MCKENNA PEPLINSKI

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EDUCATION

University of Southern California, CA Graduation May 2024
PhD, Environmental Engineering (policy emphasis) 3.88 GPA
MS, Green Technology
University of St. Thomas, MN Graduation May 2019
B.S., Mechanical Engineering, Summa Cum Laude 3.96 GPA
Peace Engineering Minor

EXPERIENCE

Graduate Research Assistant, University of Southern California August 2019–Current

- Utilize Python and R to analyze large-scale residential electricity consumption data, implementing statistical and machine models to derive insight into patterns of demand and predict future energy needs
- Evaluate the efficacy of modern grid strategies for grid flexibility, including demand response programs and utility scale battery technologies, through analysis of grid-level datasets

Graduate Teaching Assistant, University of Southern California August 2020–May 2022
Courses: Statics and Dynamics, Fluid Mechanics, Air Pollution Fundamentals

- Planned and led weekly discussion sections to review course material and provide constructive feedback
- Prepared course material including assignments, quizzes, and tests and evaluated student performance

Communications Intern, The Office of Governor Mark Dayton September 2018-December 2018

- Communicated the administration's policy agenda and achievements across the state through digital content
- Expanded knowledge of policy tactics and how state level decision making impacts communities through research and interactions with policy makers

Undergraduate Researcher, Drexel University, NSF REU Program June 2018-August 2018

- Examined the role of structured surfaces in phase change heat transfer processes through experimentation and researched new techniques to promote efficiency of boiling and condensation
- Employed computer-animated design to design and manufacture an apparatus to conduct wire boiling experiments

HONORS AND AWARDS

Behavior, Energy, and Climate Change Conference Student Fellowship 2023
Honorable Mention: Duke Analytics Energy Symposium Lightning Talks 2020
Viterbi Graduate Student Fellowship 2019
Women and Science in Engineering Top-Off Fellowship 2019
Tommie Award Nominee 2019
Academic All-American 2018
MIAC Elite22 Award 2018

ACTIVITIES AND MENTORSHIP

Sander's Sustainable Systems Group *Research Mentor* 2023-current
Coordinate and manage projects, overseeing research tasks for master level students and offering guidance to enhance their data science skills and domain knowledge pertaining to grid-scale energy systems.
AGU Fall Meeting *Student Convener* December 2023
Contributed to the facilitation of a conference session that convened distinguished researchers specializing in the demand-side of energy systems and its role in achieving climate mitigation goals.
Center for Undergraduate Research (CURVE) *Advice Captain* 2021-2022
Fostered a community for undergraduate student researchers and developed programming, including workshops and panels, to improve students' research skills and assist in their preparation for graduate school.
USC Women in Engineering (WIE) *Director of Outreach* 2020-2021
Provided support and services for female engineers at USC to ensure the success of women in engineering.
St. Thomas Women's Soccer Team 2015-2019
Developed strong work ethic and teamwork skills while competing to achieve personal and team goals.

PUBLICATIONS AND ORAL PRESENTATIONS

Journal Publications

McKenna Peplinski, M. Chen, B. Dilkina, G.A. Ban-Weiss, K.T. Sanders (2024). "A machine learning framework to estimate residential electricity demand based on smart meter electricity, climate, building characteristics, and socioeconomic datasets." Applied Energy, 357, 122413

McKenna Peplinski, K.T. Sanders. (2023). "Residential electricity demand on CAISO Flex Alert days: A case study of voluntary emergency demand response programs." Environmental Research: Energy, 1(1), 015002

McKenna Peplinski, Peter Kalmus, K.T. Sanders. (2023). "Investigating whether the inclusion of humid heat metrics improves estimates of AC penetration rates: a case study of Southern California." Environmental Research Letters, 18(10), 104054

Oral Presentations

Joseph Ko, Yun Li, Stepp Mayes, **McKenna Peplinski,** Hannah Schlaerth, Pouya Vahmani, George A Ban-Weiss and K.T Sanders. "Modeling the Spatiotemporal Distribution and Meteorological Impacts of Anthropogenic Heat in Los Angeles." AGU Fall Meeting, San Francisco, California. Dec. 11-15, 2023.

Anamika Shreevastava, Glynn C Hulley, Sai Prasanth, Yi Yin, TC Chakraborty, Diego Ramos Aguilera, **McKenna Peplinski,** and K.T Sanders. "Unequal Heat Exposure in Urban Areas: Unraveling the Role of Historic Redlining and Present-Day Inequities in Los Angeles." AGU Fall Meeting, San Francisco, California. Dec. 11-15, 2023.

McKenna Peplinski, K.T. Sanders. "CAISO Flex Alerts: How responsive are residential customers to voluntary demand response events?" Behavior, Energy, and Climate Change Conference. Sacramento, California. Nov. 2-5, 2023.

McKenna Peplinski, K.T. Sanders. "Are voluntary demand response programs effective at shedding load during emergency grid events? A study of CAISO's Flex Alerts." SoCal CEERS 2023. Los Angeles, California. Oct. 19-20, 2023.

McKenna Peplinski, K.T. Sanders. "Examining How Various Heat Metrics Influence Residential Cooling Demand and the Vulnerability of Populations to Urban Warming." AGU Fall Meeting, Chicago, Illinois. Dec. 12-16, 2022.

McKenna Peplinski, G.A. Ban-Weiss, K.T. Sanders. "Characterizing patterns of residential AC ownership across Southern California in the context of urban warming." AGU Fall Meeting, New Orleans, Louisiana. Dec. 13-17, 2021.

McKenna Peplinski, M. Chen, B. Dilkina, K.T. Sanders, G.A. Ban-Weiss. "Predicting changes in Southern California's residential electricity consumption using machine learning models." AGU Fall Meeting, Online. Dec. 7-11, 2020.

McKenna Peplinski, M. Chen, G.A. Ban-Weiss, B. Dilkina, K.T. Sanders "Projecting residential electricity consumption under future warming using machine learning models in conjunction with smart-meter data, building characteristics and weather data." 2020 Duke University Energy Data Analytics Symposium, Online. December 8-9th, 2020.

Poster Presentations

McKenna Peplinski, Stepp Mayes, K.T. Sanders. "Improving AC Penetration Estimates for Demand Response." AGU Fall Meeting, San Francisco, California. Dec. 11-15, 2023.

McKenna Peplinski, K.T. Sanders. "Are voluntary demand response programs effective at shedding load during extreme heat events? A case study of CAISO's Flex Alerts." AGU Fall Meeting, San Francisco, California. Dec. 11-15, 2023.

Jaime D. Reyes Sanchez, Md Mostafijur Rahman, Sandrah P. Eckel, Sam Silva, **McKenna Peplinski,** Kelly Sanders, Rob McConnell, Erika Garcia. "Does air conditioning modify the temperature-mortality association in Southern California? A study at the census-tract level using a novel measure of air conditioning use." Annual Meeting of the Society for Epidemiologic Research, in Portland OR. June 15, 2023.

Andrew Jin, **McKenna Peplinski,** Alexandre K Ligo, Igor Linkov, K.T. Sanders. "Machine learning insights into climate sensitivity of residential electricity usage based on smart meter data." Energy and Climate Transformations: 3rd International Conference on Energy Research and Social Science, Manchester, United Kingdom. June 20-23, 2022.

McKenna Peplinski, M. Chen, B. Dilkina, K.T. Sanders, G.A. Ban-Weiss. "Optimizing machine learning models to predict residential electricity use in Southern California." AGU Fall Meeting, Dec. 13-17, 2021.

McKenna Peplinski, M. Chen, B. Dilkina, K.T. Sanders, G.A. Ban-Weiss. "Developing a machine learning model to understand climate-energy interactions in Southern California." Arizona State University's Urban Climate Research Center Poster Event, Online. Oct. 15, 2020.