



Lucy McKenzie

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ENERGY AND ENVIRONMENTAL ECONOMICS, INC.

Director

San Francisco, CA

2015 – Present

Ms. McKenzie’s work focuses on quantifying and realizing the economic benefits of electric vehicles (EVs) and other distributed energy resources. Since joining E3 in 2015, she has led work for utilities, regulators, and technology companies across the U.S. Most notably, Ms. Kenzie has led the development of industry-leading transportation electrification “strategic roadmaps” for both investor-owned and publicly owned utility clients. Her other EV-related projects include quantifying the societal and ratepayer benefits of EVs for utilities around the country; reviewing global best practices on EV regulation and policy for the Sultanate of Oman; developing e-bus rate design recommendations for the California Transit Association; and identifying optimal locations and best practices for public EV charging for PG&E. Ms. McKenzie has led work helping California regulators on issues related to flexible loads, low-carbon building standards, and the state’s Self-Generation Incentive Program (SGIP). She also built NYSERDA’s “Value Stack Calculator” to quantify the value of distributed solar and storage under New York’s updated incentives.

Ms. McKenzie holds a Master of Public Policy from U.C. Berkeley’s Goldman School, and bachelor’s degrees in Economics and Commerce, with majors in Finance and Accounting, from the University of Queensland in Brisbane, Australia. Select E3 projects include:

- **Transportation Electrification (TE) Roadmap, Salt River Project (SRP), 2018 – 2019.** Ms. McKenzie led the development of a TE Roadmap that a) quantified the potential net benefits to SRP and its customers from TE, and b) proposed initiatives that will enable the utility to realize these benefits while minimizing the challenges and risks to SRP’s system. The Roadmap was developed with input from more than 10 teams within SRP, as well as several external stakeholders.
- **Electrification of Transportation (EoT) Strategic Roadmap, Hawaiian Electric Companies (HECO), 2017 – 2018.** Ms. McKenzie led a team to formulate HECO’s EoT Roadmap, filed with the Hawaii Public Utilities Commission (HPUC) in March 2018. E3 convened internal and external stakeholder workshops, undertook interviews and surveys, analyzed economic and emissions benefits from EVs under both unmanaged and ‘smart’ charging assumptions, developed and justified utility EoT initiatives, drafted the Strategic Roadmap, and presented to the HPUC.
- **Study of International Best Practices in EV Regulation and Policy, Authority for Electricity Regulation (AER), Oman, 2018.** Ms. McKenzie reviewed international best practices in EV regulation and adapted these to Oman’s local conditions. This work included an assessment of evolving mobility trends and customer preferences, EV charging business models around the world, methods for managing load impacts on electric grids, EV technology and safety standards, and policies for promoting EV adoption. The E3 team interviewed key stakeholders and Ministries during three trips to the Sultanate and provided a prioritized list of regulatory and policy recommendations for Oman. AER published the resulting report and is currently using the findings in its policymaking.

- **Rate Design for Electric Buses, California Transit Association (CTA), 2018.** Ms. McKenzie worked with an E3 team to design electric rates that support e-bus conversion in California. She evaluated trip data from participating transit agencies as well as current and future assumptions about e-bus technology to develop charging shapes that could adequately represent all buses in the state's fleets. CTA submitted this work in the current EV rulemaking at the California Public Utilities Commission.
- **Pacific Northwest EV Impact Analysis, Six Washington Utilities, 2015 – 2017.** Ms. McKenzie led an E3 team in quantifying the net benefits to society and ratepayers of EV and e-bus adoption in Washington and Oregon. E3 also quantified load impacts and greenhouse gas emissions and assessed the value of managed charging in each utility service territory. E3 modeled personal light-duty vehicles as well as electric taxis, transportation network company (TNC) vehicles (e.g., Lyft, Uber, etc.), parcel trucks, buses and forklifts.
- **Research Study on Potential Title 24 Building Code Updates, California Energy Commission (CEC), 2018 – 2019.** Working with researchers at Lawrence Berkeley National Laboratory, Ms. McKenzie led an E3 team to advise the CEC on the cost-effectiveness and greenhouse gas impacts of residential storage, building pre-cooling, community solar and full electrification of new residential construction in the 2023 – 2053 timeframe.
- **DER Value Stack Calculator, New York State Energy Research and Development Authority (NYSERDA), 2017 – 2018.** Ms. McKenzie built an Excel calculator to provide guidance to developers and investors on the value of New York distributed solar and storage investments, following recent changes to the compensation of these technologies.
- **Self-Generation Incentive Program (SGIP) Evaluation, California Public Utilities Commission (CPUC), 2016 – 2018.** For several years, Ms. McKenzie has led an E3 team working with Itron, Inc. to evaluate the impacts of SGIP storage funding on CO₂ emissions and utility costs. This work has revealed the need for changes to utility signals to incentivize beneficial storage dispatch, resulting in new policymaking processes at the CPUC.
- **California Demand Response Potential Study, CPUC, 2015 – 2016.** Collaborating with researchers at Lawrence Berkeley National Laboratory, Ms. McKenzie assessed the potential value to the grid of advanced demand response and other flexible-load resources in a high-renewables future. This work formed the basis of ongoing working groups and proceedings at the CPUC that seek to capture the grid value of the resulting DR resources (nicknamed 'shift,' 'shimmy,' 'shed' and 'shape').

ANALYSIS GROUP, INC.

Senior Analyst

San Francisco, CA

2008 – 2013

- Provided case strategy and management, data analysis, research and reporting for the U.S.'s largest private economic consulting firm
- Projects were in environmental, energy, finance, healthcare and telecommunications practices
- Responsibilities included case strategy and team management, data sourcing and analysis, Excel modeling, statistical (SAS) programming, data visualization, literature and legal review, web and subscription research, communication with academic experts, and drafting of reports, exhibits and presentations
- Example assignments:
 - Analyzed the use of marine spatial planning in Outer Continental Shelf oil and wind policy

- Carried out retrospective market share analysis of the California energy market during the California Electricity Crisis
- Investigated the economic impacts of transforming the U.S. natural gas transmission system to comply with proposed EPA rulemaking
- Researched and reported on energy efficiency best practices to assist Environmental Defense Fund in advising Duke Energy

Education

University of California, Berkeley
Master of Public Policy

Berkeley, CA
 May 2015

University of Queensland
Bachelor of Economics
Bachelor of Commerce (Finance and Accounting)

Brisbane, Australia
 December 2007

Publications

1. Wei, Max & Lee, Sang Hoon & Hong, Tianzhen & Yang, Hung-Chia & Price, Sarah & McKenzie, Lucy & Conlon, Brian & Price, Snuller & German, Alea & Hendron, Bob. (2018). *“Approaches to More Cost-Effective Zero Net Energy Homes,”* available at https://www.researchgate.net/publication/326825676_Approaches_to_More_Cost-Effective_Zero_Net_Energy_Homes.
2. Alstone, P. et al. (2016). *“2015 California Demand Response Potential Study: Charting California’s Demand Response Future,”* available at <http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442451541>.
3. Davis, M., L. McKenzie, A. Horvat, M. Nicholas, S. Mohammed, M. Wiseman, C. Silcox. (2016). *“Merging Expert Perspectives to Site DC Fast Charging,”* EVS29 Symposium, Montreal, Canada, June 19 – 22 2016.
4. Ryan, N. & L. McKenzie. (2016). *“Utilities’ Role in Transport Electrification: Capturing Benefits for All Ratepayers,”* *Public Utilities Fortnightly*, April 2016.
5. Ryan, N. & L. McKenzie. (2016). *“Utilities’ Role in Transport Electrification: Promoting Competition, Balancing Risks,”* *Public Utilities Fortnightly*, March 2016.
6. McKenzie, L., R. Orans, J. Williams, A. Mahone. (2014). *“Strengthening the Clean Power Plan: Three Key Opportunities for the EPA,”* *Electricity Journal*, Vol. 27, Issue 10, 80–92.