

Jeremy Hargreaves

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Energy consultant with deep experience across the energy industry advising clients on a wide range of issues, including in integrated resource planning for higher renewable systems, distribution system and DER planning, rate design, and asset evaluation.

PROFESSIONAL EXPERIENCE

EVOLVED ENERGY RESEARCH, NEW YORK, NY

Principal, January 2018– Present

- **Resource planning and asset evaluation, 2018-Present.** Provided decarbonization and electricity planning analysis to confidential utility and developer clients.
- **Gridlab, 2020-Present.** Analysis of electricity system and economy wide policy and investment strategy to support state legislatures and reach state goals. Co-sponsors include Renewable Northwest and Clean Energy Transition Institute in Oregon, Western Resource Advocates in New Mexico and Arizona, and Renew Wisconsin and Clean Wisconsin in Wisconsin.
- **State of Washington, State Energy Strategy, 2021, Hydrogen Strategy, 2023.** Developed least cost pathways to achieve state goals of net zero emissions and a 100% clean electricity sector as part of a stakeholder engaged policy development process in Washington. Developed the strategy to support hydrogen infrastructure development in Washington.
- **NRDC, Evaluation of Decarbonization Policy, 2019-Present.** Provided analytics to NRDC to help them assess the costs, benefits, and tradeoffs of different US-wide policy initiatives to reach a high renewable and low carbon future.
- **State of New Jersey, Integrated Energy Plan, 2019.** Developed investment strategies for least cost decarbonization of the New Jersey economy. Provided EER's industry leading analytics to create an Integrated Energy Plan and nearer-term Energy Master Plan to reach New Jersey's climate goals.
- **Clean Energy Transition Institute, Northwest Decarbonization Pathways, 2019, Net Zero Northwest, 2023.** Explored cost effective pathways for decarbonization for Washington, Oregon, Montana, and Idaho.
- **European Resource Planning, 2018.** Performed least cost resource investment planning for confidential client across all countries in Europe using the Regional Investment and Operations platform to meet Paris Conference of the Parties CO2 reduction goals.
- **Regional Investment and Operations platform (RIO), 2018.** Developed the next generation capacity expansion based, energy resource planning tool, designed to address the shortcomings of existing planning tools when planning for high renewables or deep decarbonization goals, and determine least cost investments for highly integrated and rapidly changing energy systems.

ENERGY & ENVIRONMENTAL ECONOMICS, INC., SAN FRANCISCO, CA

Director, June 2010 – December 2017

- **Hawaiian Electric Companies Power Supply Improvement Plan (PSIP), 2016 – 2017.** Led the development of least cost resource investment decisions necessary to reach the Hawaii policy goal of 100% renewables by 2045 for the Hawaii PSIP.
- **Orange & Rockland Non-Wires Alternatives Assessment, 2017.** Managed development of non-wires alternative economic analysis tools for Orange & Rockland for assessment of proposed distribution system upgrades and distributed energy resource (DER) investments.
- **California Energy Commission Solar + Storage Project, 2017.** Managed development of a DER evaluation tool, designed to estimate operations, costs, and benefits of DER portfolios and be integrated into utility distribution resource planning.
- **USTDA Clean Energy Project Evaluation, 2017.** Provided advisory services to the Industrial Development Corporation, a South African development bank, including a capacity building workshop on long term grid and distributed system planning.
- **Pumped Hydro Evaluation, Israel, 2017.** Led an economic feasibility study for an Israeli pumped hydro developer to assess project viability and development strategy. Contracted to Parsons Engineering.
- **USTDA Storage Evaluation Economic Assessment, South Africa, 2015-2016.** Evaluated the economics of storage, estimating system and local level benefits compared with expected storage costs in South Africa.
- **PG&E Storage Strategy, 2016.** Managed development of a storage dispatch optimization tool to investigate the value of behind-the-meter storage to customers and to the utility under customer control and utility control regimes.
- **SMUD PV Integrated Energy Storage, 2015-2016.** Developed integrated distributed energy resources (IDER) models to quantify the operational and distribution planning benefits of customer and utility controlled PV integrated storage.
- **Hawaiian Electric Companies, 2015-2016.** Led a study of the technical electricity system limits to integrating additional uncontrolled rooftop PV systems on each of the islands and the integration solutions that could increase them.

- **Emerging Technology Strategy Practice, 2011-2015.** Provided strategic support to renewable energy developers, including project valuation, interconnection evaluation and risk analysis, and transmission congestion and generation curtailment studies. Conducted due diligence and M&A support for clean energy investors.
- **Distributed Energy Resource Evaluation, Tata, Delhi, India, 2014-2015.** Evaluated the benefits and costs of distributed energy resources in Delhi, informing DER business model design and strategy for Tata and Delhi rooftop solar incentive policy.
- **Capturing the Local Avoided Costs of Distributed Energy Resources, PG&E, 2014.** Author of a white paper on how to capture local value from distributed energy resources through deferral of distribution system investments.
- **Integrated Demand Side Management (IDSMS) Model, Consolidated Edison, 2013-2014.** Led the design and development of an integrated DER planning tool for Consolidated Edison in New York, modeling the operations of, and valuing, generation, energy efficiency, demand response, and storage – winner of a 2014 Utility Analytics Institute Innovation Award.
- **Investigating a Higher Renewables Standard in California, PG&E, SCE, SDG&E, 2013.** Worked with utility stakeholders to model future distributed generation portfolios and their associated costs using the best available information and assumptions, under 40% and 50% RPS scenarios.
- **E3 Renewable Flexibility Model (REFLEX), 2012-2014.** Developed an enhanced unit commitment and dispatch model for capacity and flexible resource planning and operations in systems with large amounts of intermittent resources.
- **Rate design, BC Hydro and Lower Valley Energy, 2011-2013.** Developed residential and small commercial rate designs, balancing rate design objectives against customer rate impacts.
- **Energy Storage Model, Hydro Storage Developer, 2011.** Designed a mixed integer linear program reservoir storage profit maximization model.
- **California Solar Initiative (CSI) Cost-Effectiveness, CPUC, 2011.** Modeled the Californian interconnection potential and associated cost of distributed solar PV in California at a substation and hourly granularity, evaluating the feasibility of meeting Renewable Portfolio Standard (RPS) targets with large scale distributed PV deployment.
- **Revised Transmission Planning Process (RTPP), CAISO, 2010-2011.** Developed renewable resource build out scenarios, assisting CAISO in identifying the required transmission to meet 2020 RPS targets.

ACADEMIC PUBLICATIONS

- J. Williams, R.A. Jones, B. Haley, G. Kwok, J.J. Hargreaves, J. Farbes, M.S. Torn, *“Carbon-Neutral Pathway for the United States”*, AGU Advances, 2021, 2(1).
- J.J. Hargreaves, R.A. Jones, *“Long Term Energy Storage in Highly Renewable Systems”*, Frontiers in Energy Research, 2020.
- R. Jones, B. Haley, G. Kwok, J.J. Hargreaves, J Williams, *“Electrification and the Future of Electricity Markets: Transitioning to a Low-Carbon Energy System”*, IEEE Power and Energy Magazine, 2018, 16(4), 79-89.
- A. Olson, E.K. Hart, J.J. Hargreaves, R. Jones, N. Schlag, G. Kwok, N. Ryan, R. Orans, R. Frowd, *“Halfway There: Can California Achieve a 50% Renewable Grid?”*, IEEE Power and Energy Magazine, 2015, 13(4), 41-52.
- A. Olson, R. Jones, E.K. Hart, J. J. Hargreaves, *“Renewable Curtailment as a Power System Flexibility Resource”*, The Electricity Journal, 2014, 27(9), 49-61.
- J. J. Hargreaves, E.K. Hart, R. Jones, A. Olson, *“REFLEX: An Adapted Production Simulation Methodology for Flexible Capacity Planning”*, IEEE Transactions on Power Systems, 2014, 30(3), 1306-1315.
- E. Cutter, B. Haley, J Hargreaves, J. Williams, *“Utility Scale Energy Storage and the Need for Flexible Capacity Metrics”*, Applied Energy, 2014, 124, 274-282.
- C.K. Woo, P. Sreedharan, J. Hargreaves, F. Kahrl, J. Wang, I. Horowitz, *“A Review of Electricity Product Differentiation”*, Applied Energy, 2014, 114, 262-272.
- R. Orans, A. Olson, J. Moore, J. Hargreaves, R. Jones, G. Kwok, F. Kahrl, C.K. Woo, *“Energy Imbalance Market Benefits in the West: A Case Study of PacifiCorp and CAISO”*, The Electricity Journal, 2013, 26(5), 26-36.
- J. J. Hargreaves and B.F. Hobbs, *“Metamodeling of Input-Output Relationships for Complex Power Market Models”*, Energy Systems, 2013, 4(1), 25-45.
- J. J. Hargreaves and B.F. Hobbs, *“Commitment and Dispatch with Uncertain Wind Generation by Dynamic Programming”*, IEEE Transactions on Sustainable Energy, 2012, 3(4), 724-734.
- J. J. Hargreaves and B.F. Hobbs, *“Optimal Selection of Priority Development Areas Considering Tradeoffs between Hydrology and Development Configuration”*, Environmental Modeling and Assessment, 2009, 14(3), 289-302.

EDUCATION

JOHNS HOPKINS UNIVERSITY, Baltimore, MD

Doctor of Philosophy, Geography and Environmental Engineering, May 2010

Master of Science in Engineering, Environmental Management and Economics, May 2007

IMPERIAL COLLEGE, London, United Kingdom

Master of Chemical Engineering – First Class Honors, May 2005