# Chen Zhang

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

Ms. Zhang joined E3 in 2020 and primarily works in E3's resource planning practice area to help utilities, states, and municipalities tackle long-term resource planning challenges surrounding renewable energy integration and decarbonization. She uses capacity expansion and resource adequacy models, especially PLEXOS as well as E3's RESOLVE and RECAP, to help clients identify cost-effective and reliable energy portfolios. She has been the technical lead on a number of projects using PLEXOS's capacity expansion and production cost modeling capabilities to examine renewable integration challenges.

Ms. Zhang came to E3 after completing her Master of Science degree in civil and environmental engineering at Stanford University, where her study focused on electricity market modeling and analysis. She brings with her an understanding of the technical and economic aspects of energy resources. In addition to her master's degree, Ms. Zhang holds a bachelor's degree in civil and environmental engineering from University of Illinois at Urbana-Champaign.

Select E3 projects include:

- **Day Ahead Market Cost Benefit Study (2022-2023).** Led PLEXOS modeling, working extensively to change model inputs and run thousands of cases on an E3 project that developed a multi-stage WECC-wide production cost model that simulates day-ahead scheduling and subsequent real-time dispatch for all generators across WECC. The model accounts for imperfect day-ahead commitment decisions subject to forecast error and reserve requirements.
- **New Brunswick Power Decarbonization Study (2022-2023).** Technical lead for capacity expansion modeling for a study that leveraged PLEXOS LT to build optimal resource portfolios, and PLEXOS ST to perform hourly chronological production cost simulation including a portfolio analysis to analyze the NPV cost of various portfolios under different scenarios and sensitivities.
- **Decarbonization Pathways of the Energy Portfolio, Omaha Public Power District (2021).** Performing reliability and resilience assessments for the power system through determining the planning reserve margin and the effective load carrying capability for various energy resources to ensure the system maintains an adequate level of reliability.
- **Integrated Resource Plan, El Paso Electric (2020).** Performing long-term capacity expansion modeling to meet New Mexico's requirement for 100 percent zero-carbon energy by 2045, considering the capabilities of both supply-side and demand-side resources.


**TESLA, INC.**                                                                  Palo Alto, CA
*Sales Analyst Intern, Commercial Energy Team*                        Feb 2020 – Mar 2020

- Evaluated cost savings associated with solar and storage systems for commercial customers
- Analyzed various tariffs and incentive programs to maximize the customer value proposition

**STANFORD UNIVERSITY**                                          Stanford, CA
*Teaching Assistant, Department of Civil and Environmental Engineering*        Mar 2019 – Mar 2020

- o Held review sessions and weekly office hours to help students with course content and assignments for courses *Understanding Energy* and *Electricity Economics*

**WESTERN ELECTRICITY COORDINATING COUNCIL**                    Salt Lake City, UT
*Data Analyst Intern, Performance Analysis Team*                    Jun 2019 – Aug 2019

- o Used machine learning techniques to develop a framework for analyzing changes in demand patterns
- o Analyzed 13 years of hourly data in 30 balancing authorities within the Western Interconnection and examined geographical differences
- o Investigated the impacts of behind-the-meter and utility-scale renewable generation resources on load shapes and identified bulk grid system risks in certain regions

**UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN (UIUC)**          Urbana-Champaign, IL
*Research Assistant, Engineering System Design Lab*                    Mar 2017 – May 2018

- o Designed and optimized a small-scale wind turbine located in a region with low wind speeds
- o Modeled wind turbine in 3D design and fluid mechanics software and studied the performance of different configurations

**UIUC Institute for Sustainability, Energy, and Environment**          Urbana-Champaign, IL
*Intern*                                                          May 2017 – Dec 2017

- o Audited energy and water consumption in 10 campus buildings and worked with building managers to identify improvement opportunities
- o Promoted building-specific actions to conserve energy and reduce water usage to occupants

*Project Experience*

- o **Optimal Charging of Autonomous EV Fleets in a Distribution Grid with High Penetration of Solar PV**
  - Examined the potential distribution system operation violations caused by high penetration of solar PV
  - Developed an optimization model to evaluate EVs' potential to resolve system violations with charging price incentives

- o **California's Cap-and-Trade Program and Renewables Portfolio Standard in the Electricity Sector**
  - Examined emission reductions in California and evaluated the effectiveness of the two policies
  - Analyzed emission leakage, cost of compliance, and social equity issues associated with policy implementation

## Education

Stanford University                                                                 Stanford, CA
*Master of Science, Civil and Environmental Engineering*                    April 2020

University of Illinois at Urbana-Champaign                          Urbana-Champaign, IL
*Bachelor of Science, Civil and Environmental Engineering*                    May 2018