

ENERGY AND ENVIRONMENTAL ECONOMICS, INC.
Consultant

San Francisco, CA

Ms. Spencer joined E3 in 2019. Her work focuses on analyzing opportunities to leverage distributed energy resources to reduce the environmental impacts of energy use and supporting clients' transportation electrification and renewables integration efforts. Ms. Spencer has also worked on long-term resource planning with an emphasis on meeting emission reductions goals and maintaining system reliability. Prior to joining E3, Ms. Spencer conducted research on managed charging for electric vehicles and utilizing biofuels for central heating. In addition to her master's degree, Ms. Spencer received a M.S. in civil and environmental engineering from University of California, Berkeley and a B.S. in engineering and B.A. in environmental studies from Swarthmore College. Recent E3 projects include:

- **California Public Utilities Commission Residential Energy Cost Calculator (2020-2021).** Ms. Spencer worked to develop the Residential Energy Cost Calculator (RECC) as part of California's integrated resource planning (IRP) process. The RECC provides 10-year forecasts of customer energy bills and affordability metrics for two dozen types of households in California. The RECC will be used in the IRP process to assess implications of long-term planning decisions, such as emissions reduction targets, on residential customer energy costs and affordability. The RECC can also be used to compare the impacts of electrification and rate design on household energy costs.
- **Confidential municipal utility (2020-2021).** Ms. Spencer utilized E3's RESOLVE capacity expansion tool to assess the resource build and cost implications of different scenarios that comply with the municipal utility's zero emissions goals. Ms. Spencer helped to identify optimal resource portfolios under different carbon accounting methodologies and technology availability scenarios.
- **Utilities and automakers (2019-2020).** Ms. Spencer developed electric vehicle (EV) charging profiles under different charge management strategies using E3's EV Load Shape Tool for a variety of utility and automaker clients. Ms. Spencer has used EV charging profiles with E3's EV Grid tool to compare costs and benefits from customer adoption of EVs in utility service territories. Ms. Spencer has also evaluated the impacts of different rate designs on EV charging load shapes and costs.
- **Confidential renewable developer (2020).** Ms. Spencer worked on a team that analyzed expected renewable resource needs in utilities throughout the US and coal plant operating data to make projections on coal plants with retirement dates likely to be accelerated. This information was useful to the client in identifying locations for renewable project development opportunities.
- **Confidential transit agency in US (2019).** Ms. Spencer helped determine the most economic renewable energy procurement option to meet a large U.S. transit agency's long-term sustainability targets. Ms. Spencer led development of load shapes for the transit agency's end uses and helped calculate the emissions and cost implications of different procurement strategies.

TRANSPORTATION SUSTAINABILITY RESEARCH CENTER
Graduate Student Researcher

Berkeley, CA
August 2018 – August 2019

- Analyzed electric vehicle (EV) driver behavior and charging data from BMW's ChargeForward pilot program
- Assessed the effectiveness of BMW's optimizations of intra-locational charging sessions for producing economic and energy savings across different use cases

PRESIDENTIAL SUSTAINABILITY RESEARCH FELLOWSHIP

Research Fellow

Swarthmore, PA
August 2017 – May 2018

- Researched logistical, cost, and sustainability components of biofuels as a replacement for natural gas in Swarthmore College's central heat plant
- Presented research findings and a pilot proposal for biofuel made from waste cooking oil, including to the President and two Vice Presidents of the College

SWARTHMORE COLLEGE

Student Researcher

Swarthmore, PA
November 2017 – May 2018

- Conducted a life-cycle assessment of a biofuel produced from waste cooking oil used in Swarthmore College's central heat plant
- Compared results of waste vegetable oil to those of natural gas to make recommendations for Swarthmore's heating fuel choice
- Presented results to key Swarthmore stakeholders and at ASME's 2018 IMECE Conference

CLIMATE SYSTEMS ANALYSIS GROUP

Student Researcher

Cape Town, South Africa
January 2017 – June 2017

- Conducted a study titled "The Implications of 1.5 Degrees Celsius Warming on Grapes in the Western Cape"
- Analyzed global climate model temperature data to find that global average warming of 1.5°C will be reached by 2030
- Assessed the implications of global warming through the lens of grape production on the Western Cape
- Determined that the Western Cape will experience higher increases in average temperatures and more frequent extreme heat events than the global average, resulting in declining grape quality and yield

SWARTHMORE COLLEGE

Student Researcher

Swarthmore, PA
June 2016 – August 2016

- Conducted an experiment to compare shower times of college dorm residents with regular versus low-flow showerheads
- Used the results of this experiment to persuade the College's Facilities to purchase low-flow showerheads for all dorm showers and personally changed 242 showerheads, saving 1 million gallons of water (60% of previous usage) per semester

THE PHILADELPHIA ZOO

Environmental Education and Animal Behavior Intern

Philadelphia, PA
May 2015 – August 2015

- Conducted research on the activity levels of Amur tigers and African lions based on weather and time of day to inform guests on optimal viewing conditions for these animals
- Operated interactive stations throughout the zoo to channel guests' enthusiasm over animals into environmentally conscious behaviors both at the zoo and in their everyday lives
- Interpreted over 100 animals and adapted conversations and presentations to the size, age, and interest levels of audiences

Education

University of California, Berkeley
M.S., Civil and Environmental Engineering (Energy, Civil Infrastructure, & Climate)

Berkeley, CA
2019

Swarthmore College
B.S., Engineering and B.A., Environmental Studies

Swarthmore, PA
2018

Citizenship

United States