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Energy Analysis and Environmental Impacts Division
Lawrence Berkeley National Laboratory
90R2002
1 Cyclotron Road
Berkeley, CA 94720

caspurock@lbl.gov
Phone: (510) 495-2072

C. Anna Spurlock

Education:

University of California, Berkeley: Ph.D., Agricultural and Resource Economics (Primary Field: Energy and Environmental Economics) - May 17th, 2013
University of California, Berkeley: M.S., Agricultural and Resource Economics - December 2009
University of California, Santa Cruz: B.A., Anthropology - December 2002

Relevant Work Experience:

Lawrence Berkeley National Laboratory (LBNL), Energy Analysis and Environmental Impacts
May 2019-present Research Scientist
May 2021-May 2022 50%-time Justice40 Fellow on Detail to Office of Economic Impact and Diversity at the U.S. Department of Energy
July 2013-May 2019 Scientific Engineering Associate
July 2012-July 2013 Graduate Student Researcher

University of California at Berkeley, Agricultural and Resource Economics Department
Sept. 2009-May 2012 (Intermittent) Graduate Student Researcher and Instructor

Yemeni Social Fund for Development (SFD), Sana'a, Yemen
June-Sept. 2009 Consultant, in support of the collaborative World Bank-SFD project, "Assessing local communities and household resilience to adapt to climate change in rain-fed areas of Yemen"

Leadership/Committee Membership Experience:

March 2022 – present Deputy Department Head for Sustainable Energy and Environmental System Department, LBNL
November 2021 – present Representative for the U.S. Department of Energy on the Distributional Analysis Interagency Working Group in support of the Federal Government effort on Modernizing Regulatory Review coordinated by the Office of Management and Budget
April 2021 – August 2022 Representative for the U.S. Department of Energy on the Technical Working Group for Discounting, Equity and Risk Aversion in support of the Interagency Working Group on Social Cost of Greenhouse Gases
February 2018 – August 2018 ETA Representative on the LBNL Diversity, Equity, and Inclusion Advisory Board (DAB)
June 2017 – June 2018 Assistant Group Leader, Electricity Markets and Policy Group, LBNL
July 2016 – December 2017 Member of the ETA Mentoring Committee
February 2017 – August 2018 Founding Leader of the Energy Technologies Area (ETA) Diversity & Inclusion Working Group
April 2014 – August 2018 Division Representative on the LBNL Diversity & Inclusion Council

Published Peer-Reviewed Journal Articles:

- Elmallah, Salma, **C. Anna Spurlock**, Tony Reames. “Grounding Energy Justice: Visioning Principles for Energy Transitions from Frontline and Community-based Organizations.” *Energy Research & Social Science*, 94, 102855. DOI: <https://doi.org/10.1016/j.erss.2022.102855>. Role: Contributing author.
- Spurlock, C. Anna**, Salma Elmallah, Tony Reames. 2022. “Equitable Deep Decarbonization: a framework to facilitate energy justice-based multidisciplinary modeling.” *Energy Research & Social Science*, 92, 102808. DOI: <https://doi.org/10.1016/j.erss.2022.102808>. **Role: Lead author.**
- Ling Jin, Alina Lazar, Caitlin Brown, Bingrong Sun, Venu Garikapati, Srinath Ravulaparthi, Qianmiao Chen, Alexander Sim, Kesheng Wu, Thomas Wenzel, **C. Anna Spurlock**. 2022. “What Makes You Hold on to That Old Car? Joint Insights from Machine Learning and Multinomial Logit on Vehicle-level Transaction Decisions.” *Frontiers in Future Transportation*, 3, 894654. DOI: <https://doi.org/10.3389/ffutr.2022.894654>. **Role: Principal investigator.**
- Spurlock, C. Anna**, K. Sydney Fujita. 2022. “Equity Implications of Market Structure and Appliance Energy Efficiency Regulation.” *Energy Policy*, 165, 112943. DOI: <https://doi.org/10.1016/j.enpol.2022.112943>. **Role: Lead author.**
- Wells, Emily, Mitchell Small, **C. Anna Spurlock**, Gabrielle Wong-Parodi. 2021. “Factors Associated with Emerging Multimodal Transportation Behavior in the San Francisco Bay Area.” *Environmental Research: Infrastructure and Sustainability*, 1, 3. DOI: <https://doi.org/10.1088/2634-4505/ac392f>. Role: Contributing author.
- Fowlie, Meredith, Catherine Wolfram, **C. Anna Spurlock**, Annika Todd, Patrick Baylis, and Peter Cappers. 2021. “Default Effects and Follow-On Behavior: Evidence from an Electricity Pricing Program.” *The Review of Economic Studies*, 88 (6) 2886–2934. DOI: <https://doi.org/10.1093/restud/rdab018>. Role: Contributing author.
- Popovich, Natalie, **C. Anna Spurlock**, Zachary Needell, Ling Jin, Tom Wenzel, Colin Sheppard, and Mona Asudegi. 2021. “A Methodology to Develop a Geospatial Transportation Typology.” *Journal of Transport Geography*, 93, 103061. DOI: <https://doi.org/10.1016/j.jtrangeo.2021.103061>. **Role: Senior researcher and principal investigator.**
- Jin, Ling, Alina Lazar, James Sears, Annika Todd, Alexander Sim, Kesheng Wu, Hung-Chia Yang, **C. Anna Spurlock**. 2020. “Life Course as a Contextual System to Investigate the Effects of Life Events, Gender, and Generation on Travel Mode Use.” *IEEE Access*, 1-17. DOI: <https://doi.org/10.1109/ACCESS.2020.3032328>. **Role: Senior researcher and principal investigator.**
- Spurlock, C. Anna**, Annika Todd, Gabrielle Wong-Parodi, Victor Walker. 2020. “Children, Income, and the Impact of Home-Delivery on Household Shopping Trips.” *Transportation Research Record*, 2674 (10), 335-350. DOI: <https://doi.org/10.1177/0361198120935113>. **Role: Lead author and principal investigator.**
- Todd-Blick, Annika, **C. Anna Spurlock**, Ling Jin, Sam Borgeson, Peter Cappers, Daniel Fredman, Jarett Zuboy. 2020. “Winners are not keepers: Characterizing household engagement, gains, and energy patterns in demand response using machine learning.” *Energy Research & Social Science* 70, 101595. DOI: <https://doi.org/10.1016/j.erss.2020.101595>. **Role: Co-principal investigator.**
- Todd, Annika, Peter Cappers, **C. Anna Spurlock** and Ling Jin. 2019. “Spillover as a Cause of Bias in Baseline Evaluation Methods for Demand Response Programs.” *Applied Energy*, 250, 344-357. DOI: <https://doi.org/10.1016/j.apenergy.2019.05.050>. Role: Contributing author.
- Spurlock, C. Anna**, James Sears, Gabrielle Wong-Parodi, Victor Walker, Ling Jin, Margaret R. Taylor, Andrew Duvall, Anand Gopal, Annika Todd. 2019. “Describing the users: Understanding adoption of and interest in shared, electrified, and automated transportation in the San Francisco Bay Area.” *Transportation Research Part D*, 71, 283-301. DOI: <https://doi.org/10.1016/j.trd.2019.01.014>. **Role: Lead author and principal investigator.**
- Lazar, Alina, Ling Jin, **C. Anna Spurlock**, Annika Todd, Kesheng Wu and Alex Sim. 2019. “Evaluating the Effects of Missing Values and Mixed Data Types on Social Sequence

Clustering Using t-SNE Visualization.” *Journal of Data and Information Quality (JDIQ)* 11(2), 7. DOI: <https://doi.org/10.1145/3301294>. **Role: principal investigator.**

Cappers, Peter, C. Anna Spurlock, Annika Todd and Ling Jin. 2018. “Are vulnerable customers any different than their peers when exposed to critical peak pricing: Evidence from the US.” *Energy Policy*, 123, 421-432. DOI: <https://doi.org/10.1016/j.enpol.2018.09.013>. Role: Contributing author.

Kim, Taehoon, Jaesik Choi, Dongeun Lee, Alexander Sim, C. Anna Spurlock, Annika Todd, and Kesheng Wu. 2018. “Predicting Baseline for Analysis of Electricity Pricing,” *International Journal of Big Data Intelligence*. Special issue on Data to Decision. Vol.5, No.1/2, pp.3-20. DOI: <http://dx.doi.org/10.1504/IJBDI.2018.088269>. **Role: Co-principal investigator.**

Houde, Sébastien, and C. Anna Spurlock. 2016. "Minimum Energy Efficiency Standards for Appliances: Old and New Economic Rationales." *Economics of Energy & Environmental Policy* 5.2. DOI: <https://doi.org/10.5547/2160-5890.5.2.shou>. Role: Contributing author.

Journal Articles Under Review:

Yu, Mengqiao, Tom Wenzel, C. Anna Spurlock, Joan Walker. “Understanding the Sequential Decision Making of Residential Location with Inverse Reinforcement Learning.” (Revise and Resubmit – *Transportation Research Part B*). Role: Contributing author.

Peer-Reviewed Conference Papers:

Lazar, Alina, Alexandra Ballou, Ling Jin, C. Anna Spurlock, Alex Sim, and Kesheng Wu. 2020. “Machine Learning for Prediction of Mid to Long Term Habitual Transportation Mode Use.” 2019 IEEE International Conference on Big Data. DOI: <https://doi.org/10.1109/BigData47090.2019.9006411>. **Role: Principal investigator.**

Lazar, Alina, Ling Jin, C. Anna Spurlock, Annika Todd, Kesheng Wu, Alex Sim. 2017. “Data Quality Challenges with Missing Values and Mixed Types in Joint Sequence Analysis.” 2017 IEEE International Conference on Big Data. DOI: <https://doi.org/10.1109/BigData.2017.8258222>. **Role: Principal investigator.**

Jin, Ling, Doris Lee, Alex Sim, Sam Borgeson, John Wu, C. Anna Spurlock, Annika Todd. 2017. "Comparison of Clustering Techniques for Residential Energy Behavior using Smart Meter Data." 2nd Association for the Advancement of Artificial Intelligence (AAAI) Workshop on Smart Grid and Smart Buildings. <https://aaai.org/ocs/index.php/WS/AAAIW17/paper/view/15166>. **Role: Co-principal investigator.**

Patel, Siddharth, Sam Borgeson, Ram Rajagopal, C. Anna Spurlock, Ling Jin, Annika Todd. 2016. “Time Will Tell: Using Smart Meter Time Series Data to Derive Household Features and Explain Heterogeneity in Pricing Programs” 2016 ACEEE Summer Study Conference Proceedings. https://aceee.org/files/proceedings/2016/data/papers/12_199.pdf. **Role: Co-principal investigator.**

Baylis, Patrick, Peter Cappers, Ling Jin, C. Anna Spurlock, Annika Todd. 2016. “Go for the Silver? Evidence from field studies quantifying the difference in evaluation results between “gold standard” randomized controlled trial methods versus quasi-experimental methods.” 2016 ACEEE Summer Study Conference Proceedings. https://aceee.org/files/proceedings/2016/data/papers/2_363.pdf. Role: Contributing author.

Kim, Taehoon, Dongeun Lee, Jaesik Choi, Alex Sim, C. Anna Spurlock, Annika Todd, Kesheng Wu. 2015. “Extracting Baseline Electricity Usage with Gradient Tree Boosting.” 2015 International Conference on Big Data Intelligence and Computing (DataCom 2015). DOI: <https://doi.org/10.1109/SmartCity.2015.156>. **Role: Co-principal investigator.**

Published Working Papers and Reports:

Jin, Ling, C. Anna Spurlock, Sam Borgeson, Alina Lazar, Daniel Fredman, Annika Todd, Alexander Sim, Kesheng Wu. 2021. “Investigating Underlying Drivers of Variability in Residential Energy Usage Patterns with Daily Load Shape Clustering of Smart Meter Data.” <https://arxiv.org/pdf/2102.11027.pdf> **Role: Co-principal investigator.**

- Spurlock, C. Anna**, Saika Belal, K. Sydney Fujita, Nikhil Sawe. 2020. “Enabling behavior through personal commitment statements: why do they work?” LBNL Report No. LBNL-2001373. <https://eta.lbl.gov/publications/enabling-behavior-through-personal>. **Role: Lead author and principal investigator.**
- Department of Energy. 2020. “SMART Mobility: Mobility Decision Science Capstone Report.” Department of Energy Office of Energy Efficiency and Renewable Energy. https://www.energy.gov/sites/prod/files/2020/08/f77/SMART-MDS_Capstone_08.05.20.pdf. **Role: Lead author and principal investigator.**
- Cappers, Peter, **C. Anna Spurlock**. 2020. “A Handbook for Designing, Implementing, and Evaluating Successful Pilots.” LBNL Report. <https://eta.lbl.gov/publications/handbook-designing-implementing>. Role: Contributing author.
- Fowlie, Meredith, Catherine Wolfram, **C. Anna Spurlock**, Annika Todd, Patrick Baylis, and Peter Cappers. 2017. “Default Effects and Follow-On Behavior: Evidence from an Electricity Pricing Program.” Working Paper No. w23553. National Bureau of Economic Research. DOI: 10.3386/w23553 <https://www.nber.org/papers/w23553>. Role: Contributing author.
- Jin, Ling, **C. Anna Spurlock**, Sam Borgeson, Daniel Fredman, Liesel Hans, Siddharth Patel, Annika Todd. 2016. “Load Shape Clustering Using Residential Smart Meter Data: a Technical Memorandum.” LBNL Report. <https://eta.lbl.gov/publications/load-shape-clustering-using>. **Role: Co-principal investigator.**
- Cappers, Peter, **C. Anna Spurlock**, Annika Todd, Ling Jin. 2016. “Experiences of Vulnerable Residential Subpopulations with Critical Peak Pricing” LBNL Report No. LBNL-1006294. <https://emp.lbl.gov/publications/experiences-vulnerable-residential>. Role: Contributing author.
- Cappers, Peter, **C. Anna Spurlock**, Annika Todd, Patrick Baylis, Meredith Fowlie, Catherine Wolfram. 2016. “Time-of-Use as a Default Rate for Residential Customers: Issues and Insights” LBNL Report No. LBNL-1005704. <https://emp.lbl.gov/publications/time-use-default-rate-residential>. Role: Contributing author.
- Taylor, Margaret and **C. Anna Spurlock** and Hung-Chia Yang. 2015. “Confronting Regulatory Cost and Quality Expectations: An Exploration of Technical Change in Minimum Efficiency Performance Standards” Resources for the Future Working Paper DP 15-50. <http://www.rff.org/research/publications/confronting-regulatory-cost-and-quality-expectations-exploration-technical>. Role: Contributing author.
- Spurlock, C. Anna**. 2015. “Loss Aversion and Time-Differentiated Electricity Pricing” LBNL Report No. LBNL-182764. <https://eta.lbl.gov/publications/loss-aversion-time-differentiated>. **Role: Lead author.**
- Houde, Sebastien and **C. Anna Spurlock**. 2015. “Do Energy Efficiency Standards Improve Quality? Evidence from a Revealed Preference Approach” LBNL Report No. LBNL-182701. <https://eta.lbl.gov/publications/do-energy-efficiency-standards>. Role: Contributing author.
- Spurlock, C. Anna**. 2013. “Appliance Efficiency Standards and Price Discrimination.” LBNL Report No. LBNL-6283E. <https://eta.lbl.gov/publications/appliance-efficiency-standards-price>. **Role: Lead author.**
- Spurlock, C. Anna**, Hung-Chia Yang, Larry Dale. 2013. “Energy Efficiency and Minimum Standards: A Market Analysis of Recent Changes in Appliance Energy Efficiency Standards in the United States.” LBNL Report No. LBNL-6353E. <https://eta.lbl.gov/publications/energy-efficiency-minimum-standards>. **Role: Lead author.**

Grants:

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| 2022 | Joint Office of Energy and Transportation, “JUST Lab Consortium.” (Principal Investigator) |
| 2022 | Federal Highways Administration (FHWA) year 5 follow-on funding: “Geo-Economics Multi-Modal System Modeling.” (Principal Investigator) |
| 2022 | Department of Energy, Vehicle Technologies Office, EEMS Program, “BILD AQ: Air Quality Benefits of Electric Vehicle Charging Infrastructure for Justice40 Assessment.” (Principal Investigator) |

- 2022 UCOP LFRP 2022 Collaborative Research and Training Awards: “California’s Deep Decarbonization Pathways: A Holistic Multi-Layer Assessment.” **(Principal Investigator for LBNL; Co-Principal Investigator for Project, for which UCLA is the Prime awardee).**
- 2021 Federal Highways Administration (FHWA) year 4 follow-on funding: “Geo-Economics Multi-Modal System Modeling.” **(Principal Investigator)**
- 2020 Department of Energy, Vehicle Technologies Office, EEMS Program, SMART Mobility: “SMART 2.0.” **(Principal Investigator).**
- 2020 Federal Highways Administration (FHWA) year 3 follow-on funding: “Geo-Economics Multi-Modal System Modeling.” **(Principal Investigator)**
- 2018 LBNL Early Career Development Laboratory Directed Research and Development (LDRD) second year follow-on funding: “A Neuroeconomics Experiment to Study Routine Transportation Decision-Making Processes and Drivers.” **(Principal Investigator)**
- 2017 LBNL Early Career Development LDRD: “A Neuroeconomics Experiment to Study Routine Transportation Decision-Making Processes and Drivers.” **(Principal Investigator)**
- 2016 Department of Energy, Vehicle Technologies Office, EEMS Program, SMART Mobility: “Mobility Decision Science.” (Initially LBNL Deputy Pillar Lead, then became **Principal Investigator**)
- 2015 LBNL LDRD grant second year follow-on funding: “Behavior Analytics,” with Annika Todd. **(Co-Principal Investigator)**
- 2014 LBNL LDRD grant: “Behavior Analytics,” with Annika Todd. **(Co-Principal Investigator)**
- 2013 Resources for the Future Regulatory Performance Initiative Proposal: “Accounting for Innovation in Regulatory Impact Analyses,” with Margaret Taylor. (Senior research contributor)

Awards, Honors, and Fellowships:

- 2021 SPOT Award, Lawrence Berkeley National Laboratory, “For contributions to the Lab’s Workforce Development & Education programs in Spring and/or Summer of 2021, and for supporting research experiences for undergraduates, teachers, and faculty collaborators.”
- 2018 Director’s Award for Exceptional Achievement – Diversity, Lawrence Berkeley National Laboratory
- 2017 SPOT Award, Lawrence Berkeley National Laboratory, “Anna working in collaboration with ETA staff Corrine Scown and Sr. HRDP, Leticia Ericson identified an effective, but not well understood mechanism for providing compensation to women employees while on maternity leave.”
- 2017 2017 Kevin McCauley Memorial Outstanding Staff Award, Council of UC Staff Assemblies (CUCSA). For exceptional efforts engaging staff and leadership on diversity & inclusion efforts.
- 2016 SPOT Award, Lawrence Berkeley National Laboratory, “C. Anna Spurlock has substantively contributed to promoting a more inclusive and diverse workplace environment through her many efforts as the EAEI representative on the ETA Diversity and Inclusion Council”
- 2015 Best Paper Award at 2015 International Conference on Big Data Intelligence and Computing (DataCom 2015) for “Extracting Baseline Electricity Usage with Gradient Tree Boosting”, with Kim, Taehoon, Dongeun Lee, Jaesik Choi, Alex Sim, Annika Todd, Kesheng Wu.
- 2013 Outstanding Graduate Student Instructor Award, UC Berkeley
- 2012 & 2010 Precourt Energy Efficiency Center Fellow, BECC Conference
- 2007-2009 Foreign Language and Area Studies Fellowship (Arabic), UC Berkeley
- 2002 College Honors, UC Santa Cruz

Selected Presentations, Conferences & Webinars:

October 2022	2022 USAEE Conference: “Energy Justice – A Research Agenda in Economics” Plenary Session.
June 2021	Berkeley Lab 90 th Anniversary Speaker Series Session on Leveraging Machine Learning for Science. https://youtu.be/qbbJM4ZSNi4
June 2021	2021 DOE Hydrogen and Fuel Cells Program and Vehicle Technologies Office Annual Merit Review and Peer Evaluation Meeting: “BEAM CORE.”
November 2020	EEMS SMART Mobility Webinar Series: “Moving People in a SMART Mobility System.” https://www.energy.gov/eere/vehicles/downloads/eems-smart-mobility-capstone-reports-and-webinar-series
June 2020	2020 DOE Hydrogen and Fuel Cells Program and Vehicle Technologies Office Annual Merit Review and Peer Evaluation Meeting: “WholeTraveler Transportation Behavior Study.”
January 2020	Transportation Review Board (TRB) Annual Meeting 2020: “Children, Income, and the Impact of Home-Delivery on Household Shopping Trips.” (poster)
January 2020	Transportation Review Board (TRB) Annual Meeting 2020: “What will happen to mass transit use if the price of ride hailing falls? Insights from the WholeTraveler Transportation Behavior Study.” (poster)
November 2019	Behavior Energy and Climate Change (BECC) 2019: “Children, Income, and the Impact of Home-Delivery on Household Shopping Trips.”
June 2019	2019 DOE Hydrogen and Fuel Cells Program and Vehicle Technologies Office Annual Merit Review and Peer Evaluation Meeting: “WholeTraveler Transportation Behavior Study.”
June 2018	2018 DOE Hydrogen and Fuel Cells Program and Vehicle Technologies Office Annual Merit Review and Peer Evaluation Meeting: “WholeTraveler Survey on Life Trajectories and Mobility Decisions.”
October 2017	Behavior Energy and Climate Change (BECC) 2017: “Understanding the Whole Traveler in an Era of Rapid Transportation Innovation,” (Poster)
June 2017	2017 DOE Hydrogen and Fuel Cells Program and Vehicle Technologies Office Annual Merit Review and Peer Evaluation Meeting: “WholeTraveler Survey on Life Trajectories and Mobility Decisions.” (Poster)
September 2016	Energy Efficiency EM&V Webinar Series: “Evaluation of Residential Behavior-Based Programs” https://eta.lbl.gov/publications/evaluation-residential-behavior-based
October 2016	Behavior Energy and Climate Change (BECC) 2016: “Go for the Silver? Evidence from field studies quantifying the difference in evaluation results between “gold standard” randomized controlled trial methods versus quasi-experimental methods.”
August 2016	ACEEE Summer Study: “Go for the Silver? Evidence from field studies quantifying the difference in evaluation results between “gold standard” randomized controlled trial methods versus quasi-experimental methods.”
July 2016	Electric Power Research Institute (EPRI) and Center for Information Technology Research in the Interest of Society (CITRIS) Consumer Connectivity and Analytics Workshop: “Smart Grid, Behavior, and Big Data: improved customer targeting for residential utility programs.”
June 2015	AERE Summer Conference: “The Implications of Market Structure for Appliance Energy Efficiency Regulation.”
December 2014	Behavior Energy and Climate Change (BECC) 2014: “Using Data to Identify Energy Behaviors, Actions, and Characteristics of Households.”
November 2014	Energy Institute at Haas Seminar: "The Implications of Market Structure for Appliance Energy Efficiency Regulation."
July 2014	AERE Session at the AAEA Annual Meeting: “Market Structure and Energy Efficiency Regulation: the case of clothes washers.”

November 2013	Behavior Energy and Climate Change (BECC) 2013: “Loss Aversion and Time-Differentiated Electricity Pricing.” (Poster)
June 2013	ECEEE 2013 Summer Study on Energy Efficiency: “Energy Efficiency and Minimum Standards: A Market Analysis of Recent Changes in Appliance Energy Efficiency Standards in the United States.”
March 2013	Environment and Resource Economics Seminar, Agricultural and Resource Economics Department, UC Berkeley: “Loss Aversion and Time-Differentiated Electricity Pricing.”

Reviewer/Referee Service:

- 2014 ACEEE Summer Study on Energy Efficiency in Buildings
- DOE SEEDS Program SunShot Initiative
- Environment for Development Program
- RFF Working Paper Series
- American Economic Review
- European Economic Review
- Energy Journal
- Transportation Research Part A
- Transportation Research Part D
- Sloan Foundation Grant Call for Social Science Research Projects on Energy Insecurity, Distributional Equity, and Just Transitions in the United States
- Energy Research & Social Science