

Eric O'Shaughnessy, PhD

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Qualifications Summary

Passionate renewable energy policy and market professional with seven years of market research experience. Currently providing research consulting to the U.S. National Renewable Energy Laboratory, the U.S. Lawrence Berkeley National Laboratory, and the World Resources Institute on a portfolio of economic and policy research projects with an emphasis on distributed solar PV markets. Technical expertise in econometric analysis and data visualization.

Education

University of Wisconsin-Madison 08/2016 – 12/2018

PhD, Environment and Resources, Nelson Institute for Environmental Studies

Dissertation: "Solar Photovoltaic Market Structure in the United States: The Installation Industry, Effects on Prices, and the Role of Public Policy"

University of Wisconsin-Madison 08/2013 – 05/2015

Master of Public Affairs, La Follette School of Public Affairs

Certificate in Energy Analysis and Policy, Nelson Institute for Environmental Studies

Cumulative GPA: 4.0

Recipient of 2013 La Follette School Fellowship

Recipient of 2015 Director's Award for outstanding academic achievement

Michigan State University 08/2004 – 04/2008

Bachelor of Science - Environmental Economics and Policy

Graduated with High Honors: Career GPA 3.86

Recipient of 2008 Academic Achievement Award in Environmental Economics and Policy for achieving highest GPA of graduating class

Professional Experience

Renewable Energy Research Analyst, Clean Kilowatts, LLC. 3/19-current

- Consultant for the U.S. National Renewable Energy Laboratory, the U.S. Lawrence Berkeley National Laboratory, and the World Resources Institute on a portfolio of renewable energy research projects

- Leading a research project on the future role of solar photovoltaics in building energy systems
- Leading data-driven research on uses cases and economic impacts of distributed solar PV paired with battery storage and load flexibility
- Made significant contributions to U.S. Department of Energy *Solar Futures Study*
- Led research on the role of large corporate clean energy buyers in deep grid decarbonization
- Contributed data analysis to multiple projects on U.S. PV permitting and interconnection policies
- Led research on solar PV curtailment in the United States
- Led the design and implementation of an econometric model to test the effects of various market factors on prices for installed solar PV systems

Research Affiliate, Lawrence Berkeley National Laboratory. 9/20-current

- Leading a portfolio of projects studying models to increase solar PV adoption equity and access
- Leading an econometric program evaluation of policies to increase solar PV adoption among low- and moderate-income households
- Co-leading data collection and analysis of U.S. residential solar programs
- Developing multiple interactive web-based data visualization platforms

Market Research Analyst, National Renewable Energy Lab, Washington, DC. 6/15-3/19

- Led econometric analysis of distributed solar PV markets, with an emphasis on research of market structure in residential PV markets in the United States
- Studied novel methods to optimize the value of distributed solar PV, including integrating PV with energy storage and building energy management systems
- Led the lab's efforts to establish data partnerships with solar industry stakeholders
- Led data compilation and analysis for an annual report on trends in voluntary green power markets
- Used R and Stata statistical software packages on a daily basis

Research Assistant, University of Wisconsin-Madison, Madison, WI. 08/14-06/15

- Used a variety of econometric methods to analyze economic trends in a large dataset of solar photovoltaic installations
- Used Stata geospatial capabilities and ArcGIS software to analyze spatial trends in solar markets

Economic Development Volunteer, U.S. Peace Corps, Paraguay. 05/11-07/13

- Directed an initiative to increase sales of local artisan products by coupling traditional production practices with modern marketing techniques such as internet promotion
- Trained over 20 Paraguayan students in basic entrepreneurship practices through a three-month long course covering fundamental business and economic concepts

Environmental Policy Analyst, ICF International, Fairfax, VA/Washington, DC. 05/08-04/11

ICF International's Environment, Planning and Infrastructure Office is a consulting group specializing in regulatory development, environmental economics and policy.

- Evaluated the potential impacts of an Environmental Protection Agency rulemaking proposing new financial assurance regulations to remediate groundwater contamination in the U.S. mining industry
- Designed a cost-benefit model to project potential economic impacts of policy options for a Nuclear Regulatory Commission rulemaking
- Analyzed existing regulatory frameworks and legal options for Carbon Capture and Storage in support of the U.S. Interagency Task Force on Carbon Capture and Storage

Journal Publications

E. O'Shaughnessy, G. Barbose, R. Wiser, S. Forrester, N. Darghouth. 2021. "The impact of policies and business models on income equity in rooftop solar adoption." *Nature Energy* 6:84-91.

E. O'Shaughnessy. In press. "Toward a more productive discourse on rooftop solar and energy justice." *Joule*.

E. O'Shaughnessy, G. Barbose, R. Wiser, S. Forrester. In press. "Income-targeted marketing as a supply-side barrier to low-income solar adoption." *iScience*.

E. O'Shaughnessy, J. Cruce, K. Xu. 2021. "Rethinking Solar PV Contracts in a World of Increasing Curtailment Risk." *Energy Economics* 98:105264.

E. O'Shaughnessy, J. Heeter, C. Shah, S. Koebrich. 2021. "Corporate acceleration of the renewable energy transition and implications for electric grids." *Renewable and Sustainable Energy Reviews* 146: 111160.

Cook, J., J. Cruce, **E. O'Shaughnessy**, K. Ardani, R. Margolis, 2021. "Exploring the link between project delays and cancellation rates in the U.S. rooftop solar industry." *Energy Policy* 156:112421.

Kim, J.H., A. Mills, R. Wiser, M. Bolinger, W. Gorman, C. Montañes, **E. O'Shaughnessy**. In press. "Enhancing the value of solar electricity as solar and storage penetrations increase." *Applied Energy* 304:117742.

E. O'Shaughnessy, J. Cruce, K. Xu. 2020. "Too much of a good thing? Global trends in the curtailment of solar PV energy." *Solar Energy* 208:1068-1077.

E. O'Shaughnessy, G. Barbose, R. Wiser. 2020. "Patience is a Virtue: A Data-Driven Analysis of Rooftop Solar PV Permitting Timelines in the United States." *Energy Policy* 144:111615.

E. O'Shaughnessy, R. Margolis. 2020. "Charting the evolution of the U.S. solar PV installation industry and its bonds with other skilled trades." *The Electricity Journal* 33:106726.

E. O'Shaughnessy, K. Ardani. 2020. "Distributed Rate Design: A Review of Early Approaches and Practical Considerations for Value of Solar Tariffs." *The Electricity Journal* 33:106713.

L. Knapp, **E. O'Shaughnessy**, J. Heeter, S. Mills, J. DeCicco. 2020. "Will consumers really pay for green electricity? Comparing stated and revealed preferences for residential programs in the United States." *Energy Research and Social Science* 65:101457.

Gorman, W., A. Mills, M. Bolinger, R. Wiser, N. Singhal, E. Ela, **E. O'Shaughnessy**. 2020. "Motivations and options for deploying hybrid generator-plus-battery projects within the bulk power system." *The Electricity Journal* 33:5 106739.

E. O'Shaughnessy. 2019. "Non-monotonic effects of market concentration on prices for residential solar photovoltaics in the United States." *Energy Economics* 78:182-191.

E. O'Shaughnessy, G. Nemet, J. Pless, R. Margolis. 2019. "Addressing the soft cost challenge in U.S. small-scale solar PV system pricing." *Energy Policy* 134:110956.

E. O'Shaughnessy, J. Heeter, J. Gattaciecceca, J. Sauer, K. Trumbull, E. Chen. 2019. "Empowered communities: The rise of community choice aggregation in the United States." *Energy Policy* 132:1110-1119.

Leibowicz, B., K. Punjabi, **E. O'Shaughnessy**, R. Margolis. 2019. "Rules of the rooftop: Platform design and price reductions in an online solar photovoltaic marketplace in the United States." *Energy Research and Social Science* 48:194-204.

E. O'Shaughnessy, D. Cutler, K. Ardani, R. Margolis. 2018. "Solar Plus: Optimization of Distributed Solar PV through Battery Storage and Dispatchable Load in Residential Buildings." *Applied Energy* 213:11-21.

E. O'Shaughnessy, G. Nemet, N. Darghouth. 2018. "The geography of solar energy in the United States: market definition, industry structure, and choice in solar PV adoption." *Energy Research and Social Science* 38:1-8

E. O'Shaughnessy, R. Margolis. 2018. "The value of price transparency in residential solar photovoltaic markets." *Energy Policy* 117:406-412.

E. O'Shaughnessy. 2018. "Trends in the market structure of U.S. residential solar PV installation, 2000-2016: An evolving industry." *Progress in Photovoltaics: Research and Applications*. 2018:1-10.

E. O'Shaughnessy, D. Cutler, K. Ardani, R. Margolis. 2018. "Solar Plus: A review of the end-user economics of solar PV integration with storage and load control in residential buildings." *Applied Energy* 228:2165-2175.

Nemet, G., **E. O'Shaughnessy**, R. Wiser, N. Darghouth, G. Barbose, K. Gillingham, V. Rai. 2017. "What Factors Affect the Prices of Low-Priced U.S. Solar PV Systems?" *Renewable Energy* 114:1333-1339.

Nemet, G., **E. O'Shaughnessy**, R. Wiser, N. Darghouth, G. Barbose, K. Gillingham, V. Rai. 2017. "Characteristics of Low-Priced Solar Photovoltaic Systems in the United States." *Applied Energy* 187:501-513.

McLaren, J., J. Miller, **E. O'Shaughnessy**, E. Wood, E. Shapiro. 2016. "CO₂ Emissions Associated with Electric Vehicle Charging: The Impact of Electricity Generation Mix, Charging Infrastructure Availability, and Vehicle Type." *The Electricity Journal* 29:72-88.

Contracted Reports

E. O'Shaughnessy, M. Shah. 2021. "The Demand-Side Opportunity: The Roles of Distributed Solar and Building Energy Systems in a Decarbonized Grid." Golden, CO: U.S. National Renewable Energy Laboratory (NREL).

Ardani, K., P. Denholm, T. Mai, R. Margolis, **E. O'Shaughnessy**, T. Silverman, J. Zuboy. 2021. "Solar Futures Study." U.S. Department of Energy.

Bird, L., **E. O'Shaughnessy**, N. Hutchinson. 2021. "Actions Large Energy Buyers Can Take to Transform and Decarbonize the Grid: Procurement Practices for Achieving 100% Carbon Free Electricity." World Resources Institute.

Barbose, G., N. Darghouth, **E. O'Shaughnessy**, S. Forrester. 2021. "Tracking the Sun: Pricing and Design Trends for Distributed Photovoltaic Systems in the United States." Berkeley, CA: Lawrence Berkeley National Laboratory.

Bonugli, C., **E. O'Shaughnessy**, H. Ratz, J. Womble. 2021. "Solar Energy in Utility Integrated Resource Plans: Factors that can Impact Customer Clean Energy Goals." World Resources Institute.

Barbose, G., S. Forrester, **E. O'Shaughnessy**, N. Darghouth. 2021. "Residential Solar-Adopter Income and Demographic Trends: 2021 Update." Berkeley, CA: Lawrence Berkeley National Laboratory (LBNL).

Barbose, G., N. Darghouth, **E. O'Shaughnessy**, S. Forrester. 2021. "Distributed Solar 2020 Data Update." Berkeley, CA: LBNL.

Paulos, B., S. Forrester, **E. O'Shaughnessy**, C. Dyson, G. Barbose, R. Wisser. 2021. "An Assessment of Evaluation Practices of Low- and Moderate-Income Solar Programs." Berkeley, CA: LBNL.

O'Shaughnessy, E., J. Heeter, J. Gattaciececa, J. Sauer, K. Trumbull, E. Chen. 2019. "Community Choice Aggregation: Challenges, Opportunities, and Impacts on Renewable Energy Markets." Golden, CO: NREL.

O'Shaughnessy, E. 2019. "State and Local Policy Impacts on the Residential Solar PV Installation Industry." Golden, CO: NREL.

O'Shaughnessy, E. 2019. "Expanding Community Shared Solar in New York City: Analysis of Barriers and Policy Pathways." Golden, CO: NREL.

Bielen, D., **E. O'Shaughnessy**, B. Sigrin, R. Margolis. 2019. "Value Accrual to Customers, Installers, and Financiers in Third-Party Owned Solar PV Markets." Golden, CO: NREL.

Tongsopit, S., S. Saelim, T. Keereepart, N. Darghouth, A. Aznar, **E. O'Shaughnessy**, S. Chaitusaney. 2019. "Distributed Photovoltaic Economic and Technical Impact Analysis in the Philippines." United States Agency for International Development.

O'Shaughnessy, E., R. Margolis. 2018. "Solar Economies of Scope through the Intersection of Four Industries: PV Installation, Electrical, Construction, and Roofing." Golden, CO: NREL.

O'Shaughnessy, E., R. Margolis. 2018. "Solar Buyer's Markets: Unlocking Lower Photovoltaic and Battery Prices on Online Quote Platforms." Golden, CO: NREL.

O'Shaughnessy, E. 2018. "The Effects of Market Concentration on Residential Solar PV Prices: Competition, Installer Scale, and Soft Costs." Golden, CO: NREL.

O'Shaughnessy, E. 2018. "The Evolving Market Structure of the U.S. Residential Solar PV Installation Industry, 2000-2016." Golden, CO: NREL.

Sauer, J., J. Meng, **E. O'Shaughnessy.** 2018. "Trends in Installer Strategy and Customer Choice on a Solar PV Financing Platform." Golden, CO: NREL.

Leibowicz, B., **E. O'Shaughnessy,** K. Punjabi, R. Margolis. 2018. "Effects of Platform Design on the Customer Experience in an Online Solar PV Marketplace." Golden, CO: NREL.

Ardani, K., **E. O'Shaughnessy,** P. Schwabe. 2018. "Coordinating Distributed Energy Resources for Grid Services: A Case Study of Pacific Gas and Electric." Golden, CO: NREL.

Heeter, J., L. Bird, **E. O'Shaughnessy,** S. Koebrich. 2018. "Design and Implementation of Community Solar Programs for Low- and Moderate-Income Customers." Golden, CO: NREL.

O'Shaughnessy, E., R. Margolis. 2017. "The Value of Market Transparency in Distributed Solar PV Markets." Golden, CO: NREL.

O'Shaughnessy, E., K. Ardani, D. Cutler, R. Margolis. 2017. "Solar Plus: A Holistic Approach to Distributed Solar PV." Golden, CO: NREL.

O'Shaughnessy, E., R. Margolis. 2017. "Using Residential Solar PV Quote Data to Analyze the Relationship between Installer Pricing and Firm Size." Golden, CO: NREL.

O'Shaughnessy, E., J. Heeter, C. Volpi. 2017. "Status and Trends in the U.S. Voluntary Green Power Market (2016 data)." Golden, CO: NREL.

Nemet, G., **E. O'Shaughnessy,** R. Wiser, N. Darghouth, G. Barbose, K. Gillingham, V. Rai. 2017. "Sources of price dispersion in U.S. residential solar installations." Berkeley, CA: LBNL.

Bird, L., J. Heeter, **E. O'Shaughnessy,** B. Speer, C. Volpi, et al. 2017. "Policies for Enabling Corporate Sourcing of Renewable Energy Internationally." Golden, CO: NREL.

O'Shaughnessy, E., G. Nemet, N. Darghouth. 2016. "Using the Spatial Distribution of Installers to Define Solar Photovoltaic Markets." Golden, CO: NREL.

O'Shaughnessy, E., J. Heeter, D. Keyser, P. Gagnon, A. Aznar. 2016. "Estimating the National Carbon Abatement Potential of City Policies: A Data-Driven Approach." Golden, CO: NREL.

Nemet, G., **E. O'Shaughnessy,** R. Wisner, N. Darghouth, G. Barbose, K. Gillingham, V. Rai. 2016. "Characteristics of Low-Priced Solar Photovoltaic Systems in the United States." Berkeley, CA: LBNL.

Ardani, K., **E. O'Shaughnessy,** R. Fu, C. McClurg, J. Huneycutt, R. Margolis. 2016. "Installed Costs and Deployment Barriers for Residential Solar Photovoltaics with Energy Storage." Golden, CO: NREL.

Weimar, M., M. Mylrea, T. Levin, A. Botterud, **E. O'Shaughnessy,** L. Bird. 2016. "Integrating Renewable Generation into Grid Operations: Four International Experiences." Richland, WA: Pacific Northwest National Laboratory.

Heeter, J., T. Lowder, **E. O'Shaughnessy,** J. Miller. 2015. "Implications of the Scheduled Federal Investment Tax Credit Reversion for Renewable Portfolio Standard Solar Carve-out Compliance." NREL/TP-6A20-64506. Golden, CO: NREL.

Other Publications

Barbose, G., **E. O'Shaughnessy,** R. Wisner. 2021. "Cheaper solar power means low-income families can also benefit – with the right kind of help." The Conversation.

O'Shaughnessy, E., J. Heeter, S. Dong. 2020. "US Voluntary Clean Power Sales Keep Surging, With More Than a Little Help From Utilities." Greentech Media.

O'Shaughnessy, E., D. Smith, G. Heath. 2019. "Sustainable Sunshine: A New Standard for Environmentally-Friendly Solar Panels." Environment + Energy Leader.

O'Shaughnessy, E., D. Cutler, K. Ardani, R. Margolis. 2018. "Thinking Creatively About Residential Solar PV System Optimization: The Solar Plus Approach." Science Trends.

Tong, J., B. Sigrin, **E. O'Shaughnessy,** A. Mickey. 2016. "How to Improve the Solar Customer Experience—and Get More Referrals." Greentech Media.

Presentations

Presenter, "How Low- and Moderate-Income Solar Programs are Evaluated: Trends and Best Practices." 5/20/21. Clean Energy States Alliance Webinar.

Presenter, "Understanding the Nexus between Income Inequality and Solar PV Adoption Inequity." 12/10/20. Behavior, Energy and Climate Change Conference. Virtual.

Presenter, "The Impact of Policies and Business Models on Income Equity in Rooftop Solar Adoption." 12/3/20. Clean Energy States Alliance Webinar.

Invited speaker, "The Foundations of Corporate and Bulk-Scale Green Energy Programs." 11/4/20. EUCI: Utility Green Tariffs A-Z. Virtual.

Presenter, "A data-driven analysis of rooftop solar PV permitting timelines in the United States." 10/9/20. Solar Power International. Virtual.

Presenter, "An Introduction to U.S. Renewable Energy Markets." 6/30/2020. REC Market Meeting 2020 Webinar Series.

Presenter, "Sharing the Sun: Understanding Community Solar Deployment and Subscriptions." 5/21/2020. NREL Webinars.

Presenter, "Solar PV Curtailment in Changing Grid and Technological Contexts." Grid of the Future. 11/4/2019. Atlanta, GA.

Invited Speaker, "Rate Design Considerations for Solar Plus." APEC International Workshop: Distributed Energy Resources Regulation and Rate Design. 10/23/2019. Santiago, Chile.

Invited Speaker, "Solar PV Curtailment in Changing Grid and Technological Contexts." FAASTeR Workshop. 6/24/2019. Gainesville, FL.

Presenter, "State of the Voluntary Green Power Market." EPA Green Power Partnership Webinar, 03/13/2019.

Presenter, "How do policies shape emerging industries? The case of residential solar photovoltaics in the United States." Association of Public Policy Analysis and Management Fall Research Conference. 11/8/2018. Washington, DC.

Presenter, "State of the Voluntary Green Power Market." Renewable Energy Markets 2018. Houston, TX.

Presenter, "State of the Voluntary Green Power Market." EPA Green Power Partnership Webinar, 02/21/2018.

Presenter, "Solar Plus: A Holistic Approach to Distributed Solar PV." University of Texas Energy Week. 1/29/2018. Austin, TX.

Presenter, "Corporate Procurement of Renewable Energy." The Case for Renewable Power in the Southeast, Vanderbilt University. 10/19/2017. Nashville, TN.

Presenter, "Renewable Energy Markets 101." Renewable Energy Markets 2017. New York, NY.

Invited Speaker, "Solar Plus: A Holistic Approach to Distributed Solar PV." Midwest Solar Expo. 05/23/2017. Minneapolis, MN.

Presenter, "State of the Voluntary Green Power Market." EPA Green Power Partnership Webinar, 01/25/2017.

Presenter, "Utility Green Power Innovations." Renewable Energy Markets 2016. San Francisco, CA.

Presenter, "Voluntary Renewable Energy Markets 101." Renewable Energy Markets 2016. San Francisco, CA.

Invited speaker, "Understanding Prices in U.S. Solar Photovoltaic Markets." 2016 IEEE PES General Meeting. 06/20/2016. Boston, MA.

Presenter, "Green Power Markets and Opportunities." National Energy Solutions Conference, 03/23/2016.

Presenter, "An Introduction to Community Solar Programs." EPA Green Power Partnership Webinar, 03/09/2016.

Presenter, "State of the Voluntary Green Power Market." EPA Green Power Partnership Webinar, 01/27/2016.

Web Development

The Renewables and Wholesale Electricity Price Tool. 2021. Lawrence Berkeley National Laboratory. <https://emp.lbl.gov/renewables-and-wholesale-electricity-prices-rewep>.

Tracking the Sun Tool. 2020. Lawrence Berkeley National Laboratory. <https://emp.lbl.gov/tracking-sun-tool>.

Solar Demographics Tool. 2019. Lawrence Berkeley National Laboratory. <https://emp.lbl.gov/solar-demographics-tool>.

Professional Training

- Certificate in Drawing Nature, Science, and Culture: Natural History Illustration 101. The University of New Castle, Australis. September, 2020.
- Certificate in Data Science: Visualization. HarvardX. July, 2020.
- Rock the VizComm (data visualization workshop). May 9, 2018. New York, NY.

Other accomplishments/interests

- Thru-hiked the Appalachian National Scenic Trail, 2,178 miles from Georgia to Maine (04/2009-08/2009)
- Backpacked the Torres del Paine circuit in Patagonia, Chile
- Backpacked the John Muir Trail, California
- Has run five marathons and one 33.5 mile race
- PADI advanced open water and coral reef conservation certified scuba diver
- Generally interested in running, climbing, and backpacking