

# Andrew Satchwell

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## PROFESSIONAL EXPERIENCE

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Research Scientist (June 2009-present)

*Lawrence Berkeley National Laboratory*

Berkeley, California

- Provide technical support to state utility regulators considering implications of energy efficiency, demand response, and renewable energy policy on utilities, customers, and energy developers;
- Lead quantitative analysis of changes to utility profit achievement and profit motivation in a future of increasing distributed energy resources, including modeling changes in utility stock prices;
- Develop innovative modeling approaches to incorporate demand response resources in utility planning processes used by the Western Electricity Coordinating Council for regional transmission planning;
- Analyze risks and opportunities for biogas plants in California, including project economics, CAISO wholesale energy market prices, changes in utility rates, and state enabling policies;
- Principal investigator (PI) or Co-PI for \$1M in annual program funding and manage team of researchers and outside consultants; and
- Lead author or co-author on more than 30 peer-reviewed reports, papers, and articles with over 450 citations.

Independent Consultant (August 2010-present)

El Cerrito, California

- Principal of independent consulting firm that assists clients in energy policy, electric utility regulation, and demand-side program design and analysis. Clients include law firms and consultancies.

Utility Analyst II (May 2007-June 2009)

*Indiana Office of Utility Consumer Counselor*

Indianapolis, Indiana

- Served as expert policy and economics witness representing customer interests in more than 10 adjudicated proceedings, including review of and recommendations on supply contracts for large energy customers;
- Led analysis of emerging resources and alternative regulatory approaches, including smart grid investments, energy efficiency programs, and utility financial incentive mechanisms; and
- Represented agency at Midwest ISO and PJM stakeholder meetings and developed testimony and briefs filed at the Federal Energy Regulatory Commission.

## EDUCATION

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Master of Arts	2008	<b>Indiana University</b> , Bloomington, Indiana Concentration: West European Studies and Economics Honors: Chancellor's List
Bachelor of Arts	2005	<b>University of Pittsburgh</b> , Pittsburgh, Pennsylvania Major: Political Science Certificate: European Union Studies

## PAPERS AND REPORTS

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### *Peer Reviewed Journal Articles*

Brinker, L. and **A. Satchwell**. 2019. "A Comparative Review of Municipal Energy Business Models in Germany, California, and Great Britain: Institutional Context and Forms of Energy Decentralization." *Renewable and Sustainable Energy Reviews*. In press.

Cappers, P., **A. Satchwell**, W. Gorman, and Reneses, J. 2019. "Financial Impacts of Net-Metered Distributed PV on a Prototypical Western Utility's Shareholders and Ratepayers." *Energies*, 12, 4794.

**Satchwell, A.**, C. Scown, J. Amir, S. Smith, N. Brown, L. Jing, C. Preble, and T. Kirchstetter. 2018. "Accelerating the Deployment of Anaerobic Digestion to Meet Zero Waste Goals." *Environmental Science & Technology* 52(23): 13663-13669.

**Satchwell, A.** and P. Cappers. 2018. "Recent Developments in Competition and Innovation for Regulated Electric Utilities." *Utilities Policy* 55: 110-114.

Kihm, S., P. Cappers, **A. Satchwell**, and E. Graffy. 2018. "Corporate Finance and Sustainability: The Case of the Electric Utility Industry." *Journal of Applied Corporate Finance* 30(1): 106-111.

**Satchwell, A.**, P. Cappers and C. Goldman. 2018. "Customer Bill Impacts of Energy Efficiency and Net-metered Photovoltaic System Investments." *Utilities Policy* 50: 144-152.

**Satchwell, A.** and P. Cappers. 2015. "A Framework for Organizing Electric Utility Regulatory and Business Models." *Electricity Journal* 28(8): 119-129.

**Satchwell, A.**, A. Mills, and G. Barbose. 2015. "Regulatory and Ratemaking Approaches to Mitigate Financial Impacts of Net-Metered PV on Utilities and Ratepayers." *Energy Policy* 85: 115-125.

**Satchwell, A.**, A. Mills, and G. Barbose. 2015. "Quantifying the Financial Impacts of Net-Metered PV on Utilities and Ratepayers." *Energy Policy* 80: 133-144.

**Satchwell, A.** and R. Hledik. 2014. "Analytical Frameworks to Incorporate Demand Response in Long-Term Resource Planning." *Utilities Policy* 28: 73-81.

Larsen, P., C. Goldman, and **A. Satchwell**. 2012. "Evolution of the U.S. Energy Service Company Industry: Market Size and Project Performance from 1990-2008." *Energy Policy* 50: 802-820.

**Satchwell, A.**, P. Cappers and C. Goldman. 2011. "Carrots and Sticks: A Comprehensive Business Model for the Successful Achievement of Energy Efficiency Resource Standards." *Utilities Policy* 19: 218-225.

### ***Peer Reviewed Conference Papers***

Kihm, S., P. Cappers, and **A. Satchwell**. 2016. "Considering Risk and Investor Value in Energy Efficiency Business Models." *2016 ACEEE Summer Study on Energy Efficiency in Buildings*. Pacific Grove, CA.

**Satchwell, A.**, P. Larsen, and C. Goldman. 2011. "Combining Energy Efficiency Building Retrofits and Onsite Generation: An Emerging Business Model from the ESCO Industry." *2011 ACEEE Summer Study on Energy Efficiency in Industry*. Niagara Falls, NY.

**Satchwell, A.**, P. Cappers, and C. Goldman. 2011. "Carrots and Sticks: A Comprehensive Business Model for the Successful Achievement of Energy Efficiency Resource Standards." *2011 ECEEE Summer Study*. Giens, France

Cappers, P., **A. Satchwell**, C. Goldman, and J. Schlegel. 2010. "Benefits and Costs of Aggressive Energy Efficiency Programs and the Impacts of Alternative Sources of Funding: Case Study of Massachusetts." *2010 ACEEE Summer Study on Energy Efficiency in Buildings*. Pacific Grove, CA.

### ***Reports and Technical Briefs Reviewed by Industry Experts***

**Satchwell, A.**, P. Cappers, and G. Barbose. 2019. Current Developments in Retail Rate Design: Implications for Solar and Other Distributed Energy Resources. LBNL Report, July.

**Satchwell, A.** and P. Cappers. 2018. Evolving Grid Services, Products, and Market Opportunities for Regulated Electric Utilities. LBNL Report, May.

**Satchwell, A.**, P. Cappers, and C. Goldman. 2017. Financial Impacts of a Combined Energy Efficiency and Net-Metered PV Portfolio on a Prototypical Northeast Utility. LBNL Report 1007280, April.

Kihm, S., **A. Satchwell**, and P. Cappers. 2016. The Financial Impacts of Declining Investment Opportunities on Electric Utility Shareholders. LBNL Technical Brief 1005828. July.

Barbose, G., J. Miller, B. Sigrin, E. Reiter, K. Cory, J. McLaren, J. Seel, A. Mills, N. Darghouth, and **A. Satchwell**. 2016. On the Path to SunShot: Utility Regulatory and Business Model Reforms for Addressing the Financial Impacts of Distributed Solar on Utilities. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A20-65670.

Kihm, S., **A. Satchwell**, and P. Cappers. 2015. The Effects of Rising Interest Rates on Electric Utility Stock Prices: Regulatory Considerations and Approaches. LBNL Technical Brief 1003952. December.

**Satchwell, A.**, P. Cappers, L. Schwartz, and E. Martin Fadrhonc. 2015. A Framework for Organizing Current and Future Electric Utility Regulatory and Business Models. LBNL Report, June.

**Satchwell, A.,** A. Mills, G. Barbose, R. Wiser, P. Cappers, and N. Darghouth. 2014. Financial Impacts of Net-Metered PV on Utilities and Ratepayers: A Scoping Study of Two Prototypical U.S. Utilities. LBNL Report, September.

**Satchwell, A.,** G. Barbose, C. Goldman, R. Hledik, and A. Faruqi. 2013. Incorporating Demand Response into Western Interconnection Transmission Planning. LBNL Report 6381-E, July.

**Satchwell, A.,** C. Goldman, H. Haeri, and M. Lesiw. 2013. An Assessment of Analytical Capabilities, Services, and Tools for Demand Response. LBNL Report prepared for FERC-DOE as part of the National Forum of the National Action Plan for Demand Response.

Larsen, P., C. Goldman, **A. Satchwell.** 2012. Evolution of the U.S. Energy Service Company Industry: Market Size and Project Performance from 1998-2008. LBNL Report 5447-E, June.

**Satchwell A.,** C. Goldman, P. Larsen, D. Gilligan, and T. Singer. 2010. A Survey of the U.S. ESCO Industry: Market Growth and Development from 2008 to 2011, Berkeley, CA: Lawrence Berkeley National Laboratory, LBNL-3479E, June.

### *Articles and Conference Papers not Peer Reviewed*

Barbose, G., **A. Satchwell, A.** Mills, R. Wiser, P. Cappers, and N. Darghouth. 2015. "The Impacts of Net Metering on Utility Profits and Rates: Case Studies of Two Prototypical Utilities." 42nd IEEE PVSC Conference, June.

Cappers, P. and **A. Satchwell.** 2015. Considerations for State Regulators and Policymakers in a Post-FERC Order 745 World. Electricity Policy. February.

### **PRESENTATIONS AND INVITED TALKS**

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National Associate of Regulatory Utility Commissioners Summer Policy Summit. July 23, 2019. Creative Momentum Class for Today and Tomorrow: DERs are Changing Everything. Indianapolis, IN.

Legislative Energy Horizon Institute. July 9, 2019. What will Electric Utility Regulation and Business Models Look Like in 2030? Richland, WA.

Smart Electric Power Alliance Utility Conference. April 9, 2019. Utility Owned Residential Rooftop Solar: An Analysis of Ratepayer and Shareholder Impacts. San Diego, CA

National Associate of Regulatory Utility Commissioners. March 5-7, 2019. Peer Review on Tariff Design and Performance Based Ratemaking. Costa Rica.

Legislative Energy Horizon Institute. July 10, 2018. What will Electric Utility Regulation and Business Models Look Like in 2030? Richland, WA.

Solar Energy Innovation Network. May 22, 2018. Advanced Retail Rate Design Concepts. Denver, CO.

Energy Policy Research Conference. September 7, 2017. Strategies for Electric Utilities to Maintain Financial Viability in a Future of Aggressive Energy Efficiency and Net-Metered PV. Park City, UT.

Legislative Energy Horizon Institute. July 11, 2017. What will Electric Utility Regulation and Business Models Look Like in 2030? Richland, WA.

National Conference of Regulatory Attorneys: New Horizons, Utility Regulation of the Future. May 10, 2017. Financial Impacts of a Combined Energy Efficiency and Net-Metered PV Portfolio on a Prototypical Northeast Utility. Portland, OR.

National Governor's Association Policy Academy on Power Sector Modernization. February 2, 2017. Managing the Financial Impacts of Distributed Energy Resources. San Diego, CA.

Berkeley Tsinghua Energy Forum. October 21, 2016. Toward Future's Clean Energy System: Lessons from the Past. Contributed presentation content. Beijing, China.

Peak Load Management Association (PLMA) Spring Conference. April 20, 2016. Demand Response in Western Regional Planning. San Francisco, CA

Berkeley Energy & Resources Collaborative (BERC) Energy Summit. February 19, 2016. Panel Moderator: Distributed Energy - Power to the People. Berkeley, CA

Energy Policy Research Conference. September 11, 2015. A Framework for Organizing Current and Future Electric Utility Regulatory and Business Models. Denver, CO

Arizona Corporation Commission Workshop on Integrated Resource Planning. February 26, 2015. *Utility Resource Planning Practices and Trends: Experiences from Western Regional Planning*. Phoenix, AZ

National Governor's Association Learning Lab. January 20, 2015. *Financial Impacts of Net-Metered PV on Utilities and Ratepayers: A Scoping Study of Two Prototypical U.S. Utilities* .

National Association of State Utility Consumer Advocates Annual Meeting. November 16, 2014. *Financial Impacts of Net-Metered PV on Utilities and Ratepayers: A Scoping Study of Two Prototypical U.S. Utilities* . San Francisco, CA

International Association for Energy Economics (IAEE) International Conference. June 16, 2014. Financial Impacts of Distributed PV on Utility Rates and Profitability . New York, NY.

California Municipal Utilities Association (CMUA) Annual Conference. April 2, 2014. *Utility Business Models in a Low Load Growth/High DG Future*. Napa, CA

Committee on Regional Electric Power Cooperation (CREPC): Western State and Provincial Meeting. March 25, 2014. *Quantifying the Financial Impact of Distributed PV on Utility Rates and Profitability*. Tempe, AZ

Center for Research in Regulated Industries (CRR) 26<sup>th</sup> Annual Western Conference. June 21, 2013. *Analytical Frameworks to Incorporate Demand Response in Long-Term Resource Planning*. Monterrey, CA.

National Association of Regulatory Utility Commissioners (NARUC) Summer Committee Meetings. July 24, 2012. *What Remains to be Done with Demand Response? A National Forum from the FERC National Action Plan on Demand Response Tries to Give an Answer: Tools and Methods Working Group*. Portland, OR.

California Energy Commission (CEC) Integrated Energy Planning Report Workshop. June 11, 2012. *Framework to Identify and Address Barriers for Demand Response as Ancillary Services*. Sacramento, CA.

AESP National Meeting. Energy Efficiency Business Models: Challenges to Traditional Utility Regulation. February 8, 2012. *Panel Discussant*. San Diego, CA.

European Council for an Energy Efficiency Economy (ECEEE) Summer Study. June 10, 2011. *Carrots and Sticks: A Comprehensive Business Model for the Successful Achievement of Energy Efficiency Resource Standards*. Giens, France.

Demand Response Expo. May 26, 2010. *Cost Allocation Approaches to Smart Grid/AMI Deployments*. Santa Clara, CA.

## **HONORS, AWARDS, AND ACTIVITIES**

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- Reviewer for *The Energy Journal*, *Energy: The International Journal*, *Energy Policy*, *Utilities Policy*, *Sustainable Energy Technologies and Assessments*, *Energy Efficiency*, and *Energy Research and Social Science*
- “Excellence for the Future Award” in recognition of excellent achievement in the study of European Union Law