Jun Zhang

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ENERGY AND ENVIRONMENTAL ECONOMICS, INC. San Francisco, CA
Senior Managing Consultant

Mr. Zhang has extensive research and modeling experience in electricity system analysis, including residential demand, PV potential, and renewable integration. His work at E3 focuses on the optimal dispatch, cost-effectiveness, and adoption of distributed energy resources (DER) and electrification capturing economic and policy drivers. He has also supported several asset valuation clients evaluating battery energy storage systems in the California and New York wholesale markets. Highly technically skilled in Python and tool development, Mr. Zhang leads multiple model development efforts at E3 including E3's price-taker dispatch & valuation model for flexible DER (RESTORE), E3's integrated demand-side resource management tool to identify the least-cost integrated DER portfolio for targeted distribution planning areas (IDSM), and the grid impact module of the E3-supported NYSERDA toolkit to identify impacts and adoption of building electrification and efficiency (BEEM-EM).

Mr. Zhang joined E3 in 2018 after completing his Master of Environmental Management (MEM) at Duke University. In addition to his master's degree, he holds two bachelor's degrees in both environmental science and economics from Xiamen University in China. As a 2018 EDF Climate Corps fellow at Dartmouth College, he helped design and implement the Green Labs program on campus to reduce campus carbon intensity. Selected projects at E3 include:

- **CEC/LBNL California Load Flexibility and Deployment Hub (CalFlexHub) (2022 – Present):** Contributed as an advisor for model enhancements in E3's RESTORE model that optimally dispatch assorted flexible load technologies. These enhancements supported development of an evaluation and prioritization framework to evaluate the economics and environmental impacts of flexible load technologies in CA's electric grid.

- **NYSERDA/Cadmus NYS Statewide Potential Study (2021 – Present):** Led a team to conduct a comprehensive statewide efficiency and electrification potential study for all NYS buildings capturing economic and policy drivers.

- **NYSERDA Building Electrification Roadmap (2020 – Present):** Developed new features to expand the capabilities of the NYSERDA Building Efficiency and Electrification Model (BEEM) suite to evaluate the cost-effectiveness and consequent adoption of building electrification and efficiency measures under different incentive frameworks to support the development of a building electrification roadmap for New York State.

- **USTDA Tata Power-DDL DER Roadmap and Regulatory Support (2018 – Present):** Explored the cost-effectiveness and the least-cost portfolio of DER technologies within TPDDL's service territory using E3's RESTORE and IDSM model to support Tata Power-DDL in the development of a DER roadmap and valuation framework, and regulatory filings promoting DER programs in the near-term including demand response and electric vehicles.

- **NYSERDA Value of DER (VDER) Value Stack Calculator, (2018 – Present):** Led a team to support the NY-Sun team to develop, maintain, and update the public-facing VDER Calculator to help distributed generation project developers and financiers better estimate and understand the compensation of VDER credits and thereby reduce the barrier of uncertainty associated with the impact of the new Value Stack tariff in New York State.

- **Utah Residential Electrification Cost-effectiveness (2021 – 2022):** Developed the underlying analytical tool for cost-effectiveness evaluations to support E3's efforts on examining the participant economics of all-electric new construction in Utah's all three major climate zones for single-family and multi-family homes.

- **DPS/NYSERDA New York Distributed Solar Roadmap (2021):** Technical lead on developing a supply curve model for distributed solar projects in New York and used this model to evaluate program costs for different incentive program options to support the development of a new roadmap for New York to achieve the installation of at least 10 GW of distributed solar by 2030.

- **HP OEM National Electrification Analysis (2021):** Technical lead on upgrading an adoption model for assessing the national heat pump market, capturing policy and economic drivers.

- **SMUD Net Energy Metering Successor Tariff (2021):** Technical lead on modeling adoption impacts of different rate designs on behind-the-meter solar and storage within SMUD's service area. The analysis informed SMUD's 2022 rate plan to identify a successor to NEM 1.0.

- **DCAS DEM New York City LL97 Action Plan (2020 – 2021):** Supported the modeling and technical analysis of the cost and carbon impact of various decarbonization pathways for New York City government agencies to achieve deep decarbonization in compliance with LL97.

- **CEC Non-residential PV and Storage Cost-Effectiveness (2020 – 2021):** Technical lead on evaluating the participant lifecycle cost-effectiveness of PV and storage systems in high-rise multi-family and non-residential new construction to support final decisions on 2022 California building standards using E3's RESTORE model.

- **Hawaiian Electric Companies (HECO) Integrated Grid Planning (2019 – 2021):** Developed new features to expand the capabilities of E3's capacity planning tool (RESOLVE) to support HECO's Integrated Grid Planning process to incorporate new system need assumptions and evaluate bids on each of HECO's operating islands in the context of Hawaii's long-term energy policies.

- **Silicon Valley Clean Energy (SVCE) DER and Electrification Adoption Study (2019 – 2020):** Technical lead on the DER adoption modeling workstream to support SVCE in estimating the impact of various incentive mechanisms and rate designs on the adoption of building electrification and DERs including electric vehicles, residential solar PV, and behind-the-meter storage.

- **CEC EPIC Solar + Storage Tool (2018 – 2020):** Contributed to the development of a CEC-funded (GFO 16-309) solar + storage tool to evaluate and optimize the dispatch, operations, and value proposition for integrated solar + storage systems.

DARTMOUTH COLLEGE Hanover, NH

EDF Climate Corps Fellow Jun 2018 – Aug 2018

- Assessed Dartmouth's Green Labs Program to date, identified gaps, and opportunities
- Designed a strategic scheme for Green Labs Program; assessed and described barriers to implementation
- Developed financial analysis of Dartmouth's options for Green Labs investments and showed expected paybacks

CENTERS OF AMERICAN STATES Shanghai, China

Market Research and Business Development Intern Jun 2017 – Aug 2017

- Supported Michigan State Governor's trade mission to China by representing one Michigan-based company to interact with 60 high-potential Chinese business partners and successfully invited 16 of them to 1-on-1 business meetings, which resulted in a $3 million investment in the client's R&D
- Performed market research to identify the list of high-potential partners and made 300+ cold calls to establish relationships with these firms

DUKE UNIVERSITY Durham, NC

Graduate Teaching Assistant Sept 2017 – Spring 2018

- Held office hours and lab sessions; graded assignments and exams for Instructors Dr. Dalia Patino-Echeverri and Dr. Timothy Johnson on *Modeling for Energy Systems and Markets for Power Systems;* and for Instructor Dr. Elizabeth Albright on *Applied Data Analysis*

Project Experience

- **Residential Microgrid System Design** Sept 2017 – Dec 2017
  Explored optimal designs of residential community microgrids under various scenarios in San Diego, CA, by using HOMER (microgrid optimization model) and considered the regulatory framework, financial incentives, project economics, and case-specific constraints

- **Power System Renewable Integration** Jan 2017 – Apr 2017
  Applied optimization and simulation in simplified power system models to analyze the effect of different renewable energy strategies on the system's reliability, costs, and emissions

- **Supply-Chain Sustainability Life-Cycle Assessment (LCA)** Jan 2017 – May 2017
  Led a 3-member team to identify a 30% carbon-reduction opportunity for one REI's (top sports gear manufacturer & retailer) product by developing an LCA model to quantify the product's supply-chain sustainability under various scenarios (scope 1, 2, and 3 carbon emissions)

- **Scenario Analysis for Duke Energy Integrated Resource Planning (IRP)** Sept 2016 – Dec 2016
  Developed policy-change scenarios to bind the impacts of natural-gas-policy uncertainty with Duke Energy's capacity planning; using a simplified capacity planning spreadsheet model

- **GIS-Based Multi-Criteria Wind Farm Site Selection** Sept 2016 – Dec 2016
  Evaluated 10 nominated sites in North Carolina by the criteria of land feasibility, regulations, bird population, wind resource, and economics to filter out the optimal sites by using ArcGIS and spreadsheet modeling

Research Experience

- **Increasing Solar PV Capacity at Duke University** Apr 2017 – May 2018
  - Estimated available installation area, the technical potential (87.1 MWdc), and hourly power output of on-site PV capacity atop rooftop and parking lots by geospatial analysis, PVWatts, and HOMER (energy models)
  - Analyzed the grid impact of PV integration by modeling and simulating the power system operation in CPLEX (system optimization software) under various scenarios
  - Summarized the regulatory framework for large-scale solar projects, implementation barriers, and best practices from other universities
  - Performed financial analysis for various PV project configurations by spreadsheet modeling considering the availability of financial incentives (ITC), and then compared the GHG abatement cost of PV projects with other available carbon-abating strategies, informing a better pathway to achieve climate goal

- **Bottom-Up Model of Residential Electricity Demand China by End-Uses** Sept 2017 – May 2018
  - Analyzed detailed household energy-audit data to categorize residential customers by their energy consumption behaviors using statistical clustering methods in R
  - Approximated hourly load profiles for different behaviors of each household appliance, and then interpolated the hourly generation at the city and province level by available demographic, socioeconomic, geographic, and appliance energy efficiency data, using spreadsheet modeling and R

- **End-Use Model of Residential Electricity Demand in Mexico** Jan 2017 – May 2017
  - Assisted in developing the end-use model of residential electricity demand in Mexico by cleaning input data, updating model parameters, and visualizing results in Tableau

Education

Duke University — Durham, NC
Master of Environmental Management — May 2018

Xiamen University — Xiamen, China
B.S., Environmental Science, Bachelor of Economics — 2016

Citizenship

China