Matthew Dudek
Ph.D. Applied Economics
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Education

Ph.D. Applied Economics	University of California, Davis	2021-Present
M.S. Applied Economics	University of California, Davis	2021
B.A. Economics/ Minor Mathematics	Colorado State University	2020

Fields Energy economics, applied econometrics, applied microeconomics, and natural resource economics

Dissertation "Smoothing the Green Transition: Which Battery Locations Provide the Greatest Returns to Renewable Generation in California" by Matthew Dudek

California's renewable portfolio standard requires a rapid de-carbonization of the state's electricity supply by 2045. Despite renewables' falling fixed costs, increased reliance on intermittent, primarily solar, generation creates two challenges for California's grid operator. First, maximum solar generation does not coincide with peak demand during the day. Second, locations with the greatest generation potential are distant from the state's demand centers. The spatial and temporal mismatch between renewable supply and demand increases the frequency of line congestion, causing localized curtailment despite the willingness to pay elsewhere. Utility-scale storage promises to mitigate the inefficiencies of intermittent generation by allowing owners to arbitrage electricity across time and space. My research investigates whether batteries operating in California's wholesale electricity market have increased the productivity of renewables, indicated by reductions in curtailment, and whether these impacts varied with batteries' location. I find that the marginal MWh of electricity used to charge batteries at noon in California resulted in a 0.5 MWh reduction in solar curtailment, which was largely driven by storage capacity additions near solar generators.

Working Papers "Crowding Out The Peakers: The Impacts of Electricity Storage on Combustion Turbine Generation and Nitrogen Oxide Emissions in California" by Matthew Dudek

Teaching Experience

University of California, Davis
- Associate Instructor: ARE 106 Introductory Econometrics — Summer 2024
- Teaching Assistant:
  - ECN 240A Econometrics I (Ph.D.) — Winter 2024
  - BAX 401 Business Analytics (MSBA) — Fall 2023/24
  - BAX 441 Intermediate Statistics (MSBA) — Fall 2025
  - BAX 452 Machine Learning & Artificial Intelligence (MSBA) — Winter 2026
  - BAX 463/4 Practicum Elaboration (MSBA) — Winter-Spring 2025
  - ARE 106 Introductory Econometrics — Winter-Spring 2021, Spring 2024
  - ARE 107 Econometrics For Business Decisions — Winter 2022
  - ARE 155 Operations Research & Management Science — Summer 2021/22, Spring 2026
  - ARE 171 Principles of Finance — Fall 2020
  - ARE 175 Natural Resource Economics — Spring 2023

Colorado State University
- Teaching Assistant: ECON 304 Intermediate Macroeconomics — Fall 2019

Research Experience

University of California, Davis
- Research Assistant for Steve Boucher — 2025
  - Center for Educational Effectiveness, Program learning outcome analysis
- Research Assistant for Tina Saitone — 2022-2023
  - The Impacts of Wolf Reintroduction in Northern California

Colorado State University
- Research Assistant for Harvey Cutler — 2019
  - Center of Disaster and Risk Analysis, Economic damage forecasting

Conferences and Workshops

UC Davis Environmental and Energy Economics Workshop	Fall 2025
Giannini Foundation ARE Conference	Spring 2025
CU Environmental and Resource Economics Workshop	Summer 2024
UC Davis Natural Resource Policy Lab	Winter-Fall 2024

Awards & Grants

Summer Fellowship Award: $4,000	2024
H. A. Jastro Shields Award: $3,000	2023-24

Service

Associated Students of CSU, Office Administrator	2018-2020
Community for Sustainable Energy, Canvasser	2018

Languages

R, STATA, Python, AMPL, and MATLAB

References

Kevin Novan
Department of Agricultural and Natural Resource Economics
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Jim Bushnell
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Jeffrey Williams
Department of Agricultural and Natural Resource Economics
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williams@primal.ucdavis.edu

Socials

https://www.linkedin.com/in/matt-dudek-4a469815b/

Hobbies

Rock and ice climbing, mountaineering, cycling, and running