

Shenshen Li

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ENERGY AND ENVIRONMENTAL ECONOMICS, INC. *Consultant I*

San Francisco, CA

Mr. Li joined E3 in 2017 upon receiving an M.S.E. in Environmental Economics and Policy from Johns Hopkins University. He brings with him extensive experience in researching environmental and materials engineering problems, applying operations research, and writing detailed reports. As a researcher, he has applied his skills in optimization, modeling, and economic analysis to projects on energy storage for the Western Electricity Coordinating Council (WECC) and long-term emissions downscaling for the U.S. Environmental Protection Agency. At E3, Mr. Li focuses primarily on integrated resource planning. By utilizing E3's Renewable Energy Solutions Model (RESOLVE), Mr. Li identifies optimal capacity expansion plans and dispatch portfolios in specific regions. He also uses E3's Renewable Energy Capacity Planning Model (RECAP) to simulate resource adequacy and test the reliability of energy supply systems. Select E3 projects include:

- **Integrated Resource Planning and RFP Bid Evaluation Support, Confidential Southwestern Electric Utility, 2018.** Using RECAP, E3's in-house system reliability model, Mr. Li constructed the ELCC (Effective Load Carrying Capacity) curves for solar and wind resources in the utility's future system. Mr. Li also tested and verified the reliability of the portfolios under various scenarios through RESOLVE, E3's in-house capacity expansion model.
- **Offshore Wind Valuation in Massachusetts, Offshore Wind Developer, 2018.** E3 helped an offshore wind developer assess the market potential and supply curve for offshore wind development areas in Massachusetts. Mr. Li explored the topology of potential areas for development and the costs of different wind technologies under various assumptions and conditions.
- **Resource Adequacy Testing for Production Simulation Model Development, Western Electricity Coordinating Council (WECC), 2018.** On an E3 team supporting WECC's latest production simulation modelling work, specifically its analysis of generation capacity, Mr. Li built a model to screen whether the capacity included in WECC's current Anchor Data Set is adequate to meet 2028 regional peak loads.

JOHNS HOPKINS UNIVERSITY **HOBBS ENERGY-ENVIRONMENT DECISIONS GROUP** *Research Assistant*

Baltimore, MD
April 2017 – December 2017

- Collaborated with the Western Electricity Coordinating Council (WECC) group to plan, operate, and analyze power systems in Western U.S. with energy storage technologies, using optimization, modeling, economics, statistical and decision analysis methods. Project topics included:

- Evaluation of instantaneous economic and environmental impacts (i.e. electricity price, operation cost, etc.) of the installation of storage technologies (i.e., the JD Pool Pumped Storage and Utah Compressed Air Energy Storage Projects)
- Long-term effects (20-40 years) of energy storage facilities in Western U.S.
- Evaluated the relationship between renewable energy generation and policies and storage expansion.

Research Analyst

February 2018 – May 2018

- The objective of these projects, sponsored by U.S. EPA, was to build a deep understanding of the regional effects of air, energy, and climate policies and their interactions with energy transitions. Project topics included:
 - Capacity expansion modeling in individual electricity market zones over a 40-year horizon
 - Modeling national emissions and downscaling them to the county level for further air quality and public health studies

JOHNS HOPKINS UNIVERSITY

DEPARTMENT OF ENVIRONMENTAL HEALTH & ENGINEERING

Baltimore, MD

Teaching Assistant and Grader

August 2017 – December 2017

- Teaching assistant for “Physical and Chemical Processes in Environmental Engineering”; collaborated with instructor, held TA sessions, and demonstrated course materials and homework problems to students
- Grader for “Risk and Decision Analysis”; mastered course contents, conducted statistical analysis on class survey, and graded homework, exams and presentations

UCLA SOFT MATERIALS RESEARCH LABORATORY

Los Angeles, CA

Student Researcher

October 2012 – October 2015

- Research focused on new polymers synthesis, electroactive polymer fabrication, thin-film devices design, and applications based on desired electronic and mechanical properties. Artificial muscles and dielectric elastomers exhibiting high electrically-induced strains were the central focus
 - Explored and tested the preferable physical working conditions of HVB film as a “smart coating”
 - Designed, fabricated and tested the multi-layer polymer actuators in the application of “flapping wings”

Education

Johns Hopkins University

Baltimore, MD

Master of Environmental Health & Engineering

2017

Major in System Analysis: Optimization, Modeling, Risk Analysis, Energy System and Policies

University of California, Los Angeles

Los Angeles, CA

Bachelor of Materials Science & Engineering

2016

Minor in Environmental Engineering

Publications

1. Xu, Qingyu, **Shenshen Li**, and Benjamin F. Hobbs. "Generation and Storage Expansion Co-optimization with Consideration of Unit Commitment." 2018 IEEE International Conference on Probabilistic Methods Applied to Power Systems (PMAPS). IEEE, 2018.
2. Ren Zhi, Wei Hu, Chao Liu, **Shenshen Li**, Xiaofan Niu, and Qibing Pei. "Phase-Changing Bistable Electroactive Polymer Exhibiting Sharp Rigid-to-Rubbery Transition." *Macromolecules* 49, No.1 (2015): 134-140.
3. Jiang Chuanjia, **Shenshen Li**, Pengyi Zhang, and Juan Wang. "Pollution level and seasonal variations of carbonyl compounds, aromatic hydrocarbons and TVOC in a furniture mall in Beijing, China." *Building and Environment* 69 (2013): 227-232.

Citizenship

China