University of California, Berkeley — Department of Agricultural and Resource Economics

Karl W. Dunkle Werner

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Doctoral Studies
University of California, Berkeley
PhD, Agricultural and Resource Economics, Expected completion May 2021
Dissertation: Essays in Energy and Environmental Economics

Primary Fields: Energy and Environmental Economics; Public Economics
Secondary Fields: Applied Econometrics

References

Dr. James Sallee	Dr. Severin Borenstein	Dr. Meredith Fowlie
sallee@berkeley.edu	severinborenstein@berkeley.edu	fowlie@berkeley.edu
Ag. & Resource Econ.	Haas School of Business	Ag. & Resource Econ.

Placement Officers

Dr. Sofia Villas-Boas	Dr. Maximilian Auffhammer	Diana Lazo
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Prior Education

UC Berkeley	MS	Agricultural and Resource Economics	2017
U Michigan	BS	Economics; Interdisciplinary Physics	2013

Teaching

UC Berkeley, Haas	GSI	*Data and Decisions,* Lucas Davis	2018
	Reader	*Energy and Environmental Markets,* Severin Borenstein	2017

Prior Employment

UC Berkeley Energy Institute, Graduate Student Researcher (Davis, Fowlie, and Sallee) 2016–20
The Brattle Group, Summer Associate 2019
UC Berkeley, Graduate Student Researcher (P. Berck) 2015–16
Federal Reserve Board, Senior Research Assistant (Short-Term Funding Markets) 2013–15

Languages

Human	English (native), Spanish (conversant)
Computer	R, Python, Stata, Git, Bash, Stan, PostgreSQL, Google Earth Engine

Grants, Fellowships, and Awards

2019–21	Alfred P. Sloan Foundation Pre-doctoral Fellowship on Energy Economics, awarded through the NBER
2018	Sacheti Family Fellowship
2017	ARE Graduate Student Travel Grant
Earlier	Michigan's Ferrando Prize and Sims Scholarship in Economics, NSF GRFP honorable mention, "Extraordinary" personnel evaluation at the Federal Reserve Board

Job Market Paper

Hard to Measure Well: Can Feasible Policies Reduce Methane Emissions?
With Wenfeng Qiu

Abstract: Oil and gas wells emit large quantities of methane, a greenhouse gas 34 times more potent than carbon dioxide. Methane emissions are rarely priced and lightly regulated—in large part because they are hard to measure—leading to a large climate externality. However, measurement technology is improving, with remote sensing and other techniques opening the door for policy innovation. We present a theoretical model of emissions abatement at the well level and a range of feasible policy options, then use data constructed from cross-sectional scientific studies to estimate abatement costs and simulate policies under realistic constraints. We focus on audit policies, varying the information the regulator uses in choosing wells to audit. These simulated second-best audits become more effective when they can target on well covariates, detect leaks remotely, and charge higher fees for leaks. A policy that audits 1% of wells with uniform probability may achieve less than 1% of the gains of the infeasible first best. Using the same number of audits targeted on remotely sensed emissions data could achieve gains of 30–60% of the first best. These simulation results demonstrate that because leaks are rare events, targeting is essential for achieving welfare gains and emissions reductions. The results also show that auditing a small fraction of wells can have a large impact when properly targeted.

Research in Progress

Rate of Return Regulation Revisited
With Stephen Jarvis

A Welfare Analysis of Drilling on US Public Lands
With Eva Lyubich

Hedonic Valuation of Flood Risk on Agricultural Land
With Oliver Browne, Alyssa Neidhart, and David Sunding

Nuclear Closures and Air Pollution

Talks

2020	Berkeley Energy Markets; ARE department seminar
2019	Camp Resources xxvi; CRRI Western Conference
2018	Berkeley Energy, resources and environment seminar

Refereeing

European Economic Review; Energy Journal

Activities

2015–20¬18	Volunteer Income Tax Assistance (VITA) tax preparation volunteer
2018–20	Organized reading group on econometrics and machine learning
2018–20	Berkeley Energy and Resources Collaborative (BERC) department liaison
2018–20	Chancellor's Oversight Committee on Parking and Transportation
2018–19	Berkeley Graduate Assembly department representative
2018–19	Mentoring through Berkeley's Student Mentoring and Research Teams (SMART) and Underrepresented Minorities in Economics (UME)