from different stakeholder perspectives.
- OCR practice: Electricity meter recognition
 - Implemented a state-of-art, CNN-based object detector *yolo* for detecting counters in electric meter images.
 - Trained a model to learn class possibilities with coordinates of the counter area and automatically record electric meters.

Education

Duke University
Master of Environmental Management

Durham, NC
 June 2021

Hohai University
B.E., Environmental Science

Nanjing, CHINA
 June 2019

Publication

1. X.Zhang, X.Zhao, **R.Li**, G.Mao, et al (2020), *Evaluating the vulnerability of physical and virtual water resource networks in China's megacities*. Resources, Conservation and Recycling, 161.
2. X.Liao, X.Zhao, W.Liu, **R.Li**, X.Wang et al (2020), *Comparing water footprint and water scarcity footprint of energy demand in China's six megacities*. Applied Energy, 269.