

# Joachim Seel, Ph.D.

Lawrence Berkeley National Laboratory  
1 Cyclotron Road, MS 90-4000, Berkeley, CA 94720  
(510) 486-5087, [jseel@lbl.gov](mailto:jseel@lbl.gov)

## EDUCATION

**University of California at Berkeley.** Ph.D. in Energy and Resources, May 2017.  
M.S. in Energy and Resources and Master in Public Policy, May 2012.

**Jacobs University Bremen, Germany.** B.A. in International Politics and History with an Environmental Policy and European Integration emphasis. Graduated at the top 5% of the class, May 2009.

## SELECTED PROFESSIONAL EXPERIENCE

### **LAWRENCE BERKELEY NATIONAL LABORATORY, Berkeley, CA, USA**

*Principal Scientific Engineering Associate, Electricity Markets and Policy Department, 2023.01-present*

*Senior Scientific Engineering Associate, Electricity Markets and Policy Department, 2018.10-2022.11*

*Scientific Engineering Associate, Electricity Market and Policy Group, 2017.01 – 2018.09*

*Senior Research Associate, Electricity Market and Policy Group, 2015.05 -2016.12*

*Graduate Student Research Assistant, Electricity Markets and Policy Group, 2011- 2015.05*

- Member of a diverse, nationally recognized research program on the planning, design, and evaluation of renewable energy policies; on the costs, benefits, and market potential of renewable electricity sources; on electric grid operations and infrastructure impacts; and on public acceptance.
- Co-leading cost, performance, value, and pricing analyses of utility-scale solar projects in the US.
- Leading analysis of drivers of bulk power system generator interconnection costs in the US.
- Co-led analysis of the impacts of high renewable energy penetrations on wholesale power markets, electric industry participants and load-based energy programs.
- Contributed to expert elicitations on wind cost reduction opportunities.
- Led comparative research on soft cost components of distributed solar installations between the U.S. and Germany and contributed to a comparative study between the U.S. and Japan.

### **FEDERAL GERMAN MINISTRY FOR ECONOMICS AND ENERGY, Berlin, Germany**

*Research Fellow at Referat III/B1 Electricity Market Design 06/2014 – 08/2014*

- Conducted research on electricity market design proposals for Germany that accommodate high renewable penetration levels. Investigated German utility business and infrastructure finance models.

### **SINO-DANISH RENEWABLE ENERGY DEVELOPMENT PROGRAMME, Beijing, China**

*Fellow at “Center for Renewable Energy Development” (CRED) of the “China National Energy Administration” 06/2011 – 08/2011*

- Consulted and published on German policies guiding the expansion of distributed photovoltaics.

### **PG&E, RENEWABLE ENERGY DIVISION, San Francisco, CA, USA**

*Consultant, 01/2011 – 05/2011*

- Assessed the cost-effectiveness of tracking systems for 250MW of utility-scale photovoltaic projects.

### **AMERICAN WIND ENERGY ASSOCIATION, Washington D.C., USA**

*Policy and Data Analyst, 05/2010 – 08/2010*

- Analyzed and compared renewable energy policies for wind industries in 40+ countries.
- Analyzed U.S. Senate energy bills and their potential impact on the American wind industry.

## SELECTED HONORS AND AWARDS

- Celebration of Excellence, Lawrence Berkeley National Laboratory, 2017
- SPOT Award, Lawrence Berkeley National Laboratory, 2016, 2020, 2021, 2022
- Best Student Presentation Award , 39th IEEE Photovoltaics Specialist Conference, 2013
- Graduate Studies Fellowship, German Academic Exchange Service (DAAD) 2012
- UC Regents Fellowship, University of California, Berkeley, 2011
- Goldman School of Public Policy Fellowship, University of California, Berkeley, 2010.
- Fulbright Scholarship, The Fulbright Program, 2009
- Hamburg Scholarship, German National Academic Foundation, 2009
- Scholarships for Bachelor and Master Studies, German National Academic Foundation, 2006-2012

## SELECTED PUBLICATIONS

9 refereed journal papers, 6 refereed conference papers, 39 national lab research reports.

Over a hundred presentations at industry and academic conferences, domestic and international regulatory bodies, and for California Governor Brown.

Relevant publications include:

- J. Seel, J. Rand, W. Gorman, D. Millstein, R. Wisler, “Generator Interconnection Cost Analysis in the PJM territory”. Lawrence Berkeley National Laboratory (LBNL), 2023.
- J. Seel, J. Rand, W. Gorman, D. Millstein, R. Wisler, “Generator Interconnection Cost Analysis in the Midcontinent Independent System Operator (MISO) territory”. Lawrence Berkeley National Laboratory (LBNL), 2022.
- J. Seel, C. Warner, A. Mills, ”Influence of Business Models on PV-Battery Dispatch Decisions and Market Value”. *Advances in Applied Energy*, 2022. <https://doi.org/10.1016/j.adapen.2021.100076>
- J. Seel, W. Gorman. “Batteries Included: Top 10 Findings from Berkeley Lab Research on the Growth of Hybrid Power Plants in the United States”. Lawrence Berkeley National Laboratory (LBNL), 2022.
- J. Rand, R. Wisler, W. Gorman, D. Millstein, J. Seel, S. Jeong, D. Robson. “Queued Up: Characteristics of Power Plants Seeking Transmission Interconnection As of the End of 2021”. Lawrence Berkeley National Laboratory (LBNL), 2022.
- P. Beiter, J. Rand, J. Seel, E. Lantz, P. Gilman, R. Wisler. “Expert Perspectives on the Wind Plant of the Future”. *Wind Energy*, 2022. <https://doi.org/10.1002/we.2735>
- D. Millstein, R. Wisler, A. Mills, M. Bolinger, J. Seel, S. Jeong. “Solar and wind grid system value in the United States: The effect of transmission congestion, generation profiles, and curtailment”. *Joule*, 2021. <https://doi.org/10.1016/j.joule.2021.05.009>
- J. Seel, D. Millstein, A. Mills, M. Bolinger, R. Wisler, ”Plentiful electricity turns wholesale prices negative”. *Advances in Applied Energy*, 2021. <https://doi.org/10.1016/j.adapen.2021.100073>
- A. Mills, J. Seel, M. Bolinger, W. Gorman, J. Hyungkwan, D. Millstein, R. Wisler, “Solar-to-Grid: Trends in System Impacts, Reliability, and Market Value in the United States”. Lawrence Berkeley National Laboratory (LBNL), 2020-2021.
- R. Wisler, J. Rand, J. Seel, E. Lantz, P. Beiter, E. Baker, P. Gilman. “Expert elicitation survey predicts 37% to 49% declines in wind energy costs by 2050”. *Nature Energy*, 2021. <https://dx.doi.org/10.1038/s41560-021-00810-z>
- M. Bolinger, and J. Seel, Cody Warner, Dana Robson. “Utility-Scale Solar: An Empirical Analysis of Project Cost, Performance, Pricing, and Value Trends in the United States“. Lawrence Berkeley National Laboratory (LBNL), 2015-2022
- J. Seel, A. Mills, C. Warner, B. Paulos, R. Wisler, “Impacts of High Variable Renewable Energy Futures on Wholesale Electricity Prices, and on Electric-Sector Decision Making – Demand Side Effects”. Lawrence Berkeley National Laboratory (LBNL), 2020.

- A. Mills, T. Levin, R. Wiser, J. Seel, A. Botterud, “Impacts of Variable Renewable Energy on Wholesale Markets and Generating Assets in the United States: A Review of Expectations and Evidence”. *Renewable and Sustainable Energy Reviews*.120 (2020). doi: 10.1016/j.rser.2019.109670
- A. Mills, D. Millstein, R. Wiser, J. Seel, J. Carvallo, S. Jeong, W. Gorman, ” The Impact of Wind, Solar, and Other Factors on the Decline in Wholesale Power Prices in the United States”. *Applied Energy*, 2020.
- J. Seel, A. Mills, R. Wiser. “Impacts of High Variable Renewable Energy Futures on Wholesale Electricity Prices, and on Electric-Sector Decision Making”. Lawrence Berkeley National Laboratory (LBNL), 2018
- R. Wiser, A. Mills, and J. Seel. “Power Plant Retirements: Trends and Possible Drivers”. Lawrence Berkeley National Laboratory (LBNL), 2017.
- J. Seel. “Socio-Economic and Engineering Assessments of Renewable Energy Cost Reduction Potential”. Dissertation, University of California, Berkeley, 2017.
- R. Wiser, A. Mills, J. Seel, T. Levin, A. Botterud, “Impacts of Variable Renewable Energy on Bulk Power System Assets, Pricing and Costs” - Memo to Secretary of Energy Rick Perry, Department of Energy. Lawrence Berkeley National Laboratory (LBNL), 2017.
- A. Mills, G. Barbose, J. Seel, C. Dong, T. Mai, B. Sigrin, J. Zuboy. “Planning for a Distributed Disruption: Innovative Practices for Incorporating Distributed Solar into Utility Planning. Lawrence Berkeley National Laboratory (LBNL), 2016.
- G. Barbose, J. Miller, B. Sigrin, E. Reiter, K. Cory, J. McLaren, J. Seel, A. Mills, N. Darghouth, A. Satchwell. “Utility Regulatory and Business Model Reforms for Addressing the Financial Impacts of Distributed Solar on Utilities”. Lawrence Berkeley National Laboratory (LBNL), 2016.
- M. Bolinger, J. Seel, M. Wu. “Maximizing MWh: A Statistical Analysis of the Performance of Utility-Scale Photovoltaic Projects in the United States”. IEEE 43<sup>rd</sup> PV Specialist Conference Proceedings, June 2016. doi: 10.1109/PVSC.2016.7750254.
- A. Mills and J. Seel. “Flexibility Inventory for Western Resource Planners”. Lawrence Berkeley National Laboratory (LBNL), 2015.
- D. Feldman, G. Barbose, R. Margolis, M. Bolinger, D. Chung, R. Fu, J. Seel, C. Davidson, and R. Wiser. “Photovoltaic System Pricing Trends: Historical, Recent and Near-Term Projections.” National Renewable Energy Laboratory (NREL), 2015.
- J. Seel., G. Barbose, and R. Wiser. 2014. “An Analysis of Residential PV System Price Differences Between the United States and Germany.” *Energy Policy*, 69(2014): 216-226.
- B. Friedman, B. Margolis, and J. Seel. “Comparing Photovoltaic (PV) Costs and Deployment Drivers in the Japanese and U.S. Residential and Commercial Markets”. National Renewable Energy Laboratory (NREL), 2014.
- B. Hoen, G. Klise, J. Graff-Zivin, M. Thayer, J. Seel, and R. Wiser. “Exploring California PV Home Premiums”. Lawrence Berkeley National Laboratory (LBNL), 2013.
- G. Barbose, N. Darghouth, R. Wiser, and J. Seel. “Tracking the Sun IV An Historical Summary of the Installed Cost of Photovoltaics in the United States from 1998 to 2010”. Lawrence Berkeley National Laboratory (LBNL), 2011.
- Contributed to: R. Wiser, and M. Bolinger.”Wind Technologies Market Report 2010”. Department of Energy, 2011.